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MEMO

To:
Attn: Diane Schott
U.S. Environmental Protection Agency,
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Copies:
Bob Conger, Celanese
Ryan Kelly, VDEQ
Dan Stark, USACE

From:
Mike Dant, ARCADIS

Date:
August 9, 2013

ARCADIS Project No.:
MD001158.01.01

Subject:
RCRA FLP Phase I/IB Data Package Addendum – Dioxin Values
Celco Plant, Narrows , Virginia

The purpose of this memorandum is to update the July 16, 2013 RFI Phase I/IB Data Package. Specifically, this memorandum presents updated Dioxin/Furan results to incorporate the information received from Diane Schott and Dr. Ruth Prince on appropriate TCDD equivalent concentration limits for the Celanese Celco Plant in Narrows, VA.

Celanese appreciates EPA's note of 7/19/2013 (See **Attachment 1**) addressing dioxin values in soils as the first feedback of the Phase 1/1B Data Report. Celanese has compared the Dioxin 2,3,7,8-TCDD toxicity equivalent concentration results presented in the Celco Site RCRA Phase I/IB data package to the EPA residential cleanup value of 50 ng/kg (parts per trillion) and the EPA industrial/commercial cleanup value of 664 ng/kg (parts per trillion) referenced in the 7/19/2013 EPA communication. Revised tables 12-3, 14-5 and 17-1 are included in **Attachment 2** and present the Phase I/IB Dioxin/Furan 2,3,7,8-TCDD TEC results compared to the cleanup value referenced above.

The revised analysis indicates that all 2,3,7,8-TCDD TEC results are less than the industrial cleanup value of 664 ng/kg and only two sample results (SB007 1-2' and SB008A 1-3') had results slightly exceeding the residential cleanup value of 50 ng/kg. Based on this revised analysis Celanese believes that the Site has been adequately characterized with respect to Dioxins/Furans and that additional sample collection for Dioxin/Furan analysis is not warranted. Therefore we are seeking your concurrence with our plan to eliminate the eight soil sample locations (SB043 through SB050) which were included for Dioxin/Furan analysis in the original proposed Phase II scope of work.

Upon receipt of your comments on this revised Dioxin section of the report and other comments you might have on the remainder of the report, Celanese/ARCADIS will reissue the appropriate sections (e.g. section 17 for dioxins) of the Phase 1/1B report such that those sections can be replaced in the binders as well as a new electronic copy of the entire report. If the received comments require changes to a significant portion of the report, Celanese/ARCADIS will reissue the entire report, both hard copies and electronic versions.

Attachment 1

Dant, Mike

From: Schott, Diane <Schott.Diane@epa.gov>
Sent: Friday, July 19, 2013 4:06 PM
To: Conger, Robert (Bob), CA RKH/US
Cc: Dant, Mike
Subject: Dioxin Clean Up Levels

Hi

With respect to Table 14-5, please note the following message from Ruth Prince, Ph.D., toxicologist, that addresses dioxin clean up levels :

For dioxin, the current RSL Table cancer slope factor is a CalEPA value and EPA is still finishing up our cancer slope factor assessment. So, although the RSL Table shows the cancer-based values for screening purposes, they are not particularly relevant at this time because cleanup values are currently based on the EPA RfD (which will fall in the mid-range of acceptable cancer risk once the EPA slope factor is finalized). The EPA RfD produces a default residential cleanup value of 50 ng/kg (parts per trillion) and a default industrial/commercial cleanup value of 664 ng/kg. The dioxin – 2,3,7,8-TCDD equivalent concentration results should be compared to these cleanup values.

Note that these values are "cleanup values" rather than "screening levels".

Thanks,
Diane Schott
RCRA Project Manager
Office of Remediation (3LC20)
Land and Chemicals Division
EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

ATTACHMENT 2

Table 12-3
Dioxin/Furan TEF Adjustment Calculations - Tank Farm
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB026A SS026A(1.2-1.7) 11/6/2012		SB030A DS030A(0.0-0.5) 11/6/2012	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	4.4 J	0.044	91	0.91
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	36	0.36	49	0.49
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.70 J	0.007	5.1 J	0.051
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	1.9 J	0.19	63	6.3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.49 J	0.049	4.6 J	0.46
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.62 J	0.062	20	2
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	1.5 J	0.15	7.7	0.77
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	< 0.12 UB	0	0.87 J	0.087
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.2 J	0.12	12	1.2
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.31 J	0.0093	13	0.39
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	< 0.27 UB	0	4.8 J	4.8
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.42 J	0.042	24	2.4
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.54 J	0.162	29	8.7
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.84 J	0.084	18	1.8
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.22 J	0.22	1.6	1.6
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	10 J	0.003	19	0.0057
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	540	0.162	350	0.105
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					1.6643		32.0687
USEPA Residential Cleanup Value (pg/g)					50		50
USEPA Industrial Cleanup Value (pg/g)					664		664

Notes:

Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF

Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration

Bolded values indicate detected compound

Green shading indicates concentration exceeds Cleanup Values

J - Result is estimated

U - Result is not detected at the reporting limit

UB - Result is not detected because of blank contamination

pg/g - picogram per gram

RSL - Regional Screening Level (USEPA May 2012)

2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin

TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)

USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB001A SS001A(0-0.5) 11/3/2011		SB001A DS001A(1.5-9.5) 11/3/2011		SB001B SS001B(0-0.5) 11/3/2011		SB001B DS001B(1.5-9.5) 11/3/2011		SB001C SS001C(0-0.5) 11/3/2011	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	2.4 J	0.024	0.16 J	0.0016	1.1 J	0.011	0.72 J	0.0072	23	0.23
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	23	0.23	2.2 J	0.022	24	0.24	7.9 J	0.079	40	0.4
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.27 U	0	0.27 U	0	0.2 U	0	0.23 U	0	0.44 J	0.0044
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.56 J	0.056	0.075 U	0	0.21 J	0.021	0.35 J	0.035	0.42 J	0.042
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.34 J	0.034	0.16 U	0	0.25 J	0.025	0.18 U	0	0.35 J	0.035
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.27 J	0.027	0.078 U	0	0.082 U	0	0.1 U	0	0.37 J	0.037
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.67 J	0.067	0.16 U	0	0.34 J	0.034	0.33 J	0.033	1.2 J	0.12
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.17 U	0	0.11 U	0	0.11 U	0	0.16 U	0	0.098 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.44 J	0.044	0.15 U	0	0.70 J	0.07	0.17 U	0	0.89 J	0.089
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.21 U	0	0.15 U	0	0.17 U	0	0.18 J	0.0054	0.13 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.3 U	0	0.18 U	0	0.17 J	0.17	0.27 U	0	0.19 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.11 U	0	0.076 U	0	0.078 U	0	0.099 U	0	0.45 J	0.045
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.2 U	0	0.13 U	0	0.16 U	0	0.15 U	0	0.12 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.70 J	0.07	0.26 U	0	0.30 J	0.03	0.50 J	0.05	0.18 U	0
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.44 U	0	0.41 U	0	0.37 U	0	0.5 U	0	0.27 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	4.9 J	0.00147	0.16 U	0	2.1 J	0.00063	1.1 J	0.00033	69	0.0207
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	1100	0.33	99	0.0297	1500	0.45	260	0.078	1000	0.3
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.88347	0.0533	1.05163	0.28793	1.3231				
USEPA Residential Cleanup Value (pg/g)					50	50	50	50	50				
USEPA Industrial Cleanup Value (pg/g)					664	664	664	664	664				

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB001C DS001C(1.5-9.5) 11/3/2011		SB001D SS001D (0.0-0.5) 11/1/2012		SB001D DS001D (1.5-9.5) 11/1/2012		SB001E SS001E (0.0-0.5) 11/1/2012	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	0.44 J	0.0044	0.71 J	0.0071	0.046 J	0.00046	0.40 J	0.004
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	2.2 J	0.022	25	0.25	0.82 J	0.0082	4.7 J	0.047
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.3 U	0	0.092 J	0.00092	0.025 U	0	0.038 U	0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.28 J	0.028	0.035 UB	0	0.060 UB	0	0.030 UB	0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.17 U	0	0.072 U	0	0.040 U	0	0.061 U	0
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.12 U	0	0.035 UB	0	0.025 U	0	0.028 UB	0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.18 U	0	0.20 J	0.02	0.041 U	0	0.11 J	0.011
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.28 U	0	0.044 U	0	0.032 U	0	0.040 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.16 U	0	0.67 J	0.067	0.039 U	0	0.33 J	0.033
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.29 U	0	0.052 U	0	0.11 J	0.0033	0.036 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.26 U	0	0.14 J	0.14	0.024 U	0	0.031 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.14 U	0	0.036 U	0	0.026 U	0	0.031 U	0
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.23 U	0	0.045 U	0	0.033 U	0	0.036 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.38 U	0	0.055 U	0	0.030 J	0.003	0.061 U	0
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.57 U	0	0.055 U	0	0.055 U	0	0.048 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	0.61 J	0.000183	2.5 J	0.00075	0.14 UB	0	0.53 UB	0
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	38	0.0114	3300	0.99	52	0.0156	240	0.072
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.065983		1.47577		0.03056		0.167
USEPA Residential Cleanup Value (pg/g)					50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664

Notes:

Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration

Bolded values indicate detected compound

Green Shading indicates concentration exceeds Cleanup Values

J - Result is estimated

U - Result is not detected at the reporting limit

UB - Result is not detected because of blank contamination

pg/g - picogram per gram

RSL - Regional Screening Level (USEPA May 2012)

2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin

TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)

USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB001E DS001E (1.5-9.5) 11/1/2012		SB002A SS002A(0.0-0.5) 11/14/2011		SB002A DS002A(1.5-9.5) 11/14/2011		SB002B SS002B(0-0.5) 11/3/2011		SB002B DS002B(1.5-9.5) 11/3/2011		SB002C SS002C(0-0.5) 11/15/2011		SB002C DS002C(1.5-9.5) 11/15/2011	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	0.019 U	0	1.3 J	0.013	1.4 J	0.014	0.21 J	0.0021	0.42 J	0.0042	5.4 J	0.054	1.3 J	0.013
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	0.77 J	0.0077	10	0.1	7.5	0.075	13	0.13	6.5	0.065	18	0.18	6.2	0.062
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.029 U	0	0.24 U	0	0.48 U	0	0.13 U	0	0.17 U	0	0.80 J	0.008	0.29 U	0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.025 U	0	0.094 U	0	0.16 U	0	0.057 U	0	0.056 U	0	1.9 J	0.19	0.18 J	0.018
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.043 U	0	0.16 U	0	0.23 U	0	0.096 U	0	0.11 U	0	0.16 U	0	0.15 U	0
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.054 UB	0	0.1 U	0	0.15 U	0	0.054 U	0	0.053 U	0	0.68 J	0.068	0.12 U	0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.047 U	0	0.17 U	0	0.25 U	0	0.11 U	0	0.13 J	0.013	0.46 J	0.046	0.15 U	0
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.031 U	0	0.14 U	0	0.23 U	0	0.091 U	0	0.083 U	0	0.2 U	0	0.18 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.044 U	0	0.15 U	0	0.23 U	0	0.43 J	0.043	0.25 J	0.025	0.30 J	0.03	0.14 U	0
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.071 J	0.00213	0.19 U	0	0.17 U	0	0.095 U	0	0.1 U	0	0.26 U	0	0.27 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.026 U	0	0.21 U	0	0.22 U	0	0.13 U	0	0.15 U	0	0.3 U	0	0.27 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.026 U	0	0.11 U	0	0.16 U	0	0.059 U	0	0.057 U	0	0.32 J	0.032	0.16 J	0.016
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.041 U	0	0.15 U	0	0.15 U	0	0.083 U	0	0.093 U	0	0.41 J	0.123	0.2 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.068 U	0	0.23 U	0	0.23 U	0	0.14 U	0	0.16 J	0.016	0.72 J	0.072	0.99 J	0.099
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.058 U	0	0.33 U	0	0.34 U	0	0.24 U	0	0.25 U	0	0.65 J	0.65	0.55 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	0.12 UB	0	1.8 J	0.00054	1.9 J	0.00057	0.42 J	0.000126	0.86 J	0.000258	7.8 J	0.00234	0.66 J	0.000198
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	21	0.0063	420	0.126	240	0.072	1900	0.57	480	0.144	280	0.084	220	0.066
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.01613		0.23954		0.16157		0.745226		0.267458		1.53934		0.274198
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination
pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
 Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
 Celco Plant, Narrows, Virginia
 Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB003A SS003A (0-0.5) 11/10/2011		SB003A DS003A (6-10) 11/10/2011		SB003B SS003B (0-0.5) 11/4/2011		SB003B DS003B (9.0-13.0) 11/4/2011		SB003C SS003C(0-0.5) 11/11/2011		SB003C DS003C(4.3-5.3) 11/11/2011		SB003D SS003D(0.0-0.5) 11/2/2012		SB003D DS003D(5.5-8.7) 11/2/2012		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	12	0.12	40	0.4	8.3	0.083	42	0.42	11	0.11	29	0.29	18	0.18	120	1.2	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	49	0.49	300	3	29	0.29	990	9.9	65	0.65	160	1.6	120	1.2	510	5.1	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	1.6 J	0.016	6.1	0.061	0.66 J	0.0066	9.6	0.096	0.92 J	0.0092	6.6	0.066	2.0 J	0.02	30	0.3	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	4.4 J	0.44	9.7	0.97	4.5 J	0.45	11	1.1	2.6 J	0.26	13	1.3	2.8 J	0.28	52	5.2	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.45 J	0.045	1.2 J	0.12	0.50 J	0.05	5.6 J	0.56	0.41 U	0	1.8 J	0.18	0.85 J	0.085	1.8 J	0.18	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.99 J	0.099	4.9 J	0.49	1.6 J	0.16	4.7 J	0.47	1.2 J	0.12	5.0 J	0.5	1.7 J	0.17	17	1.7	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	1.8 J	0.18	8.3	0.83	1.1 J	0.11	20	2	1.3 J	0.13	6.0 J	0.6	3.2 J	0.32	14 J	1.4	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.23 U	0	1 U	0	0.25 J	0.025	0.91 U	0	0.32 U	0	1.2 U	0	0.055 U	0	2.5 J	0.25	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.1 J	0.11	0.87 U	0	1.4 J	0.14	14	1.4	0.77 J	0.077	6.4	0.64	1.8 J	0.18	5.8 J	0.58	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.39 J	0.0117	0.88 J	0.0264	1.2 J	0.036	1.4 J	0.042	0.47 U	0	1.2 J	0.036	0.38 J	0.0114	4.2 J	0.126	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.27 J	0.27	0.94 J	0.94	0.66 J	0.66	1.8 J	1.8	0.58 U	0	1.6 J	1.6	0.70 J	0.7	0.33 U	0	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.65 J	0.065	0.98 U	0	1.8 J	0.18	1.6 J	0.16	0.24 U	0	1.3 J	0.13	0.55 J	0.055	8.2 J	0.82	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.96 J	0.288	3.1 J	0.93	2.1 J	0.63	2.9 J	0.87	0.70 J	0.21	4.8 J	1.44	1.0 J	0.3	19	5.7	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	1.0 J	0.1	3.1	0.31	2.3	0.23	4.5	0.45	0.84 J	0.084	6.1	0.61	0.88 J	0.088	5.6	0.56	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.34 U	0	0.64 U	0	0.38 U	0	0.8 U	0	0.68 U	0	0.85 U	0	0.29 J	0.29	0.57 J	0.57	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	23	0.0069	100	0.03	8.1 J	0.00243	85	0.0255	33	0.0099	42	0.0126	56	0.0168	330	0.099	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	1300	0.39	8400 J	2.52	700	0.21	8400 J	2.52	2500	0.75	1600	0.48	1600	0.48	4600	1.38	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					2.6316		10.6274		3.26303		21.8135		2.4101		9.4846		4.3762		25.165	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
 Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
 Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
 J - Result is estimated
 U - Result is not detected at the reporting limit
 UB - Result is not detected because of blank contamination

pg/g - picogram per gram
 RSL - Regional Screening Level (USEPA May 2012)
 2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
 TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
 USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB003E SS003E (0.0-0.5) 11/5/2012		SB003E DS003E (4.9-5.7) 11/5/2012		SB003F SS003F(0.0-0.5) 11/2/2012		SB003F DS003F(9.0-10.0) 11/2/2012		SB004A SS004A (0-0.5) 11/30/2011		SB004A DS004A (1.5-9.5) 11/30/2011		SB004B SS004B (0-0.5) 11/30/2011		SB004B DS004B (1.5-9.5) 11/30/2011		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	20	0.2	72	0.72	26	0.26	6.1	0.061	9.3	0.093	4.0 J	0.04	13	0.13	0.080 J	0.0008	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	340	3.4	270	2.7	120	1.2	47	0.47	40	0.4	5.1 J	0.051	61	0.61	3.8 J	0.038	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	2.8 J	0.028	23	0.23	13	0.13	1.2 J	0.012	0.68 J	0.0068	0.11 U	0	1.0 J	0.01	0.083 U	0	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	3.9 J	0.39	40	4	14	1.4	2.1 J	0.21	4.5 J	0.45	0.042 J	0.0042	2.5 J	0.25	0.033 U	0	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.95 J	0.095	9.4	0.94	0.66 U	0	1.4 J	0.14	0.35 J	0.035	0.063 J	0.0063	0.61 J	0.061	0.071 U	0	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	2.1 J	0.21	20	2	5.6 J	0.56	1.2 J	0.12	3.1 J	0.31	0.051 J	0.0051	1.4 J	0.14	0.03 U	0	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	5.9	0.59	19	1.9	4.0 J	0.4	2.2 J	0.22	1.2 J	0.12	0.14 J	0.014	1.9 J	0.19	0.074 U	0	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.087 U	0	2.0 J	0.2	2.2 J	0.22	0.17 U	0	0.10 J	0.01	0.087 U	0	0.17 U	0	0.048 U	0	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	3.4 J	0.34	37	3.7	3.6 J	0.36	5.6 J	0.56	0.75 J	0.075	0.19 J	0.019	1.6 J	0.16	0.16 J	0.016	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.50 J	0.015	4.8 J	0.144	2.4 J	0.072	0.65 J	0.0195	1.4 J	0.042	0.071 U	0	0.64 J	0.0192	0.057 U	0	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.91 J	0.91	5.8	5.8	1.0 J	1	1.1 J	1.1	0.35 J	0.35	0.083 U	0	0.15 U	0	0.077 U	0	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.97 J	0.097	7.8	0.78	2.5 J	0.25	0.53 J	0.053	0.39 J	0.039	0.049 J	0.0049	0.60 J	0.06	0.03 U	0	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	1.0 J	0.3	16	4.8	4.2 J	1.26	0.92 J	0.276	0.83 J	0.249	0.054 U	0	0.82 J	0.246	0.053 U	0	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.71 J	0.071	5.1	0.51	1.8	0.18	0.95 J	0.095	1.0 UB	0	0.52 UB	0	0.97 UB	0	0.28 UB	0	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.13 J	0.13	1.2	1.2	0.33 U	0	0.16 U	0	0.16 U	0	0.12 U	0	0.46 J	0.46	0.13 U	0	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	70	0.021	140	0.042	100	0.03	18	0.0054	27	0.0081	3.0 J	0.0009	19	0.0057	0.050 J	0.000015	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	4000	1.2	2800	0.84	3400	1.02	1500	0.45	590	0.177	210	0.063	1400	0.42	410	0.123	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					7.997		30.506		8.342		3.7919		2.3649		0.2084		2.7619		0.177815	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
 Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
 Celco Plant, Narrows, Virginia
 Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB004C SS004C (0-0.5) 11/30/2011		SB004C DS004C (1.5-9.5) 11/30/2011		SB004D SS004D (0.9-1.4) 7/25/2012		SB004D DS004D (5.4-7.6) 7/25/2012		SB004E SS004E (0.3-0.8) 7/26/2012		SB004E DS004E (2.8-5.8) 7/26/2012		SB004F SS004F (0.9-1.4) 7/25/2012		SB004F DS004F (6.0-6.5) 7/25/2012		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	9.8	0.098	0.066 U	0	11	0.11	1.2 J	0.012	3.3 J	0.033	1.3 J	0.013	1.7 J	0.017	1.4 J	0.014	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	72	0.72	0.31 J	0.0031	72	0.72	5.8 J	0.058	22	0.22	4.5 J	0.045	6.2	0.062	6.9 J	0.069	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.93 J	0.0093	0.1 U	0	0.77 J	0.0077	0.29 U	0	0.32 J	0.0032	0.18 U	0	0.36 U	0	0.27 U	0	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	1.2 J	0.12	0.045 U	0	0.78 J	0.078	0.56 J	0.056	0.46 J	0.046	0.18 J	0.018	0.18 J	0.018	0.39 J	0.039	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.57 J	0.057	0.069 U	0	0.47 J	0.047	0.26 U	0	0.17 U	0	0.13 U	0	0.23 U	0	0.27 U	0	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	1.1 J	0.11	0.045 U	0	1.3 J	0.13	0.13 U	0	0.43 J	0.043	0.19 J	0.019	0.12 U	0	0.28 J	0.028	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	1.9 J	0.19	0.069 U	0	2.3 J	0.23	0.37 J	0.037	0.79 J	0.079	0.14 U	0	0.23 U	0	0.30 U	0	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.078 U	0	0.067 U	0	0.20 U	0	0.22 U	0	0.13 U	0	0.12 U	0	0.17 U	0	0.21 U	0	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.0 J	0.1	0.065 U	0	1.4 J	0.14	0.24 U	0	0.57 J	0.057	0.12 U	0	0.22 U	0	0.27 U	0	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	1.5 J	0.045	0.06 U	0	0.41 J	0.0123	0.38 J	0.0114	0.12 U	0	0.11 U	0	0.14 U	0	0.17 U	0	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.62 J	0.62	0.086 U	0	0.29 J	0.29	0.36 U	0	0.17 U	0	0.14 U	0	0.23 U	0	0.26 U	0	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.36 J	0.036	0.045 U	0	0.42 J	0.042	0.15 U	0	0.17 J	0.017	0.069 U	0	0.16 U	0	0.15 U	0	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	1.2 J	0.36	0.057 U	0	0.52 J	0.156	0.22 J	0.066	0.21 J	0.063	0.095 U	0	0.13 U	0	0.16 U	0	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	1.8	0.18	0.094 U	0	0.91 J	0.091	1.4 J	0.14	0.52 J	0.052	0.14 U	0	0.17 U	0	0.33 J	0.033	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.16 U	0	0.13 U	0	0.40 J	0.4	0.45 U	0	0.23 U	0	0.20 U	0	0.27 U	0	0.39 U	0	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	33	0.0099	0.11 U	0	12	0.0036	2.4 J	0.00072	5.2 J	0.00156	0.52 J	0.000156	3.3 J	0.00099	2.5 J	0.00075	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	1400	0.42	20	0.006	1000	0.3	100	0.03	500	0.15	61	0.0183	290	0.087	94	0.0282	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					3.0752		0.0091		2.7576		0.41112		0.76476		0.113456		0.18499		0.21195	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
 Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
 Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
 J - Result is estimated
 U - Result is not detected at the reporting limit
 UB - Result is not detected because of blank contamination

pg/g - picogram per gram
 RSL - Regional Screening Level (USEPA May 2012)
 2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
 TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
 USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB005A SS005A(0-0.5) 11/29/2011		SB005A DS005A(1.5-9.5) 11/29/2011		SB005B SS005B (0-0.5) 11/18/2011		SB005B DS005B (2-4) 11/18/2011		SB005C SS005C (0-0.5) 11/18/2011		SB005C DS005C (2-5) 11/18/2011		SB005D SS005D (0.0-0.5) 7/23/2012		SB005D DS005D (1.5-9.5) 7/24/2012		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	0.14 J	0.0014	0.048 U	0	1.1 J	0.011	0.26 J	0.0026	2.1 J	0.021	0.26 U	0	11	0.11	1.4 J	0.014	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	0.97 J	0.0097	0.079 U	0	9	0.09	1.0 J	0.01	22	0.22	0.39 U	0	52	0.52	11	0.11	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.076 U	0	0.071 U	0	0.47 U	0	0.23 U	0	0.27 U	0	0.39 U	0	0.89 J	0.0089	0.18 U	0	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.036 U	0	0.035 U	0	0.18 U	0	0.16 U	0	0.16 U	0	0.16 U	0	1.4 J	0.14	0.19 J	0.019	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.058 U	0	0.061 U	0	0.26 U	0	0.22 U	0	0.18 U	0	0.26 U	0	0.36 J	0.036	0.19 U	0	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.035 U	0	0.037 U	0	0.17 U	0	0.16 U	0	0.18 U	0	0.17 U	0	1.1 J	0.11	0.27 J	0.027	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.059 U	0	0.062 U	0	0.27 U	0	0.22 U	0	0.58 J	0.058	0.29 U	0	1.4 J	0.14	0.34 J	0.034	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.081 U	0	0.09 U	0	0.21 U	0	0.2 U	0	0.2 U	0	0.2 U	0	0.13 U	0	0.15 U	0	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.055 U	0	0.058 U	0	0.25 U	0	0.21 U	0	0.38 J	0.038	0.26 U	0	1.1 J	0.11	0.47 J	0.047	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.072 U	0	0.066 U	0	0.26 U	0	0.28 U	0	0.24 U	0	0.26 U	0	0.26 J	0.0078	0.17 U	0	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.086 U	0	0.074 U	0	0.32 U	0	0.28 U	0	0.29 U	0	0.32 U	0	0.29 J	0.29	0.23 U	0	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.035 U	0	0.034 U	0	0.17 U	0	0.14 U	0	0.16 U	0	0.17 U	0	0.43 J	0.043	0.11 U	0	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.064 U	0	0.051 U	0	0.24 U	0	0.21 U	0	0.21 U	0	0.23 U	0	0.36 J	0.108	0.16 U	0	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.37 UB	0	0.1 UB	0	0.29 U	0	0.39 U	0	0.86 J	0.086	0.38 U	0	0.69 J	0.069	0.25 U	0	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.14 U	0	0.15 U	0	0.4 U	0	0.53 U	0	0.47 U	0	0.51 U	0	0.31 U	0	0.35 U	0	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	0.25 J	0.000075	0.072 U	0	3.0 J	0.0009	0.90 J	0.00027	9.3 J	0.00279	0.79 J	0.000237	21 J	0.0063	1.6 J	0.00048	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	65	0.0195	1.7 J	0.00051	430 J	0.129	16 J	0.0048	400	0.12	6.6 UB	0	770	0.231	510	0.153	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.030675		0.00051		0.2309		0.01767		0.54579		0.000237		1.93		0.40448	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB005E SS005E (0.0-0.5) 7/23/2012		SB005E DS005E (1.5-9.5) 7/24/2012		SB006A SS006A(0-0.5) 11/29/2011		SB006A DS006A(9.7-10.7) 11/29/2011		SB006B SS006B(0-0.5) 11/29/2011		SB006B DS006B(1.5-9.5) 11/29/2011		SB006C SS006C(0-0.5) 11/29/2011		SB006C DS006C(2-4.2) 11/29/2011	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	4.5 J	0.045	0.10 U	0	2.1 J	0.021	0.044 U	0	7.1	0.071	0.072 J	0.00072	5.7 J	0.057	0.25 J	0.0025
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	26	0.26	0.66 J	0.0066	8.3	0.083	0.27 J	0.0027	22	0.22	0.24 J	0.0024	27	0.27	5.1 J	0.051
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.56 J	0.0056	0.19 U	0	0.092 U	0	0.069 U	0	0.50 J	0.005	0.078 U	0	0.40 J	0.004	0.085 U	0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.70 J	0.07	0.082 U	0	0.30 J	0.03	0.031 U	0	0.26 J	0.026	0.045 U	0	0.44 J	0.044	0.04 U	0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.46 J	0.046	0.15 U	0	0.072 U	0	0.049 U	0	0.063 U	0	0.075 U	0	0.25 J	0.025	0.068 U	0
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.92 J	0.092	0.081 U	0	0.27 J	0.027	0.03 U	0	0.29 J	0.029	0.043 U	0	0.56 J	0.056	0.041 U	0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.96 J	0.096	0.15 U	0	0.26 J	0.026	0.05 U	0	0.79 J	0.079	0.075 U	0	0.80 J	0.08	0.18 J	0.018
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.13 U	0	0.14 U	0	0.14 U	0	0.075 U	0	0.12 U	0	0.061 U	0	0.093 U	0	0.11 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.3 J	0.13	0.14 U	0	0.23 J	0.023	0.046 U	0	0.19 J	0.019	0.07 U	0	0.58 J	0.058	0.12 J	0.012
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.24 J	0.0072	0.16 U	0	0.13 J	0.0039	0.061 U	0	0.082 U	0	0.084 U	0	0.13 U	0	0.076 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.24 U	0	0.18 U	0	0.12 U	0	0.076 U	0	0.084 U	0	0.11 U	0	0.17 U	0	0.1 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.34 J	0.034	0.10 U	0	0.10 J	0.01	0.028 U	0	0.10 J	0.01	0.043 U	0	0.12 J	0.012	0.041 U	0
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.32 J	0.096	0.14 U	0	0.094 U	0	0.051 U	0	0.069 U	0	0.076 U	0	0.11 U	0	0.064 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.73 J	0.073	0.26 U	0	0.6 UB	0	0.1 UB	0	0.22 UB	0	0.14 UB	0	0.4 UB	0	0.32 UB	0
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.37 U	0	0.32 U	0	0.18 U	0	0.14 U	0	0.14 U	0	0.22 U	0	0.22 U	0	0.14 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	12 J	0.0036	0.12 U	0	3.8 J	0.00114	0.053 U	0	13	0.0039	0.08 U	0	19	0.0057	0.40 J	0.00012
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	550	0.165	9.6 J	0.00288	180	0.054	4.3 J	0.00129	260	0.078	2.5 J	0.00075	380	0.114	53	0.0159
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					1.1234		0.00948		0.27904		0.00399		0.5409		0.00387		0.7257		0.09952
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB006D SS006D (0.0-0.5) 7/24/2012		SB006D DS006D(1.5-9.5) 7/26/2012		SB006E SS006E(2.5-3.0) 7/26/2012		SB006E DS006E(3.5-9.5) 7/26/2012		SB006F SS006F (1.8-2.3) 7/26/2012		SB006F DS006F (2.5-9.5) 7/26/2012		SB007A SS007A (0-0.5) 11/19/2011		SB007A DS007A (2-4) 11/19/2011	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	7.1	0.071	2.5 J	0.025	0.45 J	0.0045	0.26 J	0.0026	1.7 J	0.017	0.16 J	0.0016	15	0.15	60	0.6
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	32	0.32	5.3 J	0.053	1.0 J	0.01	2.0 J	0.02	15	0.15	1.3 J	0.013	33	0.33	170	1.7
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.87 J	0.0087	0.26 U	0	0.17 U	0	0.13 U	0	0.24 U	0	0.12 U	0	1.2 J	0.012	15	0.15
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	1.0 J	0.1	0.45 J	0.045	0.071 U	0	0.069 U	0	0.26 J	0.026	0.061 U	0	1.9 J	0.19	38	3.8
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.47 J	0.047	0.17 U	0	0.10 U	0	0.11 U	0	0.14 U	0	0.098 U	0	0.36 J	0.036	0.42 J	0.042
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	1.0 J	0.1	0.53 J	0.053	0.068 U	0	0.066 U	0	0.28 J	0.028	0.057 U	0	1.0 J	0.1	16	1.6
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	1.3 J	0.13	0.34 J	0.034	0.22 J	0.022	0.21 J	0.021	0.45 J	0.045	0.36 J	0.036	1.9 J	0.19	6.0 J	0.6
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.13 U	0	0.19 U	0	0.15 U	0	0.086 U	0	0.13 U	0	0.084 U	0	0.23 U	0	0.3 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.1 J	0.11	0.17 U	0	0.10 U	0	0.11 U	0	0.38 J	0.038	0.095 U	0	1.4 J	0.14	2.1 J	0.21
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.56 J	0.0168	0.29 J	0.0087	0.15 U	0	0.11 U	0	0.12 U	0	0.088 U	0	0.33 J	0.0099	2.6 J	0.078
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.35 J	0.35	0.19 U	0	0.18 U	0	0.15 U	0	0.18 U	0	0.13 U	0	0.38 U	0	0.5 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.36 J	0.036	0.48 J	0.048	0.085 U	0	0.069 U	0	0.096 U	0	0.061 U	0	0.68 J	0.068	4.2 J	0.42
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.38 J	0.114	0.71 J	0.213	0.11 U	0	0.10 U	0	0.17 J	0.051	0.079 U	0	0.72 J	0.216	11	3.3
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	1.0 J	0.1	0.72 J	0.072	0.50 J	0.05	0.16 J	0.016	0.44 J	0.044	0.19 U	0	1.4	0.14	16	1.6
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.30 U	0	0.24 U	0	0.26 U	0	0.26 U	0	0.23 U	0	0.23 U	0	1.8	1.8	0.51 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	18	0.0054	0.80 J	0.00024	0.41 J	0.000123	0.27 J	0.000081	0.64 J	0.000192	0.17 J	0.000051	16	0.0048	80	0.024
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	440 J	0.132	86	0.0258	6.2 J	0.00186	160	0.048	940	0.282	3.9 UB	0	1200	0.36	1300	0.39
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					1.6409		0.57774		0.088483		0.107681		0.681192		0.050651		3.7467		14.514
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664

Notes:
 Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
 Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
 J - Result is estimated
 U - Result is not detected at the reporting limit
 UB - Result is not detected because of blank contamination

pg/g - picogram per gram
 RSL - Regional Screening Level (USEPA May 2012)
 2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
 TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
 USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB007B SS007B(0-0.5) 11/15/2011		SB007B DS007B(2.8-3.6) 11/15/2011		SB007C SS007C(0-0.5) 11/19/2011		SB007C DS007C(1-2) 11/19/2011		SB007D SS007D(0-0.5) 11/19/2011		SB007D DS007D(1.5-9.5) 11/19/2011		MP119 MP119(1.5-9.5) 11/15/2011		SB008A SS008A(0-0.5) 11/17/2011	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	9.2	0.092	190	1.9	39	0.39	150	1.5	160	1.6	140 J	1.4	15	0.15	35	0.35
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	37	0.37	520	5.2	220	2.2	1700	17	660	6.6	670	6.7	85	0.85	150	1.5
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.83 J	0.0083	16	0.16	7.2	0.072	40	0.4	25	0.25	19	0.19	1.7 J	0.017	3.0 J	0.03
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	1.3 J	0.13	36	3.6	14	1.4	85	8.5	28	2.8	28	2.8	4.2 J	0.42	1.9 J	0.19
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.39 J	0.039	2.5 J	0.25	1.5 J	0.15	4.1 J	0.41	9.9	0.99	3.8 J	0.38	0.70 J	0.07	0.91 J	0.091
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	1.6 J	0.16	18	1.8	7.9	0.79	35	3.5	17	1.7	18	1.8	2.5 J	0.25	1.8 J	0.18
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	1.4 J	0.14	19	1.9	7.5	0.75	54	5.4	26	2.6	20	2	2.9 J	0.29	5.0 J	0.5
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.13 U	0	0.37 U	0	0.2 U	0	2.7 J	0.27	1.2 J	0.12	0.42 J	0.042	0.13 U	0	0.16 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.1 J	0.11	8.9	0.89	4.2 J	0.42	18	1.8	17	1.7	9	0.9	1.8 J	0.18	2.3 J	0.23
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.41 J	0.0123	4.1 J	0.123	1.2 J	0.036	4.4 J	0.132	3.8 J	0.114	1.0 J	0.03	0.36 J	0.0108	0.23 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.36 J	0.36	3.0 J	3	1.0 J	1	1.4 J	1.4	4.4 J	4.4	1.4 J	1.4	0.45 J	0.45	0.43 J	0.43
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.55 J	0.055	6.3 J	0.63	2.2 J	0.22	11	1.1	6.1	0.61	5.0 J	0.5	0.68 J	0.068	0.57 J	0.057
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.49 J	0.147	12	3.6	3.7 J	1.11	15	4.5	8.6	2.58	5.3 J	1.59	1.2 J	0.36	0.2 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.72 J	0.072	12	1.2	3.6	0.36	11	1.1	9.1	0.91	1.8	0.18	0.83 J	0.083	0.95 J	0.095
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.36 J	0.36	1.5	1.5	0.42 U	0	0.75 U	0	0.62 J	0.62	0.52 U	0	0.3 U	0	0.31 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	15	0.0045	230	0.069	63	0.0189	160	0.048	290	0.087	260	0.078	19	0.0057	94	0.0282
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	520	0.156	4600	1.38	2100	0.63	13000 J	3.9	5700 J	1.71	6100 J	1.83	1200	0.36	1700	0.51
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					2,2161		27,202		9,5469		50,96		29,391		21,82		3,5645		4,1912
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB008A DS008A(1-3) 11/17/2011		SB008B SS008B(0-0.5) 11/17/2011		SB008B DS008B(8.7-9.5) 11/17/2011		SB009A SS009A(0.1-0.6) 9/22/2011		SB009A DS009A(12-14) 9/22/2011		SB009A DS009A(10-12) 9/22/2011		SB009B SS009B(0-0.5) 9/21/2011		SB009B DS009B(12.0-14.0) 9/22/2011		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	600	6	0.71 J	0.0071	0.14 U	0	0.17 U	0	0.79 U	0	0.44 J	0.0044	0.72 U	0	1.1 J	0.011	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	2600	26	3.9 J	0.039	1.2 J	0.012	2.6 J	0.026	4.6 J	0.046	2.1 J	0.021	2.9 J	0.029	8.6 J	0.086	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	49	0.49	0.14 U	0	0.19 U	0	0.29 U	0	1.7 U	0	0.41 U	0	1.9 U	0	1.0 U	0	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	28 J	2.8	0.065 J	0.0065	0.11 U	0	0.12 U	0	0.51 U	0	0.16 U	0	0.47 U	0	1.5 J	0.15	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	8.8 J	0.88	0.13 U	0	0.16 U	0	0.25 U	0	0.87 U	0	0.31 U	0	0.86 U	0	0.75 U	0	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	29	2.9	0.082 U	0	0.1 U	0	0.12 U	0	0.48 U	0	0.17 U	0	0.50 U	0	0.59 J	0.059	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	78	7.8	0.13 U	0	0.17 U	0	0.25 U	0	0.91 U	0	0.28 U	0	0.91 U	0	0.78 U	0	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	1.1 U	0	0.1 U	0	0.13 U	0	0.22 U	0	1.2 U	0	0.29 U	0	2.2 U	0	0.79 U	0	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	26 J	2.6	0.12 U	0	0.16 U	0	0.24 U	0	0.83 U	0	0.27 U	0	0.83 U	0	1.4 J	0.14	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	1.6 U	0	0.17 U	0	0.19 U	0	0.23 U	0	0.85 U	0	0.28 U	0	0.70 U	0	0.88 J	0.0264	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	3.9 J	3.9	0.21 U	0	0.23 U	0	0.26 U	0	1.5 J	1.5	0.34 U	0	0.93 U	0	2.1 J	2.1	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	10 J	1	0.079 U	0	0.068 U	0	0.12 U	0	0.54 U	0	0.17 U	0	0.53 U	0	0.46 U	0	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	2.9 J	0.87	0.13 U	0	0.16 U	0	0.20 U	0	0.69 U	0	0.24 U	0	0.52 U	0	1.1 J	0.33	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	4.0 J	0.4	0.21 U	0	0.26 U	0	0.35 U	0	4.1	0.41	0.39 U	0	0.88 U	0	4.9	0.49	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	1.8 U	0	0.28 U	0	0.35 U	0	0.61 U	0	1.9 U	0	0.63 U	0	1.5 U	0	2.1 U	0	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	540	0.162	1.8 J	0.00054	0.18 U	0	0.41 U	0	2.3 U	0	1.3 J	0.00039	2.3 U	0	2.5 J	0.00075	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	32000 J	9.6	230	0.069	88	0.0264	110 J	0.033	19 J	0.0057	42	0.0126	290	0.087	36	0.0108	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					65.402		0.12214		0.0384		0.059		1.9617		0.03839		0.116		3.40395	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB009C SS009C(0.1-0.6) 9/23/2011		SB009C DS009C(2.5-9.5) 9/23/2011		SB009D SS009D(0.0-0.5) 10/22/2012		SB009D DS009D(8.0-12.0) 10/22/2012		SB009D DS009D(12.0-16.0) 10/22/2012		SB009E SS009E(0.0-0.5) 10/19/2012		SB009E DS009E(16.1-18.8) 10/19/2012		SB009F SS009F(0.0-0.5) 10/18/2012	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	0.28 U	0	1.3 U	0	0.66 J	0.0066	0.21 J	0.0021	1.6 J	0.016	0.81 J	0.0081	0.79 J	0.0079	0.44 J	0.0044
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	1.7 J	0.017	9.8 J	0.098	7.9	0.079	1.4 J	0.014	19	0.19	14	0.14	10 J	0.1	7	0.07
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.56 U	0	1.9 U	0	0.11 U	0	0.12 U	0	0.70 J	0.007	0.081 U	0	0.56 J	0.0056	0.055 U	0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.21 U	0	0.89 U	0	0.082 J	0.0082	0.060 U	0	1.9 J	0.19	0.11 J	0.011	0.63 J	0.063	0.090 J	0.009
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.32 U	0	1.6 U	0	0.096 U	0	0.083 U	0	0.63 J	0.063	0.27 J	0.027	0.20 U	0	0.093 J	0.0093
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.21 U	0	0.80 U	0	0.051 J	0.0051	0.062 U	0	0.73 J	0.073	0.094 J	0.0094	0.14 U	0	0.045 J	0.0045
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.34 U	0	1.7 U	0	0.38 J	0.038	0.089 U	0	2.5 J	0.25	0.35 J	0.035	1.0 J	0.1	0.20 J	0.02
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.45 U	0	1.2 U	0	0.053 U	0	0.067 U	0	0.19 U	0	0.050 U	0	0.17 U	0	0.027 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.31 U	0	1.6 U	0	0.30 J	0.03	0.080 U	0	2.6 J	0.26	0.71 J	0.071	1.1 J	0.11	0.40 J	0.04
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.39 U	0	1.7 U	0	0.11 U	0	0.094 U	0	1.1 J	0.033	0.11 U	0	0.45 J	0.0135	0.060 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.43 U	0	2.3 U	0	0.14 U	0	0.13 U	0	4.6 J	4.6	0.13 U	0	0.73 J	0.73	0.064 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.21 U	0	0.78 U	0	0.044 U	0	0.057 U	0	0.40 J	0.04	0.092 J	0.0092	0.15 U	0	0.065 J	0.0065
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.31 U	0	1.4 U	0	0.095 U	0	0.082 U	0	1.4 J	0.42	0.086 U	0	0.60 J	0.18	0.049 U	0
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.55 U	0	2.2 U	0	0.11 U	0	0.13 J	0.013	8.2	0.82	0.12 J	0.012	3.2	0.32	0.039 J	0.0039
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.85 U	0	3.5 U	0	0.19 U	0	0.20 U	0	1.9 J	1.9	0.17 U	0	0.73 J	0.73	0.091 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	0.65 U	0	1.8 U	0	1.3 J	0.00039	0.45 J	0.000135	3.1 J	0.00093	1.2 J	0.00036	1.3 J	0.00039	0.88 UB	0
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	150	0.045	810	0.243	260	0.078	28	0.0084	110	0.033	620	0.186	150	0.045	650	0.195
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.062		0.341		0.24529		0.037635		8.89593		0.50906		2.40539		0.3626
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB009F DS009F(11.5-15.2) 10/18/2012		SB009G SS009G (0.0-0.5) 10/19/2012		SB009G DS009G (12.0-13.0) 10/19/2012		SB009H SS009H (0.0-0.5) 10/19/2012		SB009H DS009H (11.5-14.3) 10/19/2012		SB010A SS010A(0.1-0.6) 9/21/2011		SB010A DS010A(6.0-8.0) 9/21/2011		SB010B SS010B(0-0.5) 9/23/2011		
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	1.9 J	0.019	0.49 J	0.0049	0.88 J	0.0088	0.38 J	0.0038	1.5 J	0.015	0.40 J	0.004	0.37 U	0	0.83 J	0.0083	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	13 J	0.13	20	0.2	12 J	0.12	16	0.16	15	0.15	2.2 J	0.022	1.8 J	0.018	3.9 J	0.039	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.71 J	0.0071	0.088 U	0	0.54 J	0.0054	0.16 U	0	0.44 J	0.0044	1.1 U	0	1.0 U	0	0.50 U	0	
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	1.5 J	0.15	0.053 J	0.0053	0.90 J	0.09	0.077 U	0	0.89 J	0.089	0.38 J	0.038	0.25 UJ	0	0.23 U	0	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.29 J	0.029	0.30 J	0.03	0.18 J	0.018	0.27 J	0.027	0.35 J	0.035	0.53 UJ	0	0.54 UJ	0	0.35 U	0	
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.56 J	0.056	0.043 U	0	0.27 J	0.027	0.075 U	0	0.35 J	0.035	0.28 U	0	0.26 U	0	0.21 U	0	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	2.4 J	0.24	0.49 J	0.049	1.6 J	0.16	0.47 J	0.047	2.1 J	0.21	0.58 U	0	0.50 U	0	0.35 U	0	
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.12 U	0	0.047 U	0	0.15 U	0	0.093 U	0	0.14 U	0	1.3 J	0.13	0.94 U	0	0.33 U	0	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.5 J	0.15	1.2 J	0.12	1.5 J	0.15	0.82 J	0.082	1.4 J	0.14	0.59 U	0	0.55 U	0	0.33 U	0	
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	1.2 J	0.036	0.053 J	0.00159	0.31 U	0	0.13 U	0	0.40 J	0.012	0.52 U	0	0.49 U	0	0.46 U	0	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	1.6 J	1.6	0.21 J	0.21	2.1 J	2.1	0.17 U	0	2.9 J	2.9	0.62 U	0	0.65 U	0	0.53 U	0	
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.39 J	0.039	0.038 U	0	0.13 U	0	0.074 U	0	0.22 J	0.022	0.31 U	0	0.27 U	0	0.20 U	0	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	1.9 J	0.57	0.071 U	0	0.57 J	0.171	0.11 U	0	0.63 J	0.189	0.27 J	0.081	0.36 U	0	0.39 U	0	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	7	0.7	0.086 U	0	4.1	0.41	0.12 U	0	5	0.5	0.65 U	0	0.64 U	0	0.69 U	0	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	1.3 J	1.3	0.16 U	0	0.92 J	0.92	0.22 U	0	1.3 J	1.3	1.3 U	0	0.97 U	0	0.98 U	0	
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	3.0 J	0.0009	0.78 UB	0	1.4 J	0.00042	0.74 UB	0	1.8 J	0.00054	2.7 J	0.00081	1.4 UJ	0	0.98 J	0.000294	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	110	0.033	930	0.279	72	0.0216	840	0.252	110	0.033	68	0.0204	42	0.0126	120	0.036	
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					5.06		0.89979		4.20222		0.5718		5.63494		0.29621		0.0306		0.083594	
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50	
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664	

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	SB010B DS010B(1.5-9.5) 9/23/2011		SB010C SS010C(1.1-1.6) 9/27/2011		SB010C DS010C(2.5-9.5) 9/27/2011		SB010D SS010D(0.0-0.5) 10/16/2012		SB010D DS010D(4.5-6.4) 10/16/2012		SB010E SS010E(0.0-0.5) 10/17/2012		SB010E DS010E(4.0-6.0) 10/17/2012		SB010F SS010F(0.0-0.5) 10/18/2012	
				Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD	Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	0.15 U	0	0.28 U	0	0.29 U	0	1.0 J	0.01	4.2 J	0.042	0.99 J	0.0099	5.5 J	0.055	0.81 J	0.0081
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	0.32 J	0.0032	2.1 J	0.021	2.9 J	0.029	5.1 J	0.051	19	0.19	5.3 J	0.053	28	0.28	4.5 J	0.045
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	0.31 U	0	0.42 U	0	0.52 U	0	0.088 U	0	1.1 J	0.011	0.074 U	0	1.6 J	0.016	0.085 U	0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	0.11 U	0	0.23 U	0	0.20 U	0	0.30 J	0.03	3.4 J	0.34	0.31 J	0.031	3.9 J	0.39	0.34 J	0.034
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.18 U	0	0.37 U	0	0.37 U	0	0.14 J	0.014	0.24 J	0.024	0.26 J	0.026	0.41 J	0.041	0.20 J	0.02
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.12 U	0	0.22 U	0	0.21 U	0	0.10 J	0.01	0.89 J	0.089	0.14 J	0.014	1.2 J	0.12	0.13 J	0.013
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	0.18 U	0	0.38 U	0	0.38 U	0	0.31 J	0.031	1.9 J	0.19	0.38 J	0.038	4.2 J	0.42	0.39 J	0.039
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.23 U	0	0.35 U	0	0.38 U	0	0.054 U	0	0.12 U	0	0.043 U	0	0.15 J	0.015	0.052 U	0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	0.17 U	0	0.36 U	0	0.36 U	0	0.47 J	0.047	1.2 J	0.12	0.34 J	0.034	2.2 J	0.22	0.41 J	0.041
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.18 U	0	0.39 U	0	0.37 U	0	0.091 U	0	0.61 J	0.0183	0.091 U	0	1.2 J	0.036	0.10 U	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.27 U	0	0.52 U	0	0.45 U	0	0.13 U	0	0.74 J	0.74	0.16 J	0.16	1.1 J	1.1	0.13 U	0
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.12 U	0	0.23 U	0	0.23 U	0	0.089 J	0.0089	0.55 J	0.055	0.089 J	0.0089	0.58 J	0.058	0.16 J	0.016
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	0.15 U	0	0.34 U	0	0.31 U	0	0.17 J	0.051	1.6 J	0.48	0.073 U	0	1.7 J	0.51	0.078 J	0.0234
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	0.31 U	0	0.52 U	0	0.49 U	0	0.37 J	0.037	5.1	0.51	0.28 J	0.028	12	1.2	0.21 J	0.021
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.54 U	0	0.94 U	0	0.95 U	0	0.15 U	0	0.50 J	0.5	0.16 U	0	0.82 J	0.82	0.18 U	0
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	0.32 U	0	0.46 U	0	1.2 J	0.00036	1.7 J	0.00051	6.0 J	0.0018	1.7 J	0.00051	6.3 J	0.00189	1.2 J	0.00036
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	36	0.0108	210	0.063	140	0.042	82	0.0246	130	0.039	79	0.0237	150	0.045	88	0.0264
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					0.014		0.084		0.07136		0.31501		3.3501		0.42701		5.32789		0.28726
USEPA Residential Cleanup Value (pg/g)					50		50		50		50		50		50		50		50
USEPA Industrial Cleanup Value (pg/g)					664		664		664		664		664		664		664		664

Notes:
Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF
Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration
Bolded values indicate detected compound
Green Shading indicates concentration exceeds Cleanup Values
J - Result is estimated
U - Result is not detected at the reporting limit
UB - Result is not detected because of blank contamination

pg/g - picogram per gram
RSL - Regional Screening Level (USEPA May 2012)
2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin
TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)
USEPA - United States Environmental Protection Agency

Table 14-5
Dioxin/Furan TEC Adjustment Calculations - Waste Disposal Areas
Celco Plant, Narrows, Virginia
Updated 8/6/2013

Analyte	CAS	Unit	TEF	Location	SB010F
				Sample ID	DS010F (6.0-7.5)
				Sample Date	10/18/2012
				Lab Result	Equivalent 2378-TCDD
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.01	4.5 J	0.045
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.01	25	0.25
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.01	1.1 J	0.011
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.1	2.6 J	0.26
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.1	0.35 J	0.035
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.1	0.97 J	0.097
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.1	2.5 J	0.25
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.1	0.095 J	0.0095
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.1	1.3 J	0.13
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.03	0.74 J	0.0222
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	1	0.47 J	0.47
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.1	0.50 J	0.05
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.3	1.5 J	0.45
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.1	6.1	0.61
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	1	0.56 J	0.56
Octachlorodibenzofuran	39001-02-0	pg/g	0.0003	6.7 J	0.00201
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	0.0003	210	0.063
Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)					3.31471
USEPA Residential Cleanup Value (pg/g)					50
USEPA Industrial Cleanup Value (pg/g)					664

Notes:

Equivalent 2,3,7,8-TCDD Concentration = Lab Result * TEF

Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration

Bolded values indicate detected compound

Green Shading indicates concentration exceeds Cleanup Values

J - Result is estimated

U - Result is not detected at the reporting limit

UB - Result is not detected because of blank contamination

pg/g - picogram per gram

RSL - Regional Screening Level (USEPA May 2012)

2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin

TEF - Toxic Equivalency Factor (Van den Berg, et al., 2006)

USEPA - United States Environmental Protection Agency

Table 17-1
 Summary of 2378-TCDD TEC Results
 Celco Plant, Narrows, Virginia
 Updated 8/6/2013

WDA	Location ID	Sample ID	Sample Date	USEPA Residential Cleanup Value for 2,3,7,8-TCDD (pg/g)	USEPA Industrial Cleanup Value for 2,3,7,8-TCDD (pg/g)	Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)
WDA 1	SB001A	SS001A(0-0.5)	11/3/2011	50	664	0.883
	SB001A	DS001A(1.5-9.5)	11/3/2011	50	664	0.053
	SB001B	SS001B(0-0.5)	11/3/2011	50	664	1.052
	SB001B	DS001B(1.5-9.5)	11/3/2011	50	664	0.288
	SB001C	SS001C(0-0.5)	11/3/2011	50	664	1.323
	SB001C	DS001C(1.5-9.5)	11/3/2011	50	664	0.066
	SB001D	SS001D (0.0-0.5)	11/1/2012	50	664	1.476
	SB001D	DS001D (1.5-9.5)	11/1/2012	50	664	0.031
	SB001E	SS001E (0.0-0.5)	11/1/2012	50	664	0.167
SB001E	DS001E (1.5-9.5)	11/1/2012	50	664	0.016	
WDA 2	SB002A	SS002A(0.0-0.5)	11/14/2011	50	664	0.240
	SB002A	DS002A(1.5-9.5)	11/14/2011	50	664	0.162
	SB002B	SS002B(0-0.5)	11/3/2011	50	664	0.745
	SB002B	DS002B(1.5-9.5)	11/3/2011	50	664	0.267
	SB002C	SS002C(0-0.5)	11/15/2011	50	664	1.539
	SB002C	DS002C(1.5-9.5)	11/15/2011	50	664	0.274
WDA 3	SB003A	SS003A (0-0.5)	11/10/2011	50	664	2.632
	SB003A	DS003A (6-10)	11/10/2011	50	664	10.627
	SB003B	SS003B (0-0.5)	11/4/2011	50	664	3.263
	SB003B	DS003B (9.0-13.0)	11/4/2011	50	664	21.814
	SB003C	SS003C(0-0.5)	11/11/2011	50	664	2.410
	SB003C	DS003C(4.3-5.3)	11/11/2011	50	664	9.485
	SB003D	SS003D(0.0-0.5)	11/2/2012	50	664	4.376
	SB003D	DS003D(5.5-8.7)	11/2/2012	50	664	25.165
	SB003E	SS003E (0.0-0.5)	11/5/2012	50	664	7.997
	SB003E	DS003E (4.9-5.7)	11/5/2012	50	664	30.506
	SB003F	SS003F(0.0-0.5)	11/2/2012	50	664	8.342
SB003F	DS003F(9.0-10.0)	11/2/2012	50	664	3.792	
WDA 4	SB004A	SS004A (0-0.5)	11/30/2011	50	664	2.365
	SB004A	DS004A (1.5-9.5)	11/30/2011	50	664	0.208
	SB004B	SS004B (0-0.5)	11/30/2011	50	664	2.762
	SB004B	DS004B (1.5-9.5)	11/30/2011	50	664	0.178
	SB004C	SS004C (0-0.5)	11/30/2011	50	664	3.075
	SB004C	DS004C (1.5-9.5)	11/30/2011	50	664	0.009
	SB004D	SS004D (0.9-1.4)	7/25/2012	50	664	2.758
	SB004D	DS004D (5.4-7.6)	7/25/2012	50	664	0.411
	SB004E	SS004E(0.3-0.8)	7/26/2012	50	664	0.765
	SB004E	DS004E(2.8-5.8)	7/26/2012	50	664	0.113
	SB004F	SS004F (0.9-1.4)	7/25/2012	50	664	0.185
SB004F	DS004F (6.0-6.5)	7/25/2012	50	664	0.212	
WDA 5	SB005A	SS005A(0-0.5)	11/29/2011	50	664	0.031
	SB005A	DS005A(1.5-9.5)	11/29/2011	50	664	0.001
	SB005B	SS005B (0-0.5)	11/18/2011	50	664	0.231
	SB005B	DS005B (2-4)	11/18/2011	50	664	0.018
	SB005C	SS005C (0-0.5)	11/18/2011	50	664	0.546
	SB005C	DS005C (2-5)	11/18/2011	50	664	0.000
	SB005D	SS005D (0.0-0.5)	7/23/2012	50	664	1.930
	SB005D	DS005D (1.5-9.5)	7/24/2012	50	664	0.404
	SB005E	SS005E (0.0-0.5)	7/23/2012	50	664	1.123
SB005E	DS005E (1.5-9.5)	7/24/2012	50	664	0.009	
WDA 6	SB006A	SS006A(0-0.5)	11/29/2011	50	664	0.279
	SB006A	DS006A(9.7-10.7)	11/29/2011	50	664	0.004
	SB006B	SS006B(0-0.5)	11/29/2011	50	664	0.541
	SB006B	DS006B(1.5-9.5)	11/29/2011	50	664	0.004
	SB006C	SS006C(0-0.5)	11/29/2011	50	664	0.726
	SB006C	DS006C(2-4.2)	11/29/2011	50	664	0.100
	SB006D	SS006D (0.0-0.5)	7/24/2012	50	664	1.641
	SB006D	DS006D(1.5-9.5)	7/26/2012	50	664	0.578
	SB006E	SS006E(2.5-3.0)	7/26/2012	50	664	0.088
	SB006E	DS006E(3.5-9.5)	7/26/2012	50	664	0.108
	SB006F	SS006F (1.8-2.3)	7/26/2012	50	664	0.681
SB006F	DS006F (2.5-9.5)	7/26/2012	50	664	0.051	

Table 17-1
 Summary of 2378-TCDD TEC Results
 Celco Plant, Narrows, Virginia
 Updated 8/6/2013

WDA	Location ID	Sample ID	Sample Date	USEPA Residential Cleanup Value for 2,3,7,8-TCDD (pg/g)	USEPA Industrial Cleanup Value for 2,3,7,8-TCDD (pg/g)	Total Equivalent Concentration of 2,3,7,8-TCDD (pg/g)
WDA 7	SB007A	SS007A (0-0.5)	11/19/2011	50	664	3.747
	SB007A	DS007A (2-4)	11/19/2011	50	664	14.514
	SB007B	SS007B(0-0.5)	11/15/2011	50	664	2.216
	SB007B	DS007B(2.8-3.6)	11/15/2011	50	664	27.202
	SB007C	SS007C (0-0.5)	11/19/2011	50	664	9.547
	SB007C	DS007C (1-2)	11/19/2011	50	664	50.960
	SB007D	SS007D (0-0.5)	11/19/2011	50	664	29.391
	SB007D	DS007D (1.5-9.5)	11/19/2011	50	664	21.820
WDA 8	MP119	MP119(1.5-9.5)	11/15/2011	50	664	3.565
	SB008A	SS008A(0-0.5)	11/17/2011	50	664	4.191
	SB008A	DS008A(1-3)	11/17/2011	50	664	65.402
	SB008B	SS008B(0-0.5)	11/17/2011	50	664	0.122
WDA 9	SB008B	DS008B(8.7-9.5)	11/17/2011	50	664	0.038
	SB009A	SS009A(0.1-0.6)	9/22/2011	50	664	0.059
	SB009A	DS009A(12-14)	9/22/2011	50	664	1.962
	SB009A	DS009A(10-12)	9/22/2011	50	664	0.038
	SB009B	SS009B(0-0.5)	9/21/2011	50	664	0.116
	SB009B	DS009B(12.0-14.0)	9/22/2011	50	664	3.404
	SB009C	SS009C(0.1-0.6)	9/23/2011	50	664	0.062
	SB009C	DS009C(2.5-9.5)	9/23/2011	50	664	0.341
	SB009D	SS009D (0.0-0.5)	10/22/2012	50	664	0.245
	SB009D	DS009D (8.0-12.0)	10/22/2012	50	664	0.038
	SB009D	DS009D (12.0-16.0)	10/22/2012	50	664	8.896
	SB009E	SS009E (0.0-0.5)	10/19/2012	50	664	0.509
	SB009E	DS009E (16.1-18.8)	10/19/2012	50	664	2.405
	SB009F	SS009F(0.0-0.5)	10/18/2012	50	664	0.363
	SB009F	DS009F(11.5-15.2)	10/18/2012	50	664	5.060
	WDA 10	SB009G	SS009G (0.0-0.5)	10/19/2012	50	664
SB009G		DS009G (12.0-13.0)	10/19/2012	50	664	4.202
SB009H		SS009H (0.0-0.5)	10/19/2012	50	664	0.572
SB009H		DS009H (11.5-14.3)	10/19/2012	50	664	5.635
SB010A		SS010A(0.1-0.6)	9/21/2011	50	664	0.296
SB010A		DS010A(6.0-8.0)	9/21/2011	50	664	0.031
SB010B		SS010B(0-0.5)	9/23/2011	50	664	0.084
SB010B		DS010B(1.5-9.5)	9/23/2011	50	664	0.014
SB010C		SS010C (1.1-1.6)	9/27/2011	50	664	0.084
SB010C		DS010C (2.5-9.5)	9/27/2011	50	664	0.071
Tank Farm	SB010D	SS010D (0.0-0.5)	10/16/2012	50	664	0.315
	SB010D	DS010D (4.5-6.4)	10/16/2012	50	664	3.350
	SB010E	SS010E (0.0-0.5)	10/17/2012	50	664	0.427
	SB010E	DS010E (4.0-6.0)	10/17/2012	50	664	5.328
	SB010F	SS010F(0.0-0.5)	10/18/2012	50	664	0.287
	SB010F	DS010F(6.0-7.5)	10/18/2012	50	664	3.315
Tank Farm	SB026A	SS026A(1.2-1.7)	11/6/2012	50	664	1.664
	SB030A	DS030A(0.0-0.5)	11/6/2012	50	664	32.069

Equivalent 2,3,7,8-TCDD Concentration = Lab Result * Toxic Equivalency Factor (Van den Berg, et al., 2006)

Non-detect results were not included in the Equivalent 2,3,7,8-TCDD Concentration

Green shading indicates concentration exceeds Cleanup Values

pg/g - picogram per gram

RSL - Regional Screening Level (USEPA May 2012)

2,3,7,8-TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin

USEPA - United States Environmental Protection Agency