Summary of Stantec Consulting Services, Inc. Dioxin/Dibenzofuran Results
Comprehensive Sampling Events May 2013

Table 1. Source Gas Results, August 2012 and May 2013
Bridgeton Landfill, LLC
Total TCDD TEQ Concentrations - Under FML Sampling
All Units µg/m^3

Location	Date	
	August 17, 2012	May 7, 2013
	Comprehensive Event #1	Comprehensive Event #2
FML 1 – Amphitheater	1.52E-08	8.68E-08
FML 2 - Second Tier	1.03E-08	1.49E-07
FML 3 - East Face	3.00E-08	1.05E-07

1. High volume samples were collected for approximately 2 hours, utilizing a manifold connecting to air space under FML liner
2. Analytical Method: EPA TO-9a
3. Total 2,3,7,8-TCDD TEQ: Calculated using US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factors (TEF)
4. **The space under the FML is not an exposure location.**

Summary of Stantec Consulting Services, Inc. Dioxin/Dibenzofuran Results
Comprehensive Sampling Events May 2013

Table 2. Source Gas Sample Results
Dioxin & Dibenzofuran Isomers & TEF Conversions
May 7 to May 8, 2013 [1,2]

Name	TEF [3]	FML Source Gas Sampling - Amphitheater				FML Source Gas Sampling – Second Tier				FML Source Gas Sampling – East Face			
		Mass	TEQ [4]	Air volume	Concentration [5]	Mass	TEQ	Air volume	Concentration	Mass	TEQ	Air volume	Concentration
Units	--	pg [6]	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3
2,3,7,8-TCDD	1	ND [7]	--	14,690	--	ND	--	19,520	--	ND	--	21,000	--
1,2,3,7,8-PeCDD	1	**1.15**	1.15	14,690	7.83E-08	**2.14**	2.14	19,520	1.10E-07	**1.83**	1.83	21,000	8.71E-08
1,2,3,4,7,8-HxCDD	0.1	ND	--	14,690	--	ND	--	19,520	--	ND	--	21,000	--
1,2,3,6,7,8-HxCDD	0.1	ND	--	14,690	--	**2.41**	0.241	19,520	1.23E-08	ND	--	21,000	--
1,2,3,7,8,9-HxCDD	0.1	ND	--	14,690	--	ND	--	19,520	--	ND	--	21,000	--
1,2,3,4,6,7,8-HpCDD	0.01	**2.29**	0.0229	14,690	1.56E-09	**5.18**	0.0518	19,520	2.65E-09	**4.13**	0.0413	21,000	1.97E-09
OCDD	0.0003	**9.15**	0.00275	14,690	1.87E-10	**20.0**	0.00600	19,520	3.07E-10	**17.6**	0.00528	21,000	2.51E-10
2,3,7,8-TCDF	0.1	ND	--	14,690	--	**1.69**	0.169	19,520	8.66E-09	ND	--	21,000	--
1,2,3,7,8-PeCDF	0.03	ND	--	14,690	--	ND	--	19,520	--	**1.02**	0.0306	21,000	1.46E-09
2,3,4,7,8-PeCDF	0.3	ND	--	14,690	--	ND	--	19,520	--	ND	--	21,000	--
1,2,3,4,7,8-HxCDF	0.1	ND	--	14,690	--	ND	--	19,520	--	**0.781**	0.0781	21,000	3.72E-09
1,2,3,6,7,8-HxCDF	0.1	**0.862**	0.0862	14,690	5.87E-09	**1.56**	0.156	19,520	7.99E-09	**1.13**	0.113	21,000	5.38E-09
1,2,3,7,8,9-HxCDF	0.1	ND	--	14,690	--	ND	--	19,520	--	**0.807**	0.0807	21,000	3.84E-09
2,3,4,6,7,8-HxCDF	0.1	ND	--	14,690	--	**1.26**	0.126	19,520	6.45E-09	ND	--	21,000	--
1,2,3,4,6,7,8-HpCDF	0.01	**1.22**	0.0122	14,690	8.30E-10	**2.58**	0.0258	19,520	1.32E-09	**2.09**	0.0209	21,000	9.95E-10
1,2,3,4,7,8,9-HpCDF	0.01	ND	--	14,690	--	ND	--	19,520	--	ND	--	21,000	--
OCDF	0.0003	**2.40**	0.000720	14,690	4.90E-11	ND	--	19,520	--	ND	--	21,000	--
Total TCDD TEQ [8]			**1.27**		**8.68E-08**		**2.92**		**1.49E-07**		**2.20**		**1.05E-07**

1. Samples of source gas were collected over approximately 2 hours.
2. Analytical Method: EPA TO-9a
3. TEF: US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factor
4. TEQ: 2,3,7,8-TCDD Toxicity Equivalent Mass/Concentration
5. Concentration calculation: ((TEQ /Air Volume) * 1,000)/1,000,000
6. pg: Picograms
7. ND: Not Detected
8. Total TCDD TEQ: Total 2,3,7,8-Tetrachlorodibenzo-p-dioxin TEQ
9. **The space under the FML is not an exposure location.**

Table 3. Air Sample Results, August 2012 and May 2013
Bridgeton Landfill, LLC
Total TCDD TEQ Concentrations
All Units µg/m^3

Location	Relative Wind Direction	Date		
		Aug 17-18, 2012 [4]	May 7-8, 2013 [5]	May 29-30, 2013 [6]
On- Site				
Summit	Downwind	1.49E-08	--	--
East Fence #1	Downwind	7.88E-09	--	--
Grassy Knoll	Downwind	--	--	--
Grassy Knoll	Upwind	1.94E-08	--	--
Grassy Knoll	Upwind	--	1.22E-08	--
Proximate to MSD Lift Station	Downwind	--	1.69E-08	--
Virbac Animal Health	Downwind	--	--	2.16E-08
Between FR & Forshaw	Upwind	--	--	3.54E-08
Amphitheater	Active Area	--	6.31E-09	--
Hill Above Flares	Active Area	--	--	9.99E-09

1. High volume samples were collected for approximately 24 hours.
2. Analytical Method: EPA TO-9a.
3. Total 2,3,7,8-TCDD TEQ: Calculated using US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factors (TEF) .
4. August 17-18, 2012: Comprehensive Sampling Event #1.
5. May 7-8, 2013: Comprehensive Sampling Event #2.
6. May 29-30, 2013: RCP Removal Sampling Event #3.
7. **Total TCDD TEQ concentrations at all sampled locations were lower than both the USEPA Industrial RSL (3.20E-07 µg/m^3) and the USEPA Residential RSL (6.40E-08 µg/m^3).**

Summary of Stantec Consulting Services, Inc. Dioxin/Dibenzofuran Results
Comprehensive Sampling Events May 2013

Table 4. Ambient Air Sample Results, May 7-8, 2013
Dioxin & Dibenzofuran Isomers & TEF Conversions
May 7 to May 8, 2013 [1,2]

Name	TEF [3]	Grassy Knoll Location (Upwind)				Proximate to MSD Lift Station (Downwind)				Amphitheater (Onsite)			
		Mass	TEQ [4]	Air volume	Concentration [5]	Mass	TEQ	Air volume	Concentration	Mass	TEQ	Air volume	Concentration
Units	--	pg [6]	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3
2,3,7,8-TCDD	1	ND	--	353,312	--	ND	--	364,573	--	ND	--	371,622	--
1,2,3,7,8-PeCDD	1	**3.00**	3.00	353,312	8.49E-09	**3.83**	3.83	364,573	1.05E-08	ND	--	371,622	--
1,2,3,4,7,8-HxCDD	0.1	ND	--	353,312	--	**2.68**	0.268	364,573	7.35E-10	**2.00**	0.200	371,622	5.38E-10
1,2,3,6,7,8-HxCDD	0.1	ND	--	353,312	--	**1.81**	0.181	364,573	4.96E-10	**2.11**	0.211	371,622	5.68E-10
1,2,3,7,8,9-HxCDD	0.1	**2.45**	0.245	353,312	6.93E-10	**2.94**	0.294	364,573	8.06E-10	**2.30**	0.230	371,622	6.19E-10
1,2,3,4,6,7,8-HpCDD	0.01	**11.1**	0.111	353,312	3.14E-10	**18.0**	0.180	364,573	4.94E-10	**12.4**	0.124	371,622	3.34E-10
OCDD	0.0003	**42.0**	0.0126	353,312	3.57E-11	**70.8**	0.0212	364,573	5.83E-11	**60.2**	0.0181	371,622	4.86E-11
2,3,7,8-TCDF	0.1	**5.57**	0.557	353,312	1.58E-09	**3.47**	0.347	364,573	9.52E-10	**5.03**	0.503	371,622	1.35E-09
1,2,3,7,8-PeCDF	0.03	**2.93**	0.0879	353,312	2.49E-10	ND	--	364,573	--	**2.95**	0.0885	371,622	2.38E-10
2,3,4,7,8-PeCDF	0.3	ND	--	353,312	--	ND	--	364,573	--	**1.33**	0.399	371,622	1.07E-09
1,2,3,4,7,8-HxCDF	0.1	ND	--	353,312	--	**3.00**	0.300	364,573	8.23E-10	**2.64**	0.264	371,622	7.10E-10
1,2,3,6,7,8-HxCDF	0.1	**2.31**	0.231	353,312	6.54E-10	**2.78**	0.278	364,573	7.63E-10	**2.23**	0.223	371,622	6.00E-10
1,2,3,7,8,9-HxCDF	0.1	ND	--	353,312	--	**1.09**	0.109	364,573	2.99E-10	ND	--	371,622	--
2,3,4,6,7,8-HxCDF	0.1	ND	--	353,312	--	**2.54**	0.254	364,573	6.97E-10	ND	--	371,622	--
1,2,3,4,6,7,8-HpCDF	0.01	**5.86**	0.0586	353,312	1.66E-10	**8.87**	0.0887	364,573	2.43E-10	**7.11**	0.0711	371,622	1.91E-10
1,2,3,4,7,8,9-HpCDF	0.01	ND	--	353,312	--	**1.83**	0.0183	364,573	5.02E-11	**1.30**	0.0130	371,622	3.50E-11
OCDF	0.0003	**4.44**	0.00133	353,312	3.77E-12	**7.53**	0.00226	364,573	6.20E-12	**5.05**	0.00152	371,622	4.08E-12
Total TCDD TEQ [8]			**4.30**		**1.22E-08**		**6.17**		**1.69E-08**		**2.35**		**6.31E-09**
USEPA Industrial RSL [9]					**3.20E-07**				**3.20E-07**				**3.20E-07**
USEPA Residential RSL [10]					**6.40E-08**				**6.40E-08**				**6.40E-08**

1. Samples of source gas were collected over approximately 2 hours
2. Analytical Method: EPA TO-9a
3. TEF: US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factor
4. TEQ: 2,3,7,8-TCDD Toxicity Equivalent Mass/Concentration
5. Concentration calculation: ((TEQ * Air Volume) * 1,000)/1,000,000
6. pg: Picograms
7. ND: Not Detected
8. Total TCDD TEQ: Total 2,3,7,8-Tetrachlorodibenzo-p-dioxin TEQ
9. RSL: EPA Regional Screening Level for Dioxins in Industrial Air (concentration derived to correspond to a [hypothetical] excess lifetime cancer risk of 1 in 1,000,000)
10. RSL: EPA Regional Screening Level for Dioxins in Residential Air (concentration derived to correspond to a [hypothetical] excess lifetime cancer risk of 1 in 1,000,000)
11. **Total TCDD TEQ concentrations at all sampled locations were lower than both the USEPA Industrial RSL (3.20E-07 µg/m^3) and the USEPA Residential RSL (6.40E-08 µg/m^3).**

Table 5. Air Sample Results During RCP Removal, May 29-30, 2013
Bridgeton Landfill, LLC
Total TCDD TEQ Concentrations
All Units µg/m^3

Location	Date
	May 29 through May 30
Between FR & Forshaw Warehouse – Upwind	3.54E-08
Virbac Animal Health – Downwind	2.16E-08
Hill Above Flares – On-Site	9.99E-09

1. High volume samples were collected for approximately 24 hours.
2. Analytical Method: EPA TO-9a
3. Total 2,3,7,8-TCDD TEQ: Calculated using US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factors (TEF)
4. **Total TCDD TEQ concentrations at all sampled locations were lower than both the USEPA industrial RSLs (3.20E-07 µg/m^3) and the USEPA Residential RSL (6.40E-08 µg/m^3).**

Summary of Stantec Consulting Services, Inc. Dioxin/Dibenzofuran Results
Comprehensive Sampling Events May 2013

Table 6. Ambient Air Sample Results During RCP Removal at Bridgeton Landfill
Dioxin & Dibenzofuran Isomers & TEF Conversions
May 29, 2013 [1,2]

Name	TEF [3]	Between FR & Forshaw Warehouse - Upwind				Virbac Animal Health - Downwind				Hill Above Flares – On-Site			
		Mass	TEQ [4]	Air volume	Concentration [5]	Mass	TEQ	Air volume	Concentration	Mass	TEQ	Air volume	Concentration
Units	--	pg [6]	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3	pg	pg	Liters	µg/m^3
2,3,7,8-TCDD	1	ND	--	354,240	--	ND	--	367,200	--	ND	--	364,320	--
1,2,3,7,8-PeCDD	1	**6.20**	6.20	354,240	1.75E-08	**4.12**	4.120	367,200	1.12E-08	**2.67**	2.670	364,320	7.33E-09
1,2,3,4,7,8-HxCDD	0.1	**3.72**	0.372	354,240	1.05E-09	**2.25**	0.225	367,200	6.13E-10	ND	--	364,320	--
1,2,3,6,7,8-HxCDD	0.1	**7.96**	0.796	354,240	2.25E-09	**4.73**	0.473	367,200	1.29E-09	ND	--	364,320	--
1,2,3,7,8,9-HxCDD	0.1	**5.55**	0.555	354,240	1.57E-09	**3.65**	0.365	367,200	9.94E-10	ND	--	364,320	--
1,2,3,4,6,7,8-HpCDD	0.01	**64.2**	0.642	354,240	1.81E-09	**20.9**	0.209	367,200	5.69E-10	**14.1**	0.141	364,320	3.87E-10
OCDD	0.0003	**1020**	0.306	354,240	8.64E-10	**133**	0.040	367,200	1.09E-10	**152**	0.046	364,320	1.25E-10
2,3,7,8-TCDF	0.1	**4.27**	0.427	354,240	1.21E-09	**5.07**	0.507	367,200	1.38E-09	ND	--	364,320	--
1,2,3,7,8-PeCDF	0.03	**4.85**	0.146	354,240	4.11E-10	**3.86**	0.116	367,200	3.15E-10	**3.10**	0.093	364,320	2.55E-10
2,3,4,7,8-PeCDF	0.3	**3.47**	1.04	354,240	2.94E-09	**2.18**	0.654	367,200	1.78E-09	ND	--	364,320	--
1,2,3,4,7,8-HxCDF	0.1	**3.90**	0.390	354,240	1.10E-09	**3.73**	0.373	367,200	1.02E-09	**1.70**	0.170	364,320	4.67E-10
1,2,3,6,7,8-HxCDF	0.1	**6.32**	0.632	354,240	1.78E-09	**4.06**	0.406	367,200	1.11E-09	**3.04**	0.304	364,320	8.34E-10
1,2,3,7,8,9-HxCDF	0.1	**2.90**	0.290	354,240	8.19E-10	**1.32**	0.132	367,200	3.59E-10	ND	--	364,320	--
2,3,4,6,7,8-HxCDF	0.1	**4.60**	0.460	354,240	1.30E-09	**2.01**	0.201	367,200	5.47E-10	**1.29**	0.129	364,320	3.54E-10
1,2,3,4,6,7,8-HpCDF	0.01	**22.7**	0.227	354,240	6.41E-10	**10.2**	0.102	367,200	2.78E-10	**8.39**	0.084	364,320	2.30E-10
1,2,3,4,7,8,9-HpCDF	0.01	**3.58**	0.0358	354,240	1.01E-10	ND	--	367,200	--	ND	--	364,320	--
OCDF	0.0003	**41.6**	0.0125	354,240	3.52E-11	**13.9**	0.004	367,200	1.14E-11	**8.81**	0.003	364,320	7.25E-12
Total TCDD TEQ [8]			**12.53**		**3.54E-08**		**7.93**		**2.16E-08**		**3.64**		**9.99E-09**
USEPA Industrial RSL [9]					**3.20E-07**				**3.20E-07**				**3.20E-07**
USEPA Residential RSL					**6.40E-08**				**6.40E-08**				**6.40E-08**

1. Samples were collected for approximately 24 hours.
2. Analytical Method: EPA TO-9a
3. TEF: US EPA (EPA/100/R-10/005, December 2010) Toxicity Equivalence Factor
4. TEQ: 2,3,7,8-TCDD Toxicity Equivalent Mass/Concentration
5. Concentration calculation: ((TEQ /Air Volume) * 1,000)/1,000,000
6. pg: Picograms
7. ND: Not Detected
8. Total TCDD TEQ: Total 2,3,7,8-Tetrachlorodibenzo-p-dioxin TEQ
9. RSL: EPA Regional Screening Level for 2,3,7,8-TCDD in Industrial Air (Concentration derived to correspond to a [hypothetical] excess lifetime cancer risk of 1 in 1,000,000)
10. RSL EPA Regional Screening Level for 2,3,7,8-TCDD in Residential Air (Concentration derived to correspond to a [hypothetical] excess lifetime cancer risk of 1 in 1,000,000)
11. **Total TCDD TEQ concentrations at all sampled locations were lower than both the USEPA Industrial RSL (3.20E-07 µg/m^3) and the USEPA Residential RSL (6.40E-08 µg/m^3).**