Monthly SSO Report December 2013

Permit Number	Manhole Number	Location	Receiving Water	Duration	Cause	Volume	Component	Date	Started	Stopped	Steps Taken
AR0033278	manhole P001-0830	3117 No. 26	yard	19 minutes	grease & debris	190 gallons	manhole	12/4/2013	12:10 AM	12:19 AM	Machine rodded
AR0033278	manhole MC01-0070	700 So. U	creek	900 minutes	power outage	90,000 gallons	manhole	12/5,6/2013	11:00 PM	2:00 PM	Used portable generator (ice storm)
AR0033278	manhole not numbered	210 Navy Rd.	creek	900 minuts	power outage	180,000 gallons	manhole	12/5,6/2013	11:00 PM	2:00 PM	Used portable generator (ice storm)
AR0033278	manhole CS01-0140	10 Candlestick Ln.	storm drain	780 minutes	power outage	214,500 gallons	manhole	12/6/2013	2:30 AM	3:30 PM	Used new generator (ice storm)
AR0033278	between FL02-0640 & 0630	4601 Arlington	yard	123 minutes	debris	615 gallons	cleanout	12/6/2013	2:35 PM	4:38 PM	Machine rodded
AR0021750	between M007-1160 & 1130	3202 So. 62	yard	52 minutes	grease	260 gallons	cleanout	12/9/2013	8:28 AM	9:20 AM	Hydro cleaned
AR0033278	manhole P001-1660	2600 Brockman	ditch	90 minutes	grease	450 gallons	manhole	12/10/2013	4:45 PM	6:15 PM	Machine rodded
AR0021750	manhole M006-0780	Cliff Drive & Seminole	ditch	44 minutes	roots	2,200 gallons	manhole	12/16/2013	10:06 AM	10:40 AM	Hydro cleaned
AR0021750	manhole MC06-1060	1810 Waco	yard	70 minutes	grease & roots	1,750 gallons	manhole	12/17/2013	8:25 AM	9:45 AM	Machine rodded
AR0033278	manhole MC07-1460	3121 Cliff Drive	yard	240 minutes	roots	1,200 gallons	manhole	12/19/2013	9:45 AM	1:45 PM	Hydro cleaned
AR0033278	manhole S008-3180	1922 No. 45 Cir.	yard	170 minutes	roots	850 gallons	manhole	12/19/2013	12:10 PM	3:00 PM	Hydro cleaned
AR0033278	between Z008-0760 & 0740	10405 Seven Oaks Ln.	yard	120 minutes	grease	600 gallons	cleanout	12/19/2013	2:10 PM	4:10 PM	Hydro cleaned
AR0021750	manhole S003-0960	4704 Chestnut Way	yard	133 minutes	roots	665 gallons	manhole	12/20/2013	10:47 AM	1:00 PM	Hydro cleaned
AR0033278	manhole MC06-0542	1412 Phoenix	storm drain	733 minutes	I & I - rainfall	154,600 gallons	manhole	12/21/2013	8:08 AM	9:01 PM	Major Project Design (wet weather)
AR0033278	manhole MC06-0305	1412 Phoenix	storm drain	414 minutes	I & I - rainfall	2,070 gallons	manhole	12/21/2013	8:30 AM	3:24 PM	Major Project Design (wet weather)
AR0021750	manhole RL01-0680	1601 So. 74	creek	429 minutes	I & I - rainfall	117,975 gallons	manhole	12/21/2013	12:30 PM	7:39 PM	Major Project Design (wet weather)
AR0021750	manhole RL01-0670	1601 So. 74	creek	199 minutes	I & I - rainfall	4,975 gallons	manhole	12/21/2013	12:33 PM	3:52 PM	Major Project Design (wet weather)
AR0021750	manhole RL01-1060	1801 So. 74	storm drain	189 minutes	I & I - rainfall	9,450 gallons	manhole	12/21/2013	12:37 PM	3:46 PM	Major Project Design (wet weather)
AR0021750	manhole MC02-1400	S. 32 & Vicksburg	ditch	162 minutes	I & I - rainfall	810 gallons	manhole	12/21/2103	6:30 PM	9:12 PM	Major Project Construction (wet weather)
AR0033278	between MC02-0910 & 0900	1910 Waco **(1910 Utica) - address correction**	yard	265 minutes	roots	1,325 gallons	cleanout	12/22/2013	10:05 AM	2:15 PM	Hydro cleaned
AR0033278	manhole CS01-1080	915 Belmont	ditch	39 minutes	roots	165 gallons	manhole	12/24/2013	5:31 PM	6:59 PM	Machine rodded
AR0033278	between S007-3160 & 3150	2004 No. 46th Ter.	yard	41 minutes	roots	205 gallons	cleanout	12/26/2013	9:19 AM	10:00 AM	Machine rodded
AR0021750	between P008-1490 & 1480	3612 Park	yard	150 minutes	line failure	750 gallons	line	12/27/2013	11:00 AM	1:30 PM	Hydro cleaned, repaired planned
AR0021750	manhole RL01-0230	27 Riverlyn Dr.	yard	33 minutes	roots	165 gallons	manhole	12/27/2013	3:04 PM	3:37 PM	Machine rodded
AR0033278	manhole Z006-0230	200 Cornell	yard	106 minutes	grease & roots	530 gallons	manhole	12/29/2013	3:19 PM	5:05 PM	Machine rodded
AR0033278	between P004-0490 & 0480	2319 Carnes **(2319 No. 30) - address correction**	yard	60 minutes	grease & roots	300 gallons	cleanout	12/29/2013	5:33 PM	6:33 PM	Machine rodded
AR0021750	between S007-0400 & 0390	2008 No. 46 Ter.	yard	30 minutes	grease	150 gallons	cleanout	12/30/2013	10:50 AM	11:20 AM	Hydro cleaned
AR0033278	manhole MC07-0510	2501 Memphis	ditch	30 minutes	grease	150 gallons	manhole	12/30/2013	12:15 PM	12:45 PM	Hydro cleaned

CONFIRMATION NUMBER

CB73813B-1E8F-4368-8D90-4D93BADD42E6

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

Close this window Print this page

24-Hour Sanitary Sewer Overflow Report

SSO ID#: CB73813B-1E8F-4368-8D90-4D93BADD42E6
Date Sent: 12/4/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/04/2103**	Time:	**12:10 am**
Date Overflow Ended:	**12/04/2013**	Time:	**12:19 am**
Location:	**3117 No. 26, manhole number P001-0830, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **190**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☑) Grease
(☑) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

8D7E78EC-4193-4A3C-9C31-A63441615D08

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 8D7E78EC-4193-4A3C-9C31-A63441615D08
Date Sent: 12/6/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/05/2013**	Time:	**11:00 pm**
Date Overflow Ended:	**12/06/2013**	Time:	**02:00 pm**

Location: **700 So. U, manhole number MC01-0070, creek**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **90,000**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☑) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☑) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed: Major ice storm

CONFIRMATION NUMBER

F11B89B9-519E-49D6-8046-679479A47785

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: F11B89B9-519E-49D6-8046-679479A47785
Date Sent: 12/6/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/05/2013**	Time:	**11:00 pm**
Date Overflow Ended:	**12/06/2013**	Time:	**02:00 pm**

Location: **210 Navy Rd., manhole not numbered, on pump stations grounds, creek**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☑) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **180,000**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☑) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☑) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed: major ice storm

CONFIRMATION NUMBER

F8558452-820D-43FC-954A-4B2B7C534391

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: F8558452-820D-43FC-954A-4B2B7C534391
Date Sent: 12/6/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/06/2013**	Time:	**02:30 am**
Date Overflow Ended:	**12/06/2013**	Time:	**03:30 pm**
Location:	**10 Candlestick Ln., manhole CS01-0140, storm drain**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **214,500**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☑) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☑) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed: major ice storm

CONFIRMATION NUMBER

BACE9298-8D9C-43E9-9745-B8F43AF6D844

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: BACE9298-8D9C-43E9-9745-B8F43AF6D844
Date Sent: 12/6/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/06/2013**	Time:	**02:35 pm**
Date Overflow Ended:	**12/06/2013**	Time:	**04:38 pm**

Location: **4601 Arlington, between manholes FL02-0640 & 0630, yard**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑ Other Overflow Type: **clean out**
(Enter overflow type if not listed)

Volume: **615**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☐) Grease
(☑) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

5475895C-C799-483C-A36C-F31A3D643F01

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 5475895C-C799-483C-A36C-F31A3D643F01
Date Sent: 12/9/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR00AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/09/2013**	Time:	**08:28 am**
Date Overflow Ended:	**12/09/2013**	Time:	**09:20 am**
Location:	**3202 So. 62, between manholes M007-1160 & 1130, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

- (☐) Manhole Overflow
- (☐) Lift Station Overflow
- (☐) Main Line Overflow
- (☐) Service Line Overflow
- (☑) Other Overflow Type: **clean out**

(Enter overflow type if not listed)

Volume: **260**

(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

- (☐) I & I - Rainfall
- (☐) Roots
- (☑) Grease
- (☐) Debris
- (☐) Equipment Failure
- (☐) Construction
- (☐) Vandalism
- (☐) Power Failure
- (☐) Line Failure/Break
- (☐) Other Cause:

Action Taken - Check all that apply

(Short term and long-term action, including clean-up and any plans to remediate I & I).

- (☐) Machine rodded
- (☐) Jet-Vac
- (☐) Hand rodded
- (☐) Used Generator To Power Pumps/Equipment
- (☐) Other: Describe
- (☑) Disinfected and Deodorized
- (☑) Hydro Cleaned
- (☐) Spread Lime on Affected Area
- (☐) Public Notification

Environmental Damage

- (☐) OEHC - Observed or Evidence of Human Contact
- (☐) OEEI - Observed or Evidence of Environmental Impact
- (☑) NEAH - No Evidence of Adverse Health/Environmental Impact
- (☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

1BE0917E-7E23-47A2-BE01-193A237B6AD8

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 1BE0917E-7E23-47A2-BE01-193A237B6AD8
Date Sent: 12/11/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/10/2013**	Time:	**04:45 pm**
Date Overflow Ended:	**12/10/2013**	Time:	**06:15 pm**
Location:	**2600 Brockman, manhole P001-1660, ditch**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐) Other Overflow Type:
(Enter overflow type if not listed)

Volume: **450**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Public Land Only (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed: Disfinection and deodorization is schedule when ice and snow allows.

CONFIRMATION NUMBER

3FD1B8B4-2299-4780-8219-E8B38A5FB669

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 3FD1B8B4-2299-4780-8219-E8B38A5FB669
Date Sent: 12/16/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/16/2013**	Time:	**10:06 am**
Date Overflow Ended:	**12/16/2013**	Time:	**10:50 am**
Location:	**Cliff Drive & Seminole, manhole M006-0780, ditch**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **2200**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Public Land Only (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☑) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

D94F2F8E-408B-4AE0-BCC0-1AAC99A049D9

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: D94F2F8E-408B-4AE0-BCC0-1AAC99A049D9
Date Sent: 12/18/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/17/2013**	Time:	**08:25 am**
Date Overflow Ended:	**12/17/2013**	Time:	**09:45 am**
Location:	**1810 Waco, manhole MC06-1060, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **1750**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply

(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

871472C6-AB5C-4F59-B1A8-0B6CFFE7EB24

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 871472C6-AB5C-4F59-B1A8-0B6CFFE7EB24
Date Sent: 12/19/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/19/2013**	Time:	**09:45 am**
Date Overflow Ended:	**12/19/2013**	Time:	**01:45 pm**
Location:	**3121 Cliff Drive, manhole MC07-1460, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **1200**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

84C0A58A-8EBF-4810-8820-F3C761A7E004

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 84C0A58A-8EBF-4810-8820-F3C761A7E004
Date Sent: 12/20/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/19/2013**	Time:	**12:10 pm**
Date Overflow Ended:	**12/19/2013**	Time:	**03:00 pm**
Location:	**1922 No. 45 Cir., manhole S008-3180, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐) Other Overflow Type:
(Enter overflow type if not listed)

Volume: **850**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

37421F80-F95F-43AA-A541-9BFF85681F7D

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 37421F80-F95F-43AA-A541-9BFF85681F7D
Date Sent: 12/19/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/19/2013**	Time:	**02:10 pm**
Date Overflow Ended:	**12/19/2013**	Time:	**04:10 pm**
Location:	**10405 Seven Oaks Ln., between manholes Z008-0760 & 0740, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑) Other Overflow Type: **clean out**
(Enter overflow type if not listed)

Volume: **600**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

574B9740-B903-4D8B-AEDA-EC958D0C3E7D

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 574B9740-B903-4D8B-AEDA-EC958D0C3E7D
Date Sent: 12/20/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/20/2013**	Time:	**10:47 am**
Date Overflow Ended:	**12/20/2013**	Time:	**01:00 pm**

Location: **4704 Chestnut Way, manhole S003-0960, yard**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

- (☑) Manhole Overflow
- (☐) Lift Station Overflow
- (☐) Main Line Overflow
- (☐) Service Line Overflow
- (☐ Other Overflow Type:

(Enter overflow type if not listed)

Volume: **665**

(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

- (☐) I & I - Rainfall
- (☑) Roots
- (☐) Grease
- (☐) Debris
- (☐) Equipment Failure
- (☐) Construction
- (☐) Vandalism
- (☐) Power Failure
- (☐) Line Failure/Break
- (☐) Other Cause:

Action Taken - Check all that apply

(Short term and long-term action, including clean-up and any plans to remediate I & I).

- (☐) Machine rodded
- (☐) Jet-Vac
- (☐) Hand rodded
- (☐) Used Generator To Power Pumps/Equipment
- (☐) Other: Describe
- (☑) Disinfected and Deodorized
- (☑) Hydro Cleaned
- (☐) Spread Lime on Affected Area
- (☐) Public Notification

Environmental Damage

- (☐) OEHC - Observed or Evidence of Human Contact
- (☐) OEEI - Observed or Evidence of Environmental Impact
- (☑) NEAH - No Evidence of Adverse Health/Environmental Impact
- (☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

32713C35-519D-404C-AF75-843E7F9B2508

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 32713C35-519D-404C-AF75-843E7F9B2508
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/21/2013**	Time:	**08:08 am**
Date Overflow Ended:	**12/21/2013**	Time:	**09:01 pm**
Location:	**1412 Phoenix, manhole MC06-0542, storm drain**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **154,600**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☑) Other: Describe **major downstream projects are under design**
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

27DF6429-1758-4C07-81AC-57C58AC3F21B

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 27DF6429-1758-4C07-81AC-57C58AC3F21B
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/21/2013**	Time:	**08:30 am**
Date Overflow Ended:	**12/21/2013**	Time:	**03:24 pm**

Location: **1412 Phoenix, manhole MC06-0305, storm drain**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **2070**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☑) Other: Describe **major downstream projects are under design**
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By | Title | Telephone Number

Additional Comments if Needed:

CONFIRMATION NUMBER

E8196308-1A94-474E-BA8F-E2AB22BE2BEC

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: E8196308-1A94-474E-BA8F-E2AB22BE2BEC
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/21/2013**	Time:	**12:30 pm**
Date Overflow Ended:	**12/21/2013**	Time:	**07:39 pm**

Location: **1601 So. 74, manhole RL01-0680, creek**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **117,975**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☑) Other: Describe **major project under design**
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

A0F983CB-D2BC-4F13-88C0-25E5D99258B4

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: A0F983CB-D2BC-4F13-88C0-25E5D99258B4
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/21/2013**	Time:	**12:33 pm**
Date Overflow Ended:	**12/21/2013**	Time:	**03:52 pm**

Location: **1601 So. 74, manhole RL01-0670, creek**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **4975**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☑) Other: Describe **major project under design**
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

DE689F9C-2990-491B-ADA5-E3B79382EA08

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: DE689F9C-2990-491B-ADA5-E3B79382EA08
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/21/2013**	Time:	**12:37 pm**
Date Overflow Ended:	**12/21/2013**	Time:	**03:46 pm**
Location:	**1801 So. 74, manhole RL01-1060, storm drain**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **9,450**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe **major project under design**
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

53072FA5-4A7F-46B2-9EC3-ADE8D95E4471

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 53072FA5-4A7F-46B2-9EC3-ADE8D95E4471
Date Sent: 12/22/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/21/2013**	Time:	**06:30 pm**
Date Overflow Ended:	**12/21/2013**	Time:	**09:12 pm**

Location: **So. 32 & Vicksburg, manhole MC02-1400, ditch**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **810**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Receiving Water (river,stream)**

Cause of Overflow

(☑) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

721F926A-F626-4F64-90A6-798D496EAD86

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 721F926A-F626-4F64-90A6-798D496EAD86
Date Sent: 12/23/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/22/2013** Utica	Time:	**10:05 am**
Date Overflow Ended:	**12/22/2013**	Time:	**02:15 pm**

Location: **1910 Waco, between manholes MC02-0910 & 0900, yard**

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑) Other Overflow Type: **clean out**
(Enter overflow type if not listed)

Volume: **1325**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

CF1BCFCE-9BF7-4E7A-A96B-EAFDD355F52C

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: CF1BCFCE-9BF7-4E7A-A96B-EAFDD355F52C
Date Sent: 12/25/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/24/2013**	Time:	**05:31 pm**
Date Overflow Ended:	**12/24/2013**	Time:	**06:59 pm**
Location:	**915 Belmont, manhole CS01-1080, ditch**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **165**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Public Land Only (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

541E1D25-0B5C-44D6-9897-153613437F7B

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

Close this window Print this page

24-Hour Sanitary Sewer Overflow Report

SSO ID#: 541E1D25-0B5C-44D6-9897-153613437F7B
Date Sent: 12/26/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/26/2013**	Time:	**09:19 am**
Date Overflow Ended:	**12/26/2013**	Time:	**10:00 am**
Location:	**2004 No. 46 Ter., between manhole S007-3160 & 3150, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑) Other Overflow Type: **clean out**
(Enter overflow type if not listed)
Volume: **205**
(Give an estimate in gallons)
Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

FA8B924F-3D0F-49E8-BCCC-776F5CC82145

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

Close this window Print this page

24-Hour Sanitary Sewer Overflow Report

SSO ID#: FA8B924F-3D0F-49E8-BCCC-776F5CC82145
Date Sent: 12/27/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/27/2013**	Time:	**11:00 am**
Date Overflow Ended:	**12/27/2103**	Time:	**01:30 pm**
Location:	**3612 Park, between manholes P008-1490 & 1480, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☑) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **750**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☑) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☑) Other: Describe **repair planned**
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

44B14121-07E5-4EE2-BAC3-B2B41EE5AFF6

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 44B14121-07E5-4EE2-BAC3-B2B41EE5AFF6
Date Sent: 12/27/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/27/2013**	Time:	**03:04 pm**
Date Overflow Ended:	**12/27/2013**	Time:	**03:37 pm**
Location:	**27 Riverlyn Dr., manhole RL01-0230, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **165 gallons**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☐) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☑) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

F40D0110-BF95-47EF-B077-F435E5832E98

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: F40D0110-BF95-47EF-B077-F435E5832E98
Date Sent: 12/30/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/29/2103**	Time:	**03:19 pm**
Date Overflow Ended:	**12/29/2013**	Time:	**05:05 pm**
Location:	**200 Cornell, manhole Z006-0230, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **530 gallons**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superitendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

B185E32F-67A1-4F05-ADD6-2F9C3FF363C5

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: B185E32F-67A1-4F05-ADD6-2F9C3FF363C5
Date Sent: 12/30/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278** No. 30	Facility name:	**P Street**
Date Overflow Began:	**12/29/2013**	Time:	**05:33 pm**
Date Overflow Ended:	**12/29/2013**	Time:	**06:33 pm**
Location:	**2319 Carnes St., between manholes P004-0490 & 0480, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑ Other Overflow Type: **clean out**
(Enter overflow type if not listed)

Volume: **300**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☑) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☑) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☐) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

97F1F1AA-5A39-4722-93F2-676D0937F19C

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 97F1F1AA-5A39-4722-93F2-676D0937F19C
Date Sent: 12/30/2013

☑ SSO ☐ Bypass ☐ Upset

Facility Permit Number:	**AR0021750**	Facility name:	**Massard**
Date Overflow Began:	**12/30/2013**	Time:	**10:50 am**
Date Overflow Ended:	**12/30/2013**	Time:	**11:20 am**
Location:	**2008 No. 46 Ter., between manholes S007-0400 & 0390, yard**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☐) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☑) Other Overflow Type: **clean out**
(Enter overflow type if not listed)

Volume: **150 gallons**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Affected Private Property (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

CONFIRMATION NUMBER

3226BB8A-D3B1-4F73-B8EC-F303AFAB1B3A

(NOTE: You will need this number should you ever need to contact ADEQ concerning this report)

The following information has been sent.

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24-Hour Sanitary Sewer Overflow Report

SSO ID#: 3226BB8A-D3B1-4F73-B8EC-F303AFAB1B3A
Date Sent: 12/30/2013

☑SSO ☐Bypass ☐Upset

Facility Permit Number:	**AR0033278**	Facility name:	**P Street**
Date Overflow Began:	**12/30/2013**	Time:	**12:15 pm**
Date Overflow Ended:	**12/30/2013**	Time:	**12:45 pm**
Location:	**2501 Memphis, manhole MC07-0510, ditch**		

(Give address, manhole number-if numbered. Include where the overflow went-yard, ditch, stream, storm sewer, building, other).

Type of Overflow

(☑) Manhole Overflow
(☐) Lift Station Overflow
(☐) Main Line Overflow
(☐) Service Line Overflow
(☐ Other Overflow Type:
(Enter overflow type if not listed)

Volume: **150 gallons**
(Give an estimate in gallons)

Impact of SSO Event: **SSO Reached Public Land Only (ground)**

Cause of Overflow

(☐) I & I - Rainfall
(☐) Roots
(☑) Grease
(☐) Debris
(☐) Equipment Failure
(☐) Construction
(☐) Vandalism
(☐) Power Failure
(☐) Line Failure/Break
(☐) Other Cause:

Action Taken - Check all that apply
(Short term and long-term action, including clean-up and any plans to remediate I & I).

(☐) Machine rodded
(☐) Jet-Vac
(☐) Hand rodded
(☐) Used Generator To Power Pumps/Equipment
(☐) Other: Describe
(☐) Disinfected and Deodorized
(☑) Hydro Cleaned
(☐) Spread Lime on Affected Area
(☐) Public Notification

Environmental Damage

(☐) OEHC - Observed or Evidence of Human Contact
(☐) OEEI - Observed or Evidence of Environmental Impact
(☑) NEAH - No Evidence of Adverse Health/Environmental Impact
(☐) EFK - Evidence of Fish Kill

Reported By **Leroy Jeremiah** Title **Superintendent** Telephone Number **(479) 784-2344**

Additional Comments if Needed:

AMERICAN INTERPLEX CORPORATION
LABORATORIES

RECEIVED
NOV 14 2013
WATER/WASTEWATER

November 12, 2013
Control No. 172181
Page 1 of 12

AR0033278

City of Fort Smith
ATTN: Mr. Lance McAvoy
3900 Kelley Highway
Fort Smith, AR 72904

This report contains the analytical results and supporting information for samples submitted on November 5, 2013. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

John Overbey
Laboratory Director

This document has been distributed to the following:

PDF cc: City of Fort Smith
ATTN: Mr. Lance McAvoy
lmcavoy@fortsmithar.gov

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

SAMPLE INFORMATION

Project Description:
Two (2) water and one (1) sludge sample(s) received on November 5, 2013
P Street Table III Priority Pollutants

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.
Ice chest #1 was delivered with a custody seal intact and signed with shipping documentation.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
172181-1	P Street Influent 11/4/13 0850	04-Nov-2013 0850	
172181-2	P Street Effluent 11/4/13 1405	04-Nov-2013 1405	
172181-3	P Street Raw Biosolids 11/4/13 1005	04-Nov-2013 1005	

Qualifiers:
X Spiking level is invalid due to the high concentration of analyte in the spiked sample

Case Narrative:
Analysis of soils/sludges are reported on a dry-weight basis unless otherwise specified.

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", 21st edition.
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

ANALYTICAL RESULTS

AIC No. 172181-1
Sample Identification: P Street Influent 11/4/13 0850

Analyte		Result	RL	Units	Qualifier
Total Recoverable Phenolics		**66**	5	**ug/l**	
EPA 420.1	Prep: 06-Nov-2013 0828 by 308	Analyzed: 06-Nov-2013 1410 by 308		Batch: W45527	
Chromium, Hexavalent		**< 10**	10	**ug/l**	
SM 3500-Cr B 2009	Prep: 05-Nov-2013 1317 by 308	Analyzed: 05-Nov-2013 1405 by 308		Batch: W45516	
Total Cyanide		**< 10**	10	**ug/l**	
SM 4500-CN C,E 1999	Prep: 06-Nov-2013 0745 by 308	Analyzed: 06-Nov-2013 1126 by 308		Batch: W45524	
Mercury, low level		**0.062**	0.0050	**ug/l**	
EPA 245.7	Prep: 06-Nov-2013 0938 by 311	Analyzed: 06-Nov-2013 1049 by 311		Batch: S35722	
Total Recoverable Antimony		**< 60**	60	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Arsenic		**2.9**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Beryllium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Cadmium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Chromium		**< 10**	10	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Copper		**13**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Lead		**3.0**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Molybdenum		**< 8**	8	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Nickel		**3.9**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Selenium		**< 5**	5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Silver		**0.69**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Thallium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	
Total Recoverable Zinc		**130**	20	**ug/l**	
EPA 200.8	Prep: 11-Nov-2013 0858 by 271	Analyzed: 11-Nov-2013 1537 by 305		Batch: S35746	

AIC No. 172181-2
Sample Identification: P Street Effluent 11/4/13 1405

Analyte		Result	RL	Units	Qualifier
Total Recoverable Phenolics		**52**	5	**ug/l**	
EPA 420.1	Prep: 06-Nov-2013 0828 by 308	Analyzed: 06-Nov-2013 1410 by 308		Batch: W45527	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

ANALYTICAL RESULTS

AIC No. 172181-2 (Continued)
Sample Identification: P Street Effluent 11/4/13 1405

Analyte		Result	RL	Units	Qualifier
Chromium, Hexavalent		**< 10**	10	**ug/l**	
SM 3500-Cr B 2009	Prep: 05-Nov-2013 1317 by 308	Analyzed: 05-Nov-2013 1405 by 308		Batch: W45516	
Total Cyanide		**< 10**	10	**ug/l**	
SM 4500-CN C,E 1999	Prep: 06-Nov-2013 0745 by 308	Analyzed: 06-Nov-2013 1121 by 308		Batch: W45524	
Mercury, low level		**0.0087**	0.0050	**ug/l**	
EPA 245.7	Prep: 06-Nov-2013 0938 by 311	Analyzed: 06-Nov-2013 1044 by 311		Batch: S35722	
Total Recoverable Antimony		**< 60**	60	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Arsenic		**0.69**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Beryllium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Cadmium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Chromium		**< 10**	10	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Copper		**7.9**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Lead		**0.91**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Molybdenum		**< 8**	8	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Nickel		**5.2**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Selenium		**< 5**	5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Silver		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Thallium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	
Total Recoverable Zinc		**71**	20	**ug/l**	
EPA 200.8	Prep: 05-Nov-2013 1341 by 271	Analyzed: 05-Nov-2013 1813 by 305		Batch: S35715	

AIC No. 172181-3
Sample Identification: P Street Raw Biosolids 11/4/13 1005

Analyte		Result	RL	Units	Qualifier
Total Cyanide		**< 9**	9	**mg/Kg**	
EPA 9010C, 9014	Prep: 07-Nov-2013 0811 by 308	Analyzed: 07-Nov-2013 1227 by 308		Batch: W45544	
Total Recoverable Phenolics		**190**	50	**mg/Kg**	
EPA 9065	Prep: 07-Nov-2013 0810 by 308	Analyzed: 07-Nov-2013 1405 by 308		Batch: W45543	

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ANALYTICAL RESULTS

AIC No. 172181-3 (Continued)
Sample Identification: P Street Raw Biosolids 11/4/13 1005

Analyte		Result	RL	Units	Qualifier
Total Solids		**1.1**	0.01	**wt %**	
SM 2540 G 1997	Prep: 05-Nov-2013 1639 by 285	Analyzed: 06-Nov-2013 1011 by 285		Batch: W45523	
Antimony		**< 3**	3	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Arsenic		**< 5**	5	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Beryllium		**0.30**	0.03	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Cadmium		**2.2**	0.4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Chromium		**54**	0.7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Copper		**290**	0.6	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Lead		**72**	4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Molybdenum		**4.8**	0.8	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Nickel		**32**	1	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Selenium		**< 7**	7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Silver		**4.8**	0.7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Thallium		**< 4**	4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Zinc		**680**	0.2	**mg/Kg**	
EPA 3051A, 6010C	Prep: 07-Nov-2013 0905 by 271	Analyzed: 08-Nov-2013 1127 by 305		Batch: S35730	
Mercury		**2.6**	0.1	**mg/Kg**	
EPA 7471B	Prep: 06-Nov-2013 0841 by 311	Analyzed: 06-Nov-2013 1438 by 311		Batch: S35721	

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DUPLICATE RESULTS

Analyte		AIC No.	Result	RPD	RPD Limit	Preparation Date	Analysis Date	Dil	Qual
Total Solids		172181-3	1.1 wt %			05Nov13 1639 by 285	06Nov13 1011 by 285		
	Batch: W45523	Duplicate	1.1 wt %	3.41	10.0	05Nov13 1639 by 285	06Nov13 1011 by 285		

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LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Recoverable Phenolics	0.1 mg/l	97.0	85.0-115			W45527	06Nov13 0828 by 308	06Nov13 1410 by 308		
Chromium, Hexavalent	0.05 mg/l	109	80.0-120			W45516	05Nov13 1317 by 308	05Nov13 1405 by 308		
Total Cyanide	0.1 mg/l	93.8	85.0-115			W45524	06Nov13 0745 by 308	06Nov13 1119 by 308		
Mercury, low level	0.01 ug/l	102	76.0-113			S35722	06Nov13 0938 by 311	06Nov13 1029 by 311		
Total Recoverable Antimony	0.05 mg/l	93.1	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Antimony	0.05 mg/l	90.2	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Arsenic	0.05 mg/l	91.7	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Arsenic	0.05 mg/l	102	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Beryllium	0.05 mg/l	94.8	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Beryllium	0.05 mg/l	98.1	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Cadmium	0.05 mg/l	94.9	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Cadmium	0.05 mg/l	99.4	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Chromium	0.05 mg/l	94.4	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Chromium	0.05 mg/l	98.9	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Copper	0.05 mg/l	97.4	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Copper	0.05 mg/l	100	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Lead	0.05 mg/l	96.8	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Lead	0.05 mg/l	101	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Molybdenum	0.05 mg/l	97.1	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Molybdenum	0.05 mg/l	101	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Nickel	0.05 mg/l	96.4	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Nickel	0.05 mg/l	103	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Selenium	0.05 mg/l	95.6	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Selenium	0.05 mg/l	99.3	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Silver	0.02 mg/l	99.3	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Silver	0.02 mg/l	96.9	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Thallium	0.05 mg/l	102	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Thallium	0.05 mg/l	101	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Recoverable Zinc	0.05 mg/l	99.3	85.0-115			S35715	05Nov13 1001 by 271	05Nov13 1757 by 305		
Total Recoverable Zinc	0.05 mg/l	99.2	85.0-115			S35746	11Nov13 0859 by 271	11Nov13 1521 by 305		
Total Cyanide	0.500 mg/Kg	88.4	85.0-115			W45544	07Nov13 0811 by 308	07Nov13 1225 by 308		
Total Recoverable Phenolics	10.0 mg/Kg	98.5	85.0-115			W45543	07Nov13 0810 by 308	07Nov13 1405 by 308		
Antimony	500 mg/Kg	96.5	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Arsenic	500 mg/Kg	95.2	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Beryllium	50.0 mg/Kg	96.4	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Cadmium	500 mg/Kg	95.1	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Chromium	50.0 mg/Kg	93.9	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Copper	50.0 mg/Kg	95.3	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Lead	500 mg/Kg	95.1	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Molybdenum	50.0 mg/Kg	95.0	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Nickel	50.0 mg/Kg	95.7	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		

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LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Selenium	500 mg/Kg	90.4	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Silver	10.0 mg/Kg	90.5	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Thallium	500 mg/Kg	97.3	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Zinc	50.0 mg/Kg	90.7	85.0-115			S35730	07Nov13 0905 by 271	08Nov13 1109 by 305		
Mercury	1.25 mg/Kg	93.8	85.0-115			S35721	06Nov13 0841 by 311	06Nov13 1425 by 311		

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MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Recoverable Phenolics	172181-2	0.1 mg/l	89.5	80.0-120	W45527	06Nov13 0828 by 308	06Nov13 1410 by 308		
	172181-2	0.1 mg/l	87.3	80.0-120	W45527	06Nov13 0828 by 308	06Nov13 1410 by 308		
	Relative Percent Difference:		1.57	10.0	W45527				
Chromium, Hexavalent	172181-2	0.05 mg/l	98.8	76.5-146	W45516	05Nov13 1317 by 308	05Nov13 1405 by 308		
	172181-2	0.05 mg/l	94.0	76.5-146	W45516	05Nov13 1317 by 308	05Nov13 1405 by 308		
	Relative Percent Difference:		4.98	25.0	W45516				
Total Cyanide	172181-2	0.1 mg/l	99.2	75.0-125	W45524	06Nov13 0745 by 308	06Nov13 1123 by 308		
	172181-2	0.1 mg/l	89.7	75.0-125	W45524	06Nov13 0745 by 308	06Nov13 1125 by 308		
	Relative Percent Difference:		9.21	20.0	W45524				
Mercury, low level	172188-1	0.01 ug/l	103	63.0-111	S35722	06Nov13 0938 by 311	06Nov13 1034 by 311		
	172188-1	0.01 ug/l	108	63.0-111	S35722	06Nov13 0938 by 311	06Nov13 1039 by 311		
	Relative Percent Difference:		2.33	18.0	S35722				
Total Recoverable Antimony	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		1.11	20.0	S35715				
Total Recoverable Antimony	172181-1	0.05 mg/l	103	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	104	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.0368	20.0	S35746				
Total Recoverable Arsenic	172181-2	0.05 mg/l	85.5	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.05 mg/l	85.0	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		0.517	20.0	S35715				
Total Recoverable Arsenic	172181-1	0.05 mg/l	96.6	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	94.9	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		1.77	20.0	S35746				
Total Recoverable Beryllium	172181-2	0.05 mg/l	90.9	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.05 mg/l	91.0	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		0.186	20.0	S35715				
Total Recoverable Beryllium	172181-1	0.05 mg/l	98.8	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	98.0	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.763	20.0	S35746				
Total Recoverable Cadmium	172181-2	0.05 mg/l	89.9	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.05 mg/l	90.1	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		0.199	20.0	S35715				
Total Recoverable Cadmium	172181-1	0.05 mg/l	98.5	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	97.9	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.530	20.0	S35746				
Total Recoverable Chromium	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		1.57	20.0	S35715				
Total Recoverable Chromium	172181-1	0.05 mg/l	98.5	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	98.2	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.338	20.0	S35746				
Total Recoverable Copper	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		0.706	20.0	S35715				
Total Recoverable Copper	172181-1	0.05 mg/l	95.8	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	95.2	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.611	20.0	S35746				
Total Recoverable Lead	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		0.465	20.0	S35715				

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MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Recoverable Lead	172181-1	0.05 mg/l	100	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	100	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.242	20.0	S35746				
Total Recoverable Molybdenum	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		0.243	20.0	S35715				
Total Recoverable Molybdenum	172181-1	0.05 mg/l	100	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	100	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.189	20.0	S35746				
Total Recoverable Nickel	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		3.05	20.0	S35715				
Total Recoverable Nickel	172181-1	0.05 mg/l	99.6	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	99.8	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.201	20.0	S35746				
Total Recoverable Selenium	172181-2	0.05 mg/l	87.2	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.05 mg/l	87.0	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		0.311	20.0	S35715				
Total Recoverable Selenium	172181-1	0.05 mg/l	97.5	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	97.6	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.145	20.0	S35746				
Total Recoverable Silver	172181-2	0.02 mg/l	100	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.02 mg/l	101	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		0.0394	20.0	S35715				
Total Recoverable Silver	172181-1	0.02 mg/l	93.3	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.02 mg/l	93.0	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.298	20.0	S35746				
Total Recoverable Thallium	172181-2	0.05 mg/l	97.3	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		
	172181-2	0.05 mg/l	94.0	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		
	Relative Percent Difference:		3.37	20.0	S35715				
Total Recoverable Thallium	172181-1	0.05 mg/l	101	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	100	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.459	20.0	S35746				
Total Recoverable Zinc	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1802 by 305		X
	172181-2	0.05 mg/l	-	75.0-125	S35715	05Nov13 1600 by 271	05Nov13 1808 by 305		X
	Relative Percent Difference:		1.38	20.0	S35715				
Total Recoverable Zinc	172181-1	0.05 mg/l	94.5	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1526 by 305		
	172181-1	0.05 mg/l	94.3	75.0-125	S35746	11Nov13 0859 by 271	11Nov13 1532 by 305		
	Relative Percent Difference:		0.113	20.0	S35746				
Total Cyanide	172181-3	0.993 mg/Kg	99.3	75.0-125	W45544	07Nov13 0811 by 308	07Nov13 1228 by 308		
	172181-3	0.984 mg/Kg	88.5	75.0-125	W45544	07Nov13 0811 by 308	07Nov13 1307 by 308		
	Relative Percent Difference:		11.4	20.0	W45544				
Total Recoverable Phenolics	172181-3	9.18 mg/Kg	91.6	80.0-120	W45543	07Nov13 0810 by 308	07Nov13 1405 by 308		
	172181-3	9.69 mg/Kg	95.0	80.0-120	W45543	07Nov13 0810 by 308	07Nov13 1405 by 308		
	Relative Percent Difference:		2.70	10.0	W45543				
Antimony	172165-1	496 mg/Kg	88.5	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	89.6	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		1.22	20.0	S35730				
Arsenic	172165-1	496 mg/Kg	92.1	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	92.7	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.597	20.0	S35730				

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Beryllium	172165-1	49.6 mg/Kg	93.9	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	94.7	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.808	20.0	S35730				
Cadmium	172165-1	496 mg/Kg	94.2	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	94.9	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.711	20.0	S35730				
Chromium	172165-1	49.6 mg/Kg	109	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	108	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.338	20.0	S35730				
Copper	172165-1	49.6 mg/Kg	105	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	106	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.774	20.0	S35730				
Lead	172165-1	496 mg/Kg	93.7	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	94.7	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		1.02	20.0	S35730				
Molybdenum	172165-1	49.6 mg/Kg	92.8	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	93.8	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		1.11	20.0	S35730				
Nickel	172165-1	49.6 mg/Kg	97.6	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	98.6	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.867	20.0	S35730				
Selenium	172165-1	496 mg/Kg	82.4	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	83.1	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.795	20.0	S35730				
Silver	172165-1	9.92 mg/Kg	90.0	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	9.94 mg/Kg	91.0	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		1.05	20.0	S35730				
Thallium	172165-1	496 mg/Kg	99.0	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	497 mg/Kg	99.7	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.667	20.0	S35730				
Zinc	172165-1	49.6 mg/Kg	97.3	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1113 by 305		
	172165-1	49.7 mg/Kg	98.3	75.0-125	S35730	07Nov13 0905 by 271	08Nov13 1118 by 305		
	Relative Percent Difference:		0.560	20.0	S35730				
Mercury	172165-1	1.23 mg/Kg	90.7	70.0-130	S35721	06Nov13 0841 by 311	06Nov13 1429 by 311		
	172165-1	1.23 mg/Kg	87.9	70.0-130	S35721	06Nov13 0841 by 311	06Nov13 1432 by 311		
	Relative Percent Difference:		3.19	20.0	S35721				

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Total Recoverable Phenolics	< 0.005 mg/l	0.005	0.005	W45527-1	06Nov13 0828 by 308	06Nov13 1410 by 308	
Chromium, Hexavalent	< 0.007 mg/l	0.007	0.007	W45516-1	05Nov13 1317 by 308	05Nov13 1405 by 308	
Total Cyanide	< 0.01 mg/l	0.01	0.01	W45524-1	06Nov13 0745 by 308	06Nov13 1117 by 308	
Mercury, low level	< 0.0018 ug/l	0.0018	0.0050	S35722-1	06Nov13 0938 by 311	06Nov13 1009 by 311	
Total Recoverable Antimony	< 0.03 mg/l	0.03	0.03	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Arsenic	< 0.0005 mg/l	0.0005	0.0005	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Beryllium	< 0.0002 mg/l	0.0002	0.0002	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Cadmium	< 0.0001 mg/l	0.0001	0.0001	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Chromium	< 0.007 mg/l	0.007	0.007	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Copper	< 0.0005 mg/l	0.0005	0.0005	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Lead	< 0.0005 mg/l	0.0005	0.0005	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Molybdenum	< 0.008 mg/l	0.008	0.008	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Nickel	< 0.0005 mg/l	0.0005	0.0005	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Selenium	< 0.002 mg/l	0.002	0.002	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Silver	< 0.0002 mg/l	0.0002	0.0002	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Thallium	< 0.0005 mg/l	0.0005	0.0005	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Zinc	< 0.002 mg/l	0.002	0.002	S35715-1	05Nov13 1001 by 271	05Nov13 1751 by 305	
Total Recoverable Antimony	< 0.03 mg/l	0.03	0.03	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Arsenic	< 0.0005 mg/l	0.0005	0.0005	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Beryllium	< 0.0002 mg/l	0.0002	0.0002	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Cadmium	< 0.0001 mg/l	0.0001	0.0001	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Chromium	< 0.007 mg/l	0.007	0.007	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Copper	< 0.0005 mg/l	0.0005	0.0005	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Lead	< 0.0005 mg/l	0.0005	0.0005	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Molybdenum	< 0.008 mg/l	0.008	0.008	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Nickel	< 0.0005 mg/l	0.0005	0.0005	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Selenium	< 0.002 mg/l	0.002	0.002	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Silver	< 0.0002 mg/l	0.0002	0.0002	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Thallium	< 0.0005 mg/l	0.0005	0.0005	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Recoverable Zinc	< 0.002 mg/l	0.002	0.002	S35746-1	11Nov13 0859 by 271	11Nov13 1512 by 305	
Total Cyanide	< 0.1 mg/Kg	0.1	0.1	W45544-1	07Nov13 0811 by 308	07Nov13 1223 by 308	
Total Recoverable Phenolics	< 0.5 mg/Kg	0.5	0.5	W45543-1	07Nov13 0810 by 308	07Nov13 1405 by 308	
Total Solids	< 0.01 wt %	0.01	0.01	W45523-1	05Nov13 1639 by 285	06Nov13 1011 by 285	
Antimony	< 3 mg/Kg	3	3	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Arsenic	< 5 mg/Kg	5	5	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Beryllium	< 0.03 mg/Kg	0.03	0.03	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Cadmium	< 0.4 mg/Kg	0.4	0.4	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Chromium	< 0.7 mg/Kg	0.7	0.7	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Copper	< 0.6 mg/Kg	0.6	0.6	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Lead	< 4 mg/Kg	4	4	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Molybdenum	< 0.8 mg/Kg	0.8	0.8	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Nickel	< 1 mg/Kg	1	1	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Selenium	< 7 mg/Kg	7	7	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Silver	< 0.7 mg/Kg	0.7	0.7	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Thallium	< 4 mg/Kg	4	4	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Zinc	< 0.2 mg/Kg	0.2	0.2	S35730-1	07Nov13 0905 by 271	08Nov13 1106 by 305	
Mercury	< 0.1 mg/Kg	0.1	0.1	S35721-1	06Nov13 0841 by 311	06Nov13 1422 by 311	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: City of Fort Smith
Project Reference: P Street Table III Priority Pollutants
Project Manager: Lance McAvoy
Sampled By: Chris Cooper John Hancock

PO No.

SAMPLE MATRIX: WATER, SOIL

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	T. CYANIDE	PHENOLICS	PP METALS (Table III: 13 PP Metal CN, T, Phenolics, Sulfide)	Mo	Mo
1	P STREET INFLUENT	11/4/13 0850	X		X		1	X				
1	P STREET INFLUENT	11/4/13 0850	X		X		1		X			
1	P STREET INFLUENT	11/4/13 0850	X		X		1			X	X	
2	P STREET EFFLUENT	11/4/13 1405	X		X		1	X				
2	P STREET EFFLUENT	11/4/13 1405	X		X		1		X			
2	P STREET EFFLUENT	11/4/13 1405	X		X		1			X	X	
3	P STREET RAW BIOSOLIDS	11/4/13 1005	X		X		1			X		X
		Container Type						P	G	P	G	P	G
		Preservative						B	S	N	No	N	No

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

AIC CONTROL NO: 172181
AIC PROPOSAL NO:
Carrier/Tracking No.
Received Temperature C: 3.1°C
Remarks
Field pH calibration on ____ @ ____ Buffer:

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: ____
Who should AIC contact with questions: Lance McAvoy
Phone: 479-784-2337 Fax: ____
Report Attention to:
Report Address to: Lance McAvoy

Relinquished By:	Date/Time	Received By:	Date/Time
Chris Cooper	11/4/13 1500		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		[signature]	11/5/13 0815

Comments: ¹ Required Reporting Limit for Metals must be identified on back of COC.
Fed Ex Tracking #: 8024-7706-7200

AMERICAN INTERPLEX CORPORATION LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: City of Fort Smith
Project Reference: P Street Table III Priority Pollutants (Hg)
Project Manager: Lance McAvoy
Sampled By: Chris Cooper, John Hancock

PO No.

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SAMPLE MATRIX: SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Hg, LL (245.7)	ANALYSES REQUESTED: Cr 6
1	P Street Influent	11/4/13 0850	X		X		1	X	
2	P Street Effluent	11/4/13 1405	X		X		1	X	
1	P Street Influent	11/4/13 0850	X		X		1		X
2	P Street Effluent	11/4/13 1405	X		X		1		X
		Container Type						G	P
		Preservative						No	

AIC CONTROL NO: 172181
AIC PROPOSAL NO:
Carrier/Tracking No.
Received Temperature C: 3.1°C
Remarks
Field pH calibration on ____ @ ____ Buffer:

G = Glass, P = Plastic, V = VOA vials, H = HCl to pH2, T = Sodium Thiosulfate
NO = none, S = Sulfuric acid pH2, N = Nitric acid pH2, B = NaOH to pH12, Z = Zinc acetate

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ___ DAYS
Expedited results requested by: ____
Who should AIC contact with questions: Lance McAvoy
Phone: 479-784-2337 Fax: ____
Report Attention to:
Report Address to: Lance McAvoy

Relinquished By	Date/Time	Received By	Date/Time
Chris Cooper	11/4/13 1500		
Relinquished By:	Date/Time	Received in Lab By: Jimmy Day	Date/Time 11/5/13 0815

Comments: ¹ Required Reporting Limit for Metals must be identified on back of COC.
Fed Ex Tracking #: 8024-7206-7200

19-Oct-09

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

October 29, 2013
Control No. 171766

AR 0021750

City of Fort Smith
ATTN: Mr. Lance McAvoy
3900 Kelley Highway
Fort Smith, AR 72904

This report contains the analytical results and supporting information for samples submitted on October 22, 2013. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

John Overbey
Laboratory Director

This document has been distributed to the following:

PDF cc: City of Fort Smith
ATTN: Mr. Lance McAvoy
lmcavoy@fortsmithar.gov

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

SAMPLE INFORMATION

Project Description:
Two (2) water and one (1) sludge sample(s) received on October 22, 2013
Massard Table III Priority Pollutants

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.
Ice chest #1 was delivered with a custody seal intact and signed

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
171766-1	Massard Influent 10/21/13 0803	21-Oct-2013 0803	
171766-2	Massard Effluent 10/21/13 1255	21-Oct-2013 1255	
171766-3	Massard Raw Biosolid 10/21/13 1120	21-Oct-2013 1120	

Qualifiers:
D Result is from a secondary dilution factor

Case Narrative:
Analysis of soils/sludges are reported on a dry-weight basis unless otherwise specified.

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", 21st edition.
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

ANALYTICAL RESULTS

AIC No. 171766-1
Sample Identification: Massard Influent 10/21/13 0803

Analyte		Result	RL	Units	Qualifier
Total Recoverable Phenolics		**69**	5	ug/l	
EPA 420.1	Prep: 23-Oct-2013 0806 by 308	Analyzed: 23-Oct-2013 1120 by 308		Batch: W45363	
Chromium, Hexavalent		**< 10**	10	ug/l	
SM 3500-Cr B	Prep: 22-Oct-2013 1408 by 308	Analyzed: 22-Oct-2013 1500 by 308		Batch: W45360	
Total Cyanide		**< 10**	10	ug/l	
SM 4500-CN C,E	Prep: 24-Oct-2013 0817 by 308	Analyzed: 24-Oct-2013 1357 by 308		Batch: W45378	
Mercury, low level		**0.013**	0.0050	ug/l	
EPA 245.7	Prep: 23-Oct-2013 1037 by 311	Analyzed: 23-Oct-2013 1200 by 311		Batch: S35643	
Total Recoverable Antimony		**< 60**	60	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Arsenic		**1.2**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Beryllium		**< 0.5**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Cadmium		**0.63**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Chromium		**< 10**	10	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Copper		**16**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Lead		**3.7**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Molybdenum		**13**	8	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Nickel		**4.7**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Selenium		**< 5**	5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Silver		**< 0.5**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Thallium		**< 0.5**	0.5	ug/l	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1202 by 305		Batch: S35642	
Total Recoverable Zinc		**1900**	200	ug/l	D
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1357 by 305		Batch: S35642	Dil: 10

AIC No. 171766-2
Sample Identification: Massard Effluent 10/21/13 1255

Analyte		Result	RL	Units	Qualifier
Total Recoverable Phenolics		**24**	5	ug/l	
EPA 420.1	Prep: 23-Oct-2013 0806 by 308	Analyzed: 23-Oct-2013 1120 by 308		Batch: W45363	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

ANALYTICAL RESULTS

AIC No. 171766-2 (Continued)
Sample Identification: Massard Effluent 10/21/13 1255

Analyte		Result	RL	Units	Qualifier
Chromium, Hexavalent		**< 10**	10	**ug/l**	
SM 3500-Cr B	Prep: 22-Oct-2013 1408 by 308	Analyzed: 22-Oct-2013 1500 by 308		Batch: W45360	
Total Cyanide		**< 10**	10	**ug/l**	
SM 4500-CN C,E	Prep: 24-Oct-2013 0817 by 308	Analyzed: 24-Oct-2013 1402 by 308		Batch: W45378	
Mercury, low level		**< 0.0050**	0.0050	**ug/l**	
EPA 245.7	Prep: 23-Oct-2013 1037 by 311	Analyzed: 23-Oct-2013 1155 by 311		Batch: S35643	
Total Recoverable Antimony		**< 60**	60	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Arsenic		**0.87**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Beryllium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Cadmium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Chromium		**< 10**	10	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Copper		**5.4**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Lead		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Molybdenum		**< 8**	8	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Nickel		**4.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Selenium		**< 5**	5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Silver		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Thallium		**< 0.5**	0.5	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	
Total Recoverable Zinc		**36**	20	**ug/l**	
EPA 200.8	Prep: 23-Oct-2013 1012 by 271	Analyzed: 24-Oct-2013 1146 by 305		Batch: S35642	

AIC No. 171766-3
Sample Identification: Massard Raw Biosolid 10/21/13 1120

Analyte		Result	RL	Units	Qualifier
Total Cyanide		**1.0**	0.5	**mg/Kg**	
EPA 9010C, 9014	Prep: 28-Oct-2013 0807 by 308	Analyzed: 29-Oct-2013 1323 by 308		Batch: W45407	
Total Recoverable Phenolics		**53**	3	**mg/Kg**	
EPA 9065	Prep: 24-Oct-2013 0831 by 308	Analyzed: 24-Oct-2013 1430 by 308		Batch: W45379	

AMERICAN INTERPLEX CORPORATION
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ANALYTICAL RESULTS

AIC No. 171766-3 (Continued)
Sample Identification: Massard Raw Biosolid 10/21/13 1120

Analyte		Result	RL	Units	Qualifier
Total Solids		**21**	0.01	**wt %**	
SM 2540 G	Prep: 22-Oct-2013 1614 by 285	Analyzed: 24-Oct-2013 1543 by 285		Batch: W45361	
Antimony		**< 3**	3	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Arsenic		**< 5**	5	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Beryllium		**0.20**	0.03	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Cadmium		**2.5**	0.4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Chromium		**19**	0.7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Copper		**140**	0.6	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Lead		**23**	4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Molybdenum		**12**	0.8	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Nickel		**14**	1	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Selenium		**< 7**	7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Silver		**7.5**	0.7	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Thallium		**< 4**	4	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Zinc		**610**	0.2	**mg/Kg**	
EPA 3051A, 6010C	Prep: 23-Oct-2013 1332 by 271	Analyzed: 24-Oct-2013 1448 by 305		Batch: S35646	
Mercury		**0.87**	0.1	**mg/Kg**	
EPA 7471B	Prep: 23-Oct-2013 1432 by 311	Analyzed: 24-Oct-2013 1109 by 311		Batch: S35647	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
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DUPLICATE RESULTS

Analyte		AIC No.	Result	RPD	RPD Limit	Preparation Date	Analysis Date	Dil	Qual
Total Solids		171768-1	9.5 wt %			22Oct13 1455 by 285	24Oct13 1543 by 285		
	Batch: W45361	Duplicate	10 wt %	8.82	10.0	22Oct13 1456 by 285	24Oct13 1543 by 285		

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Recoverable Phenolics	0.1 mg/l	98.3	85.0-115			W45363	23Oct13 0806 by 308	23Oct13 1120 by 308		
Chromium, Hexavalent	0.05 mg/l	109	80.0-120			W45360	22Oct13 1408 by 308	22Oct13 1500 by 308		
Total Cyanide	0.1 mg/l	97.3	85.0-115			W45378	24Oct13 0817 by 308	24Oct13 1356 by 308		
Mercury, low level	0.01 ug/l	91.6	76.0-113			S35643	23Oct13 1037 by 311	23Oct13 1140 by 311		
Total Recoverable Antimony	0.05 mg/l	91.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Arsenic	0.05 mg/l	99.5	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Beryllium	0.05 mg/l	94.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Cadmium	0.05 mg/l	95.5	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Chromium	0.05 mg/l	96.5	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Copper	0.05 mg/l	95.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Lead	0.05 mg/l	96.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Molybdenum	0.05 mg/l	101	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Nickel	0.05 mg/l	96.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Selenium	0.05 mg/l	96.7	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Silver	0.02 mg/l	94.4	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Thallium	0.05 mg/l	102	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Recoverable Zinc	0.05 mg/l	96.2	85.0-115			S35642	23Oct13 1012 by 271	24Oct13 1130 by 305		
Total Cyanide	0.500 mg/Kg	101	85.0-115			W45407	28Oct13 0807 by 308	29Oct13 1321 by 308		
Total Recoverable Phenolics	10.0 mg/Kg	95.2	85.0-115			W45379	24Oct13 0831 by 308	24Oct13 1430 by 308		
Antimony	500 mg/Kg	101	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Arsenic	500 mg/Kg	98.7	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Beryllium	50.0 mg/Kg	100	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Cadmium	500 mg/Kg	95.8	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Chromium	50.0 mg/Kg	99.6	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Copper	50.0 mg/Kg	95.1	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Lead	500 mg/Kg	101	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Molybdenum	50.0 mg/Kg	100	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Nickel	50.0 mg/Kg	100	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Selenium	500 mg/Kg	93.0	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Silver	10.0 mg/Kg	97.2	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Thallium	500 mg/Kg	105	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Zinc	50.0 mg/Kg	98.0	85.0-115			S35646	23Oct13 1332 by 271	24Oct13 1430 by 305		
Mercury	1.25 mg/Kg	90.5	85.0-115			S35647	23Oct13 1432 by 311	24Oct13 1051 by 311		

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
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MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Recoverable Phenolics	171766-2	0.1 mg/l	102	80.0-120	W45363	23Oct13 0806 by 308	23Oct13 1120 by 308		
	171766-2	0.1 mg/l	97.0	80.0-120	W45363	23Oct13 0806 by 308	23Oct13 1120 by 308		
	Relative Percent Difference:		4.07	10.0	W45363				
Chromium, Hexavalent	171766-2	0.05 mg/l	116	76.5-146	W45360	22Oct13 1408 by 308	22Oct13 1500 by 308		
	171766-2	0.05 mg/l	115	76.5-146	W45360	22Oct13 1408 by 308	22Oct13 1500 by 308		
	Relative Percent Difference:		0.346	25.0	W45360				
Total Cyanide	171766-1	0.1 mg/l	78.5	75.0-125	W45378	24Oct13 0817 by 308	24Oct13 1359 by 308		
	171766-1	0.1 mg/l	79.6	75.0-125	W45378	24Oct13 0817 by 308	24Oct13 1401 by 308		
	Relative Percent Difference:		1.39	20.0	W45378				
Mercury, low level	171773-1	0.01 ug/l	99.1	63.0-111	S35643	23Oct13 1037 by 311	23Oct13 1145 by 311		
	171773-1	0.01 ug/l	98.1	63.0-111	S35643	23Oct13 1037 by 311	23Oct13 1150 by 311		
	Relative Percent Difference:		0.590	18.0	S35643				
Total Recoverable Antimony	171766-2	0.05 mg/l	90.9	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	91.2	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.347	20.0	S35642				
Total Recoverable Arsenic	171766-2	0.05 mg/l	99.2	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	99.5	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.288	20.0	S35642				
Total Recoverable Beryllium	171766-2	0.05 mg/l	93.9	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	94.4	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.468	20.0	S35642				
Total Recoverable Cadmium	171766-2	0.05 mg/l	94.9	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	94.6	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.241	20.0	S35642				
Total Recoverable Chromium	171766-2	0.05 mg/l	98.4	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	98.5	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.157	20.0	S35642				
Total Recoverable Copper	171766-2	0.05 mg/l	95.4	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	97.1	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		1.73	20.0	S35642				
Total Recoverable Lead	171766-2	0.05 mg/l	96.3	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	96.4	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.144	20.0	S35642				
Total Recoverable Molybdenum	171766-2	0.05 mg/l	93.8	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	93.8	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.0415	20.0	S35642				
Total Recoverable Nickel	171766-2	0.05 mg/l	89.3	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	89.9	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.631	20.0	S35642				
Total Recoverable Selenium	171766-2	0.05 mg/l	95.2	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	95.3	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.0200	20.0	S35642				
Total Recoverable Silver	171766-2	0.02 mg/l	90.2	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.02 mg/l	90.3	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.0826	20.0	S35642				
Total Recoverable Thallium	171766-2	0.05 mg/l	101	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	101	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		0.0684	20.0	S35642				
Total Recoverable Zinc	171766-2	0.05 mg/l	93.7	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1135 by 305		
	171766-2	0.05 mg/l	95.3	75.0-125	S35642	23Oct13 1012 by 271	24Oct13 1141 by 305		
	Relative Percent Difference:		1.40	20.0	S35642				

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
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MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Total Cyanide	171766-3	0.934 mg/Kg	80.8	75.0-125	W45407	28Oct13 0807 by 308	29Oct13 1325 by 308		
	171766-3	0.975 mg/Kg	88.0	75.0-125	W45407	28Oct13 0807 by 308	29Oct13 1349 by 308		
	Relative Percent Difference:		6.20	20.0	W45407				
Total Recoverable Phenolics	171766-3	9.83 mg/Kg	100	80.0-120	W45379	24Oct13 0831 by 308	24Oct13 1430 by 308		
	171766-3	9.73 mg/Kg	102	80.0-120	W45379	24Oct13 0831 by 308	24Oct13 1430 by 308		
	Relative Percent Difference:		0.849	10.0	W45379				
Antimony	171769-1	498 mg/Kg	92.4	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	92.6	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.179	20.0	S35646				
Arsenic	171769-1	498 mg/Kg	93.1	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	93.0	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.0327	20.0	S35646				
Beryllium	171769-1	49.8 mg/Kg	98.5	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	98.1	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.465	20.0	S35646				
Cadmium	171769-1	498 mg/Kg	91.3	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	91.2	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.178	20.0	S35646				
Chromium	171769-1	49.8 mg/Kg	100	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	101	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.391	20.0	S35646				
Copper	171769-1	49.8 mg/Kg	101	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	100	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.218	20.0	S35646				
Lead	171769-1	498 mg/Kg	98.3	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	98.4	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.105	20.0	S35646				
Molybdenum	171769-1	49.8 mg/Kg	100	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	101	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.455	20.0	S35646				
Nickel	171769-1	49.8 mg/Kg	96.4	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	96.8	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.400	20.0	S35646				
Selenium	171769-1	498 mg/Kg	78.2	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	78.2	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.0297	20.0	S35646				
Silver	171769-1	9.96 mg/Kg	92.6	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	9.97 mg/Kg	93.1	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.473	20.0	S35646				
Thallium	171769-1	498 mg/Kg	104	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	498 mg/Kg	105	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.164	20.0	S35646				
Zinc	171769-1	49.8 mg/Kg	88.5	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1434 by 305		
	171769-1	49.8 mg/Kg	88.1	75.0-125	S35646	23Oct13 1332 by 271	24Oct13 1439 by 305		
	Relative Percent Difference:		0.191	20.0	S35646				
Mercury	171769-1	1.24 mg/Kg	79.5	70.0-130	S35647	23Oct13 1432 by 311	24Oct13 1054 by 311		
	171769-1	1.24 mg/Kg	80.0	70.0-130	S35647	23Oct13 1432 by 311	24Oct13 1057 by 311		
	Relative Percent Difference:		0.664	20.0	S35647				

AMERICAN INTERPLEX CORPORATION
LABORATORIES

City of Fort Smith
3900 Kelley Highway
Fort Smith, AR 72904

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Total Recoverable Phenolics	< 0.005 mg/l	0.005	0.005	W45363-1	23Oct13 0806 by 308	23Oct13 1120 by 308	
Chromium, Hexavalent	< 0.007 mg/l	0.007	0.007	W45360-1	22Oct13 1408 by 308	22Oct13 1500 by 308	
Total Cyanide	< 0.01 mg/l	0.01	0.01	W45378-1	24Oct13 0817 by 308	24Oct13 1354 by 308	
Mercury, low level	< 0.0018 ug/l	0.0018	0.0050	S35643-1	23Oct13 1037 by 311	23Oct13 1124 by 311	
Total Recoverable Antimony	< 0.03 mg/l	0.03	0.03	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Arsenic	< 0.0005 mg/l	0.0005	0.0005	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Beryllium	< 0.0003 mg/l	0.0003	0.0003	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Cadmium	< 0.0001 mg/l	0.0001	0.0001	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Chromium	< 0.007 mg/l	0.007	0.007	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Copper	< 0.0005 mg/l	0.0005	0.0005	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Lead	< 0.0005 mg/l	0.0005	0.0005	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Molybdenum	< 0.008 mg/l	0.008	0.008	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Nickel	< 0.0005 mg/l	0.0005	0.0005	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Selenium	< 0.002 mg/l	0.002	0.002	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Silver	< 0.0002 mg/l	0.0002	0.0002	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Thallium	< 0.0005 mg/l	0.0005	0.0005	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Recoverable Zinc	< 0.002 mg/l	0.002	0.002	S35642-1	23Oct13 1012 by 271	24Oct13 1124 by 305	
Total Cyanide	< 0.1 mg/Kg	0.1	0.1	W45407-1	28Oct13 0807 by 308	29Oct13 1320 by 308	
Total Recoverable Phenolics	< 0.5 mg/Kg	0.5	0.5	W45379-1	24Oct13 0831 by 308	24Oct13 1430 by 308	
Total Solids	< 0.01 wt %	0.01	0.01	W45361-1	22Oct13 1456 by 285	24Oct13 1543 by 285	
Antimony	< 3 mg/Kg	3	3	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Arsenic	< 5 mg/Kg	5	5	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Beryllium	< 0.03 mg/Kg	0.03	0.03	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Cadmium	< 0.4 mg/Kg	0.4	0.4	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Chromium	< 0.7 mg/Kg	0.7	0.7	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Copper	< 0.6 mg/Kg	0.6	0.6	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Lead	< 4 mg/Kg	4	4	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Molybdenum	< 0.8 mg/Kg	0.8	0.8	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Nickel	< 1 mg/Kg	1	1	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Selenium	< 7 mg/Kg	7	7	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Silver	< 0.7 mg/Kg	0.7	0.7	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Thallium	< 4 mg/Kg	4	4	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Zinc	< 0.2 mg/Kg	0.2	0.2	S35646-1	23Oct13 1332 by 271	24Oct13 1426 by 305	
Mercury	< 0.1 mg/Kg	0.1	0.1	S35647-1	23Oct13 1432 by 311	24Oct13 1048 by 311	

AMERICAN INTERPLEX CORPORATION LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE 1 OF 2

Client: CITY OF FORT SMITH

Project Reference: MASSARD TABLE III PRIORITY POLLUTANTS

Project Manager: LANCE McAVOY

Sampled By: Chris Cooper John Hancock

PO No.:

AIC CONTROL NO: 171766

AIC PROPOSAL NO:

Carrier/Tracking No. Fed-Ex

Received Temperature C: 0.9°C

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	T. CYANIDE	PHENOLICS	PP METALS	TABLE III 113 PP METAL (CN, T. Phenolics, T. Solids (Dry))	Mo	Mo	C/6					Remarks
1	MASSARD INFLUENT	10/21/13 0803	X		X			1	X											
1	MASSARD INFLUENT	10/21/13 0803	X		X			1		X										
1	MASSARD INFLUENT	10/21/13 0805	X		X			1			X		X							
2	MASSARD EFFLUENT	10/21/13 1255	X		X			1	X											
2	MASSARD EFFLUENT	10/21/13 1255	X		X			1		X										
2	MASSARD EFFLUENT	10/21/13 1255	X		X			1			X		X							
3	MASSARD RAW BIOSOLID	10/21/13 1120	X		X			1				X		X						
		Container Type							P	G	P	G	P	G						Field pH calibration on ____ @ ____
		Preservative							B	S	N	NO	N	NO						Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: ____
Who should AIC contact with questions: LANCE McAVOY
Phone: 479-784-2337 Fax: ____
Report Attention to:
Report Address to: LANCE McAVOY

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/21/13 1500		
Relinquished By:	Date/Time	Received in Lab By: Jimmy Day	Date/Time 10/22/13 0800

Comments: [1] Required Reporting Limit for Metals must be identified on back of COC.
FED EX TRACKING #: 8024 7206 7185

19-Oct-09

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: CITY of FORT SMITH
Project Reference: MASSARD TABLE III PRIORITY POLLUTANTS (Hg)
Project Manager: LANCE McAVOY
Sampled By: Chris Cooper Olivia Hancock

PO No.

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SAMPLE MATRIX: SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Hg, LL (245.7)	ANALYSES REQUESTED: Cr 6
1	MASSARD INFLUENT	10/21/13 0803	X		X		1	X	
2	MASSARD EFFLUENT	10/21/13 1255	X		X		1	X	
1	Massard Influent	10/21/13 0803							X
2	Massard Effluent	10/21/13 1255							X
		Container Type						G	P
		Preservative						NO	NO

AIC CONTROL NO: 171766
AIC PROPOSAL NO:
Carrier/Tracking No.: Fed-Ex
Received Temperature C: 0.9°C

Remarks

Field pH calibration on _____ @ _____
Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: LANCE McAVOY
Phone: 479-784-2337 Fax: _____
Report Attention to:
Report Address to: LANCE McAVOY

Relinquished By:	Date/Time	Received By:	Date/Time
	10/21/13 1500		
Relinquished By:	Date/Time	Received in Lab By: Jimmy Day	Date/Time 10/22/13 0800

Comments: ¹ Required Reporting Limit for Metals must be identified on back of COC.
FED EX TRACKING #: 8824 7206 7185

19-Oct-09

FORM 0060

INTER-OFFICE MEMO

TO: Steve Floyd, Superintendent of Water and Wastewater Operations

FROM: Don Clover, Biologist

AR0021750

DATE: November 4, 2013

RE: Biomonitoring Results - Massard Plant

Please find below the chronic biomonitoring results for the fourth quarter of 2013. Lethal and sub-lethal toxicity were not experienced in the low-flow dilution of 8% effluent for the *Ceriodaphnia dubia* test organism. The test therefore passes at the low-flow dilution of 8% effluent for lethal and sub-lethal effects. Lethal and sub-lethal toxicity were not experienced in the low-flow dilution of 8% effluent for the fathead minnow (*Pimephales promelas*) test. The test therefore passes at the low-flow dilution of 8% effluent for lethal and sub-lethal effects.

Parameter #TGP3B- 0

Parameter #TGP6C- 0

Parameter #TLP3B- 0

Parameter #TLP6C- 0

Parameter #TOP3B- 11%

Parameter # TOP6C- 11%

Parameter #TPP3B- 11%

Parameter #TPP6C- 11%

Parameter #TQP3B- 17.7%

Parameter #TQP6C- 5.88%

Prepared By: Don Clover Date: 11/4/13

Reviewed By: Z.A.M.Y Date: 11/04/13

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www.pacelabs.com

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

November 01, 2013

Lance McAvoy
City of Fort Smith
3900 Kelley Hwy.
Fort Smith, AR 72904

RE: Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Dear Lance McAvoy:
Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Alice Flanagan

Alice Flanagan

alice.flanagan@pacelabs.com
Project Manager

Enclosures

cc: Dan Clover, City of Fort Smith, AR

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Southeast Kansas Certification IDs
808 West McKay, Frontenac, KS 66763
Arkansas Certification #: 13-012-0
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Oklahoma Certification #: 2012-051
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Minnesota Certification #: 495004

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60155963001	MASSARD EFFLUENT	Water	10/21/13 08:00	10/22/13 14:15

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(913)599-5665

SAMPLE ANALYTE COUNT

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60155963001	MASSARD EFFLUENT	EPA 821/R-02/013	TDH	1

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Sample: MASSARD EFFLUENT **Lab ID: 60155963001** Collected: 10/21/13 08:00 Received: 10/22/13 14:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Chronic Toxicity	Analytical Method: EPA 821/R-02/013							
Toxicity, Chronic	**Complete**		1.0	1		10/22/13 14:30		

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, Inc.
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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MASSARD BIOMONITORING
Pace Project No.: 60155963

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60155963001	MASSARD EFFLUENT	EPA 821/R-02/013	BIO/1664		

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Sample Condition Upon Receipt

WO#: 60155963

60155963

Client Name: FtSmith

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ 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: IR2

Type of Ice: (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.4

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 10-23-12 TH 14:15

Chain of Custody present:	☒Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☒Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☒Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☒Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	7.
Sufficient volume:	☒Yes ☐No ☐N/A	8.
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	9.
Containers intact:	☒Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☐N/A	11.
Filtered volume received for dissolved tests?	☒Yes ☐No ☐N/A	12.
Sample labels match COC: Includes date/time/ID/analyses Matrix:	☒Yes ☐No ☐N/A	13.
All containers needing preservation have been checked.	☐Yes ☐No ☒N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☒N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes ☐No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☒N/A	
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☒N/A	17. List State:

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: AKF Date: 10/23/12

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company: City of Fort Smith
Address: 3900 Kelley Hwy
Ft. Smith, AR 72904
Email To:
Phone: 479-784-2337 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Lance McAvoy
Copy To:
Purchase Order No.:
Project Name: Massard Biomonitoring
Project Number:

Section C Invoice Information:

Attention: Lance McAvoy
Company Name: City of Fort Smith
Address: 3900 Kelley Hwy, Ft Smith AR
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☑ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / , -) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N		
																		Chlorine, Manual	Chlorine, Low-Level		
1	Massard Effluent	WW	C	10/20/13	0800	10/21/13	0800		1								X	X	X		60155963
2																					16Cab
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Preservatives: Y/N

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
T. Cl2 = 0.02 mg/L	John Hancock / City of Fort Smith	10/21/13	1200	Tom Howell FACE	10/22/13	14:15	2.4	Y	Y	C
F. Cl2 = 0.03 mg/L										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Hancock

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/21/13

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

[illegible] 10/21/13

F-ALL-Q-020rev.08, 12-Oct-2007

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REFERENCE #60155963

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

October 31, 2013

Lance McAvoy
City of Fort Smith (Massard)
3900 Kelley HWY
Fort Smith , AR 72904

Re: Lab Project Number: 60155963
Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Tim Harrell
Tim.Harrell@pacelabs.com
Technical Director

REPORT OF LABORATORY ANALYSIS

ACCREDITED IN ACCORDANCE WITH nelac

Pace Analytical®
www.pacelabs.com

REFERENCE #60155963

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

CHRONIC TOXICITY TEST FOR CITY OF FORT SMITH (Massard)

PERMIT # AR 0021750
AFIN # 66-00226

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Lance McAvoy
City of Fort Smith (Massard)
3900 Kelley HWY
Fort Smith, AR 72904

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

October 31, 2013

REPORT OF LABORATORY ANALYSIS

ACCREDITED IN ACCORDANCE WITH nelac

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

TABLE OF CONTENTS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

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 FORT SMITH (Massard) effluent discharge from October 21, 2013 to October 25, 2013. 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 (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Karber 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 11% 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 11% for survival. The LC50 was estimated to be >11% effluent. No significant reduction in growth was observed in the 11% effluent concentration. The Toxic Units is <1. The IC25 is >11. The NOEC for growth in effluent was determined to be 11%. The PMSD is 15.3.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 11% 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 11% for survival. The LC50 was estimated to be >11% effluent. No significant reduction in reproduction was observed in the 11% effluent concentrations. The Toxic Units is <1. The IC25 is >11. The NOEC for reproduction in effluent was determined to be 11%. The PMSD is 14.5.

The chronic toxicity exhibited by the fathead minnows and the Ceriodaphnia treated by the effluent sampled from October 21 to October 25 from the CITY OF FORT SMITH (Massard) effluent discharge, is acceptable as described in EPA 821-R-02-013.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from the CITY OF FORT SMITH (Massard) 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 Fort Smith (Massard) personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 10-22-13. Subsequent samples followed by delivery on 10-24-13 and on 10-26-13. All samples were stored at ≤ 6° 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 LC50, NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 10-22-13 and carried out until 10-29-13. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Eight larvae were placed in each of at least 5 replicates to make a total of 40 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.

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RESULTS

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

TABLE 1

Permittee: CITY OF FORT SMITH (Massard) Effluent discharge.

Date Sampled No. 1: 10-21-13 8:00

No. 2: 10-23-13 8:00

No. 3: 10-25-13 8:00

Test Initiated: 14:30 Date: 10-22-13

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 A	B	C	D	E	Mean Dry Weight (mg)	CV% *
Control 0%	0.429	0.362	0.439	0.459	0.409	0.420	5.34
Dilution 1 3%	0.404	0.460	0.439	0.496	0.384	0.437	6.22
Dilution 2 5%	0.525	0.486	0.361	0.434	0.427	0.447	8.62
Dilution 3 6%	0.401	0.388	0.423	0.442	0.452	0.421	3.86
Dilution 4 8%	0.400	0.518	0.469	0.459	0.437	0.457	5.88
Dilution 5 11%	0.387	0.395	0.465	0.468	0.453	0.433	5.68

* Coefficient of Variation = Standard Deviation X 100 / Mean

REPORT OF LABORATORY ANALYSIS

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Permittee: CITY OF FORT SMITH (Massard) Effluent discharge.

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	87.5	100	100	100	100	100	97.5	4.79
Dilution 1 3%	100	100	100	100	87.5	100	100	97.5	4.79
Dilution 2 5%	100	100	100	100	100	100	100	100	0.00
Dilution 3 6%	87.5	87.5	100	100	100	100	100	95	9.30
Dilution 4 8%	87.5	100	100	100	100	100	100	97.5	4.79
Dilution 5 11%	87.5	87.5	100	100	100	100	100	95	9.30

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CERIODAPHNIA SURVIVAL AND REPRODUCTION

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 3%	Dilution 2 5%	Dilution 3 6%	Dilution 3 8%	Dilution 4 11%
1	19	21	23	24	25	18
2	15	21	24	23	22	21
3	22	23	21	27	22	22
4	20	24	23	24	18	23
5	19	22	23	23	20	27
6	24	24	22	21	24	24
7	18	26	20	23	19	15
8	25	23	26	23	23	21
9	24	18	21	20	23	21
10	19	20	23	25	22	25
Mean	20.5	20.3	20.7	19.9	20.5	21.9
SD	3.171	1.947	3.199	3.035	3.629	1.792
CV %	15.47	9.59	15.45	15.25	17.70	8.18

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Permittee: CITY OF FORT SMITH (Massard) Effluent discharge.

CERIODAPHNIA MEAN PERCENT SURVIVAL

	Percent Effluent (%)					
Time Elapsed	Control 0%	Dilution 1 3%	Dilution 2 5%	Dilution 3 6%	Dilution 4 8%	Dilution 5 11%
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

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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	8
11. No. replicates/concentration	5
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.1 ml newly hatched brine shrimp nauplii three 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

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TABLE 2 (CONT.)

16. Dilution Water	Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals
17. Effluent concentrations	0%, 3%, 5%, 6%, 8%, 11%
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

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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 three 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%, 3%, 5%, 6%, 8%, 11%
18. Test duration	6 days - 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%.

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TABLE 2 (SECTION 2)

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

Permittee: CITY OF FORT SMITH (Massard). Effluent discharge.

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

SAMPLE NO. 1 COLLECTED: DATE: 10-21-13

SAMPLE NO. 2 COLLECTED: DATE: 10-23-13

SAMPLE NO. 3 COLLECTED: DATE: 10-25-13

TABLE 2 (SECTION 2)
INITIAL WATER QUALITY
EFFLUENT CONCENTRATION

	Control	100%
PH	7.47	7.58
D.O.	8.20	8.80
Temp	25	25
Alk	62	90
Hard	98	80
Cond	418	518
Chlorine	<0.1	<0.1

* D.O. is reported as mg/L
Alkalinity is reported as mg/L CaCO3
Hardness is reported as mg/L CaCO3
Conductance is reported as umhos
Chlorine is reported as mg/L

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TEST WATER QUALITY

24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.58	7.60	25
3% Effluent	7.52	7.50	25
5% Effluent	7.48	7.50	25
6% Effluent	7.48	7.50	25
8% Effluent	7.45	7.40	25
11% Effluent	7.73	7.40	25

48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.47	7.20	25
3% Effluent	7.52	7.20	25
5% Effluent	7.53	7.20	25
6% Effluent	7.53	7.30	25
8% Effluent	7.55	7.30	25
11% Effluent	7.58	7.40	25

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FINAL WATER QUALITY

EFFLUENT CONCENTRATION

	Control	11%
pH	7.68	7.88
D.O.	7.10	7.20
Temp	25	25
Alk	62	68
Hard	98	94
Cond	486	567

* D.O. is reported as mg/L
Alkalinity is reported as mg/L CaCO3
Hardness is reported as mg/L CaCO3
Conductance is reported as umhos

REPORT OF LABORATORY ANALYSIS

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TEST VALIDITY

The Pimephales promelas control survival rate was 97.5%. The mean dry weight (growth) of the Pimephales promelas was determined at 0.420 mg/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 4.79 and 5.34. 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 15.47. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

CONCLUSIONS

The No Observed Effect Concentration (NOEC) for Pimephales promelas was 11% for survival and 11% for growth. The No Observed Effect Concentration (NOEC) for Ceriodaphnia dubia was 11% for Survival and 11% for Reproduction. The tests were ran using a synthetic control against effluent concentrations of 3%, 5%, 6%, 8%, and 11%. The effluent sampled on 10-21-13, 10-23-13, and 10-25-13 exhibited acceptable chronic toxicity in Pimephales promelas and in Ceriodaphnia dubia during the exposure period as described in EPA 821-R-02-013.

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APPENDIX A
STATISTICAL ANNALYSIS

60155963 Ft Smith FATHEAD SURVIVAL
File: C:\TOXSTAT\6155963A. Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.065

W = 0.774

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.

60155963 Ft Smith FATHEAD SURVIVAL
File: C:\TOXSTAT\6155963A. Transform: ARC SINE(SQUARE ROOT(Y))

Hartley's test for homogeneity of variance
Bartlett's test for homogeneity of variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

60155963 Ft Smith FATHEAD SURVIVAL
File: 6155963A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	5	0.991	1.107	1.084
2	3%	5	0.991	1.107	1.084
3	5%	5	1.107	1.107	1.107
4	6%	5	0.991	1.107	1.061
5	8%	5	0.991	1.107	1.084
6	11%	5	0.991	1.107	1.061

60155963 Ft Smith FATHEAD SURVIVAL
File: 6155963A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.003	0.052	0.023	4.79
2	3%	0.003	0.052	0.023	4.79
3	5%	0.000	0.000	0.000	0.00
4	6%	0.004	0.064	0.028	5.99
5	8%	0.003	0.052	0.023	4.79
6	11%	0.004	0.064	0.028	5.99

60155963 Ft Smith FATHEAD SURVIVAL
File: C:\TOXSTAT\6155963A. Transform: ARC SINE(SQUARE ROOT(Y))

STEEL'S MANY-ONE RANK TEST Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	CONTROL	1.084				
2	3%	1.084	27.50	16.00	5.00	
3	5%	1.107	30.00	16.00	5.00	
4	6%	1.061	25.00	16.00	5.00	
5	8%	1.084	27.50	16.00	5.00	
6	11%	1.061	25.00	16.00	5.00	

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

60155963 Ft Smith FATHEAD GROWTH
File: C:\TOXSTAT\6155963B. Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.046

W = 0.984

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.

60155963 Ft Smith FATHEAD GROWTH
File: C:\TOXSTAT\6155963B. Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 2.70

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.

60155963 Ft Smith FATHEAD GROWTH
File: C:\TOXSTAT\6155963B. Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.005	0.001	0.541
Within (Error)	24	0.046	0.002	
Total	29	0.051		

Critical F value = 2.62 (0.05,5,24)
Since F < Critical F FAIL TO REJECT Ho: All equal

60155963 Ft Smith FATHEAD GROWTH
File: C:\TOXSTAT\6155963B. Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	0.420	0.420		
2	32%	0.437	0.437	-0.615	
3	42%	0.447	0.447	-0.977	
4	56%	0.421	0.421	-0.058	
5	75%	0.457	0.457	-1.339	
6	100%	0.433	0.433	-0.485	

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

60155963 Ft Smith FATHEAD GROWTH
File: C:\TOXSTAT\6155963B. Transform: NO TRANSFORMATION

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	0.065	15.5	-0.017
3	42%	5	0.065	15.5	-0.027
4	56%	5	0.065	15.5	-0.002
5	75%	5	0.065	15.5	-0.037
6	100%	5	0.065	15.5	-0.013

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
3%	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
5%	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
6%	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

	NUMBER OF		
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
8%	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

	NUMBER OF		
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
11%	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	3%	10	0	
2	5%	10	0	
3	6%	10	0	
4	8%	10	0	
5	11%	10	0	

60155963 Ft Smith CERIODAPHNIA DUBIA SURVIVAl
File: 6155963D 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	3%	10	1.000	1.000	1.000
3	5%	10	1.000	1.000	1.000
4	6%	10	1.000	1.000	1.000
5	8%	10	1.000	1.000	1.000
6	11%	10	1.000	1.000	1.000

60155963 Ft Smith CERIODAPHNIA DUBIA SURVIVAl
File: 6155963D 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	3%	0.000	0.000	0.000	0.00
3	5%	0.000	0.000	0.000	0.00
4	6%	0.000	0.000	0.000	0.00
5	8%	0.000	0.000	0.000	0.00
6	11%	0.000	0.000	0.000	0.00

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E 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	4	18	19	16	3

Calculated Chi-Square goodness of fit test statistic = 1.9142
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 6.48

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.

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	15.000	25.000	20.500
2	3%	10	17.000	23.000	20.300
3	5%	10	17.000	27.000	20.700
4	6%	10	15.000	23.000	19.900
5	8%	10	14.000	26.000	20.500
6	11%	10	20.000	26.000	21.900

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	10.056	3.171	1.003	15.47
2	3%	3.789	1.947	0.616	9.59
3	5%	10.233	3.199	1.012	15.45
4	6%	9.211	3.035	0.960	15.25
5	8%	13.167	3.629	1.147	17.70
6	11%	3.211	1.792	0.567	8.18

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	22.933	4.587	0.554
Within (Error)	54	447.000	8.278	
Total	59	469.933		

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

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	20.500	20.500		
2	3%	20.300	20.300	0.155	
3	5%	20.700	20.700	-0.155	
4	6%	19.900	19.900	0.466	
5	8%	20.500	20.500	0.000	
6	11%	21.900	21.900	-1.088	

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

60155963 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6155963E Transform: NO TRANSFORMATION

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	10			
2	3%	10	2.972	14.5	0.200
3	5%	10	2.972	14.5	-0.200
4	6%	10	2.972	14.5	0.600
5	8%	10	2.972	14.5	0.000
6	11%	10	2.972	14.5	-1.400

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	3	5	6	8	11
Response 1	19	21	22	17	25	21
Response 2	15	21	18	21	16	20
Response 3	22	22	19	22	21	20
Response 4	20	19	18	23	21	26
Response 5	19	23	17	17	14	23
Response 6	24	19	24	23	26	21
Response 7	18	18	23	15	22	21
Response 8	25	22	20	22	21	22
Response 9	24	17	19	17	20	22
Response 10	19	21	27	22	19	23

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: Ft Smith
Test Start Date: 10/22/13 Test Ending Date: 10/29/13
Test Species: Dubia
Test Duration: 7 Day
DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	20.500	3.171	20.633
2	10	3.000	20.300	1.947	20.633
3	10	5.000	20.700	3.199	20.633
4	10	6.000	19.900	3.035	20.633
5	10	8.000	20.500	3.629	20.633
6	10	11.000	21.900	1.792	20.633

*** 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	3	5	6	8	11
Response 1	.429	.404	.525	.401	.400	.387
Response 2	.362	.460	.486	.388	.518	.395
Response 3	.439	.439	.361	.423	.469	.465
Response 4	.459	.496	.434	.442	.459	.468
Response 5	.409	.384	.427	.452	.437	.453

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: Ft Smith
Test Start Date: 10/22/13 Test Ending Date: 10/29/13
Test Species: Fathead
Test Duration: 7 Day
DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	5	0.000	0.420	0.037	0.436
2	5	3.000	0.437	0.044	0.436
3	5	5.000	0.447	0.062	0.436
4	5	6.000	0.421	0.027	0.436
5	5	8.000	0.457	0.043	0.436
6	5	11.000	0.434	0.039	0.434

*** 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.

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Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX B
CHAIN OF CUSTODY FORMS

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company: City of Fort Smith
Address: 3900 Kelley Hwy
Ft. Smith, AR 72904
Email To:
Phone: 479-784-2337 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Lance McAvoy
Copy To:
Purchase Order No.:
Project Name: Massard Biomonitoring
Project Number:

Section C Invoice Information:

Attention: Lance McAvoy
Company Name: City of Fort Smith
Address: 3900 Kelley Hwy, Ft Smith AR
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☑ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: Chronic Mussel / Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Massard Effluent	WW	C	10/20/13	0800	10/21/13	0800		1								ICE	Y	X X		60155963 .16 Cub
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
T. Cl2 = 0.02 mg/L	John Hancock / City of Fort Smith	10/21/13	1200	Pam Harrell Pace	10/22/13	14:15	2.4	Y	Y	C
F. Cl2 = 0.03 mg/L										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Hancock

SIGNATURE of SAMPLER: John Hancock

DATE Signed (MM/DD/YY): 10/21/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	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.~~

10/21/13

F-ALL-Q-020rev.08, 12-Oct-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: City of Fort Smith	Report To: Lance McAvoy	Attention: Lance McAvoy
Address: 3900 Kelley Hwy Ft. Smith, AR 72904	Copy To:	Company Name: City of Fort Smith
		Address: 3900 Kelley Hwy, Ft. Smith, AR
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: 479-784-2337 Fax:	Project Name: Massard Biomonitoring	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☑ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other ICE	Analysis Test Y/N	Chronic Minnow	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Massard Effluent	WW	C	10/22/13	0800	10/23/13	0800		1								X		X	X		16C462
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
T. Cl2 = 0.01 mg/L	Chris Cooper / City of Fort Smith	10/23/13	1200	Dan Howell / Pace	10/23/13	15:30	3.2	Y	Y	Y
F. Cl2 = 0.03 mg/L										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Cooper

SIGNATURE of SAMPLER: CC

DATE Signed (MM/DD/YY): 10/23/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | 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.~~

CC 10/23/13

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: City of Fort Smith	Report To: Lance McAvoy	Attention: Lance McAvoy
Address: 3900 Kelley Hwy Ft. Smith, AR 72904	Copy To:	Company Name: City of Fort Smith
		Address: 3900 Kelley Hwy, Ft. Smith, AR
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: 479-784-2337 Fax:	Project Name: Massard Biomonitoring	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☑ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / , -) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other ICE	Analysis Test Y/N	Chronic Minnow	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Massard Effluent		WW	C	10/24/13	0800	10/25/13	1000		1								X		X	X		15cub
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
T. Cl_2: 0.07 mg/L	Chris Cooper / City of Ft. Smith	10/25/13	1200	Pace	10/26/13	0900	2.4	Y	Y	Y
F. Cl_2: 0.09 mg/L										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Cooper

SIGNATURE of SAMPLER: Chris Cooper

DATE Signed (MM/DD/YY): 10/25/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | 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 1.6% per month for any invoices not paid within 30 days.~~ CC 10/25/13

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX C

REFERENCE TOXICANTS SUMMARY

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

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: 10/22/13 14:30 End: 10/29/13 14:00

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	7	1	0
8 g/l	40	36	25	5
6 g/l	40	40	37	26
4 g/l	40	40	40	40
2 g/l	40	40	40	39

IC25 (5.27 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	4	0	0
2.0 g/l	10	10	8	2
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.09 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By: Tim Harrell
Timothy Harrell, Technical Director

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX D
STATE AGENCY FORMS

Biomonitoring Form
Chronic Toxicity Summary Form
Pimephales promelas
Chemical Parameters Chart

Permittee: City of Fort Smith
NPDES No.: AR 0021750
Contact: Lance McAvoy
Analyst: Tim Harrell
Mike Bollin

Sample No. 1 Collected: Date: 10/21/2013 Time: 8:00
Sample No. 2 Collected: Date: 10/23/2013 Time: 8:00
Sample No. 3 Collected: Date: 10/25/2013 Time: 8:00
Test Begin: Date: 10/22/2013 Time: 14:30
Test End: Date: 10/29/2013 Time: 13:00

Dilution: 0 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial	8.2	8.5	8	8.3	8.3	8.3	8.2	
DO Final	7.6	7.2	7.3	7	7.1	7.3	7.1	
pH Initial	7.47	7.29	7.58	7.52	7.48	7.52	7.52	
pH Final	7.58	7.47	7.6	7.65	7.65	7.64	7.68	
Alkalinity							62	
Hardness							98	
Conductivity							418	
Chlorine	<.1						<.1	

Dilution: 6 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8.1	8.2	8.3	8.3	8.2	
DO Final	7.5	7.3	7.3	7	7.2	7.3	7.1	
pH Initial		7.31	7.62	7.65	7.54	7.57	7.58	
pH Final	7.48	7.53	7.68	7.73	7.73	7.75	7.76	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 3 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8	8.3	8.3	8.3	8.7	
DO Final	7.5	7.2	7.3	7	7.1	7.3	7.1	
pH Initial		7.29	7.59	7.56	7.52	7.55	7.56	
pH Final	7.52	7.52	7.64	7.68	7.68	7.69	7.7	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 8 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.1	8.2	8.4	8.3	8.2	
DO Final	7.4	7.3	7.4	7	7.2	7.3	7.2	
pH Initial		7.33	7.66	7.7	7.55	7.59	7.6	
pH Final	7.45	7.55	7.68	7.74	7.76	7.79	7.8	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 5 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8	8.3	8.3	8.3	8.2	
DO Final	7.5	7.7	7.3	7	7.1	7.3	7.1	
pH Initial		7.3	7.61	7.6	7.54	7.57	7.58	
pH Final	7.48	7.53	7.66	7.71	7.71	7.72	7.75	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 11 / Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	Init. 100%
DO Initial		8.3	8.1	8.2	8.4	8.3	8.2	
DO Final	7.4	7.4	7.4	7	7.3	7.3	7.2	
pH Initial		7.34	7.71	7.74	7.58	7.61	7.64	
pH Final	7.43	7.58	7.69	7.77	7.8	7.83	7.88	
Alkalinity								90
Hardness								80
Conductivity								518
Chlorine							<.1	<.1

Summary Reporting Forms Chronic Biomonitoring
Fathead Minnow Larvae Growth and Survival
(Pimephales promelas)

Permittee: City of Fort Smith **NPDES No.:** AR 0021750

		Time:	Date:		Time:	Date:
Composite 1 Collected	From	8:00	10/20/2013	To	8:00	10/21/2013
Composite 2 Collected	From	8:00	10/22/2013	To	8:00	10/23/2013
Composite 3 Collected	From	8:00	10/24/2013	To	8:00	10/25/2013

Test initiated: am/pm 14:30 AM date 10/22/2013
Test terminated: am/pm 14:00 AM date 10/29/2013

Dilution water used: Receiving Reconstituted X

Data Table for Survival

Effluent Conc.%	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
Syn 0 %	100	87.5	100	100	100	100	100	97.5	4.79
3%	100	100	100	100	87.5	100	100	97.5	4.79
5%	100	100	100	100	100	100	100	100	0
6%	87.5	87.5	100	100	100	100	100	95	5.99
8%	87.5	100	100	100	100	100	100	97.5	4.79
11%	87.5	87.5	100	100	100	100	100	95	5.99

Data Table for Survival

Effluent Conc.%	Average Dry Weight in milligrams in Replicate Chambers					Mean Dry Weight mg	CV%*
	A	B	C	D	E		
Syn. 0%	0.429	0.362	0.439	0.459	0.409	0.42	5.34
3%	0.404	0.46	0.439	0.496	0.384	0.437	6.22
5%	0.525	0.486	0.361	0.434	0.427	0.447	8.62
6%	0.401	0.388	0.423	0.442	0.452	0.421	3.86
8%	0.4	0.518	0.469	0.459	0.437	0.457	5.88
11%	0.387	0.395	0.465	0.468	0.453	0.433	5.68

*coefficient of variation = standard deviation x 100/mean.

Fathead Minnow Larvae Growth and Survival (cont)
(Pimephales promelas)

1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:

Is the mean survival at 7 days significantly different (p=.05) than the control survival for the % effluent corresponding to:

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No: X**
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

2. Dunnett's Procedure (or appropriate test):

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

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No:** X
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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):

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 NOEC below and circle lowest number:

a) NOEC survival: 11 **% effluent**
b) NOEC reproduction: 11 **% effluent**

Biomonitoring Form
Chronic Toxicity Summary Form
Ceriodaphnia dubia
Chemical Parameters Chart

Permittee: City of Fort Smith
NPDES No.: AR 0021750
Contact: Lance McAvoy
Analyst: Tim Harrell
Mike Bollin

Sample No. 1 Collected: Date: 10/21/2013 Time: 8:00
Sample No. 2 Collected: Date: 10/23/2013 Time: 8:00
Sample No. 3 Collected: Date: 10/25/2013 Time: 8:00
Test Begin: Date: 10/22/2013 Time: 14:30
Test End: Date: 10/29/2013 Time: 13:00

Dilution: 0 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial	8.2	8.5	8	8.3	8.3	8.3	8.2	
DO Final	7.6	7.2	7.3	7	7.1	7.3	7.1	
pH Initial	7.47	7.29	7.58	7.52	7.48	7.52	7.52	
pH Final	7.58	7.47	7.6	7.65	7.65	7.64	7.68	
Alkalinity							62	
Hardness							98	
Conductivity							418	
Chlorine	<.1						<.1	

Dilution: 6 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8.1	8.2	8.3	8.3	8.2	
DO Final	7.5	7.3	7.3	7	7.2	7.3	7.1	
pH Initial		7.31	7.62	7.65	7.54	7.57	7.58	
pH Final	7.48	7.53	7.68	7.73	7.73	7.75	7.76	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 3 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8	8.3	8.3	8.3	8.7	
DO Final	7.5	7.2	7.3	7	7.1	7.3	7.1	
pH Initial		7.29	7.59	7.56	7.52	7.55	7.56	
pH Final	7.52	7.52	7.64	7.68	7.68	7.69	7.7	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 8 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.1	8.2	8.4	8.3	8.2	
DO Final	7.4	7.3	7.4	7	7.2	7.3	7.2	
pH Initial		7.33	7.66	7.7	7.55	7.59	7.6	
pH Final	7.45	7.55	7.68	7.74	7.76	7.79	7.8	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 5 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.4	8	8.3	8.3	8.3	8.2	
DO Final	7.5	7.7	7.3	7	7.1	7.3	7.1	
pH Initial		7.3	7.61	7.6	7.54	7.57	7.58	
pH Final	7.48	7.53	7.66	7.71	7.71	7.72	7.75	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 11 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	Init. 100%
DO Initial		8.3	8.1	8.2	8.4	8.3	8.2	
DO Final	7.4	7.4	7.4	7	7.3	7.3	7.2	
pH Initial		7.34	7.71	7.74	7.58	7.61	7.64	
pH Final	7.43	7.58	7.69	7.77	7.8	7.83	7.88	
Alkalinity								90
Hardness								80
Conductivit								518
Chlorine							<.1	<.1

Summary Reporting Forms
Chronic Biomonitoring

Ceriodaphnia dubia Survival and Reproduction

Permittee: City of Fort Smith **NPDES No.:** AR 0021750

		Time:	Date:		Time:	Date:
Composite 1 Collected	**From**	8:00	10/20/2013	**To**	8:00	10/21/2013
Composite 2 Collected	**From**	8:00	10/22/2013	**To**	8:00	10/23/2013
Composite 3 Collected	**From**	8:00	10/24/2013	**To**	8:00	10/25/2013

Test initiated: **am/pm** 14:30 AM **date** 10/22/2013
Test terminated: **am/pm** 14:00 AM **date** 10/29/2013

Dilution water used: **Receiving** **Reconstituted** X

Percent Survival

Time of Reading	Percent Effluent					
	0	3	5	6	8	11
24h	100	100	100	100	100	100
48h	100	100	100	100	100	100
End of test	100	100	100	100	100	100

Number of Young Produced per Female @ End of Test

Rep	0	3	5	6	8	11
A	19	21	22	17	25	21
B	15	21	18	21	16	20
C	22	22	19	22	21	20
D	20	19	18	23	21	26
E	19	23	17	17	14	23
F	24	19	24	23	26	21
G	18	18	23	15	22	21
H	25	22	20	22	21	22
I	24	17	19	17	20	22
J	19	21	27	22	19	23
Mean	20.5	20.3	20.7	19.9	20.5	21.9
CV%*	15.47	9.59	15.45	15.25	17.7	8.18

*coefficient of variation = standard deviation x 100/mean.

Ceriodaphnia dubia
Survival and Reproduction (cont)

1. Fisher's Exact Test:

Is the mean survival at the end of the test significantly different (p=.05) than the control survival for the % effluent corresponding to (lethality):

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No: X**
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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=.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	**(**	**8 %):**	**Yes:**	**No: X**
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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):

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 NOEC below and circle lowest number:

a) NOEC survival:	**11 % effluent**
b) NOEC reproduction:	**11 % effluent**

INTER-OFFICE MEMO

TO: Steve Floyd, Superintendent of Water and Wastewater Operations

FROM: Don Clover, Biologist

DATE: November 22, 2013 AR0033278

RE: Biomonitoring Results - "P" Street Plant

Please find below the biomonitoring test results for the fourth quarter of 2013. Sub-lethal and lethal toxicity were not experienced in the low-flow dilution of 8% effluent for the *Ceriodaphnia dubia* test. The test therefore passes at the low-flow dilution of 8% for lethal and sub-lethal toxicity. The fathead minnow (*Pimephales promelas*) chronic test did not experience lethal or sub-lethal effects in the low flow dilution of 8% effluent. The test therefore passes at the low-flow dilution of 8% for lethal and sub-lethal effects.

Parameter #TGP3B- 0

Parameter #TGP6C- 0

Parameter #TLP3B- 0

Parameter #TLP6C- 0

Parameter #TOP3B- 11%

Parameter # TOP6C- 11%

Parameter #TPP3B- 11%

Parameter #TPP6C- 11%

Parameter #TQP3B- 10.94%

Parameter #TQP6C- 6.21%

Prepared By: Don Clover Date: 11/22/13

Reviewed By: [signature] Date: 11/22/13

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

November 18, 2013

Lance McAvoy
City of Fort Smith
3900 Kelley Hwy.
Fort Smith, AR 72904

RE: Project: "P" Street Biomonitoring
Pace Project No.: 60156872

Dear Lance McAvoy:
Enclosed are the analytical results for sample(s) received by the laboratory on November 05, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Alice Flanagan

alice.flanagan@pacelabs.com
Project Manager

Enclosures

cc: Dan Clover, City of Fort Smith, AR

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
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(913)599-5665

SAMPLE SUMMARY

Project: "P" Street Biomonitoring
Pace Project No.: 60156872

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60156872001	P Street Effluent	Water	11/04/13 08:00	11/05/13 13:00
60156872002	P STREET EFFLUENT	Water	11/04/13 08:00	11/05/13 18:55

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ANALYTICAL RESULTS

Project: "P" Street Biomonitoring
Pace Project No.: 60156872

Sample: P Street Effluent **Lab ID: 60156872001** Collected: 11/04/13 08:00 Received: 11/05/13 13:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Chronic Toxicity	Analytical Method: EPA 821/R-02/013							
Toxicity, Chronic	**Complete**		1.0	1		11/05/13 14:00		

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: "P" Street Biomonitoring
Pace Project No.: 60156872

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60156872001	P Street Effluent	EPA 821/R-02/013	BIO/1667		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

1751209

Section A Required Client Information:

Company: City of Fort Smith
Address: 3900 Kelley Hwy
Ft. Smith, AR 72904
Email To:
Phone: 479-784-2337 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Lance McAuley
Copy To:
Purchase Order No.:
Project Name: P Street Biomonitoring
Project Number:

Section C Invoice Information:

Attention: Lance McAuley
Company Name: City of Fort Smith
Address: 3900 Kelley Hwy Ft. Smith, AR
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chronic Minnow	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	PStreet Effluent	WW	C	11/9/13	0800	11/4/13	0800		1								X		N	N		60156872
																						IGCUB BP3N, BP3S 1.5 1.5
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
T. Cl_2 : 0.02	Chris Cooper / City of Ft. Smith	11/4/13	1200	[illegible] / Pace	11/5/13	1350	2.7	Y	Y	Y
F. Cl_2 : 0.00				Glendelle McCoy / PAST	11/5	1855	2.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Cooper

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/4/13

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. [signature] 11/4/13

ORIGINAL

F-ALL-Q-020rev.07, 15-May-2007

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REFERENCE #60156872

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

November 14, 2013

Lance McAvoy
City of Fort Smith (P-Street)
3900 Kelley HWY
Fort Smith , AR 72904

Re: Lab Project Number: 60156872
Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Tim Harrell

Tim Harrell
Tim.Harrell@pacelabs.com
Technical Director

REPORT OF LABORATORY ANALYSIS

ACCREDITED IN ACCORDANCE WITH nelac

Pace Analytical®
www.pacelabs.com

REFERENCE #60156872

Pace Analytical Services, Inc.
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CHRONIC TOXICITY TEST FOR CITY OF FORT SMITH (P-STREET)

PERMIT # AR 0033278
AFIN # 66-00226

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Lance McAvoy
City of Fort Smith (P-Street)
3900 Kelley HWY
Fort Smith, AR 72904

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

November 14, 2013

REPORT OF LABORATORY ANALYSIS

ACCREDITED IN ACCORDANCE WITH nelac

Pace Analytical Services, Inc.
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TABLE OF CONTENTS

Pace Analytical Services, Inc.
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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 FORT SMITH (P-STREET) effluent discharge from November 4, 2013 to November 8, 2013. 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 (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Karber 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 11% 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 11% for survival. The LC50 was estimated to be >11% effluent. No significant reduction in growth was observed in the 11% effluent concentration. The Toxic Units is <1. The IC25 is >11. The NOEC for growth in effluent was determined to be 11%. The PMSD is 14.8

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 11% 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 11% for survival. The LC50 was estimated to be >11% effluent. No significant reduction in reproduction was observed in the 11% effluent concentrations. The Toxic Units is <1. The IC25 is >11. The NOEC for reproduction in effluent was determined to be 11%. The PMSD is 11.2.

The chronic toxicity exhibited by the fathead minnows and the Ceriodaphnia treated by the effluent sampled from November 4 to November 8 from the CITY OF FORT SMITH (P-STREET) effluent discharge, is acceptable as described in EPA 821-R-02-013.

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INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from the CITY OF FORT SMITH (P-STREET) 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 Fort Smith (P-Street) personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 11-5-13. Subsequent samples followed by delivery on 11-7-13 and on 11-9-13. All samples were stored at ≤ 6° 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 LC50, NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 11-5-13 and carried out until 11-12-13. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Eight larvae were placed in each of at least 5 replicates to make a total of 40 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.

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RESULTS

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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TABLE 1

Permittee: CITY OF FORT SMITH (P-STREET) Effluent discharge.

Date Sampled No. 1: 11-4-13 8:00

No. 2: 11-6-13 8:00

No. 3: 11-8-13 8:00

Test Initiated: 14:00 Date: 11-5-13

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 A	B	C	D	E	Mean Dry Weight (mg)	CV% *
Control 0%	0.439	0.399	0.447	0.342	0.421	0.410	6.21
Dilution 1 3%	0.426	0.369	0.400	0.428	0.452	0.415	4.60
Dilution 2 5%	0.422	0.389	0.309	0.450	0.429	0.400	8.38
Dilution 3 6%	0.364	0.381	0.441	0.408	0.432	0.405	4.84
Dilution 4 8%	0.435	0.436	0.459	0.445	0.352	0.425	6.07
Dilution 5 11%	0.444	0.372	0.444	0.464	0.409	0.427	5.19

* Coefficient of Variation = Standard Deviation X 100 / Mean

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Permittee: CITY OF FORT SMITH (P-STREET) Effluent discharge.

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	87.5	100	100	100	97.5	4.79
Dilution 1 3%	100	87.5	100	100	100	100	100	97.5	4.79
Dilution 2 5%	100	100	75	100	100	100	100	95	9.30
Dilution 3 6%	87.5	100	100	100	100	100	100	97.5	4.79
Dilution 4 8%	100	100	100	100	87.5	100	100	97.5	4.79
Dilution 5 11%	100	87.5	100	100	100	100	100	97.5	4.79

REPORT OF LABORATORY ANALYSIS

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Permittee: CITY OF FORT SMITH (P-STREET) Effluent discharge.

CERIODAPHNIA SURVIVAL AND REPRODUCTION

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 3%	Dilution 2 5%	Dilution 3 6%	Dilution 3 8%	Dilution 4 11%
1	20	19	23	22	21	18
2	18	21	21	21	20	21
3	20	19	23	16	21	20
4	23	23	17	19	18	19
5	15	20	22	20	20	18
6	20	20	18	21	17	22
7	21	18	23	21	23	20
8	19	21	22	22	23	23
9	18	17	23	25	22	19
10	19	22	20	18	19	17
Mean	19.3	20.0	21.2	20.5	20.4	19.7
SD	2.111	1.826	2.201	2.461	2.011	1.889
CV %	10.94	9.13	10.38	12.00	9.86	9.59

REPORT OF LABORATORY ANALYSIS

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Permittee: CITY OF FORT SMITH (P-STREET) Effluent discharge.

CERIODAPHNIA MEAN PERCENT SURVIVAL

Percent Effluent (%)						
Time Elapsed	Control 0%	Dilution 1 3%	Dilution 2 5%	Dilution 3 6%	Dilution 4 8%	Dilution 5 11%
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

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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	8
11. No. replicates/concentration	5
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.1 ml newly hatched brine shrimp nauplii three 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

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TABLE 2 (CONT.)

16. Dilution Water	Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals
17. Effluent concentrations	0%, 3%, 5%, 6%, 8%, 11%
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

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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 three 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%, 3%, 5%, 6%, 8%, 11%
18. Test duration	6 days - 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%.

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TABLE 2 (SECTION 2)

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

Permittee: CITY OF FORT SMITH (P-STREET). Effluent discharge.

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

SAMPLE NO. 1 COLLECTED: DATE: 11-4-13

SAMPLE NO. 2 COLLECTED: DATE: 11-6-13

SAMPLE NO. 3 COLLECTED: DATE: 11-8-13

TABLE 2 (SECTION 2)
INITIAL WATER QUALITY
EFFLUENT CONCENTRATION

	Control	100%
PH	7.85	6.87
D.O.	8.60	8.30
Temp	25	25
Alk	60	56
Hard	96	78
Cond	425	610
Chlorine	<0.1	<0.1

* D.O. is reported as mg/L
Alkalinity is reported as mg/L CaCO3
Hardness is reported as mg/L CaCO3
Conductance is reported as umhos
Chlorine is reported as mg/L

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TEST WATER QUALITY

24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.61	7.20	25
3% Effluent	7.64	7.20	25
5% Effluent	7.67	7.10	25
6% Effluent	7.67	7.10	25
8% Effluent	7.69	7.10	25
11% Effluent	7.72	7.10	25

48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.64	7.10	25
3% Effluent	7.65	7.10	25
5% Effluent	7.66	7.10	25
6% Effluent	7.68	7.10	25
8% Effluent	7.72	7.10	25
11% Effluent	7.76	7.10	25

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FINAL WATER QUALITY

EFFLUENT CONCENTRATION

	Control	11%
pH	7.68	7.84
D.O.	7.20	7.30
Temp	25	25
Alk	64	78
Hard	98	96
Cond	467	520

* D.O. is reported as mg/L
Alkalinity is reported as mg/L CaCO3
Hardness is reported as mg/L CaCO3
Conductance is reported as umhos

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TEST VALIDITY

The Pimephales promelas control survival rate was 97.5%. The mean dry weight (growth) of the Pimephales promelas was determined at 0.410 mg/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 4.79 and 6.21. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 19.3 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 10.94. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

CONCLUSIONS

The No Observed Effect Concentration (NOEC) for Pimephales promelas was 11% for survival and 11% for growth. The No Observed Effect Concentration (NOEC) for Ceriodaphnia dubia was 11% for Survival and 11% for Reproduction. The tests were ran using a synthetic control against effluent concentrations of 3%, 5%, 6%, 8%, and 11%. The effluent sampled on 11-4-13, 11-6-13, and 11-8-13 exhibited acceptable chronic toxicity in Pimephales promelas and in Ceriodaphnia dubia during the exposure period as described in EPA 821-R-02-013.

Pace Analytical Services, Inc.
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APPENDIX A
STATISTICAL ANNALYSIS

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A 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	6	0	24	0	0

Calculated Chi-Square goodness of fit test statistic = 38.1722
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.

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.093

W = 0.612

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.

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 3.25

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.

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	5	0.991	1.107	1.084
2	3%	5	0.991	1.107	1.084
3	5%	5	0.886	1.107	1.063
4	6%	5	0.991	1.107	1.084
5	8%	5	0.991	1.107	1.084
6	11%	5	0.991	1.107	1.084

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.003	0.052	0.023	4.79
2	3%	0.003	0.052	0.023	4.79
3	5%	0.010	0.099	0.044	9.30
4	6%	0.003	0.052	0.023	4.79
5	8%	0.003	0.052	0.023	4.79
6	11%	0.003	0.052	0.023	4.79

60156872 Ft Smith FATHEAD SURVIVAL
File: 6156872A Transform: ARC SINE(SQUARE ROOT(Y))

STEEL'S MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	CONTROL	1.084				
2	3%	1.084	27.50	16.00	5.00	
3	5%	1.063	27.00	16.00	5.00	
4	6%	1.084	27.50	16.00	5.00	
5	8%	1.084	27.50	16.00	5.00	
6	11%	1.084	27.50	16.00	5.00	

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

60156872 Ft Smith FATHEAD GROWTH
File: 6156872B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.040

W = 0.899

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.

60156872 Ft Smith FATHEAD GROWTH
File: 6156872B Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 1.64

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.

60156872 Ft Smith FATHEAD GROWTH
File: 6156872B Transform: NO TRANSFORMATION

STEEL'S MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	CONTROL	0.410				
2	3%	0.415	29.00	16.00	5.00	
3	5%	0.400	27.00	16.00	5.00	
4	6%	0.405	26.00	16.00	5.00	
5	8%	0.425	31.00	16.00	5.00	
6	11%	0.427	31.00	16.00	5.00	

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

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
3%	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
5%	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
6%	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	NUMBER OF DEAD	TOTAL ANIMALS
CONTROL	10	0	10
8%	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	NUMBER OF DEAD	TOTAL ANIMALS
CONTROL	10	0	10
11%	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	3%	10	0	
2	5%	10	0	
3	6%	10	0	
4	8%	10	0	
5	11%	10	0	

60156872 Ft Smith CERIODAPHNIA DUBIA SURVIVAl
File: 6156872D 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	3%	10	1.000	1.000	1.000
3	5%	10	1.000	1.000	1.000
4	6%	10	1.000	1.000	1.000
5	8%	10	1.000	1.000	1.000
6	11%	10	1.000	1.000	1.000

60156872 Ft Smith CERIODAPHNIA DUBIA SURVIVAl
File: 6156872D 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	3%	0.000	0.000	0.000	0.00
3	5%	0.000	0.000	0.000	0.00
4	6%	0.000	0.000	0.000	0.00
5	8%	0.000	0.000	0.000	0.00
6	11%	0.000	0.000	0.000	0.00

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E 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	5	14	22	15	4

Calculated Chi-Square goodness of fit test statistic = 0.3104
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 1.04

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.

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	15.000	23.000	19.300
2	3%	10	17.000	23.000	20.000
3	5%	10	17.000	23.000	21.200
4	6%	10	16.000	25.000	20.500
5	8%	10	17.000	23.000	20.400
6	11%	10	17.000	23.000	19.700

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	4.456	2.111	0.667	10.94
2	3%	3.333	1.826	0.577	9.13
3	5%	4.844	2.201	0.696	10.38
4	6%	6.056	2.461	0.778	12.00
5	8%	4.044	2.011	0.636	9.86
6	11%	3.567	1.889	0.597	9.59

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	22.283	4.457	1.017
Within (Error)	54	236.700	4.383	
Total	59	258.983		

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

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	19.300	19.300		
2	3%	20.000	20.000	-0.748	
3	5%	21.200	21.200	-2.029	
4	6%	20.500	20.500	-1.282	
5	8%	20.400	20.400	-1.175	
6	11%	19.700	19.700	-0.427	

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

60156872 Ft Smith CERIODAPHNIA DUBIA REPRODU
File: 6156872E Transform: NO TRANSFORMATION

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	10			
2	3%	10	2.163	11.2	-0.700
3	5%	10	2.163	11.2	-1.900
4	6%	10	2.163	11.2	-1.200
5	8%	10	2.163	11.2	-1.100
6	11%	10	2.163	11.2	-0.400

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	3	5	6	8	11
Response 1	.439	.426	.422	.364	.435	.444
Response 2	.399	.369	.389	.381	.436	.372
Response 3	.447	.400	.309	.441	.459	.444
Response 4	.342	.428	.450	.408	.445	.464
Response 5	.421	.452	.429	.432	.352	.409

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: Ft Smith
Test Start Date: 11/5/13 Test Ending Date: 11/12/13
Test Species: Fathead
Test Duration: 7 Day
DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	5	0.000	0.410	0.042	0.414
2	5	3.000	0.415	0.032	0.414
3	5	5.000	0.400	0.055	0.414
4	5	6.000	0.405	0.033	0.414
5	5	8.000	0.425	0.042	0.414
6	5	11.000	0.427	0.036	0.414

*** 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	3	5	6	8	11
Response 1	20	19	23	22	21	18
Response 2	18	21	21	21	20	21
Response 3	20	19	23	16	21	20
Response 4	23	23	17	19	18	19
Response 5	15	20	22	20	20	18
Response 6	20	20	18	21	17	22
Response 7	21	18	23	21	23	20
Response 8	19	21	22	22	23	23
Response 9	18	17	23	25	22	19
Response 10	19	22	20	18	19	17

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: Ft Smith
Test Start Date: 11/5/13 Test Ending Date: 11/12/13
Test Species: Dubia
Test Duration: 7 Day
DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	19.300	2.111	20.280
2	10	3.000	20.000	1.826	20.280
3	10	5.000	21.200	2.201	20.280
4	10	6.000	20.500	2.461	20.280
5	10	8.000	20.400	2.011	20.280
6	10	11.000	19.700	1.889	19.700

*** 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.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX B
CHAIN OF CUSTODY FORMS

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: | of | 1751209

Section A
Required Client Information:
Company: City of Fort Smith
Address: 3900 Kelley Hwy Ft. Smith, AR 72904
Email To:
Phone: 479-784-2337 Fax:
Requested Due Date/TAT:

Section B
Required Project Information:
Report To: Lance McAvoy
Copy To:
Purchase Order No.:
Project Name: P Street Biomonitoring
Project Number:

Section C
Invoice Information:
Attention: Lance McAvoy
Company Name: City of Fort Smith
Address: 3900 Kelley Hwy Ft. Smith, AR
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other ICE	Y/N	Analysis Test: Chronic Mammal	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				DATE	TIME	DATE	TIME											N	N	N		
1	PStreet Effluent	WW	C	11/3/13	0800	11/4/13	0800		1								X		X	X		60156872 IGCUB
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
T. Cl_2 : 0.02	Chris Cooper / City of Ft. Smith	11/4/13	1200	KZ / Pace	11/5/13	800
F. Cl_2 : 0.00						

SAMPLE CONDITIONS

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

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Chris Cooper
DATE Signed 11/4/13

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of

1751210

Section A — Required Client Information:

Company: City of Fort Smith
Address: 3900 Kelley Hwy Ft. Smith, AR 72904
Email To:
Phone: 479-784-2337 Fax:
Requested Due Date/TAT:

Section B — Required Project Information:

Report To: Lance McAvoy
Copy To:
Purchase Order No.:
Project Name: P Street Biomonitoring
Project Number:

Section C — Invoice Information:

Attention: Lance McAvoy
Company Name: City of Ft. Smith
Address: 3900 Kelley Hwy Ft. Smith, AR
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: AR

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other ICE	Analysis Test	Chronic Minnow	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P Street Effluent	WW	C	11/5/13	0800	11/6/13	0800		1								X		X	X		IGCUB
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
T.Cl₂ = 0.02	Chris Cooper / City of Ft. Smith	11/6/13	1200	[signature] / Pace	11/7/13	1450	3.3	Y	Y	Y
F.Cl₂ = 0.02										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Cooper
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY): 11/6/13

~~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.~~ CC 11/6/13

F-ALL-Q-020rev.07, 15-May-2007

CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 1

1751208

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: City of Fort Smith	Report To: Lance McAvoy	Attention: Lance McAvoy
Address: 3900 Kelley Hwy Ft. Smith, AR 72904	Copy To:	Company Name: City of Fort Smith
		Address: 3900 Kelley Hwy Ft Smith AR
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: 479-784-2337 Fax:	Project Name: P Street Bromomonitoring	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: AR

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other ICE	Y/N	Analysis Test: Chronic Mussel	Chronic Ceriodaphnia	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N		
1	P Street Effluent	WW	C	11/7/13	0800	11/8/13	0800		1								X		X	X		16cdb
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
T. Cl_2 = 0.01	Chris Cooper / City of Fort Smith	11/8/13	1200	[signature] Pace	11/9/13	1030	3.0	Y	Y	Y
F. Cl_2 = 0.02										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Cooper

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/8/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | 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. CRL 11/9/13

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX C

REFERENCE TOXICANTS SUMMARY

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

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: 10/22/13 14:30 End: 10/29/13 14:00

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	7	1	0
8 g/l	40	36	25	5
6 g/l	40	40	37	26
4 g/l	40	40	40	40
2 g/l	40	40	40	39

IC25 (5.27 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	4	0	0
2.0 g/l	10	10	8	2
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.09 g/l Sodium Chloride)
Survival NOEC: 1.5 g/l

Submitted By: Tim Harrell
Timothy Harrell, Technical Director

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

APPENDIX D
STATE AGENCY FORMS

Biomonitoring Form
Chronic Toxicity Summary Form
Pimephales promelas
Chemical Parameters Chart

Permittee: City of Fort Smith
NPDES No.: AR 0033278
Contact: Lance McAvoy
Analyst: Tim Harrell
Mike Bollin

Sample No. 1 Collected: Date: 11/4/2013 Time: 8:00
Sample No. 2 Collected: Date: 11/6/2013 Time: 8:00
Sample No. 3 Collected: Date: 11/8/2013 Time: 8:00
Test Begin: Date: 11/5/2013 Time: 14:00
Test End: Date: 11/12/2013 Time: 12:30

Dilution: 0 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial	8.6	8.3	8.3	8.1	8.2	8.1	8	
DO Final	7.2	7.1	7	7.3	7.2	7.3	7.2	
pH Initial	7.85	7.57	7.58	7.49	7.52	7.6	7.52	
pH Final	7.61	7.64	7.68	7.63	7.58	7.64	7.68	
Alkalinity							60	
Hardness							96	
Conductivity							425	
Chlorine	<.1						<.1	

Dilution: 6 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.3	8.2	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.6	7.65	7.55	7.61	7.66	7.61	
pH Final	7.67	7.68	7.7	7.67	7.66	7.75	7.76	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 3 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.2	8.1	8	
DO Final	7.2	7.1	7	7.3	7.2	7.3	7.2	
pH Initial		7.59	7.62	7.51	7.56	7.62	7.56	
pH Final	7.64	7.65	7.68	7.65	7.62	7.68	7.71	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 8 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.3	8.1	8.3	8.2	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.62	7.66	7.56	7.64	7.67	7.62	
pH Final	7.69	7.72	7.72	7.68	7.66	7.8	7.8	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 5 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.2	8.1	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.6	7.64	7.65	7.58	7.64	7.58	
pH Final	7.67	7.66	7.7	7.3	7.65	7.72	7.76	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 11 **Day:**

	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	Init. 100%
DO Initial		8.3	8.3	8.1	8.3	8.2	8.1	8.3
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.63	7.68	7.58	7.69	7.7	7.64	6.87
pH Final	7.72	7.76	7.75	7.7	7.69	7.83	7.84	
Alkalinity								56
Hardness								78
Conductivity								310
Chlorine							<.1	<.1

Summary Reporting Forms Chronic Biomonitoring
Fathead Minnow Larvae Growth and Survival
(Pimephales promelas)

Permittee: City of Fort Smith **NPDES No.:** AR 0033278

		Time:	Date:		Time:	Date:
Composite 1 Collected	**From**	8:00	11/3/2013	**To**	8:00	11/4/2013
Composite 2 Collected	**From**	8:00	11/5/2013	**To**	8:00	11/6/2013
Composite 3 Collected	**From**	8:00	11/7/2013	**To**	8:00	11/8/2013

Test initiated: **am/pm** 14:00 **date** 11/5/2013
Test terminated: **am/pm** 12:30 **date** 11/12/2013

Dilution water used: **Receiving** **Reconstituted** X

Data Table for Survival

Effluent Conc.%	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
Syn 0 %	100	100	100	87.5	100	100	100	97.5	4.79
3%	100	87.5	100	100	100	100	100	97.5	4.79
5%	100	100	75	100	100	100	100	95	9.3
6%	87.5	100	100	100	100	100	100	100	0
8%	100	100	100	100	87.5	100	100	97.5	4.79
11%	100	87.5	100	100	100	100	100	97.5	4.79

Data Table for Survival

Effluent Conc.%	Average Dry Weight in milligrams in Replicate Chambers					Mean Dry Weight mg	CV%*
	A	B	C	D	E		
Syn. 0%	0.439	0.399	0.447	0.342	0.421	0.41	6.21
3%	0.426	0.369	0.4	0.428	0.452	0.415	4.6
5%	0.422	0.389	0.309	0.45	0.429	0.4	8.38
6%	0.364	0.381	0.441	0.408	0.432	0.405	4.84
8%	0.435	0.436	0.459	0.445	0.352	0.425	6.07
11%	0.444	0.372	0.444	0.464	0.409	0.427	5.19

*coefficient of variation = standard deviation x 100/mean.

Fathead Minnow Larvae Growth and Survival (cont)
(Pimephales promelas)

1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:

Is the mean survival at 7 days significantly different (p=.05) than the control survival for the % effluent corresponding to:

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No: X**
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

2. Dunnett's Procedure (or appropriate test):

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

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No:** X
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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):

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 NOEC below and circle lowest number:

a) NOEC survival: 11 **% effluent**
b) NOEC reproduction: 11 **% effluent**

Biomonitoring Form
Chronic Toxicity Summary Form
Ceriodaphnia dubia
Chemical Parameters Chart

Permittee: City of Fort Smith
NPDES No.: AR 0033278
Contact: Lance McAvoy
Analyst: Tim Harrell
Mike Bollin

Sample No. 1 Collected: Date: 11/4/2013 Time: 8:00
Sample No. 2 Collected: Date: 11/6/2013 Time: 8:00
Sample No. 3 Collected: Date: 11/8/2013 Time: 8:00
Test Begin: Date: 11/5/2013 Time: 14:00
Test End: Date: 11/12/2013 Time: 12:30

Dilution: 0 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial	8.6	8.3	8.3	8.1	8.2	8.1	8	
DO Final	7.2	7.1	7	7.3	7.2	7.3	7.2	
pH Initial	7.85	7.57	7.58	7.49	7.52	7.6	7.52	
pH Final	7.61	7.64	7.68	7.63	7.58	7.64	7.68	
Alkalinity							60	
Hardness							96	
Conductivity							425	
Chlorine	<.1						<.1	

Dilution: 6 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.3	8.2	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.6	7.65	7.55	7.61	7.66	7.61	
pH Final	7.67	7.68	7.7	7.67	7.66	7.75	7.76	
Alkalinity								
Hardness								
Conductivity								
Chlorine								

Dilution: 3 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.2	8.1	8	
DO Final	7.2	7.1	7	7.3	7.2	7.3	7.2	
pH Initial		7.59	7.62	7.51	7.56	7.62	7.56	
pH Final	7.64	7.65	7.68	7.65	7.62	7.68	7.71	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 8 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.3	8.1	8.3	8.2	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.62	7.66	7.56	7.64	7.67	7.62	
pH Final	7.69	7.72	7.72	7.68	7.66	7.8	7.8	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 5 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	
DO Initial		8.3	8.2	8.1	8.2	8.1	8	
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.6	7.64	7.65	7.58	7.64	7.58	
pH Final	7.67	7.66	7.7	7.3	7.65	7.72	7.76	
Alkalinity								
Hardness								
Conductivit								
Chlorine								

Dilution: 11 Day:	1	2	3	4	5	6	7	Comments
Temp (C)	25	25	25	25	25	25	25	Init. 100%
DO Initial		8.3	8.3	8.1	8.3	8.2	8.1	8.3
DO Final	7.1	7.1	7.1	7.3	7.2	7.3	7.3	
pH Initial		7.63	7.68	7.58	7.69	7.7	7.64	6.87
pH Final	7.72	7.76	7.75	7.7	7.69	7.83	7.84	
Alkalinity								56
Hardness								78
Conductivit								310
Chlorine							<.1	<.1

Summary Reporting Forms
Chronic Biomonitoring

Ceriodaphnia dubia Survival and Reproduction

Permittee: City of Fort Smith **NPDES No.:** AR 0033278

		Time:	Date:		Time:	Date:
Composite 1 Collected	**From**	8:00	11/3/2013	**To**	8:00	11/4/2013
Composite 2 Collected	**From**	8:00	11/5/2013	**To**	8:00	11/6/2013
Composite 3 Collected	**From**	8:00	11/7/2013	**To**	8:00	11/8/2013

Test initiated: **am/pm** 14:00 **date** 11/5/2013
Test terminated: **am/pm** 12:30 **date** 11/12/2013

Dilution water used: **Receiving** **Reconstituted** X

Percent Survival

Time of Reading	Percent Effluent					
	0	3	5	6	8	11
24h	100	100	100	100	100	100
48h	100	100	100	100	100	100
End of test	100	100	100	100	100	100

Number of Young Produced per Female @ End of Test

Rep	0	3	5	6	8	11
A	20	19	23	22	21	18
B	18	21	21	21	20	21
C	20	19	23	16	21	20
D	23	23	17	19	18	19
E	15	20	22	20	20	18
F	20	20	18	21	17	22
G	21	18	23	21	23	20
H	19	21	22	22	23	23
I	18	17	23	25	22	19
J	19	22	20	18	19	17
Mean	19.3	20	21.2	20.5	20.4	19.7
CV%*	10.94	9.13	10.38	12	9.86	9.59

***coefficient of variation = standard deviation x 100/mean.**

Ceriodaphnia dubia
Survival and Reproduction (cont)

1. Fisher's Exact Test:

Is the mean survival at the end of the test significantly different (p=.05) than the control survival for the % effluent corresponding to (lethality):

a) Low Flow or Critical Dilution	**(**	**8 %):**	**Yes:**	**No: X**
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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=.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	**(**	**8 %):**	**Yes:**	**No:** X
b) ½ Low Flow Dilution	**(**	**%):**	**Yes:**	**No:**

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):

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 NOEC below and circle lowest number:

a) NOEC survival:	11 **% effluent**
b) NOEC reproduction:	11 **% effluent**

From: (479) 784-2330
Steve Floyd
City of Fort Smith
3900 Kelley Highway

Fort Smith, AR 72904

Origin ID: FSMA

FedEx Express

J14101312270326

Ship Date: 22JAN14
ActWgt: 2.0 LB
CAD: 1731127/INET3490

Delivery Address Bar Code

SHIP TO: (501) 682-0638 BILL SENDER

NPDES Enforcement Section, Water
ADEQ
5301 Northshore Drive

North Little Rock, AR 72118

Ref #
Invoice #
PO #
Dept #

FRI - 24 JAN AA
**** 2DAY ****

TRK# 0201 **7976 9975 0854**

72118
AR-US
LIT

SA LITA

522G1/D6EC/F220

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/templates/components/dotcom_label_contents/WarningsOriginalLabel/en/Folding_warning.html loading...
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