Phone (870) 238-2751 121 Merriman

WYNNE WATER UTILITIES
WYNNE, ARKANSAS
72396

Date: January 26, 2014

To: ADEQ
NPDED Enforcement Section
5301 Northshore Dr.
North Little Rock, Arkansas

Re: Toxicity Testing Reduction

To Whom It May Concern:

This is to certify that no test failures have occurred and that all tests meet all test acceptability criteria on Page 13 of Part III Item 6.a of the Permit effective April 1, 2013 for the past four quarters. This is a formal request that our testing be reduced from quarterly to semiannual. The list of each test performed including test initiation date, species, NOECs for lethal and sub-lethal effects and the maximum coefficient of variation for the controls are listed below.

If you have any questions or concerns I can be reach at the above number.

Sincerely,

Don M. O'Neal
General Manager
Wynne Water Utilities

Date	Species	NOEC %	Coefficient of Variation
3/11/13	Pimephales promela	100	5.9%
3/11/13	Ceriodaphina dubia	100	11.5%
6/10/13	Pimephales promela	100	4.0%
6/10-13	Ceriodaphina dubia	100	10.2%
9/09/13	Pimephales promela	100	3.3%
9/09/13	Ceriodaphina dubia	100	6.5%
12-13-13	Pimephales promela	100	2.7%
12-13-13	Ceriodaphina dubia	100	11.9%

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Date	Species	NOEC %	Coefficient of Variation
3/11/13	Pimephales promela	100	5.9%
3/11/13	Ceriodaphina dubia	100	11.5%
6/10/13	Pimephales promela	100	4.0%
6/10-13	Ceriodaphina dubia	100	10.2%
9/09/13	Pimephales promela	100	3.3%
9/09/13	Ceriodaphina dubia	100	6.5%
12-13-13	Pimephales promela	100	2.7%
12-13-13	Ceriodaphina dubia	100	11.9%

SORRELLS RESEARCH
LABORATORY AND FIELD SERVICES

CHEMISTS
ECOLOGISTS
CONSULTANTS
PLANNERS

8100 National Drive
Little Rock, Arkansas 72209

Phone 501-562-8139
Fax 501-562-7025
Toll Free 1-800-331-8139

LABORATORY ANALYSIS

Date of Report: January 23, 2014
Date Received : December 9, 2013

For:WYNNE WATER UTILITIES
121 EAST MERRIMAN
WYNNE, AR 72396-
Job: NPDES MONITORING PERMIT NO: AR0021903 2/YR
Sample From:POST AERATION BASIN-COMP 12/08-09/13 0700-0700 - BIO MONITORING

ANALYTE		RESULT	UNITS	METHOD
Bioassay, Ceriodaphnia dubia, chronic	=	100.000	Rp_NOEC, %	1002.0
Bioassay, Fathead minnow, chronic	=	100.000	Gr_NOEC, %	1000.0
Bioassay, Ceriodaphnia dubia- chronic	=	100.000	Sv-NOEC, %	1002.0
Bioassay, Fathead minnow, chronic	=	100.000	Sv_NOEC, %	1000.0

STANDARD METHODS, 20TH ED.; EPA METHODS, 3RD ED.
Collected by:
MAHDI HADDADI on 12/09/13 at 7:00
Analysis by :
SEE ATTACHED QUALITY ASSURANCE PAGE.
Sample preservation and Laboratory Analysis conducted according to EPA 40 CFR Part 136. Test/Analyst/Time/Coeff./Var./ QA plan filed with ADPC&E. Includes 10 % replication and 10 % recovery studies by random selection. Instruments maintained and calibrated and records kept.
See Attached.

Copies to:
MR. HARRELL WILLIAMS
OPERATOR
121 EAST MERRIMAN

WYNNE, AR 72396-

Laboratory Number: 16611.0001B TKR Reviewed By: K. E. Sorrells, M.S. [ ]

CITY OF WYNNE
PERMIT NO: AR0021903
CHRONIC BIOMONITORING

METHOD 1000.0 - PIMEPHALES PROMELAS
METHOD 1002.0 - CERIODAPHNIA DUBIA

Report Prepared by:
Sorrells Research Associates, Inc.
8100 National Dr.
Little Rock, AR 72209

Cecil A. Sorrells, Biomonitoring Laboratory Supervisor

K. E. Sorrells, M.S., Quality Assurance Officer

January 20, 2014

Laboratory Number: 16611.0001, 0002, 0003

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY

Chronic biomonitoring tests:

7 day fathead minnow larval survival and growth (method 1000.0) and 7 day ceriodaphnia dubia survival and reproduction (method 1002.0) were performed by Sorrells Research Associates for Wynne 24 hour composite samples of plant effluent for dates 12/08-09/13,12/10-11/13,12/12-13/13.

The samples were delivered to Sorrells lab in ice chest, cooled to 4 degrees c.

These samples were logged in as #16611.0001, 0002 and 0003. Chain of custody included in report.

Moderately hard 20% deionized mineral water was used as dilution water.

Testing was initiated 12/10/13 at 1615 hours and continued through 12/18/13 at 1615 hours.

The results of these tests are as follows:

TEST 1000.0 FATHEAD MINNOW

SURVIVAL - NOEL 100% Effluent

GROWTH - NOEL 100% Effluent

TEST 1002.0 CERIODAPHNIA DUBIA

SURVIVAL - NOEL 100% Effluent

REPRODUCTION - NOEL 100% Effluent

Fishers Exact Test statistics are included in this report for these observations. No other adjustments were made.

TEST ACCEPTANCE CRITERIA
FOR CONTROL

TEST METHOD	ORGANISM	CRITERIA	RESULTS	PASS/FAIL
1000	Pimephales promelas	Control surv. >or= 80 %	100%	PASS
1002	Ceriodaphnia dubia	Control surv. >or= 80 %	100%	PASS
1000	Pimephales promelas	Control wt. .25 mg or> per larvae.	.318	PASS
1002	Ceriodaphnia dubia	Control repro. 15 or> neonates per surviving female.	19.5	PASS
1000	Pimephales promelas	Control CV 40 % or <	**2.7**	PASS
1002	Ceriodaphnia Dubia	Control CV 40 % or <	**11.9**	PASS

NOTE: The test acceptance criteria is based upon the synthetic laboratory control. Laboratory control is moderately hard 20% deionized mineral water, as directed by EPA/600/4-91/002.

OUTLINED REPORT

PERMIT NO: AR0021903
PERMIT REQUIREMENTS:
PLANT LOCATION:
RECEIVING WATER BODY:

CLIENT: Wynne, City of
ADDRESS: P.O. Box 121 E. Merriman
Wynne, AR 72396

PLANT OPERATIONS

PRODUCT (S): n/a
RAW MATERIALS: n/a.
OPERATING SCHEDULE:
SCHEMATIC OF WASTE TREATMENT:

RETENTION TIME:

VOLUME OF WASTE FLOW (MGD, CFS, GPM)

BIOMONITORING CHRONIC TOXICITY REPORT
CHEMICAL PARAMETER CHART

SOURCE OF EFFLUENT (AMBIENT) AND DILUTION WATER

EFFLUENT SAMPLES-

SAMPLING POINT: PLANT EFFLUENT

COLLECTION DATES/TIMES: 12/08-09/13 0700-0700 | 12/10-11/13 0700-0700 | 12/12-13/13 0700-0700

SAMPLING COLLECTION METHOD: COMPOSITE

PHYSICAL AND CHEMICAL DATA:

CONTROL	DATE **12/10/13**	DATE **12/12/13**	DATE **12/14/13**
DO (mg/l)	8.44	8.56	8.60
pH (S.U.)	7.16	7.10	7.10
Conductivity (umhos)	268	270	285
Alkalinity (mg/l)	72	72	72
Hardness (mg/l)	126	142	138
Res. Chlorine (mg/l)	0	0	0

56%	DATE **12/10/13**	DATE **12/12/13**	DATE **12/14/13**
DO (mg/l)	8.40	8.38	8.42
pH (S.U.)	7.35	7.25	7.35
Conductivity (umhos)	352	340	348
Alkalinity (mg/l)	58	52	52
Hardness (mg/l)	180	190	158

(Cont.)

PHYSICAL AND CHEMICAL DATA: **100% EFFLUENT**	DATE **12/10/13**	DATE **12/12/13**	DATE **12/14/13**
DO (mg/l)	8.33	8.19	8.30
pH (S.U.)	7.48	7.35	7.48
Conductivity (umhos)	454	461	489
Alkalinity (mg/l)	36	52	36
Hardness (mg/l)	192	252	240
Res. Chlorine (mg/l)	0	0	0
Temperature .c	25	25	25

DILUTION WATER SAMPLES -

SOURCE: 20% DMW

COLLECTION DATE: N/A TIME: N/A

PRETREATMENT: AERATED

Hardness is to be reported as mg/1 CaCO3
D.O. Dissolved Oxygen mg/1
Temperature degrees centigrade
pH standard units
Conductivity = us/cm
Chlorine Residual = mg/1

DS-0214
DS702246

Chemical Data For Daily Biomonitoring

Permitee Wynne Date 12-10-13 16[illegible]

Analyst ~~A~~ / ED Lab no. 16610

Dilution Control

Day	1	2	3	4	5	6	7	notes
Temp	25.0	25.0	25.0	25.0	25.0	25.0		
pH	7.16	7.18	7.10	7.22	7.10	7.21		
D.O.	8.44	8.39	8.56	8.45	8.60	8.55		
Alk	72		72		72			
Hard.	126		142		138			
Cond.	268		270		285			

Dilution 56

Day	1	2	3	4	5	6	7	notes
Temp	25.0	25.0	25.0	25.0	25.0	25.0		
pH	7.35	7.33	7.25	7.36	7.35	7.35		
D.O.	8.40	8.35	8.38	8.27	8.42	8.08		
Alk	58		52		52			
Hard.	180		190		158			
Cond.	352		~~1~~340		348			

Dilution 100

Day	1	2	3	4	5	6	7	notes
Temp	25.0	25.0	25.0	25.0	25.0	25.0		
pH	7.48	7.40	7.35	7.40	7.48	7.46		
D.O.	8.33	8.27	8.19	8.03	8.30	7.99		
Alk	36		52		36			
Hard.	192		252		240			
Cond.	454		461		449			

<.05 <.05 0

DATA ANALYSIS

ACCORDING TO EPA/600/4-91/002.

STATISTICAL ANALYSES

TOXSTAT VERSION 3.3

TITLE: WYNNE 16611 CERIO REPS
FILE: 16611WCR
TRANSFORM: NO TRANSFORM NUMBER OF GROUPS: 6

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	CONTROL	1	22.0000	22.0000
1	CONTROL	2	20.0000	20.0000
1	CONTROL	3	18.0000	18.0000
1	CONTROL	4	20.0000	20.0000
1	CONTROL	5	16.0000	16.0000
1	CONTROL	6	23.0000	23.0000
1	CONTROL	7	22.0000	22.0000
1	CONTROL	8	18.0000	18.0000
1	CONTROL	9	17.0000	17.0000
1	CONTROL	10	19.0000	19.0000
2	32.00	1	19.0000	19.0000
2	32.00	2	21.0000	21.0000
2	32.00	3	18.0000	18.0000
2	32.00	4	18.0000	18.0000
2	32.00	5	19.0000	19.0000
2	32.00	6	19.0000	19.0000
2	32.00	7	21.0000	21.0000
2	32.00	8	18.0000	18.0000
2	32.00	9	19.0000	19.0000
2	32.00	10	21.0000	21.0000
3	42.00	1	19.0000	19.0000
3	42.00	2	21.0000	21.0000
3	42.00	3	20.0000	20.0000
3	42.00	4	20.0000	20.0000
3	42.00	5	19.0000	19.0000
3	42.00	6	20.0000	20.0000
3	42.00	7	19.0000	19.0000
3	42.00	8	17.0000	17.0000
3	42.00	9	17.0000	17.0000
3	42.00	10	17.0000	17.0000
4	56.00	1	20.0000	20.0000
4	56.00	2	19.0000	19.0000
4	56.00	3	20.0000	20.0000
4	56.00	4	16.0000	16.0000
4	56.00	5	20.0000	20.0000
4	56.00	6	20.0000	20.0000
4	56.00	7	20.0000	20.0000
4	56.00	8	17.0000	17.0000
4	56.00	9	19.0000	19.0000
4	56.00	10	19.0000	19.0000
5	75.00	1	18.0000	18.0000
5	75.00	2	21.0000	21.0000
5	75.00	3	20.0000	20.0000
5	75.00	4	17.0000	17.0000
5	75.00	5	22.0000	22.0000
5	75.00	6	21.0000	21.0000
5	75.00	7	24.0000	24.0000
5	75.00	8	18.0000	18.0000
5	75.00	9	19.0000	19.0000
5	75.00	10	20.0000	20.0000

6	100.00	1	18.0000	18.0000
6	100.00	2	19.0000	19.0000
6	100.00	3	19.0000	19.0000
6	100.00	4	19.0000	19.0000
6	100.00	5	17.0000	17.0000
6	100.00	6	21.0000	21.0000
6	100.00	7	20.0000	20.0000
6	100.00	8	17.0000	17.0000
6	100.00	9	17.0000	17.0000
6	100.00	10	18.0000	18.0000

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	16.000	23.000	19.500
2	32.00	10	18.000	21.000	19.300
3	42.00	10	17.000	21.000	18.900
4	56.00	10	16.000	20.000	19.000
5	75.00	10	17.000	24.000	20.000
6	100.00	10	17.000	21.000	18.500

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	CONTROL	5.389	2.321	0.734
2	32.00	1.567	1.252	0.396
3	42.00	2.100	1.449	0.458
4	56.00	2.000	1.414	0.447
5	75.00	4.444	2.108	0.667
6	100.00	1.833	1.354	0.428

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	13.600	2.720	0.942
Within (Error)	54	156.000	2.889	

Total	59	169.600

Critical F value = 2.45 (0.05,5,40)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	19.500	19.500		
2	32.00	19.300	19.300	0.263	
3	42.00	18.900	18.900	0.789	
4	56.00	19.000	19.000	0.658	
5	75.00	20.000	20.000	-0.658	
6	100.00	18.500	18.500	1.316	

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

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

DUNNETTS 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	10			
2	32.00	10	1.756	9.0	0.200
3	42.00	10	1.756	9.0	0.600
4	56.00	10	1.756	9.0	0.500
5	75.00	10	1.756	9.0	-0.500
6	100.00	10	1.756	9.0	1.000

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	CONTROL	10	19.500	19.500	19.500
2	32.00	10	19.300	19.300	19.300
3	42.00	10	18.900	18.900	19.300
4	56.00	10	19.000	19.000	19.300
5	75.00	10	20.000	20.000	19.300
6	100.00	10	18.500	18.500	18.500

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
CONTROL	19.500				
32.00	19.300	0.263		1.68	k= 1, v=54
42.00	19.300	0.263		1.76	k= 2, v=54
56.00	19.300	0.263		1.79	k= 3, v=54
75.00	19.300	0.263		1.80	k= 4, v=54
100.00	18.500	1.316		1.80	k= 5, v=54

s = 1.700
Note: df used for table values are approximate when v > 20.

WYNNE 16611 CERIO REPS
File: 16611WCR Transform: NO TRANSFORM

STEELS MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	CONTROL	19.500				
2	32.00	19.300	103.00	75.00	10.00	
3	42.00	18.900	98.00	75.00	10.00	
4	56.00	19.000	100.50	75.00	10.00	
5	75.00	20.000	111.00	75.00	10.00	
6	100.00	18.500	92.00	75.00	10.00	

Critical values use k = 5, are 1 tailed, and alpha = 0.05

TITLE: WYNNE 16611 MINNOW WEIGHTS
FILE: 16611WMW
TRANSFORM: NO TRANSFORM NUMBER OF GROUPS: 6

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	CONTROL	1	0.3220	0.3220
1	CONTROL	2	0.3220	0.3220
1	CONTROL	3	0.3050	0.3050
1	CONTROL	4	0.3230	0.3230
2	32.00	1	0.3060	0.3060
2	32.00	2	0.3150	0.3150
2	32.00	3	0.3220	0.3220
2	32.00	4	0.3290	0.3290
3	42.00	1	0.3280	0.3280
3	42.00	2	0.3020	0.3020
3	42.00	3	0.3310	0.3310
3	42.00	4	0.3150	0.3150
4	56.00	1	0.3070	0.3070
4	56.00	2	0.3260	0.3260
4	56.00	3	0.3300	0.3300
4	56.00	4	0.3200	0.3200
5	75.00	1	0.3000	0.3000
5	75.00	2	0.3230	0.3230
5	75.00	3	0.3090	0.3090
5	75.00	4	0.3360	0.3360
6	100.00	1	0.3120	0.3120
6	100.00	2	0.3080	0.3080
6	100.00	3	0.3240	0.3240
6	100.00	4	0.3090	0.3090

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	4	0.305	0.323	0.318
2	32.00	4	0.306	0.329	0.318
3	42.00	4	0.302	0.331	0.319
4	56.00	4	0.307	0.330	0.321
5	75.00	4	0.300	0.336	0.317
6	100.00	4	0.308	0.324	0.313

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	CONTROL	0.000	0.009	0.004
2	32.00	0.000	0.010	0.005
3	42.00	0.000	0.013	0.007
4	56.00	0.000	0.010	0.005
5	75.00	0.000	0.016	0.008
6	100.00	0.000	0.007	0.004

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.000	0.000	0.200
Within (Error)	18	0.002	0.000	
Total	23	0.002		

Critical F value = 2.77 (0.05,5,18)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	0.318	0.318		
2	32.00	0.318	0.318	0.000	
3	42.00	0.319	0.319	-0.126	
4	56.00	0.321	0.321	-0.347	
5	75.00	0.317	0.317	0.126	
6	100.00	0.313	0.313	0.599	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

DUNNETTS 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	4			
2	32.00	4	0.019	6.0	0.000
3	42.00	4	0.019	6.0	-0.001
4	56.00	4	0.019	6.0	-0.003
5	75.00	4	0.019	6.0	0.001
6	100.00	4	0.019	6.0	0.005

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	CONTROL	4	0.318	0.318	0.319
2	32.00	4	0.318	0.318	0.319
3	42.00	4	0.319	0.319	0.319
4	56.00	4	0.321	0.321	0.319
5	75.00	4	0.317	0.317	0.317
6	100.00	4	0.313	0.313	0.313

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
CONTROL	0.319				
32.00	0.319	0.116		1.73	k= 1, v=18
42.00	0.319	0.116		1.82	k= 2, v=18
56.00	0.319	0.116		1.85	k= 3, v=18
75.00	0.317	0.124		1.86	k= 4, v=18
100.00	0.313	0.589		1.87	k= 5, v=18

s = 0.011
Note: df used for table values are approximate when v > 20.

WYNNE 16611 MINNOW WEIGHTS
File: 16611WMW Transform: NO TRANSFORM

STEELS MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	CONTROL	0.318				
2	32.00	0.318	18.00	10.00	4.00	
3	42.00	0.319	19.00	10.00	4.00	

4	56.00	0.321	20.00	10.00	4.00
5	75.00	0.317	18.50	10.00	4.00
6	100.00	0.313	17.00	10.00	4.00

Critical values use k = 5, are 1 tailed, and alpha = 0.05

TEST METHOD
1000.0

TEST METHOD USED: 1000.0
END POINT(S) OF TEST: NOEL 100%
DEVIATIONS FROM REFERENCE METHOD: None

DATE AND TIME TEST STARTED: 12/10/13 1615
DATE AND TIME TEST TERMINATED: 12/17/13 1615
TYPE OF TEST CHAMBERS: 600 ml
VOLUME OF SOLUTIONS USED/CHAMBER: 400 ml
NUMBER OF ORGANISMS/TEST CHAMBER: 10
NUMBER OF REPLICATE TEST CHAMBERS/TREATMENT: 4

TEST TEMPERATURE (MEAN): mean = 25

TEST ORGANISMS

SCIENTIFIC NAME: Pimephales promelas
AGE: Less than 24 hours
LIFE STAGE: Larvae
SOURCE: Aquatic BioSystems, Inc.
DISEASES AND TREATMENT: None
FEEDING REGIME: 2/day Brine Shrimp
ORGANISM HISTORY SHEETS ARE ATTACHED

RESULTS SUMMARY

FATHEAD MINNOW, PIMEPHALES PROMELAS, LARVAL SURVIVAL AND GROWTH TEST METHOD 1000.0

Larvae are exposed in a static renewal system for seven days to different concentrations of effluent or to receiving water. Test results are based on the survival and growth (increase in weight) of the larvae. Effluent dilution's chosen for this test were 32%, 42%, 56%, 75% and 100% in accordance with the NPDES permit. The low flow or "critical" dilution is specified in the NPDES Permit as 100% effluent.

NOEL(S) ARE AS FOLLOWS:

100%	Survival	100%	effluent
NOEL	Growth	100%	effluent

BIOMONITORING REPORT
FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. %	Percent Survival In				Mean Percent			CV%*
	A	B	C	D	24h	48h	7d	
Dilution Water	100	100	100	100	100	100	100	0.0
32%	100	100	100	100	100	100	100	0.0
42%	100	100	100	100	100	100	100	0.0
56%	100	100	100	100	100	100	100	0.0
75%	100	100	100	100	100	100	100	0.0
100%	100	100	100	100	100	100	100	0.0

*coefficient of variation = standard deviation x 100/mean
**ph unadjusted 100% effluent

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 7 days significantly different (p=0.5) than the control survival for the % effluent corresponding to:

a.) LOW FLOW OR CRITICAL DILUTION (100%): YES [ ] NO [**X**]
b.) 1/2 LOW FLOW OR 2 X CRITICAL DILUTION (56 %): YES [ ] NO [**X**]

2. Dunnett's Procedure:
Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION (100%): YES [ ] NO [**X**]
b.) 1/2 LOW FLOW OR 2 X CRITICAL DILUTION (56 %): YES [ ] NO [**X**]

3. If you answered NO to 1.a) and 2.a) enter [0] otherwise enter [1]: **[0]**
4. If you answered NO to 1.b) and 2.b) enter [0] otherwise enter [1]: **[0]**
5. Enter response to item 3 on DMR Form, parameter # TEP6C.
6. Enter response to item 4 on DMR Form, parameter # TFP6C.
7. Enter percent effluent corresponding to each NOEL below and circle lowest number:

a.) NOEL survival =100% effluent
b.) NOEL growth = 100% effluent

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

(Pimephales promelas)

Permittee: Wynne, City of NPDES NO. AR0021903

Dilution water used: Receiving [ ] Reconstituted [X]

DATA TABLE FOR GROWTH

EFFLUENT CONC. %	AVERAGE DRY WEIGHT IN MILLIGRAMS IN REPLICATE CHAMBERS				MEAN DRY WEIGHT (MG)	CV%*
	A	B	C	D	7 days	
CONTROL	.322	.322	.305	.323	.318	**2.7**
32	.306	.315	.322	.329	.318	3.1
42	.328	.302	.331	.315	.319	4.2
56	.307	.326	.330	.320	.321	3.1
75	.300	.323	.309	.336	.317	5.0
100	.312	.308	.324	.309	.313	2.4

*Coefficient of variation = standard deviation X 100/mean

(Coef Of Var Statre 7Day Chronic Pimephales TQP6C = **2.7**)

TEST METHOD
1002.0

TEST METHOD USED: 1002.0
END POINT(S) OF TEST: NOEL 100 %
DEVIATIONS FROM REFERENCE METHOD: None

DATE AND TIME TEST STARTED: 12/10/13 1615
DATE AND TIME TEST TERMINATED: 12/18/13 1615
TYPE OF TEST CHAMBERS: 30 ml
VOLUME OF SOLUTIONS USED/CHAMBER: 15 ml
NUMBER OF ORGANISMS/TEST CHAMBER: 1
NUMBER OF REPLICATE TEST CHAMBERS/TREATMENT: 10

TEST TEMPERATURE (MEAN AND RANGE): 25

TEST ORGANISMS

SCIENTIFIC NAME: Ceriodaphnia dubia
AGE: Less than 24 hours
LIFE STAGE: Neonates
SOURCE: Aquatic BioSystems, Inc.
DISEASES AND TREATMENT: None
FEEDING REGIME: Daily
ORGANISM HISTORY SHEETS ARE ATTACHED

RESULTS SUMMARY
CLADOCERAN, CERIODAPHNIA DUBIA, SURVIVAL AND REPRODUCTION TEST
METHOD 1002.0

Ceriodaphnia are exposed in a static renewal system to different concentrations of effluent, and to receiving water until 60% of surviving control organisms have three broods of offspring (15 neonates per surviving female). Effluent dilutions for this test were 32%, 42%, 56%, 75%, and 100% in accordance with the NPDES Permit. The "critical" dilution is specified as 100% effluent. Test results are based on survival and reproduction. If the test is conducted as described, the control organism should produce three broods of young during a seven-day period.

BIOMONITORING REPORT
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION

PERCENT SURVIVAL

Time of Reading	0%	32%	42%	56%	75%	100%
24h	100	100	100	100	100	100
48h	100	100	100	100	100	100
7 day	100	100	100	100	100	100

1. Fisher's Exact Test:

Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION (100 %): YES [ ] NO [**X**]
b.) 1/2 LOW FLOW OR 2 X CRITICAL DILUTION (56%): YES [ ] NO [**X**]

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION (100%): YES [ ] NO [**X**]
b.) 1/2 LOW FLOW OR 2 X CRITICAL DILUTION (56%): YES [ ] NO [**X**]

3. If you answered NO to 1.a) and 2.a) enter [0] otherwise enter [1]: **[0]**

4. If you answered NO to 1.b) and 2.b) enter [0] otherwise enter [1]: **[0]**

5. Enter response to item 3 on DMR Form, parameter #TEP3B.
6. Enter response to item 4 on DMR Form, parameter #TFP3B.
7. Enter percent effluent corresponding to each NOEL below and circle lowest number:

a.) NOEL survival = 100% effluent
b.) NOEL reproduction = 100% effluent

BIOMONITORING REPORT
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION

Permittee: Wynne, City of NPDES NO. AR0021903
Dilution water used: Receiving ( ) Reconstituted (X)

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

PERCENT EFFLUENT (%)

REP	0 %	32%	42%	56%	75%	100%
A	22	19	19	20	18	18
B	20	21	21	19	21	19
C	18	18	20	20	20	19
D	20	18	20	16	17	19
E	16	19	19	20	22	17
F	23	19	20	20	21	21
G	22	21	19	20	24	20
H	18	18	17	17	18	17
I	17	19	17	19	19	17
J	19	21	17	19	20	18
*CV%	**11.9**	6.49	7.67	7.44	10.5	7.32
MEAN	19.5	19.3	18.9	19.0	20.0	18.5

*coefficient of variation = standard deviation x 100/mean

(Coef Of Var Statre 7Day Chronic Ceriodaphnia TQP3B = **11.9**)

STANDARD REFERENCE TOXICANTS

STANDARD TOXICANT USED AND SOURCE: SODIUM CHLORIDE
DATE AND TIME OF MOST RECENT TEST: 12/11/13
DILUTION WATER USED IN TEST: 20% DMW
RESULTS(LC50 OR, NOEC AND/OR ECL): LC50 = 1629 FATHEAD MINNOW
RESULTS(LC50 OR, NOEC AND/OR ECL): LC50 = 734.3 CERIODAPHNIA
ACCEPTABLE PERFORMANCE, STUDY 29 = 100%
PHYSICAL AND CHEMICAL METHODS USED:

SPECIFIC CONDUCTANCE METHOD 2510 B
OXYGEN, DISSOLVED METHOD 4500- O G
CHLORINE, TOTAL RESIDUAL METHOD 4500- C I F
ALKALINITY, CACO3 METHOD 2320 B

SUMMARY OF REFERENCE TOXICANT (S) ARE AS FOLLOWS:

FATHEAD MINNOW

Standard Recovery FATHEAD MINNOW **94.4%**

CERIODAPHNIA

Standard Recovery CERODAPHNIA **101.1%**

APPENDIX 1A
TEST 1000.0

Permittee	Wynne 16611							
Effluent	Percent Survival In Rep. Chambers				Mean Percent Survival			CV%*
Conc.	A	B	C	D	24h	48h	7 days	*
CONTROL	100	100	100	100	100	100	100	0.0
32.00%	100	100	100	100	100	100	100	0.0
42.00%	100	100	100	100	100	100	100	0.0
56.00%	100	100	100	100	100	100	100	0.0
75.00%	100	100	100	100	100	100	100	0.0
100.00%	100	100	100	100	100	100	100	0.0

Permittee	Wynne 16611					
Effluent	Average Dry Weight (mg)				Mean Dry Weight (mg)	
Conc.	A	B	C	D	7 days	CV%*
CONTROL	0.322	0.322	0.305	0.323	0.318	2.7
32	0.306	0.315	0.322	0.329	0.318	3.1
42	0.328	0.302	0.331	0.315	0.319	4.2
56	0.307	0.326	0.330	0.320	0.321	3.1
75	0.300	0.323	0.309	0.336	0.317	5.0
100	0.312	0.308	0.324	0.309	0.313	2.4

Figure 2. Survival data for fathead minnow larval survival and growth te

Discharger: Wynne
Location: 16611

Test Dates: 12-11-13 0900
Analyst:

Conc:	Rep. No.	No. Survivors Day 1	2	3	4	5	6	7	Remarks
Control	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc:	5	10	10	10	10	10	10	10	
	6	10	10	10	10	10	10	10	
	7	10	10	10	10	10	10	10	
32	8	10	10	10	10	10	10	10	
Conc:	9	10	10	10	10	10	10	10	
	10	10	10	10	10	10	10	10	
	11	10	10	10	10	10	10	10	
42	12	10	10	10	10	10	10	10	
Conc:	13	10	10	10	10	10	10	10	
	14	10	10	10	10	10	10	10	
	15	10	10	10	10	10	10	10	
56	16	10	10	10	10	10	10	10	
Conc:	17	10	10	10	10	10	10	10	
	18	10	10	10	10	10	10	10	
	19	10	10	10	10	10	10	10	
75	20	10	10	10	10	10	10	10	
Conc:	21	10	10	10	10	10	10	10	
	22	10	10	10	10	10	10	10	
	23	10	10	10	10	10	10	10	
100	24	10	10	10	10	10	10	10	

Comments:

Discharge: Wynne
Location: 16611
Analyst:

Test Date(s): 12-11-13
Weighing Date: 1-8-14

Drying Temperature (°C): 104
Drying Time (h): 2

Conc:	Rep. No.	A Wgt. of boat (mg)	B Dry wgt: foil and larvae (mg)	B-A Total dry wgt of larvae (mg)	C No. of larvae	(B-A)/C Mean dry wgt of larvae (mg)	Remarks
Control	1	122280	122602	322	10	.322	
	2	126304	126626	322	10	.322	
	3	125280	125585	305	10	.305	
	4	125351	125674	323	10	.323	
Conc:	5	128306	128612	306	10	.306	
	6	125155	125470	315	10	.315	
	7	122689	123011	322	10	.322	
32	8	122112	122441	329	10	.329	
Conc:	9	123509	123837	328	10	.328	
	10	127312	127614	302	10	.302	
	11	125415	125746	331	10	.331	
42	12	126380	126695	315	10	.315	
Conc:	13	122533	122840	307	10	.307	
	14	128305	128631	326	10	.326	
	15	129177	129508	331	10	.331	
56	16	126620	126940	320	10	.320	
Conc:	17	125382	125682	300	10	.300	
	18	125055	125378	323	10	.323	
	19	123418	123727	309	10	.309	
75	20	123709	124045	336	10	.336	
Conc:	21	125216	125528	312	10	.312	
	22	128230	128538	308	10	.308	
	23	122250	122574	324	10	.324	
100	24	127088	127397	309	10	.309	

[1]Adapted from Hughes, et al., 1987.

Control 129726 129727

FIGURE 3 - FATHEAD MINNOW
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APPENDIX 2A
TEST 1002.0

	Wynne 16611	CERIO	REPLICATE CONTAINERS					s.d.=	2.3214		CV% =	11.904605	
control	DAY	1	2	3	4	5	6	7	8	9	10 #young	#adult	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3		1	1				1			2 5	10	0.50
temp:	4	4	3	2	4	4	5	1	3	3	1 30	10	3.00
temp:	5		2		1			3			1 7	10	0.70
temp:	6	6	7	7	7	6	6	5	7	7	6 64	10	6.40
temp:	7	3			1		3	5			2 14	10	1.40
temp:	8	9	7	8	7	6	9	7	8	7	7 75	10	7.50
	TOTAL	22	20	18	20	16	23	22	18	17	19 195	10	19.50
conc			REPLICATE CONTAINERS					s.d.=	1.25167		CV% =	6.4853138	
32.00	DAY	1	2	3	4	5	6	7	8	9	10 no. young	no. adults	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3		1					2	1		4	10	0.40
temp:	4	2	4	3	3	3	4	2	3	5	3 32	10	3.20
temp:	5	2			1				2		4 9	10	0.90
temp:	6	5	7	7	6	6	8	7	6	6	5 63	10	6.30
temp:	7	4			1			3		1	4 13	10	1.30
temp:	8	6	9	8	7	10	7	7	6	7	5 72	10	7.20
	TOTAL	19	21	18	18	19	19	21	18	19	21 193	10	19.30
CONC.			REPLICATE CONTAINERS					s.d.=	1.44914		CV% =	7.6673951	
42.00	DAY	1	2	3	4	5	6	7	8	9	10 no. young	no. adults	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3		2	1				1			4	10	0.40
temp:	4	4	1	3	5	2	2	4	2	3	3 29	10	2.90
temp:	5		3			2				1	6	10	0.60
temp:	6	8	7	7	6	6	8	7	6	6	5 66	10	6.60
temp:	7		2						1		3	10	0.30
temp:	8	7	6	9	9	9	10	7	8	7	9 81	10	8.10
	TOTAL	19	21	20	20	19	20	19	17	17	17 189	10	18.90
CONC.			REPLICATE CONTAINERS					s.d.=	1.41421		CV% =	7.4432293	
56.00	DAY	1	2	3	4	5	6	7	8	9	10 no. young	no. adults	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3										0	10	0.00
temp:	4	4	1	3	3	5	6	2	2	4	3 33	10	3.30
temp:	5		2	1				3	1		2 9	10	0.90
temp:	6	5	5	7	6	5	7	7	6	6	5 59	10	5.90
temp:	7		5			3				1	2 11	10	1.10
temp:	8	11	6	9	7	7	7	8	8	8	7 78	10	7.80
	TOTAL	20	19	20	16	20	20	20	17	19	19 190	10	19.00
CONC.			REPLICATE CONTAINERS					s.d.=	2.10819		CV% =	10.540926	
75.00	DAY	1	2	3	4	5	6	7	8	9	10 no. young	no. adults	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3										0	10	0.00
temp:	4	4	1	3	3	4	2	5	5	3	4 34	10	3.40
temp:	5		4	2		1		1			8	10	0.80
temp:	6	8	7	7	7	7	8	6	6	5	7 68	10	6.80
temp:	7			1		2		3		4	1 11	10	1.10
temp:	8	6	9	7	7	8	11	9	7	7	8 79	10	7.90
	TOTAL	18	21	20	17	22	21	24	18	19	20 200	10	20.00
CONC.			REPLICATE CONTAINERS					s.d.=	1.35401		CV% =	7.3189535	
100.00	DAY	1	2	3	4	5	6	7	8	9	10 no. young	no. adults	
temp:	1										0	10	0.00
temp:	2										0	10	0.00
temp:	3		2		1	1	1	1			6	10	0.60
temp:	4	4	2	5	3	1	2	4	3	4	4 32	10	3.20
temp:	5				1		2			1	4	10	0.40
temp:	6	6	6	5	7	7	5	8	7	6	4 61	10	6.10
temp:	7		2	4		1	3		1		5 16	10	1.60
temp:	8	8	7	5	7	7	8	7	6	6	5 66	10	6.60
	TOTAL	18	19	19	19	17	21	20	17	17	18 185	10	18.50

WYNNE 16611. CERIO 12-10-13 1615

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
control	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3		1	1				1			2	0	10	#DIV/0!
temp:	4	4	3	2	4	4	5	1	3	3	1	0	10	#DIV/0!
temp:	5		2		1			3			1	0		#DIV/0!
temp:	6	6	7	7	7	6	6	5	7	7	6	0	10	#DIV/0!
temp:	7	3			1		3	5			2	0	10	#DIV/0!
temp:	8	9	7	8	7	6	9	7	8	7	7	0	10	#DIV/0!
*	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
32	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3		1					2	1			0	10	#DIV/0!
temp:	4	2	4	3	3	3	4	2	3	5	3	0	10	#DIV/0!
temp:	5	2			1				2		4	0	10	#DIV/0!
temp:	6	5	7	7	6	6	8	7	6	6	5	0	10	#DIV/0!
temp:	7	4			1			3		1	4	0	10	#DIV/0!
temp:	8	6	9	8	7	10	7	7	6	7	5	0	10	#DIV/0!
*	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
42	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3		2	1				1				0	11	#DIV/0!
temp:	4	4	1	3	5	2	2	4	2	3	3	0	10	#DIV/0!
temp:	5		3			2				1		0	10	#DIV/0!
temp:	6	8	7	7	6	6	8	7	6	6	5	0	10	#DIV/0!
temp:	7		2						8			0	10	#DIV/0!
temp:	8	7	6	9	9	9	10	7	8	7	9	0	10	#DIV/0!
*	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
56	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3											0	10	#DIV/0!
temp:	4	4	1	3	3	5	6	2	2	4	3	0	10	#DIV/0!
temp:	5		2					3	1		2	0	10	#DIV/0!
temp:	6	5	5	7	6	5	7	7	6	6	5	0	10	#DIV/0!
temp:	7		3			3				1	2	0	10	#DIV/0!
temp:	8	11	6	9	7	7	7	8	8	8	7	0	10	#DIV/0!
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
75	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3											0	10	#DIV/0!
temp:	4	4	1	3	3	4	2	5	5	3	4	0	10	#DIV/0!
temp:	5		4	2		1		1				0	10	#DIV/0!
temp:	6	8	7	7	7	7	8	6	6	5	7	0	10	#DIV/0!
temp:	7			1		2		3		4	1	0	10	#DIV/0!
temp:	8	6	9	7	7	8	11	9	7	7	8	0	10	#DIV/0!
^	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

CONC.				REPLICATE CONTAINERS					s.d.=	0		CV% =	#DIV/0!	
100	DAY	1	2	3	4	5	6	7	8	9	10	no. youn	no. adults	young/adult
temp:	1											0	10	#DIV/0!
temp:	2											0	10	#DIV/0!
temp:	3		2		1	1	1	1				0	10	#DIV/0!
temp:	4	4	2	5	3	1	2	4	3	4	4	0	10	#DIV/0!
temp:	5				1		2			1		0	10	#DIV/0!
temp:	6	6	6	5	7	7	5	8	7	6	4	0	10	#DIV/0!
temp:	7		2	4		1	3		7		5	0	10	#DIV/0!
temp:	8	8	4	5	7	7	8	7	6	6	5	0	10	#DIV/0!
*	TOTAL	0	0	0	0	0	0	0	0	0	0	0	10	0.00

APPENDIX B
ORGANISM HISTORY

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 12/10/2013

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 12/10/2013

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	**Current**	**Range**
TEMPERATURE:	24°C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	116 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	90 mg/l	--
pH:	7.77	--

Comments:

Facility Supervisor

Recd 12-4-13

APPENDIX C
CHAINS OF CUSTODY

[redacted]ORRE[redacted]ESEA[redacted]SSOC[redacted] INC. [redacted] CH[redacted] CUST[redacted] ECO[redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] PAGE [redacted] OF [redacted] [redacted]

3100 NATIONAL DRIVE, LITTLE ROCK, AR 72209
(501) 562-8139 (800) 331-8139
FAX # (501) 562-7025

TURNAROUND TIME
RUSH 24HR. 48HR.
5 DAY REG.
OTHER:

FOR LAB/OFFICE USE ONLY
LAB # 16411-0001 B
CLIENT # 45023
P. O. # _____

STANDARD METHODS PRESERVATION PER EPA 40 CFR
C 4 = COOL TO 4.0 C
S<2 = SULFURIC ACID TO PH < 2
N<2 = NITRIC ACID TO PH > 2
T = THIOSULFATE
W = AZIDE MODIFICATION (4500-0 C)
P = MEMBRANE ELECTRODE (4500-0 G)
NaOH = Ph > 12

NAME OF COMPANY, CITY, OR PROJECT: WYNNE WATER UTILITIES

PROJECT NO:

SAMPLER(S) SIGNATURE/PRINT: Darrell Williams (DARRELL WILLIAMS)

SAMPLE NO.	SAMPLE COLLECTION LOCATION	START DATE/TIME	END DATE/TIME	COMP/GRAB	FIELD ANALYSIS PH	TEMP	FLOW	CL2	D.O. (W) D.O. (P)	CONTAINER TYPE PRESERVATIVE	ANALYSIS REQUIRED
	POST AERATION BASIN OUTFALL	12/8/13 7:00 AM	12/9/13 7:00 AM	COMP/24			0.806			6 - 1/2 GAL	BIO-MONITORING

METHOD OF SHIPMENT (CIRCLE)
FED-EX WALK-IN (SRA) UPS OTHER

TYPE OF SAMPLE(S): (CIRCLE)
WATER SOIL (WW) SLUDGE OTHER

FIELD CALIBRATION RECORD
PH 7
PH 4
PH 10
D. O.

NOTES/COMMENTS/OBSERVATIONS
Temp Blk 6°

FIELD ANALYSIS CONDUCTED BY: (SRA) CLIENT

RELINQUISHED BY: Darrell Williams DATE/TIME 1425
RECEIVED BY: [signature] DATE/TIME 12-9-13

RELINQUISHED BY: DATE/TIME
RECEIVED BY: [signature] DATE/TIME 1615 12-9-13

[redacted]RREL[redacted]SEAR[redacted]SOCIA[redacted]NC. [redacted]CHAI[redacted]USTO[redacted]CORD[redacted] [redacted]AGE [redacted] OF [redacted]
8100 NATIONAL DRIVE, LITTLE ROCK, AR 72209
(501) 562-8139 (800) 331-8139
FAX # (501) 562-7025

TURNAROUND TIME
RUSH 24HR. 48HR.
5 DAY REG.
OTHER:

FOR LAB/OFFICE USE ONLY
LAB # 16611-0002 B
CLIENT # 45023
P. O. #

STANDARD METHODS PRESERVATION PER EPA 40 CFR
C 4 = COOL TO 4.0 C
S<2 = SULFURIC ACID TO PH < 2
N<2 = NITRIC ACID TO PH > 2
T = THIOSULFATE
W = AZIDE MODIFICATION (4500-0 C)
P = MEMBRANE ELECTRODE (4500-0 G)
NaOH = Ph > 12

NAME OF COMPANY, CITY, OR PROJECT: WYNNE WATER UTILITIES

PROJECT NO:

SAMPLER(S) SIGNATURE/PRINT: Harrell Williams (HARRELL WILLIAMS)

SAMPLE NO.	SAMPLE COLLECTION LOCATION	START DATE/TIME	END DATE/TIME	COMP/GRAB	FIELD ANALYSIS PH	TEMP	FLOW	CL2	D.O. (W) D.O. (P)	CONTAINER TYPE PRESERVATIVE	ANALYSIS REQUIRED
	POST AERATION BASIN OUTFALL	12/10/13 7:00 AM	12/11/13 7:00 AM	COMP/24			0.822			6 - 1/2 GAL	BIO-MONITORING

METHOD OF SHIPMENT (CIRCLE): FED-EX WALK-IN **SRA** (circled) UPS OTHER

TYPE OF SAMPLE(S): (CIRCLE): WATER SOIL **W/W** (circled) SLUDGE OTHER

FIELD CALIBRATION RECORD

PH 7			
PH 4			
PH 10			
D. O.			

NOTES/COMMENTS/OBSERVATIONS:
Temp @ Lab 6.8°

FIELD ANALYSIS CONDUCTED BY: **SRA** (circled) CLIENT

RELINQUISHED BY: Harrell Williams DATE/TIME
RECEIVED BY: [signature] DATE/TIME 1425 12-11-13

RELINQUISHED BY: DATE/TIME
RECEIVED BY: [signature] DATE/TIME 1605 12-[illegible]-13

[redacted]ORRE[redacted]ESEA[redacted]SSOC[redacted] INC. [redacted] CHA[redacted]CUST[redacted]ECOR[redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] PAGE [redacted] OF [redacted]

6100 NATIONAL DRIVE, LITTLE ROCK, AR 72209
(501) 562-8139 (800) 331-8139
FAX # (501) 562-7025

TURNAROUND TIME
RUSH 24HR. 48HR.
5 DAY REG.
OTHER:

FOR LAB/OFFICE USE ONLY
LAB # 16611-0003 B
CLIENT # 45023
P. O. # _____

STANDARD METHODS PRESERVATION PER EPA 40 CFR
C 4 = COOL TO 4.0 C
S<2 = SULFURIC ACID TO PH < 2
N<2 = NITRIC ACID TO PH > 2
T = THIOSULFATE
W = AZIDE MODIFICATION (4500-0 C)
P = MEMBRANE ELECTRODE (4500-0 G)
NaOH = Ph > 12

NAME OF COMPANY, CITY, OR PROJECT: WYNNE WATER UTILITIES

PROJECT NO:

SAMPLER(S) SIGNATURE/PRINT: Harrell Williams (HARRELL WILLIAMS)

SAMPLE NO.	SAMPLE COLLECTION LOCATION	START DATE/TIME	END DATE/TIME	COMP/GRAB	FIELD ANALYSIS PH	FIELD ANALYSIS TEMP	FLOW	CL2	D.O. (W) D.O. (P)	CONTAINER TYPE PRESERVATIVE	ANALYSIS REQUIRED
	POST AERATION BASIN OUTFALL	12/12/13 7:00 AM	12/13/13 7:00 AM	COMP/24			0.757			6 - 1/2 GAL	BIO-MONITORING

METHOD OF SHIPMENT (CIRCLE): FED-EX WALK-IN (SRA) UPS OTHER

TYPE OF SAMPLE(S): (CIRCLE): WATER SOIL (W/W) SLUDGE OTHER

FIELD CALIBRATION RECORD
PH 7
PH 4
PH 10
D. O.

NOTES/COMMENTS/OBSERVATIONS
Tap Lab 5.8°

FIELD ANALYSIS CONDUCTED BY: (SRA) CLIENT

RELINQUISHED BY: Harrell Williams DATE/TIME

RECEIVED BY: DATE/TIME 12-13-13 1350

RELINQUISHED BY: DATE/TIME

RECEIVED BY: DATE/TIME 12-13-13 1550

APPENDIX D
LABORATORY CONTROL
CERIO CULTURE RECORD

DATE START	12/2/13	WYNNE 16611											
DATE END		*											
ANALYST		*											
WATER TYPE		*		day 8		day 14							
% SURVIVAL		*		100		100							
#YOUNG MEAN				18.45									
stnd DEV from mean		2.1879		13.821									

	REPLICATE NUMBER										No.	No.	Young/
DAY	1	2	3	4	5	6	7	8	9	10	Young	Adults	Adult
1											0	10	0
2											0	10	0
3			2								2	10	0.2
4	3	5	1	3		2	4	2	2	5	27	10	2.7
5			2		4	1			1		8	10	0.8
6	5	7	4	7	5	6	6	7	7	5	59	10	5.9
7	2				3		1			2	8	10	0.8
8	7	9	9	8	7	10	7	7	1	9	74	10	7.4
total8	17	21	18	18	19	19	18	16	11	21	178	10	17.8
9											0	10	0
10											0	10	0
11											0	10	0
12											0	10	0
13											0	10	0
14											0	10	0
total14											0	10	0

	REPLICATE NUMBER										No.	No.	Young/
DAY	11	12	13	14	15	16	17	18	19	20	Young	Adults	Adult
1											0	10	0
2											0	10	0
3			1				1		1		3	10	0.3
4	3	3	3	4	2	4	3	1	4	5	32	10	0
5					2		2	2		1	7	10	0.7
6	6	5	7	7	5	7	3	6	6	5	57	10	5.7
7	4	2			3		3		1	2	15	10	1.5
8	6	7	8	8	7	9	7	10	7	8	77	10	7.7
total8	19	17	19	19	19	20	19	19	19	21	191	10	19.1
9											0	10	0
10											0	10	0
11											0	10	0
12											0	10	0
13											0	10	0
14											0	10	0
total14	0	0	0	0	0	0	0	0	0	0	0	10	0

12-2-13 Cerio

DATE START		*											
DATE END		*											
ANALYST		*											
WATER TYPE		*		day 8		day 14							
% SURVIVAL		*		#VALUE!		#VALUE!							
#YOUNG MEAN				0									
stnd DEV from mean		0		#DIV/0!									

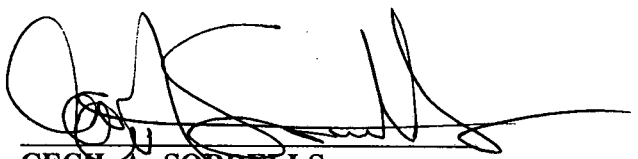
	REPLICATE NUMBER										No.	No.	Young/
DAY	1	2	3	4	5	6	7	8	9	10	Young	Adults	Adult
1											0	10	######
2											0	10	######
3			2								0	10	######
4	3	5	1	3		2	4	2	2	5	0	10	######
5			2		4	1			1		0	10	######
6	5	7	4	7	5	6	6	7	7	5	0	10	######
7	2				3		1			2	0	10	######
8	7	9	9	8	7	10	7	7	11	9	0	10	######
total8	0	0	0	0	0	0	0	0	0	0	0		######
9											0		######
10											0		######
11											0		######
12											0		######
13											0		######
14											0		######
total14											0		######

	REPLICATE NUMBER										No.	No.	Young/
DAY	11	12	13	14	15	16	17	18	19	20	Young	Adults	Adult
1											0	10	######
2											0	10	######
3			1				1		1		0	10	######
4	3	3	3	4	2	4	3	1	4	5	0	10	######
5					2		2	2		1	0	10	######
6	6	5	7	7	5	7	3	6	6	5	0	10	######
7	4	2			3		3		1	2	0	10	######
8	6	7	8	8	7	9	7	10	7	8	0	10	######
total8	0	0	0	0	0	0	0	0	0	0	0	10	0
9											0		######
10											0		######
11											0		######
12											0		######
13											0		######
14											0		######
total14	0	0	0	0	0	0	0	0	0	0	0	10	0

FIGURE 5

BIOMONITORING ANALYSIS
BY
SORRELLS RESEARCH ASSOCIATES, INC

REVIEW



CECIL A. SORRELLS
BIOMONITORING MANAGER/PRESIDENT

K.E. SORRELLS, M.S.
QUALITY ASSURANCE/OFFICER

WYNNE WATER UTILITIES
121 E. MERRIMAN *(870) 238-2751*
WYNNE, AR 72396 *FAX (870) 238-2044*

TO:

Arkansas Department of Environmental Quality
NPDES Enforcement Section
5301 Northshore Dr.
North Little Rock, Arkansas 72219-5317