Gravatt, Dan

From: Hoefer, David
Sent: Tuesday, April 22, 2014 6:44 AM
To: Gravatt, Dan
Subject: FW: Bridgeton Landfill RadChem Data - latest results
Attachments: Historical RadChem Data_04182014.pdf; Eberline Lab Report 14-03120-OR_03-18-14.pdf

I presume that you are receiving this sort of thing.

From: Merrigan, Jessie (LG) [mailto:JMerrigan@LATHROPGAGE.COM]
Sent: Monday, April 21, 2014 8:36 PM
To: Hoefer, David
Cc: Beck, Bill (LG)
Subject: FW: Bridgeton Landfill RadChem Data - latest results

Hi David,

I just wanted to keep you in the loop on the follow up regarding the leachate radiological data. If EPA ever needs additional information, please let me know.

Thank you,
Jessie

Any U.S. federal tax advice contained in this communication (including any attachments or enclosures) was not intended or written by the author to be used, and cannot be used, for the purpose of (1) avoiding penalties that may be imposed on a taxpayer or (2) promoting, marketing, or recommending to another party any transaction or other matter addressed herein.

This e-mail (including any attachments) may contain material that (1) is confidential and for the sole use of the intended recipient, and (2) may be protected by the attorney-client privilege, attorney work product doctrine or other legal rules. Any review, reliance or distribution by others or forwarding without express permission is strictly prohibited. If you are not the intended recipient, please contact the sender and delete all copies.

From: Ed Galbraith [mailto:EGalbraith@barr.com]
Sent: Thursday, April 17, 2014 5:42 PM
To: aaron.schmidt@dnr.mo.gov; 'chris.nagel@dnr.mo.gov' (chris.nagel@dnr.mo.gov); brandon.doster@dnr.mo.gov; david.lamb@dnr.mo.gov
Cc: bpower@republicservices.com; Walker, Tony (TWalker@republicservices.com); Vanessa Warren
Subject: Bridgeton Landfill RadChem Data - latest results

All, attached is the latest lab report and an updated spreadsheet for Bridgeton Landfill radiological chemistry data. A few items of note:

- Gross Gamma – all gamma is sourced from Potassium-40 (K40). The gamma and K40 activity are identical for the sample and the duplicate.

0714 3.0

40492389
Superfund

0401

- Total Uranium – The MCL for Total U is 30 ppb, results are 2.2 ppb and 2.9 ppb for the sample and duplicate, respectively.
- Gross Alpha – No verifiable positive Gross Alpha activity in either the sample or duplicate. Results for both have high combined uncertainty, likely due to matrix interference, as noted in past reports.
- Gross Beta – Gross Beta results are ~54% to 60% of K40. Gross Beta activity is within range that could be attributed to K40, as noted in past reports; further study would be needed to confirm a correlation for this sample.
- Radium 226 – No verifiable positive activity.
- Radium 228 –Sample had small positive activity but was well below the MCL.

Please let me know if you have any questions.

Ed Galbraith

Senior Environmental Scientist
Jefferson City office: 573.638.5024
cell: 573.418.5562
egalbraith@barr.com
www.barr.com

resourceful. naturally. BARR

Table 1
Bridgeton Radiological Chemistry

					Parameter	Solids, total suspended	Gross Gamma as Cesium 137	Gross Alpha (radiation)	Gross Beta (radiation)	Gross Gamma	Polonium 210	Potassium	Potassium 40	Radium 226	Radium 228
					Total or Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Location	Date	lab_name_code	Sample Type	Data Status	lab_sdg										
Batch 320-MSD	3/18/2014	Eberline	DO	QC Pending	14-03120	--	--	33.6 +/- 34.7 pCi/l	303 +/- 75.9 pCi/l	507 +/- 78.5 pCi/l	--	--	507 +/- 78.5 pCi/l	-1.93 +/- 2.33 pCi/l	2.26 +/- 1.07 pCi/l
Batch 320-MSD	3/18/2014	Eberline	DUP	QC Pending	14-03120	--	--	-27.8 +/- 42.2 pCi/l	275 +/- 76.5 pCi/l	479 +/- 76.9 pCi/l	--	--	479 +/- 76.9 pCi/l	-0.0138 +/- 1.46 pCi/l	1.20 +/- 1.01 pCi/l
Outfall008	12/30/2013	Eberline	DO	QC Pending	14-01006	--	-1.20 +/- 1.93 pCi/l	56.2 +/- 68.7 pCi/l	349 +/- 161 pCi/l	578 +/- 91.3 pCi/l	--	--	575 +/- 87.1 pCi/l	0.346 +/- 0.529 pCi/l	0.491 +/- 1.08 pCi/l
Outfall008	12/30/2013	Eberline	DUP	QC Pending	14-01006	--	-1.09 +/- 2.34 pCi/l	9.11 +/- 53.6 pCi/l	180 +/- 141 pCi/l	536 +/- 91.1 pCi/l	--	--	533 +/- 86.5 pCi/l	0.464 +/- 0.598 pCi/l	1.30 +/- 1.04 pCi/l
Outfall008	9/13/2013	Eberline	DO	QC Pending	13-09091	--	--	216 +/- 106 BQX pCi/l	819 +/- 169 pCi/l	589 +/- 79.2 BQX pCi/l	--	--	589 +/- 79.2 pCi/l	0.142 +/- 0.240 pCi/l	2.09 +/- 1.33 pCi/l
Outfall008	9/13/2013	Eberline	DUP	QC Pending	13-09091	--	--	87.1 +/- 121 BQX pCi/l	879 +/- 182 pCi/l	634 +/- 84.8 BQX pCi/l	--	--	634 +/- 84.8 pCi/l	0.634 +/- 0.496 pCi/l	0.987 +/- 1.25 pCi/l
Outfall008	9/13/2013	Eberline	DO	QC Pending	13-10138	--	--	--	--	--	0.683 +/- 0.472 pCi/l	--	--	--	--
Outfall008	9/13/2013	Eberline	DUP	QC Pending	13-10138	--	--	--	--	--	0.0654 +/- 0.157 pCi/l	--	--	--	--
Outfall008	9/13/2013	Heritage	DO	QC pending	65229	14000 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	6/18/2013	Eberline	DO	QC Pending	13-06059	--	1.54 +/- 1.67 pCi/l	46.6 +/- 57.1 pCi/l	429 +/- 102 pCi/l	--	--	--	376 +/- 70.0 pCi/l	0.0752 +/- 0.163 pCi/l	2.64 +/- 0.904 pCi/l
Outfall008	6/18/2013	Eberline	DUP	QC Pending	13-06059	--	0.00207 +/- 1.83 pCi/l	27.8 +/- 47.3 pCi/l	452 +/- 104 pCi/l	--	--	--	393 +/- 68.4 pCi/l	0.0867 +/- 0.166 pCi/l	0.289 +/- 0.596 pCi/l
Outfall008	6/18/2013	Heritage	DO	QC pending	64835	2800 mg/l	--	--	--	--	--	--	--	--	--
Treat Commingled MSD	4/25/2013	PDC	DO	Validated	3043568	1200 mg/l	--	--	--	--	--	--	--	--	--
Treat Commingled MSD	4/5/2013	Eberline	DO	Validated	1306015	--	6.62 +/- 8.36 pCi/l	-28.9 +/- 56.7 pCi/l	1860 +/- 290 BQX pCi/l	--	--	557000 ug/l	456 +/- 45.6 pCi/l	--	11.0 +/- 5.79 pCi/l
Treat Commingled MSD	4/5/2013	Eberline	DUP	Validated	1306015	--	4.51 +/- 6.40 pCi/l	-14.0 +/- 58.2 pCi/l	408 +/- 104 BQX pCi/l	--	--	--	278 +/- 187 pCi/l	--	6.99 +/- 6.33 pCi/l
Treat Commingled MSD	4/5/2013	PDC	DO	Validated	3041134	1500 mg/l	--	--	--	--	--	--	--	--	--
Treat Commingled MSD	4/5/2013	TestAmerica	DO	Validated	160-2039-1	--	< 20.0 U pCi/l	3.71 +/- 57.3 UG pCi/l	--	--	--	--	--	11.4 +/- 2.24 pCi/l	5.36 +/- 3.98 UG pCi/l
LCH_Outfall008	12/13/2012	TestAmerica	DO	QC Pending	160-1108-1	--	< 20 pCi/l	< 3 UG pCi/l	379 +/- 80.4 pCi/l	--	--	--	--	14.0 +/- 3.19 pCi/l	9.69 +/- 3.81 pCi/l
Outfall008	12/13/2012	Heritage	DO	QC pending	64037	340 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	9/19/2012	Heritage	DO	QC pending	63614	1300 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	9/19/2012	TestAmerica	DO	QC pending	F2I190459	--	0.5 +/- 5.6 U pCi/l	6 +/- 78 U pCi/l	331 +/- 74 pCi/l	--	--	--	--	13.1 +/- 2.7 pCi/l	7.3 +/- 2.7 pCi/l
Outfall008	5/15/2012	Heritage	DO	QC pending	63070	660 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	5/15/2012	TestAmerica	DO	QC pending	F2E150442	--	-1.4 +/- 6.6 U pCi/l	29 +/- 30 U pCi/l	160 +/- 33 pCi/l	--	--	--	--	8.6 +/- 2.6 pCi/l	3.7 +/- 3.3 U pCi/l
Outfall008	5/15/2012	TestAmerica	DUP	QC pending	F2E150442	--	1.9 +/- 5.3 U pCi/l	--	--	--	--	--	--	13.4 +/- 3.1 pCi/l	6.2 +/- 2.8 pCi/l
Outfall008	3/6/2012	TestAmerica	DO	QC pending	F2C080411	--	-0.5 +/- 7.3 U pCi/l	38 +/- 30 U pCi/l	183 +/- 33 pCi/l	--	--	--	--	9.0 +/- 3.8 pCi/l	7.0 +/- 4.9 U pCi/l
Outfall008	3/6/2012	TestAmerica	DUP	QC pending	F2C080411	--	0 +/- 4.5 U pCi/l	28 +/- 34 U pCi/l	170 +/- 32 pCi/l	--	--	--	--	10.8 +/- 3.9 pCi/l	8.9 +/- 5.1 pCi/l
Outfall008	11/29/2011	Heritage	DO	QC pending	62465	61 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	11/29/2011	TestAmerica	DO	QC pending	F1K290445	--	-1.1 +/- 6.8 U pCi/l	21 +/- 15 pCi/l	72 +/- 14 pCi/l	--	--	--	--	5.16 +/- 0.77 pCi/l	1.13 +/- 0.51 pCi/l
Outfall008	8/18/2011	Heritage	DO	QC pending	61987	46 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	8/18/2011	TestAmerica	DO	QC pending	F1H180440	--	-0.3 +/- 6.2 U pCi/l	31 +/- 19 pCi/l	59 +/- 12 pCi/l	--	--	--	--	3.3 +/- 1.0 pCi/l	2.5 +/- 1.1 pCi/l
Outfall008	5/11/2011	Heritage	DO	QC pending	61541	23 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	5/11/2011	TestAmerica	DO	QC pending	F1E110517	--	-2.5 +/- 8.4 U pCi/l	8 +/- 18 U pCi/l	47 +/- 11 pCi/l	--	--	--	--	3.22 +/- 0.38 pCi/l	2.04 +/- 0.43 pCi/l
Outfall008	3/16/2011	Heritage	DO	QC pending	61273	33 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	3/16/2011	TestAmerica	DO	QC pending	F1C160545	--	0.3 +/- 6.0 U pCi/l	3 +/- 13 U pCi/l	84 +/- 14 pCi/l	--	--	--	--	4.6 +/- 1.1 pCi/l	1.8 +/- 1.4 U pCi/l
Outfall008	11/17/2010	Heritage	DO	QC pending	60800	22 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	11/17/2010	TestAmerica	DO	Validated	F0K170562	--	2.6 +/- 7.0 U pCi/l	15 +/- 10 pCi/l	48.2 +/- 9.7 pCi/l	--	--	--	--	4.31 +/- 0.76 pCi/l	1.02 +/- 0.47 pCi/l
Outfall008	9/8/2010	Heritage	DO	QC pending	60486	22 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	9/8/2010	TestAmerica	DO	Validated	F0I080494	--	0.6 +/- 7.9 U pCi/l	9 +/- 13 U pCi/l	58 +/- 13 pCi/l	--	--	--	--	2.81 +/- 0.50 pCi/l	1.46 +/- 0.68 pCi/l
Outfall008	5/25/2010	Heritage	DO	QC pending	60022	62 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	5/25/2010	TestAmerica	DO	Validated	F0E250568	--	0.757 +/- 5.5 U pCi/l	5.21 +/- 2.0 U pCi/l	114 +/- 9.0 pCi/l	--	--	--	--	3.24 +/- 0.34 pCi/l	2.18 +/- 0.26 pCi/l
Outfall008	5/25/2010	TestAmerica	DUP	Validated	F0E250568	--	6.81 +/- 5.3 U pCi/l	1.25 +/- 1.2 U pCi/l	109 +/- 8.5 pCi/l	--	--	--	--	3.35 +/- 0.36 pCi/l	2.23 +/- 0.25 pCi/l
Outfall008	2/25/2010	Heritage	DO	QC pending	59650	21 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	2/25/2010	TestAmerica	DO	Validated	F0B250518	--	3.5 +/- 8.4 U pCi/l	10 +/- 10 U pCi/l	56.3 +/- 9.4 pCi/l	--	--	--	--	3.60 +/- 0.53 pCi/l	1.26 +/- 0.46 pCi/l
Outfall008	11/4/2009	Heritage	DO	Validated	59175	24 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	11/4/2009	TestAmerica	DO	Validated	F9K040546	--	-0.06 +/- 5.8 U pCi/l	8 +/- 10 U pCi/l	73 +/- 13 pCi/l	--	--	--	--	3.71 +/- 0.50 pCi/l	1.24 +/- 0.53 pCi/l
Outfall008	8/6/2009	Heritage	DO	Validated	58742	19 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	8/6/2009	TestAmerica	DO	Validated	F9H060204	--	-0.7 +/- 9.2 U pCi/l	18 +/- 10 pCi/l	50.8 +/- 9.7 pCi/l	--	--	--	--	3.51 +/- 0.42 pCi/l	1.59 +/- 0.37 pCi/l
Outfall008	8/6/2009	TestAmerica	DUP	Validated	F9H060204	--	1 +/- 8.6 U pCi/l	9 +/- 12 U pCi/l	58 +/- 11 U pCi/l	--	--	--	--	--	--
Outfall008	5/7/2009	Heritage	DO	Validated	58370	25 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	5/7/2009	TestAmerica	DO	Validated	F9E080107	--	0 +/- 9.4 U pCi/l	11.0 +/- 9.9 U pCi/l	68 +/- 11 pCi/l	--	--	--	--	4.28 +/- 0.58 pCi/l	1.36 +/- 0.34 pCi/l
Outfall008	2/12/2009	Heritage	DO	Validated	58064	31 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	2/12/2009	TestAmerica	DO	Validated	F9B120270	--	0.1 +/- 5.9 U pCi/l	-4.4 +/- 8.2 U pCi/l	73 +/- 13 pCi/l	--	--	--	--	4.24 +/- 0.58 pCi/l	1.61 +/- 0.43 pCi/l
Outfall008	11/4/2008	Heritage	DO	Validated	57674	24 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	11/4/2008	TestAmerica	DO	Validated	F8K050146	--	0.8 +/- 7.0 U pCi/l	20 +/- 12 pCi/l	66 +/- 11 pCi/l	--	--	--	--	4.19 +/- 0.54 pCi/l	1.80 +/- 0.39 pCi/l
Outfall008	11/4/2008	TestAmerica	DUP	Validated	F8K050146	--	0.4 +/- 7.5 U pCi/l	11 +/- 11 U pCi/l	66 +/- 11 pCi/l	--	--	--	--	--	--
Outfall008	7/16/2008	Heritage	DO	Validated	57153	49 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	7/16/2008	TestAmerica	DO	Validated	F8G160271	--	-0.07 +/- 7.8 U pCi/l	7.3 +/- 7.8 U pCi/l	46.4 +/- 8.3 pCi/l	--	--	--	--	3.29 +/- 0.46 pCi/l	1.44 +/- 0.36 pCi/l
Outfall008	7/16/2008	TestAmerica	DUP	Validated	F8G160271	--	-1.1 +/- 8.6 U pCi/l	3.2 +/- 7.0 U pCi/l	49.0 +/- 8.0 pCi/l	--	--	--	--	--	--
Outfall008	5/6/2008	Heritage	DO	Validated	56732	15 mg/l	--	--	--	--	--	--	--	--	--

Table 1
Bridgeton Radiological Chemistry

					Parameter	Solids, total suspended	Gross Gamma as Cesium 137	Gross Alpha (radiation)	Gross Beta (radiation)	Gross Gamma	Polonium 210	Potassium	Potassium 40	Radium 226	Radium 228
					Total or Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Location	Date	lab_name_code	Sample Type	Data Status	lab_sdg										
Outfall008	5/6/2008	TestAmerica	DO	Validated	F8E060240	--	0.5 +/- 6.7 U pCi/l	-0.2 +/- 7.7 U pCi/l	83 +/- 15 pCi/l	--	--	--	--	4.98 +/- 0.60 pCi/l	2.01 +/- 0.41 pCi/l
Outfall008	5/6/2008	TestAmerica	DUP	Validated	F8E060240	--	-0.7 +/- 8.0 U pCi/l	2 +/- 11 U pCi/l	88 +/- 16 pCi/l	--	--	--	--	--	--
Outfall008	3/13/2008	Heritage	DO	Validated	65044	75 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	3/13/2008	TestAmerica	DO	Validated	F8C130342	--	0.3 +/- 8.4 U pCi/l	20 +/- 16 U pCi/l	70 +/- 13 pCi/l	--	--	--	--	5.10 +/- 0.81 pCi/l	1.66 +/- 0.74 pCi/l
Outfall008	3/13/2008	TestAmerica	DUP	Validated	F8C130342	--	1.6 +/- 8.2 U pCi/l	--	--	--	--	--	--	--	--
Outfall008	11/29/2007	Heritage	DO	Validated	56024	37 mg/l	--	--	--	--	--	--	--	--	--
Outfall008	11/29/2007	TestAmerica	DO	Validated	F7K290239	--	1 +/- 9.1 U pCi/l	11.0 +/- 9.97 U pCi/l	71 +/- 16 pCi/l	--	--	--	--	3.94 +/- 0.68 pCi/l	2.00 +/- 0.68 pCi/l
Outfall008	11/29/2007	TestAmerica	DUP	Validated	F7K290239	--	4.1 +/- 6.0 U pCi/l	--	--	--	--	--	--	--	--
Outfall006	8/21/2007	Heritage	DO	Validated	55695	11 h mg/l	--	--	--	--	--	--	--	--	--
Outfall006	8/20/2007	TestAmerica	DO	Validated	F7H220163	--	2.8 +/- 8.9 U pCi/l	12 +/- 12 U pCi/l	71 +/- 14 pCi/l	--	--	--	--	4.66 +/- 0.80 pCi/l	1.3 +/- 1.1 U pCi/l
Outfall006	8/20/2007	TestAmerica	DUP	Validated	F7H220163	--	-1.3 +/- 9.5 U pCi/l	--	--	--	--	--	--	--	--
Outfall006	5/22/2007	Heritage	DO	Validated	55411.1	40 mg/l	--	--	--	--	--	--	--	--	--
Outfall006	5/22/2007	TestAmerica	DO	Validated	F7E220283	--	-2.1 +/- 7.8 U pCi/l	24 +/- 13 pCi/l	78 +/- 14 pCi/l	--	--	--	--	5.62 +/- 0.81 pCi/l	1.73 +/- 0.74 pCi/l
Outfall006	5/21/2007	TestAmerica	DO	Validated	F7E220283	--	1.9 +/- 7.4 U pCi/l	18 +/- 13 U pCi/l	68 +/- 13 U pCi/l	--	--	--	--	4.34 +/- 0.64 pCi/l	1.40 +/- 0.54 pCi/l
Outfall006	5/21/2007	TestAmerica	DUP	Validated	F7E220283	--	--	11 +/- 12 U pCi/l	63 +/- 12 pCi/l	--	--	--	--	--	--
Outfall006	3/8/2007	Heritage	DO	Validated	5400	25 h mg/l	--	--	--	--	--	--	--	--	--
Outfall006	3/8/2007	TestAmerica	DO	Validated	F7C080312	--	7.2 +/- 8.0 U pCi/l	14 +/- 17 U pCi/l	88 +/- 16 pCi/l	--	--	--	--	6.26 +/- 0.88 pCi/l	2.12 +/- 0.59 pCi/l
Outfall006	3/8/2007	TestAmerica	DUP	Validated	F7C080312	--	-9.3 +/- 8.7 U pCi/l	--	--	--	--	--	--	--	--
Outfall006	12/21/2006	Heritage	DO	Validated	5182	39 h mg/l	--	--	--	--	--	--	--	--	--
Outfall006	12/21/2006	TestAmerica	DO	Validated	F6L210233	--	-3 +/- 10 U pCi/l	15 +/- 15 U pCi/l	81 +/- 17 pCi/l	--	--	--	125 +/- 94 U pCi/l	4.42 +/- 0.72 pCi/l	3.4 +/- 1.4 pCi/l
Outfall006	12/21/2006	TestAmerica	DUP	Validated	F6L210233	--	2.0 +/- 9.0 U pCi/l	--	--	--	--	--	30 +/- 120 U pCi/l	--	--
Outfall006	7/26/2006	Heritage	DO	QC pending	4611	22 mg/l	--	--	--	--	--	--	--	--	--
Outfall006	6/15/2006	Heritage	DO	QC pending	4514	1200 mg/l	--	--	--	--	--	--	--	--	--
Outfall006	1/19/2006	Heritage	DO	QC pending	4063	150 mg/l	--	--	--	--	--	--	--	--	--

Table 1
Bridgeton Radiological Chemistry

					Parameter	Thorium 228	Thorium 230	Thorium 232	Thorium 234	Uranium	Uranium 234	Uranium 235	Uranium 238
					Total or Dissolved	NA	NA	NA	NA	Total	NA	NA	NA
Location	Date	lab_name_code	Sample Type	Data Status	lab_sdg								
Batch 320-MSD	3/18/2014	Eberline	DO	QC Pending	14-03120	--	--	--	**22.5 +/- 30.3 pCi/l**	**2.21 +/- 1.50 ug/l**	**2.53 +/- 1.01 pCi/l**	**0.980 +/- 0.682 pCi/l**	**0.589 +/- 0.492 pCi/l**
Batch 320-MSD	3/18/2014	Eberline	DUP	QC Pending	14-03120	--	--	--	**39.3 +/- 31.6 pCi/l**	**2.95 +/- 1.74 ug/l**	**1.87 +/- 0.869 pCi/l**	**0.288 +/- 0.373 pCi/l**	**0.947 +/- 0.583 pCi/l**
Outfall008	12/30/2013	Eberline	DO	QC Pending	14-01006	--	--	--	**176 +/- 42.6 pCi/l**	**12.73 +/- 4.86 ug/l**	**4.91 +/- 1.82 pCi/l**	**1.02 +/- 0.906 pCi/l**	**4.12 +/- 1.63 pCi/l**
Outfall008	12/30/2013	Eberline	DUP	QC Pending	14-01006	--	--	--	**149 +/- 41.7 pCi/l**	**19.86 +/- 6.22 ug/l**	**5.50 +/- 1.90 pCi/l**	**1.10 +/- 0.959 pCi/l**	**6.51 +/- 2.09 pCi/l**
Outfall008	9/13/2013	Eberline	DO	QC Pending	13-09091	--	--	--	**86.7 +/- 48.9 pCi/l**	**7.79 +/- 3.43 ug/l**	**1.82 +/- 0.990 pCi/l**	**0.943 +/- 0.821 pCi/l**	**2.47 +/- 1.15 pCi/l**
Outfall008	9/13/2013	Eberline	DUP	QC Pending	13-09091	--	--	--	**48.2 +/- 48.8 pCi/l**	**6.88 +/- 3.45 ug/l**	**3.10 +/- 1.38 pCi/l**	**0.735 +/- 0.809 pCi/l**	**2.20 +/- 1.15 pCi/l**
Outfall008	9/13/2013	Eberline	DO	QC Pending	13-10138	**0.664 +/- 1.11 BQX pCi/l**	**1.75 +/- 1.45 BQX pCi/l**	**0.938 +/- 1.06 BQX pCi/l**	--	--	--	--	--
Outfall008	9/13/2013	Eberline	DUP	QC Pending	13-10138	**-0.598 +/- 1.28 BQX pCi/l**	--	**0.464 +/- 1.13 BQX pCi/l**	--	--	--	--	--
Outfall008	9/13/2013	Heritage	DO	QC pending	65229	--	--	--	--	--	--	--	--
Outfall008	6/18/2013	Eberline	DO	QC Pending	13-06059	--	--	--	**-9.61 +/- 33.7 pCi/l**	--	**0.955 +/- 0.532 pCi/l**	**0.0549 +/- 0.168 pCi/l**	**0.380 +/- 0.328 pCi/l**
Outfall008	6/18/2013	Eberline	DUP	QC Pending	13-06059	--	--	--	**-33.1 +/- 33.1 pCi/l**	--	**1.09 +/- 0.547 pCi/l**	**0.0113 +/- 0.158 pCi/l**	**0.943 +/- 0.513 pCi/l**
Outfall008	6/18/2013	Heritage	DO	QC pending	64835	--	--	--	--	**2.08 ug/l**	--	--	--
Treat Commingled MSD	4/25/2013	PDC	DO	Validated	3043568	--	--	--	--	--	--	--	--
Treat Commingled MSD	4/5/2013	Eberline	DO	Validated	1306015	--	--	--	**-203 +/- 187 pCi/l**	--	--	--	--
Treat Commingled MSD	4/5/2013	Eberline	DUP	Validated	1306015	--	--	--	**29.8 +/- 187 pCi/l**	--	--	--	--
Treat Commingled MSD	4/5/2013	PDC	DO	Validated	3041134	--	--	--	--	--	--	--	--
Treat Commingled MSD	4/5/2013	TestAmerica	DO	Validated	160-2039-1	--	--	--	--	< 100 ug/l	--	--	--
LCH_Outfall008	12/13/2012	TestAmerica	DO	QC Pending	160-1108-1	--	--	--	--	< 20 ug/l	--	--	--
Outfall008	12/13/2012	Heritage	DO	QC pending	64037	--	--	--	--	--	--	--	--
Outfall008	9/19/2012	Heritage	DO	QC pending	63614	--	--	--	--	--	--	--	--
Outfall008	9/19/2012	TestAmerica	DO	QC pending	F2I190459	--	--	--	--	< 2.0 ug/l	--	--	--
Outfall008	5/15/2012	Heritage	DO	QC pending	63070	--	--	--	--	BDL	--	--	--
Outfall008	5/15/2012	TestAmerica	DO	QC pending	F2E150442	--	--	--	--	--	--	--	--
Outfall008	5/15/2012	TestAmerica	DUP	QC pending	F2E150442	--	--	--	--	--	--	--	--
Outfall008	3/6/2012	TestAmerica	DO	QC pending	F2C080411	--	--	--	--	< 4.0 ug/l	--	--	--
Outfall008	3/6/2012	TestAmerica	DUP	QC pending	F2C080411	--	--	--	--	--	--	--	--
Outfall008	11/29/2011	Heritage	DO	QC pending	62465	--	--	--	--	--	--	--	--
Outfall008	11/29/2011	TestAmerica	DO	QC pending	F1K290445	--	--	--	--	< 5.0 ug/l	--	--	--
Outfall008	8/18/2011	Heritage	DO	QC pending	61987	--	--	--	--	--	--	--	--
Outfall008	8/18/2011	TestAmerica	DO	QC pending	F1H180440	--	--	--	--	< 1.0 ug/l	--	--	--
Outfall008	5/11/2011	Heritage	DO	QC pending	61541	--	--	--	--	--	--	--	--
Outfall008	5/11/2011	TestAmerica	DO	QC pending	F1E110517	--	--	--	--	< 1.0 ug/l	--	--	--
Outfall008	3/16/2011	Heritage	DO	QC pending	61273	--	--	--	--	--	--	--	--
Outfall008	3/16/2011	TestAmerica	DO	QC pending	F1C160545	--	--	--	--	**16.8 +/- 2.3 ug/l**	--	--	--
Outfall008	11/17/2010	Heritage	DO	QC pending	60800	--	--	--	--	--	--	--	--
Outfall008	11/17/2010	TestAmerica	DO	Validated	F0K170562	--	--	--	--	**13.9 +/- 1.9 U ug/l**	--	--	--
Outfall008	9/8/2010	Heritage	DO	QC pending	60486	--	--	--	--	--	--	--	--
Outfall008	9/8/2010	TestAmerica	DO	Validated	F0I080494	--	--	--	--	**16.0 +/- 2.2 ug/l**	--	--	--
Outfall008	5/25/2010	Heritage	DO	QC pending	60022	--	--	--	--	--	--	--	--
Outfall008	5/25/2010	TestAmerica	DO	Validated	F0E250568	--	--	--	--	**0.705 +/- 0.041 ug/l**	--	--	--
Outfall008	5/25/2010	TestAmerica	DUP	Validated	F0E250568	--	--	--	--	**0.909 +/- 0.051 ug/l**	--	--	--
Outfall008	2/25/2010	Heritage	DO	QC pending	59650	--	--	--	--	--	--	--	--
Outfall008	2/25/2010	TestAmerica	DO	Validated	F0B250518	--	--	--	--	**9.8 +/- 1.3 ug/l**	--	--	--
Outfall008	11/4/2009	Heritage	DO	Validated	59175	--	--	--	--	--	--	--	--
Outfall008	11/4/2009	TestAmerica	DO	Validated	F9K040546	--	--	--	--	**3.03 +/- 0.37 U ug/l**	--	--	--
Outfall008	8/6/2009	Heritage	DO	Validated	58742	--	--	--	--	--	--	--	--
Outfall008	8/6/2009	TestAmerica	DO	Validated	F9H060204	--	--	--	--	**2.57 +/- 0.40 U ug/l**	--	--	--
Outfall008	8/6/2009	TestAmerica	DUP	Validated	F9H060204	--	--	--	--	--	--	--	--
Outfall008	5/7/2009	Heritage	DO	Validated	58370	--	--	--	--	--	--	--	--
Outfall008	5/7/2009	TestAmerica	DO	Validated	F9E080107	--	--	--	--	**6.09 +/- 0.83 ug/l**	--	--	--
Outfall008	2/12/2009	Heritage	DO	Validated	58064	--	--	--	--	--	--	--	--
Outfall008	2/12/2009	TestAmerica	DO	Validated	F9B120270	--	--	--	--	**-0.96 +/- 0.19 U ug/l**	--	--	--
Outfall008	11/4/2008	Heritage	DO	Validated	57674	--	--	--	--	--	--	--	--
Outfall008	11/4/2008	TestAmerica	DO	Validated	F8K050146	--	--	--	--	**7.09 +/- 0.88 U ug/l**	--	--	--
Outfall008	11/4/2008	TestAmerica	DUP	Validated	F8K050146	--	--	--	--	--	--	--	--
Outfall008	7/16/2008	Heritage	DO	Validated	57153	--	--	--	--	--	--	--	--
Outfall008	7/16/2008	TestAmerica	DO	Validated	F8G160271	--	--	--	--	--	--	--	--
Outfall008	7/16/2008	TestAmerica	DUP	Validated	F8G160271	--	--	--	--	--	--	--	--
Outfall008	5/6/2008	Heritage	DO	Validated	56732	--	--	--	--	--	--	--	--

Table 1
Bridgeton Radiological Chemistry

					Parameter	Thorium 228	Thorium 230	Thorium 232	Thorium 234	Uranium	Uranium 234	Uranium 235	Uranium 238
					Total or Dissolved	NA	NA	NA	NA	Total	NA	NA	NA
Location	Date	lab_name_code	Sample Type	Data Status	lab_sdg								
Outfall008	5/6/2008	TestAmerica	DO	Validated	F8E060240	--	--	--	--	**0.542 +/- 0.089 U ug/l**	--	--	--
Outfall008	5/6/2008	TestAmerica	DUP	Validated	F8E060240	--	--	--	--	--	--	--	--
Outfall008	3/13/2008	Heritage	DO	Validated	65044	--	--	--	--	--	--	--	--
Outfall008	3/13/2008	TestAmerica	DO	Validated	F8C130342	--	--	--	--	**0.687 +/- 0.093 U ug/l**	--	--	--
Outfall008	3/13/2008	TestAmerica	DUP	Validated	F8C130342	--	--	--	--	--	--	--	--
Outfall008	11/29/2007	Heritage	DO	Validated	56024	--	--	--	--	--	--	--	--
Outfall008	11/29/2007	TestAmerica	DO	Validated	F7K290239	--	--	--	--	**1.07 +/- 0.18 U ug/l**	--	--	--
Outfall008	11/29/2007	TestAmerica	DUP	Validated	F7K290239	--	--	--	--	--	--	--	--
Outfall006	8/21/2007	Heritage	DO	Validated	55695	--	--	--	--	--	--	--	--
Outfall006	8/20/2007	TestAmerica	DO	Validated	F7H220163	--	--	--	--	**-20.0 +/- 2.6 U* ug/l**	--	--	--
Outfall006	8/20/2007	TestAmerica	DUP	Validated	F7H220163	--	--	--	--	--	--	--	--
Outfall006	5/22/2007	Heritage	DO	Validated	55411.1	--	--	--	--	--	--	--	--
Outfall006	5/22/2007	TestAmerica	DO	Validated	F7E220283	--	--	--	--	**-0.514 +/- 0.086 U ug/l**	--	--	--
Outfall006	5/21/2007	TestAmerica	DO	Validated	F7E220283	--	--	--	--	**-0.48 +/- 0.10 U ug/l**	--	--	--
Outfall006	5/21/2007	TestAmerica	DUP	Validated	F7E220283	--	--	--	--	--	--	--	--
Outfall006	3/8/2007	Heritage	DO	Validated	5400	--	--	--	--	--	--	--	--
Outfall006	3/8/2007	TestAmerica	DO	Validated	F7C080312	--	--	--	--	**0.424 +/- 0.065 U ug/l**	--	--	--
Outfall006	3/8/2007	TestAmerica	DUP	Validated	F7C080312	--	--	--	--	--	--	--	--
Outfall006	12/21/2006	Heritage	DO	Validated	5182	--	--	--	--	--	--	--	--
Outfall006	12/21/2006	TestAmerica	DO	Validated	F6L210233	--	--	--	--	**6.88 +/- 0.86 ug/l**	--	--	--
Outfall006	12/21/2006	TestAmerica	DUP	Validated	F6L210233	--	--	--	--	--	--	--	--
Outfall006	7/26/2006	Heritage	DO	QC pending	4611	--	--	--	--	--	--	--	--
Outfall006	6/15/2006	Heritage	DO	QC pending	4514	--	--	--	--	--	--	--	--
Outfall006	1/19/2006	Heritage	DO	QC pending	4063	--	--	--	--	--	--	--	--

Data Qualifiers/Footnotes	
Qualifier	**Definition**
--	Not analyzed/not available.
DO	Duplicate Original.
DUP	Duplicate.
G	The sample MDC is greater than the requested RL.
U	Indicates the analyte was analyzed for but not detected.
BQX	Gross Beta 04/05/2013: Per Eberline Report 13-06015, Potassium 40 results confirm actual activity range for Gross Beta
	in the range of 407-408 pCi/l.
BQX	Alpha 09/13/2013: Per Eberline Report 13-09091 and 13-10138, further analysis of potential alpha emitters ascertained
	that the sample does not contain any positive alpha emitting radionuclides.
BQX	Gross Gamma 09/13/2013: Per Eberline Report 13-09091, Gross Gamma results were calculated based on Potassium-40
	which was the only positive gamma emitting radionuclide in this sample.
BQX	Thorium 230 09/13/2013: Per Eberline Report 13-10138, Thorium 230 result is biased positive and should not be considered
	a true positive. Results should be qualified as "Estimated High."
BQX	Thorium 228 and 232 09/13/2013: Per Eberline Report 13-10138, All Thorium results should be qualified as estimated due to
	low chemical recoveries. Due to the high total solids content, this sample is not very amenable to this procedure.

THIS SLIPSHEET IS FOR SDMS PURPOSES ONLY

The ".pdf" file for this submission cannot be uploaded into SDMS. The file on CD is available in the Records Center.

40492389