



Hillsborough County Florida

PUBLIC WORKS

PO Box 1110 Tampa, FL 33601-1110
(813) 272-5912 | Fax: (813) 272-5811

MEMORANDUM

DATE August 11, 2017

TO: Steve Morgan, Environmental Permitting Manager, FDEP
Lance Kautz, Environmental Specialist I, FDEP

FROM: Larry Ruiz, Section Manager, Public Works, SWMD

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: April 2017

BOARD OF COUNTY COMMISSIONERS

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INTERNAL AUDITOR

Peggy Caskey

CHIEF DEV. & INFRA. SERVICES ADMINISTRATOR

Lucia E. Garsys

Biosolids Received (wet tons):	1542.72 tons received 7/1 through 7/31
Source of Biosolids:	Hillsborough County Falkenburg AWWTP
Source of Bulking Agent:	Hillsborough County South County Yard Waste Processing Site
General Description of Activities:	All incoming biosolids were mixed with bulking agent and formed into windrows on the same day as received. 7 windrows were formed and in active composting as of 7/31/17. Windrow temperatures were monitored daily. 9 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). 12 windrows have been turned. The previous 9 windrows have been moved to the curing section and combined for a total of 8 curing windrows. Sampling was performed on July 25, 2017. 515.81 tons of compost was picked up by Life Soils.
Attachments:	A-P: Windrow construction and temperature records.

LER/rww

Attachments

CC: Beth Schinella, Division Director, Utility Operations, PUD
Kim Byer, Division Director, Solid Waste Management Division, PWD
Ron Wiesman, Manager, Southeast County Landfill, PWD/SWMD

Attachment A

MSAP Process Temperature Chart Windrow# 17-6-1																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/2/17	142	140	135	132	132	138	138	140	140	141	130	129	120	122	125	132	133.5	135.25	132	133.25	
2	6/3/17	133	138	140	141	132	132	134	138	132	138	141	140	132	132	134	138	132.25	135	137.25	139.25	
3	6/4/17																					
4	6/5/17	150	143	138	136	153	149	133	132	155	159	156	141	147	135	140	139	151.25	146.5	141.75	137	
5	6/6/17	152	150	142	134	162	154	140	142	155	156	155	140	156	150	146	140	156.25	152.5	145.75	139	
6	6/7/17	148	148	136	132	134	156	158	147	154	154	144	140	152	153	150	144	147	152.75	147	140.75	
7	6/8/17	140	142	148	143	138	143	143	148	140	142	142	140	138	142	148	150	139	142.25	145.25	145.25	
8	6/9/17	132	136	138	140	137	140	144	150	132	138	140	140	137	138	140	140	134.5	138	140.5	142.5	
9	6/10/17	132	138	140	142	140	148	150	151	138	141	141	142	138	142	143	142	137	142.25	143.5	144.25	
10	6/11/17																					
11	6/12/17	138	146	144	142	142	148	148	148	140	146	152	150	140	147	145	143	140	146.75	147.25	145.75	
12	6/13/17	142	150	150	145	145	148	143	146	142	155	158	152	144	150	148	143	143.25	150.75	149.75	146.5	
13	6/14/17	141	148	148	145	146	148	145	145	144	156	156	152	144	150	148	142	143.75	150.5	149.25	146	
14	6/15/17	141	147	148	144	150	150	146	140	149	156	156	152	143	150	150	140	145.75	150.75	150	144	
15	6/16/17	138	142	148	150	140	141	141	141	132	140	143	150	133	140	141	142	135.75	140.75	143.25	145.75	
16	6/17/17	140	143	151	153	138	141	143	153	140	142	143	148	140	143	148	150	139.5	142.25	146.25	151	
17	6/18/17																					
18	6/19/17	139	146	148	144	133	141	141	140	147	152	152	150	150	150	145	139	142.25	147.25	146.5	143.25	
19	6/20/17	139	142	142	141	135	141	141	140	136	146	150	148	150	148	144	139	140	144.25	144.25	142	
20	6/21/17	132	148	140	143	142	142	148	150	140	140	142	143	138	142	141	140	138	143	142.75	144	
21	6/22/17	140	148	150	148	150	158	158	158	142	151	151	148	150	158	158	158	145.5	153.75	154.25	153	Turn
22	6/23/17	150	160	155	161	140	150	152	155	140	145	151	160	141	150	145	140	142.75	151.25	150.75	154	
23	6/24/17	151	158	158	158	143	151	152	152	140	148	153	158	143	151	148	142	144.25	152	152.75	152.5	
24	6/25/17																					
25	6/26/17	160	163	159	151	156	158	154	144	158	155	148	142	156	154	148	140	157.5	157.5	152.25	144.25	
26	6/27/17	157	165	163	156	163	159	153	144	157	152	146	139	158	160	153	142	158.75	159	153.75	145.25	Turn
27	6/28/17	148	153	158	158	152	158	160	160	142	148	158	162	142	150	153	160	146	152.25	157.25	160	
28	6/29/17	139	146	154	150	152	158	158	154	149	160	162	158	164	164	161	150	151	157	158.75	153	
29	6/30/17	138	150	142	150	141	151	158	160	133	150	158	152	132	138	142	150	136	147.25	150	153	
30	7/1/17	136	137	140	151	140	148	155	162	138	141	145	150	132	136	140	152	136.5	140.5	145	153.75	

Attachment B

MSAP Process Temperature Chart Windrow# 17-6-5																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/6/17	146	133	120	113	154	140	129	114	110	104	100	94	102	102	102	103	128	119.75	112.75	106	
2	6/7/17	132	132	133	132	132	130	130	130	140	144	132	132	144	140	132	132	137	136.5	131.75	131.5	
3	6/8/17	138	140	142	143	140	143	151	153	132	143	150	152	142	148	151	150	138	143.5	148.5	149.5	
4	6/9/17	138	142	150	150	140	151	160	160	140	151	160	160	140	148	150	150	139.5	148	155	155	
5	6/10/17	140	142	148	151	143	152	158	160	141	150	151	152	140	148	151	153	141	148	152	154	
6	6/11/17																					
7	6/12/17	149	156	150	150	148	156	158	157	147	152	153	150	154	158	152	152	149.5	155.5	153.25	152.25	
8	6/13/17	152	160	154	149	154	158	158	155	153	156	155	150	164	163	156	150	155.75	159.25	155.75	151	
9	6/14/17	146	156	155	149	154	158	156	156	154	156	156	150	154	162	155	149	152	158	155.5	151	
10	6/15/17	141	153	155	150	156	158	152	156	156	160	157	148	152	160	155	148	151.25	157.75	154.75	150.5	
11	6/16/17	148	151	152	152	142	150	153	158	143	148	151	153	133	142	151	153	141.5	147.75	151.75	154	
12	6/17/17	150	153	153	158	150	153	158	160	150	158	158	160	138	142	148	151	147	151.5	154.25	157.25	
13	6/18/17																					
14	6/19/17	154	158	156	150	150	160	162	157	153	158	157	153	140	153	153	149	149.25	157.25	157	152.25	
15	6/20/17	145	153	154	150	156	163	162	156	148	156	157	154	158	163	159	151	151.75	158.75	158	152.75	
16	6/21/17	138	141	145	143	140	148	150	152	138	141	143	150	133	138	132	138	137.25	142	142.5	145.75	
17	6/22/17	158	161	160	153	142	160	152	152	150	163	160	161	143	151	161	158	148.25	158.75	158.25	156	Turn
18	6/23/17	140	141	138	132	132	140	136	132	140	141	136	132	140	150	160	158	138	143	142.5	138.5	
19	6/24/17	140	141	138	132	132	138	138	138	142	141	138	132	142	151	158	158	139	142.75	143	140	
20	6/25/17																					
21	6/26/17	153	167	169	162	161	170	171	159	157	163	170	166	151	166	164	154	155.5	166.5	168.5	160.25	Turn
22	6/27/17	164	169	169	156	168	171	168	159	163	171	172	168	159	167	164	153	163.5	169.5	168.25	159	
23	6/28/17	152	160	163	163	141	158	162	168	153	161	163	170	140	151	158	160	146.5	157.5	161.5	165.25	
24	6/29/17	146	164	166	166	150	163	170	171	168	165	168	169	150	162	166	162	153.5	163.5	167.5	167	
25	6/30/17	153	158	160	158	142	140	138	132	142	153	160	162	153	158	158	158	147.5	152.25	154	152.5	
26	7/1/17	150	160	160	155	141	142	136	132	140	151	162	162	150	160	158	158	145.25	153.25	154	151.75	
27	7/2/17																					
28	7/3/17	156	160	161	158	158	159	161	160	155	158	160	156	154	158	158	154	155.75	158.75	160	157	Turn
29	7/4/17																					
30	7/5/17	150	152	158	160	152	151	158	161	148	153	158	160	140	148	157	157	147.5	151	157.75	159.5	
31	7/6/17	158	161	161	162	150	152	158	160	160	162	164	168	140	148	152	158	152	155.75	158.75	162	
32	7/7/17	150	155	160	158	144	155	162	160	142	152	158	162	148	152	158	152	146	153.5	159.5	158	
33	7/8/17	150	155	160	160	148	156	166	160	145	151	160	163	150	155	160	150	148.25	154.25	161.5	158.25	
34	7/9/17																					
35	7/10/17	151	153	150	148	152	160	158	153	143	158	162	163	140	150	158	161	146.5	155.25	157	156.25	

Attachment C

MSAP Process Temperature Chart Windrow# 17-6-8																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/9/17	132	136	138	140	132	131	136	131	132	136	136	138	132	132	136	136	132	133.75	136.5	136.25	
2	6/10/17	132	138	138	140	132	132	133	133	132	138	138	140	132	138	138	140	132	136.5	136.75	138.25	
3	6/11/17																					
4	6/12/17	148	160	164	161	154	160	158	158	152	157	160	154	154	158	159	151	152	158.75	160.25	156	
5	6/13/17	148	159	162	158	150	160	156	156	159	156	161	156	154	162	158	156	152.75	159.25	159.25	156.5	
6	6/14/17	150	143	134	158	146	133	152	152	150	152	160	158	152	139	156	156	149.5	141.75	150.5	156	
7	6/15/17	150	150	144	152	138	142	148	148	141	152	156	158	145	148	157	158	143.5	148	151.25	154	
8	6/16/17	142	151	151	150	138	158	141	142	148	152	150	160	148	152	158	159	144	153.25	150	152.75	
9	6/17/17	140	143	148	150	142	148	151	151	138	141	142	152	150	152	152	150	142.5	146	148.25	150.75	
10	6/18/17																					
11	6/19/17	153	157	154	146	142	145	143	146	137	142	142	150	143	146	144	147	143.75	147.5	145.75	147.25	
12	6/20/17	144	150	150	144	138	143	140	142	141	143	136	149	138	150	145	145	140.25	146.5	142.75	145	
13	6/21/17	148	151	150	143	148	148	143	140	152	158	153	150	140	141	140	148	147	149.5	146.5	145.25	
14	6/22/17	138	142	148	157	162	163	163	161	153	158	153	150	153	158	152	150	151.5	155.25	154	154.5	
15	6/23/17	150	160	160	161	155	160	161	161	150	151	155	160	150	148	141	160	151.25	154.75	154.25	160.5	
16	6/24/17	153	160	160	162	158	161	161	161	150	153	158	160	150	148	143	151	152.75	155.5	155.5	158.5	Turn
17	6/25/17																					
18	6/26/17	159	162	158	149	156	159	150	144	162	164	159	149	151	158	155	142	157	160.75	155.5	146	
19	6/27/17	160	162	156	145	153	158	147	140	159	166	161	150	164	162	156	140	159	162	155	143.75	
20	6/28/17	161	163	163	162	160	162	162	161	162	168	170	170	158	160	158	152	160.25	163.25	163.25	161.25	
21	6/29/17	151	165	163	152	166	168	164	159	154	158	158	144	145	161	161	150	154	163	161.5	151.25	
22	6/30/17	132	140	143	150	140	143	151	153	133	142	152	160	138	143	148	150	135.75	142	148.5	153.25	
23	7/1/17	132	141	144	151	140	143	151	153	132	140	150	160	134	140	148	150	134.5	141	148.25	153.5	
24	7/2/17																					
25	7/3/17	148	158	161	160	150	157	159	162	140	148	156	152	144	152	151	146	145.5	153.75	156.75	155	Turn
26	7/4/17																					
27	7/5/17	152	160	158	158	142	142	148	148	143	151	152	160	151	152	150	142	147	151.25	152	152	
28	7/6/17	152	160	158	153	142	150	151	153	145	155	156	160	152	154	150	148	147.75	154.75	153.75	153.5	
29	7/7/17	160	162	163	163	158	160	160	161	151	158	160	160	153	158	152	151	155.5	159.5	158.75	158.75	
30	7/8/17	161	160	163	165	160	160	160	161	150	160	160	160	155	160	155	150	156.5	160	159.5	159	
31	7/9/17																					
32	7/10/17	150	152	153	153	148	152	153	158	143	150	152	151	152	158	158	158	148.25	153	154	155	

Attachment D

MSAP Process Temperature Chart Windrow# 17-6-12																							
Temperature: Shading equals temperature 131 or greater for PFRP.																							
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn	
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"		
1	6/13/17	156	150	138	120	150	135	120	111	160	146	128	119	116	104	98	95	145.5	133.75	121	111.25		
2	6/14/17	150	151	141	128	150	139	131	122	160	153	134	130	131	132	110	100	147.75	143.75	129	120		
3	6/15/17	149	156	146	138	148	146	138	132	160	159	140	134	138	132	138	130	148.75	148.25	140.5	133.5		
4	6/16/17	143	150	150	151	142	150	148	148	138	141	143	140	143	148	148	142	141.5	147.25	147.25	145.25		
5	6/17/17	142	151	153	153	140	142	141	140	158	160	160	152	140	144	142	138	145	149.25	149	145.75		
6	6/18/17																						
7	6/19/17	155	158	152	144	158	156	144	133	154	158	152	135	144	140	148	140	152.75	153	149	138		
8	6/20/17	134	158	160	150	158	150	139	133	150	156	152	142	147	142	148	142	147.25	151.5	149.75	141.75		
9	6/21/17	133	138	140	138	149	140	142	143	143	150	150	152	144	132	150	146	142.25	140	145.5	144.75		
10	6/22/17	138	140	138	132	143	150	151	153	143	152	153	160	143	148	150	151	141.75	147.5	148	149		
11	6/23/17	140	148	140	141	140	142	150	151	143	150	152	160	148	150	151	148	142.75	147.5	148.25	150		
12	6/24/17	142	148	143	143	140	142	148	151	143	152	152	150	150	153	151	148	143.75	148.75	148.5	148		
13	6/25/17																						
14	6/26/17	160	167	170	162	169	166	153	145	164	170	166	157	154	154	140	134	161.75	164.25	157.25	149.5	Turn	
15	6/27/17	165	171	171	163	168	166	155	143	168	168	161	153	156	152	143	134	164.25	164.25	157.5	148.25		
16	6/28/17	158	160	160	152	148	158	160	160	132	138	143	160	148	152	153	153	146.5	152	154	156.25		
17	6/29/17	156	155	146	137	152	164	169	160	159	164	164	156	151	168	171	168	154.5	162.75	162.5	155.25		
18	6/30/17	153	168	168	163	158	161	161	160	158	160	162	163	152	158	158	150	155.25	161.75	162.25	159		
19	7/1/17	151	168	166	163	155	160	161	160	155	160	161	163	150	155	158	150	152.75	160.75	161.5	159		
20	7/2/17																						
21	7/3/17	148	162	164	162	150	156	162	161	156	163	166	165	148	152	156	154	150.5	158.25	162	160.5		
22	7/4/17																						
23	7/5/17	150	162	162	161	154	158	160	162	162	168	171	171	146	146	151	152	153	158.5	161	161.5	Turn	
24	7/6/17	153	160	161	160	160	162	168	171	161	163	170	172	142	148	148	151	154	158.25	161.75	163.5		
25	7/7/17	138	142	150	153	168	170	170	171	153	160	158	158	143	150	150	148	150.5	155.5	157	157.5		
26	7/8/17	139	142	152	155	168	170	170	171	155	160	160	161	148	152	152	155	152.5	156	158.5	160.5		
27	7/9/17																						
28	7/10/17	150	153	158	152	142	143	141	140	152	160	162	168	158	150	150	151	150.5	151.5	152.75	152.75	Turn	
29	7/11/17	150	156	163	164	151	158	161	166	152	159	164	165	161	158	152	151	153.5	157.75	160	161.5		
30	7/12/17	148	160	170	170	153	160	164	170	154	158	165	168	164	164	152	150	154.75	160.5	162.75	164.5		
31	7/13/17	138	150	152	158	132	141	148	152	140	143	150	153	132	138	142	143	135.5	143	148	151.5		
32	7/14/17	140	148	150	160	140	155	158	160	141	150	160	161	140	141	150	157	140.25	148.5	154.5	159.5		
33	7/15/17	145	148	150	165	145	156	160	163	141	155	160	163	140	143	150	151	142.75	150.5	155	160.5		

Attachment E

MSAP Process Temperature Chart Windrow# 17-6-15																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/16/17	132	130	133	138	138	142	148	151	132	132	133	133	120	118	116	114	130.5	130.5	132.5	134	
2	6/17/17	132	131	130	123	138	141	142	142	134	120	119	119	132	120	120	120	134	128	127.75	126	
3	6/18/17																					
4	6/19/17	154	146	135	124	158	154	138	140	154	147	122	105	162	168	144	131	157	153.75	134.75	125	
5	6/20/17	160	158	140	131	156	158	151	144	150	152	141	131	158	161	158	143	156	157.25	147.5	137.25	
6	6/21/17	132	148	140	143	132	138	138	141	140	141	138	132	140	138	136	136	136	141.25	138	138	
7	6/22/17	133	138	150	148	132	138	140	140	141	141	141	138	142	138	138	132	137	138.75	142.25	139.5	
8	6/23/17	150	155	160	161	140	150	150	151	150	151	153	150	140	148	140	141	145	151	150.75	150.75	
9	6/24/17	153	158	158	161	143	150	150	152	150	151	153	151	142	148	143	141	147	151.75	151	151.25	
10	6/25/17																					
11	6/26/17	150	147	148	137	150	146	138	132	163	160	151	139	157	152	142	137	155	151.25	144.75	136.25	
12	6/27/17	154	150	146	137	153	149	140	132	159	152	145	138	150	147	143	136	154	149.5	143.5	135.75	
13	6/28/17	151	152	151	151	148	150	150	148	151	153	158	158	151	152	153	152	150.25	151.75	153	152.25	
14	6/29/17	168	155	153	146	157	159	148	140	162	163	151	144	156	156	152	144	160.75	158.25	151	143.5	
15	6/30/17	138	141	143	142	132	138	142	152	148	152	158	158	132	138	140	141	137.5	142.25	145.75	148.25	
16	7/1/17	136	140	144	141	132	138	140	150	148	150	158	160	132	138	140	141	137	141.5	145.5	148	
17	7/2/17																					
18	7/3/17	150	156	156	152	148	150	151	148	152	158	157	156	142	146	144	140	148	152.5	152	149	Turn
19	7/4/17																					
20	7/5/17	142	150	151	152	143	150	148	150	133	140	142	143	132	138	141	143	137.5	144.5	145.5	147	
21	7/6/17	146	150	150	151	140	148	150	138	136	141	142	144	136	140	142	142	139.5	144.75	146	143.75	
22	7/7/17	151	152	151	150	132	140	151	158	140	142	142	143	138	141	143	142	140.25	143.75	146.75	148.25	
23	7/8/17	150	155	150	150	132	140	152	160	140	144	144	150	139	144	150	141	140.25	145.75	149	150.25	
24	7/9/17																					
25	7/10/17	158	161	163	168	150	158	160	161	143	151	152	152	140	148	150	148	147.75	154.5	156.25	157.25	Turn
26	7/11/17	151	158	156	151	148	152	154	153	151	153	158	158	151	152	153	152	150.25	153.75	155.25	153.5	
27	7/12/17	144	155	154	148	142	148	146	140	166	163	159	152	148	152	149	146	150	154.5	152	146.5	
28	7/13/17	150	158	160	162	150	160	163	160	141	143	143	148	142	152	152	153	145.75	153.25	154.5	155.75	
29	7/14/17	141	150	150	150	148	155	160	160	140	141	145	150	138	140	141	140	141.75	146.5	149	150	
30	7/15/17	143	151	153	158	150	158	160	162	140	143	148	151	138	141	143	143	142.75	148.25	151	153.5	
31	7/16/17																					
32	7/17/17	159	162	160	156	140	152	152	143	138	140	140	139	136	138	140	138	143.25	148	148	144	
33	7/18/17	157	160	166	167	158	161	164	167	162	164	165	163	150	152	152	150	156.75	159.25	161.75	161.75	

Attachment F

MSAP Process Temperature Chart Windrow# 17-6-20																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/21/17	143	150	150	150	141	142	143	148	143	150	148	150	140	148	150	152	141.75	147.5	147.75	150	
2	6/22/17	140	148	152	153	138	143	148	151	132	142	143	152	138	140	140	133	137	143.25	145.75	147.25	
3	6/23/17	160	160	162	161	150	160	160	160	148	150	151	151	148	150	151	153	151.5	155	156	156.25	
4	6/24/17	160	162	162	161	153	158	160	160	148	151	153	151	150	152	153	153	152.75	155.75	157	156.25	
5	6/25/17																					
6	6/26/17	158	162	161	160	160	162	160	158	160	164	162	158	156	162	164	156	158.5	162.5	161.75	158	
7	6/27/17	159	162	162	160	159	162	160	159	161	164	162	158	152	164	164	156	157.75	163	162	158.25	
8	6/28/17	156	163	162	161	158	161	160	160	158	162	161	158	150	164	160	156	155.5	162.5	160.75	158.75	
9	6/29/17	154	164	163	162	152	161	161	160	156	162	160	158	148	166	160	156	152.5	163.25	161	159	
10	6/30/17	152	156	158	153	146	146	154	157	155	148	158	156	149	162	158	152	150.5	153	157	154.5	
11	7/1/17	150	160	160	161	150	160	158	160	145	150	150	150	151	160	150	150	149	157.5	154.5	155.25	
12	7/2/17																					
13	7/3/17	151	155	150	156	144	156	152	154	152	159	160	160	150	150	141	145	149.25	155	150.75	153.75	
14	7/4/17																					
15	7/5/17	143	150	151	153	148	151	152	152	142	151	153	158	140	142	143	148	143.25	148.5	149.75	152.75	
16	7/6/17	138	140	140	140	132	138	140	140	141	146	148	149	140	143	143	144	137.75	141.75	142.75	143.25	
17	7/7/17	143	143	142	142	143	148	143	141	140	142	140	138	142	143	143	141	142	144	142	140.5	
18	7/8/17	145	141	141	140	145	150	150	140	140	141	140	138	144	148	148	140	143.5	145	144.75	139.5	
19	7/9/17																					
20	7/10/17	150	165	164	160	141	160	160	159	140	160	164	160	140	158	162	161	142.75	160.75	162.5	160	Turn
21	7/11/17	150	162	164	162	143	160	161	159	132	159	161	161	147	159	160	152	143	160	161.5	158.5	
22	7/12/17	149	161	161	162	162	162	145	142	156	161	162	159	156	168	169	159	155.75	163	159.25	155.5	
23	7/13/17	152	160	160	161	150	152	152	150	151	153	158	160	150	153	158	160	150.75	154.5	157	157.75	
24	7/14/17	140	150	150	151	140	148	150	151	150	140	143	150	143	140	143	150	143.25	144.5	146.5	150.5	
25	7/15/17	142	150	150	151	148	150	151	151	142	148	148	150	133	141	143	151	141.25	147.25	148	150.75	
26	7/16/17																					
27	7/17/17	157	163	168	168	160	164	168	168	162	165	167	163	161	158	152	146	160	162.5	163.75	161.25	Turn
28	7/18/17	148	156	158	156	142	148	149	148	132	137	139	139	133	138	141	140	138.75	144.75	146.75	145.75	
29	7/19/17	142	148	148	151	150	158	162	163	158	162	162	163	141	143	148	150	147.75	152.75	155	156.75	
30	7/20/17	140	150	152	153	150	158	161	163	152	158	161	162	140	143	148	150	145.5	152.25	155.5	157	
31	7/21/17	138	144	141	140	136	140	142	140	136	140	142	140	132	142	142	140	135.5	141.5	141.75	140	
32	7/22/17	138	145	144	143	136	142	143	141	135	140	143	142	130	141	141	143	134.75	142	142.75	142.25	
33	7/23/17																					

Attachment G

MSAP Process Temperature Chart Windrow# 17-6-23																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/24/17	140	148	150	152	141	143	132	131	132	132	130	122	141	138	132	133	138.5	140.25	136	134.5	
2	6/25/17																					
3	6/26/17	148	156	152	148	147	152	141	138	152	148	140	130	146	153	142	138	148.25	152.25	143.75	138.5	
4	6/27/17	145	152	152	150	148	152	148	149	150	148	146	132	154	150	148	146	149.25	150.5	148.5	144.25	
5	6/28/17	141	148	151	151	144	151	152	152	150	148	148	143	151	152	152	150	146.5	149.75	150.75	149	
6	6/29/17	136	144	139	145	134	144	155	158	132	142	149	154	132	143	151	154	133.5	143.25	148.5	152.75	
7	6/30/17	132	132	138	146	132	140	149	150	133	140	142	152	132	141	146	149	132.25	138.25	143.75	149.25	
8	7/1/17	132	132	136	131	132	132	136	132	131	137	132	136	134	142	145	148	132.25	135.75	137.25	136.75	
9	7/2/17																					
10	7/3/17	136	141	142	142	134	148	143	141	140	142	145	146	142	143	148	146	138	143.5	144.5	143.75	
11	7/4/17																					
12	7/5/17	138	142	148	151	132	138	142	148	148	151	153	152	150	152	152	151	142	145.75	148.75	150.5	
13	7/6/17	141	142	141	140	132	133	138	138	132	138	138	140	138	140	140	140	135.75	138.25	139.25	139.5	
14	7/7/17	150	152	151	148	142	148	148	142	150	153	158	160	148	150	143	143	147.5	150.75	150	148.25	
15	7/8/17	151	155	150	145	140	148	148	145	152	159	160	160	150	150	141	145	148.25	153	149.75	148.75	
16	7/9/17																					
17	7/10/17	160	162	162	161	158	161	160	160	153	158	153	151	142	151	152	153	153.25	158	156.75	156.25	
18	7/11/17	156	162	162	162	162	158	158	159	150	158	156	151	144	151	150	150	153	157.25	156.5	155.5	
19	7/12/17	156	160	171	170	141	144	139	138	146	152	152	151	148	150	149	145	147.75	151.5	152.75	151	
20	7/13/17	158	161	161	160	142	146	142	151	158	160	160	161	148	153	153	158	151.5	155	154	157.5	Turn
21	7/14/17	140	140	145	152	138	141	140	140	140	148	150	151	138	142	141	144	139	142.75	144	146.75	
22	7/15/17	140	142	148	151	138	140	140	141	141	148	151	152	140	138	142	143	139.75	142	145.25	146.75	
23	7/16/17																					
24	7/17/17	142	150	154	152	142	146	149	148	146	150	152	149	143	148	146	144	143.25	148.5	150.25	148.25	
25	7/18/17	156	156	153	147	142	142	140	138	143	146	146	142	144	146	143	138	146.25	147.5	145.5	141.25	
26	7/19/17	144	152	152	148	138	140	141	142	141	143	150	151	150	153	153	158	143.25	147	149	149.75	
27	7/20/17	142	148	151	150	138	142	143	143	137	142	142	148	158	160	160	158	143.75	148	149	149.75	Turn
28	7/21/17	140	143	150	150	132	140	142	143	138	142	142	143	132	141	143	148	135.5	141.5	144.25	146	
29	7/22/17	141	144	151	150	133	142	143	143	140	143	143	145	133	142	144	150	136.75	142.75	145.25	147	
30	7/23/17																					
31	7/24/17	138	140	148	146	132	141	144	145	153	158	158	160	130	133	140	141	138.25	143	147.5	148	
32	7/25/17	149	152	153	152	137	140	145	148	142	145	146	146	146	146	146	144	143.5	145.75	147.5	147.5	Turn
33	7/26/17	143	150	155	162	148	152	156	150	150	153	155	160	130	132	136	141	142.75	146.75	150.5	153.25	

Attachment H

MSAP Process Temperature Chart Windrow# 17-6-27																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	6/28/17	143	150	152	153	140	143	143	142	148	152	151	151	140	142	140	132	142.75	146.75	146.5	144.5	
2	6/29/17	139	147	154	152	136	139	150	154	144	148	146	143	132	136	138	140	137.75	142.5	147	147.25	
3	6/30/17	138	142	151	151	141	150	152	152	140	143	151	153	138	141	141	142	139.25	144	148.75	149.5	
4	7/1/17	138	140	150	151	138	150	151	155	136	140	150	151	138	140	141	144	137.5	142.5	148	150.25	
5	7/2/17																					
6	7/3/17	146	155	156	158	144	150	156	156	144	150	160	155	136	140	150	156	142.5	148.75	155.5	156.25	
7	7/4/17	144	154	157	156	142	148	156	156	142	150	161	157	136	142	152	158	141	148.5	156.5	156.75	
8	7/5/17	144	152	159	155	145	156	163	158	146	159	162	156	142	160	163	162	144.25	156.75	161.75	157.75	
9	7/6/17	140	150	158	156	144	151	159	156	148	156	160	155	141	158	160	160	143.25	153.75	159.25	156.75	
10	7/7/17	138	142	143	143	142	143	143	154	143	151	152	152	143	148	150	148	141.5	146	147	149.25	
11	7/8/17	138	145	150	144	145	145	143	150	144	150	155	155	144	150	150	152	142.75	147.5	149.5	150.25	
12	7/9/17																					
13	7/10/17	148	151	151	152	143	148	150	151	148	152	158	161	158	161	160	160	149.25	153	154.75	156	
14	7/11/17	146	152	149	150	153	156	156	152	149	157	156	160	150	160	161	162	149.5	156.25	155.5	156	
15	7/12/17	148	150	148	146	158	158	152	150	160	157	153	158	153	156	154	161	154.75	155.25	151.75	153.75	Turn
16	7/13/17	141	150	150	148	150	152	153	153	161	160	158	152	158	161	163	168	152.5	155.75	156	155.25	
17	7/14/17	150	151	155	158	155	160	158	158	160	160	161	160	161	163	161	160	156.5	158.5	158.75	159	
18	7/15/17	148	152	159	158	158	160	158	158	160	163	162	161	161	163	162	160	156.75	159.5	160.25	159.25	
19	7/16/17																					
20	7/17/17	161	162	156	145	158	162	162	156	163	164	162	157	158	157	154	147	160	161.25	158.5	151.25	Turn
21	7/18/17	162	160	154	146	150	157	161	158	164	163	160	152	158	158	152	146	158.5	159.5	156.75	150.5	
22	7/19/17	140	143	148	150	150	152	152	151	142	150	150	150	150	152	153	158	145.5	149.25	150.75	152.25	
23	7/20/17	152	153	153	158	153	161	161	161	158	160	160	161	140	143	143	148	150.75	154.25	154.25	157	
24	7/21/17	148	153	158	160	142	158	161	162	150	158	160	161	142	152	158	160	145.5	155.25	159.25	160.75	
25	7/22/17	146	150	156	160	141	155	160	162	151	156	158	163	143	151	160	161	145.25	153	158.5	161.5	
26	7/23/17																					
27	7/24/17	150	152	152	153	150	152	153	160	132	138	140	142	150	153	158	160	145.5	148.75	150.75	153.75	
28	7/25/17	156	161	160	156	149	153	158	161	162	164	164	160	159	159	156	150	156.5	159.25	159.5	156.75	
29	7/26/17	143	146	152	155	142	145	151	158	148	150	160	161	153	155	161	162	146.5	149	156	159	
30	7/27/17	150	158	162	161	143	151	158	162	152	160	161	161	142	152	158	160	146.75	155.25	159.75	161	
31	7/28/17	138	143	152	160	151	158	160	160	143	158	160	162	142	151	158	161	143.5	152.5	157.5	160.75	
32	7/29/17	150	151	158	161	144	150	152	155	142	151	158	162	140	148	152	153	144	150	155	157.75	
33	7/30/17																					
34	7/31/17	152	153	153	158	153	161	161	161	158	160	160	160	140	143	143	148	150.75	154.25	154.25	156.75	

Attachment I

MSAP Process Temperature Chart Windrow# 17-6-30																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/1/17	160	158	138	124	150	141	122	118	150	156	138	112	150	152	118	114	152.5	151.75	129	117	
2	7/2/17																					
3	7/3/17	156	159	142	128	156	148	138	124	156	160	138	120	160	164	140	132	157	157.75	139.5	126	
4	7/4/17	152	163	154	140	156	158	146	140	158	159	150	141	158	163	151	141	156	160.75	150.25	140.5	
5	7/5/17	148	162	154	142	152	158	150	141	160	164	148	140	158	162	152	140	154.5	161.5	151	140.75	
6	7/6/17	144	160	158	153	150	160	158	150	159	161	153	151	152	154	150	148	151.25	158.75	154.75	150.5	
7	7/7/17	137	133	133	138	138	140	141	142	138	140	141	142	132	131	148	146	136.25	136	140.75	142	
8	7/8/17	132	133	133	140	132	140	142	142	138	140	141	143	132	133	149	145	133.5	136.5	141.25	142.5	
9	7/9/17																					
10	7/10/17	132	140	141	142	141	148	150	151	138	140	143	150	141	143	148	143	138	142.75	145.5	146.5	
11	7/11/17	133	138	137	141	140	146	148	150	136	140	140	150	142	146	148	140	137.75	142.5	143.25	145.25	
12	7/12/17	134	134	131	138	139	140	146	148	134	138	137	148	154	150	149	137	140.25	140.5	140.75	142.75	
13	7/13/17	134	135	131	138	136	138	141	142	133	135	135	146	132	133	150	138	133.75	135.25	139.25	141	
14	7/14/17	132	136	135	140	132	135	140	141	132	132	135	138	141	145	150	150	134.25	137	140	142.25	
15	7/15/17	132	138	138	140	138	140	142	141	132	132	133	138	142	148	150	150	136	139.5	140.75	142.25	
16	7/16/17																					
17	7/17/17	132	131	138	140	138	140	140	132	132	134	132	133	134	137	137	136	134	135.5	136.75	135.25	
18	7/18/17	132	133	138	138	141	138	134	137	133	133	134	133	135	135	134	131	135.25	134.75	135	134.75	
19	7/19/17	132	136	138	138	140	142	141	142	132	134	136	136	132	133	138	140	134	136.25	138.25	139	
20	7/20/17	132	140	140	141	141	148	151	153	132	133	138	138	138	142	150	152	135.75	140.75	144.75	146	
21	7/21/17	138	140	141	140	152	158	160	162	132	133	132	133	148	152	152	153	142.5	145.75	146.25	147	Turn
22	7/22/17	140	141	143	144	150	153	158	161	133	135	134	133	140	151	153	153	140.75	145	147	147.75	
23	7/23/17																					
24	7/24/17	135	132	132	133	146	148	152	156	133	136	134	134	140	142	141	141	138.5	139.5	139.75	141	
25	7/25/17	132	132	132	135	136	138	137	149	133	136	134	134	136	136	135	134	134.25	135.5	134.5	138	
26	7/26/17	132	138	140	141	141	143	143	143	138	140	141	141	137	138	138	140	137	139.75	140.5	141.25	
27	7/27/17	133	140	141	141	138	141	141	142	138	140	140	136	132	138	138	140	135.25	139.75	140	139.75	
28	7/28/17	133	138	141	141	138	142	132	136	133	138	138	140	141	143	143	148	136.25	140.25	138.5	141.25	
29	7/29/17	132	133	138	140	138	143	151	156	132	133	133	136	138	148	152	153	135	139.25	143.5	146.25	Turn
30	7/30/17																					
31	7/31/17	138	141	141	142	133	140	140	141	131	133	133	138	133	138	138	140	133.75	138	138	140.25	

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-5	
Windrow Construction:			Date Commenced: 7-1-17		Date Completed: 7-5-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/1/17	Oscar Ochoa	23.48	30.52	40.00	16.00	
7/1/17	Oscar Ochoa	20.53	26.69	40.00	16.00	
7/1/17	Oscar Ochoa	22.72	29.54	40.00	16.00	44
7/3/17	Jerry Devoe	22.63	29.42	40.00	16.00	
7/3/17	Jerry Devoe	22.46	29.20	40.00	16.00	
7/3/17	Mike Bayne	22.28	28.96	40.00	16.00	44
7/5/17	Mike Bayne	22.47	29.21	40.00	16.00	
7/5/17	Mike Bayne	22.11	28.74	40.00	16.00	
7/5/17	Mike Bayne	22.45	29.19	40.00	16.00	48
Totals		201.13	261.47	360.00	144.00	136.00
Windrow Construction ratio:		2.45 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-7-5																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/6/17	122	119	116	115	130	138	132	130	121	122	122	123	141	148	150	150	128.5	131.75	130	129.5	
2	7/7/17	130	128	122	122	143	148	143	142	133	132	129	122	153	148	160	160	139.75	139	138.5	136.5	
3	7/8/17	132	129	125	125	140	150	141	140	133	132	129	128	150	160	160	161	138.75	142.75	138.75	138.5	
4	7/9/17																					
5	7/10/17	142	150	150	151	141	143	143	148	141	143	148	148	148	152	158	158	143	147	149.75	151.25	
6	7/11/17	140	151	149	150	144	156	154	150	142	143	150	148	151	153	154	156	144.25	150.75	151.75	151	
7	7/12/17	138	150	142	148	154	160	161	158	146	143	151	150	158	156	147	152	149	152.25	150.25	152	
8	7/13/17	136	148	142	146	146	156	158	156	143	146	152	150	155	152	144	151	145	150.5	149	150.75	
9	7/14/17	132	144	141	141	136	152	150	150	140	150	153	150	132	140	141	150	135	146.5	146.25	147.75	
10	7/15/17	138	142	142	141	140	148	151	153	142	151	153	158	133	141	143	151	138.25	145.5	147.25	150.75	
11	7/16/17																					
12	7/17/17	154	152	146	136	151	156	156	152	139	137	134	158	154	155	154	149	149.5	150	147.5	148.75	
13	7/18/17	156	154	146	138	132	153	156	151	138	135	131	159	140	153	153	149	141.5	148.75	146.5	149.25	
14	7/19/17	142	143	148	148	148	151	152	152	152	158	158	160	151	158	158	153	148.25	152.5	154	153.25	
15	7/20/17	138	141	141	142	133	140	140	141	131	133	133	138	133	138	138	140	133.75	138	138	140.25	
16	7/21/17	136	141	142	143	132	133	138	140	132	140	141	142	132	132	132	133	133	136.5	138.25	139.5	
17	7/22/17	132	140	142	141	131	133	140	142	132	142	143	143	132	133	135	134	131.75	137	140	140	
18	7/23/17																					
19	7/24/17	132	138	140	141	138	148	151	152	150	153	158	160	132	141	148	152	138	145	149.25	151.25	
20	7/25/17	145	148	147	140	143	154	158	157	134	133	133	131	140	142	149	152	140.5	144.25	146.75	145	Turn
21	7/26/17	140	142	142	141	142	150	152	153	133	133	134	138	132	140	150	152	136.75	141.25	144.5	146	
22	7/27/17	143	148	148	151	143	151	152	158	138	146	150	148	142	150	151	153	141.5	148.75	150.25	152.5	
23	7/28/17	131	143	148	148	141	142	142	143	133	132	132	132	140	148	140	143	136.25	141.25	140.5	141.5	
24	7/29/17	151	153	158	167	138	141	146	144	138	141	141	142	140	132	136	138	141.75	141.75	145.25	147.75	
25	7/30/17																					
26	7/31/17	150	158	161	163	152	158	161	162	151	157	159	161	148	152	158	156	150.25	156.25	159.75	160.5	Turn

Attachment K

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-10	
Windrow Construction:			Date Commenced: 7-6-17		Date Completed: 7-10-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/6/17	Mike Bayne	22.45	29.19	40.00	16.00	
7/6/17	Mike Bayne	20.70	26.91	40.00	16.00	
7/6/17	Mike Bayne	22.37	29.08	40.00	16.00	44
7/7/17	Jerry Devoe	22.99	29.89	40.00	16.00	
7/7/17	Jerry Devoe	21.99	28.59	40.00	16.00	
7/7/17	Jerry Devoe	22.93	29.81	40.00	16.00	44
7/8/17	Oscar Ochoa	19.81	25.75	40.00	16.00	
7/8/17	Oscar Ochoa	23.05	29.97	40.00	16.00	32
7/10/17	Mike Bayne	22.90	29.77	40.00	16.00	
7/10/17	Mike Bayne	22.19	28.85	40.00	16.00	32
Totals		221.38	287.79	400.00	160.00	152.00
Windrow Construction ratio:		2.47 /1				

MSAP Process Temperature Chart Windrow# 17-7-10																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/11/17	131	130	120	112	135	132	128	120	136	133	125	115	131	115	112	110	133.25	127.5	121.25	114.25	
2	7/12/17	136	132	120	119	141	139	131	124	140	137	128	119	133	119	130	128	137.5	131.75	127.25	122.5	
3	7/13/17	135	132	133	131	136	138	138	135	138	138	133	131	138	136	140	139	136.75	136	136	134	
4	7/14/17	132	133	138	138	132	138	141	141	136	140	140	132	140	145	150	150	135	139	142.25	140.25	
5	7/15/17	132	133	138	138	132	138	140	141	138	141	140	132	141	148	151	152	135.75	140	142.25	140.75	
6	7/16/17																					
7	7/17/17	133	135	133	135	134	136	138	138	142	144	141	134	134	142	146	148	135.75	139.25	139.5	138.75	
8	7/18/17	150	152	151	142	146	147	147	140	140	137	138	134	140	141	138	134	144	144.25	143.5	137.5	
9	7/19/17	140	142	142	143	138	148	148	146	143	150	150	148	158	158	153	148	144.75	149.5	148.25	146.25	
10	7/20/17	146	154	158	159	148	158	162	160	148	158	160	159	146	156	162	158	147	156.5	160.5	159	
11	7/21/17	140	152	159	159	146	156	162	162	146	158	161	160	140	152	161	161	143	154.5	160.75	160.5	
12	7/22/17	140	154	163	164	140	154	160	159	142	156	162	163	140	150	161	164	140.5	153.5	161.5	162.5	
13	7/23/17																					
14	7/24/17	136	152	165	166	136	152	160	160	140	152	162	162	138	150	161	163	137.5	151.5	162	162.75	
15	7/25/17	136	150	165	165	135	151	160	159	140	151	163	164	138	148	161	163	137.25	150	162.25	162.75	
16	7/26/17	152	155	158	162	144	151	156	162	156	160	156	154	136	140	144	146	147	151.5	153.5	156	
17	7/27/17	132	138	138	140	140	148	156	161	148	156	156	152	135	141	148	151	138.75	145.75	149.5	151	Turn
18	7/28/17	150	154	160	162	156	154	152	152	160	162	154	154	154	156	154	152	155	156.5	155	155	
19	7/29/17	148	156	162	152	154	154	152	151	156	160	154	152	154	154	152	151	153	156	155	151.5	
20	7/30/17																					
21	7/31/17	158	155	152	150	150	151	150	150	148	152	154	150	152	151	150	150	152	152.25	151.5	150	

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-13	
Windrow Construction:			Date Commenced: 7-10-17		Date Completed: 7-13-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/10/17	Mike Bayne	22.92	29.80	40.00	16.00	16
7/11/17	Mike Bayne	21.72	28.24	40.00	16.00	
7/11/17	Mike Bayne	19.24	25.01	40.00	16.00	
7/11/17	Mike Bayne	22.21	28.87	40.00	16.00	44
7/12/17	Mike Bayne	22.30	28.99	40.00	16.00	
7/12/17	Mike Bayne	18.67	24.27	40.00	16.00	
7/12/17	Mike Bayne	22.64	29.43	40.00	16.00	
7/12/17	Mike Bayne	22.19	28.85	40.00	16.00	56
7/13/17	Mike Bayne	22.37	29.08	40.00	16.00	
7/13/17	Mike Bayne	22.31	29.00	40.00	16.00	20
Totals		216.57	281.54	400.00	160.00	136.00
Windrow Construction ratio:		2.47 /1				

MSAP Process Temperature Chart Windrow# 17-7-13																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/14/17	132	140	138	138	138	141	141	143	120	128	126	122	115	115	115	110	126.25	131	130	128.25	
2	7/15/17	138	140	140	138	141	143	143	143	135	131	128	122	134	130	115	113	137	136	131.5	129	
3	7/16/17																					
4	7/17/17	147	158	148	140	145	158	156	152	146	157	144	130	146	156	140	120	146	157.25	147	135.5	
5	7/18/17	144	154	150	146	140	156	159	158	144	156	146	138	140	150	146	132	142	154	150.25	143.5	
6	7/19/17	144	152	152	148	144	156	161	160	148	156	156	140	142	148	166	160	144.5	153	158.75	152	
7	7/20/17	142	151	151	148	146	158	160	161	146	154	161	149	144	148	164	161	144.5	152.75	159	154.75	
8	7/21/17	140	150	150	150	145	156	160	160	145	155	161	158	144	146	166	160	143.5	151.75	159.25	157	
9	7/22/17	139	150	151	148	144	156	158	161	144	155	161	159	144	146	162	163	142.75	151.75	158	157.75	
10	7/23/17																					
11	7/24/17	151	153	150	148	141	143	142	142	151	153	158	160	132	138	140	142	143.75	146.75	147.5	148	
12	7/25/17	156	153	151	149	152	151	150	149	148	151	150	150	156	155	152	150	153	152.5	150.75	149.5	
13	7/26/17	153	156	158	160	141	152	153	152	132	140	150	152	141	142	148	151	141.75	147.5	152.25	153.75	
14	7/27/17	151	152	152	151	151	153	158	158	150	148	141	132	143	151	152	150	148.75	151	150.75	147.75	
15	7/28/17	150	153	158	162	140	142	144	148	153	158	158	160	142	146	150	148	146.25	149.75	152.5	154.5	
16	7/29/17	148	153	151	150	142	148	151	150	143	150	151	151	142	145	133	138	143.75	149	146.5	147.25	
17	7/30/17																					
18	7/31/17	144	150	148	146	144	148	150	150	145	150	150	148	144	146	142	146	144.25	148.5	147.5	147.5	

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-17	
Windrow Construction:			Date Commenced: 7-13-17		Date Completed: 7-17-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/13/17	Mike Bayne	22.34	29.04	56.00	16.00	16
7/14/17	Jerry Devoe	22.49	29.24	40.00	16.00	
7/14/17	Jerry Devoe	21.03	27.34	40.00	16.00	
7/14/17	Jerry Devoe	22.56	29.33	40.00	16.00	44
7/15/17	Jerry Devoe	18.35	23.86	40.00	16.00	
7/15/17	Jerry Devoe	19.16	24.91	40.00	16.00	
7/15/17	Jerry Devoe	22.33	29.03	40.00	16.00	44
7/17/17	Jerry Devoe	22.49	29.24	40.00	16.00	24
Totals		170.75	221.98	336.00	128.00	128.00
Windrow Construction ratio:		2.67 /1				

MSAP Process Temperature Chart Windrow# 17-7-17																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/18/17	138	136	132	130	134	130	119	115	136	136	124	118	139	133	128	122	136.75	133.75	125.75	121.25	
2	7/19/17	132	142	148	134	140	143	148	121	141	143	141	128	132	141	142	130	136.25	142.25	144.75	128.25	
3	7/20/17	136	138	138	135	136	141	140	128	132	140	141	140	132	134	138	135	134	138.25	139.25	134.5	
4	7/21/17	132	136	138	136	132	142	146	142	138	148	144	140	149	157	142	134	137.75	145.75	142.5	138	
5	7/22/17	133	138	138	135	132	146	150	144	140	154	158	151	146	156	158	142	137.75	148.5	151	143	
6	7/23/17																					
7	7/24/17	138	141	148	152	142	150	152	151	140	143	148	148	146	157	148	150	141.5	147.75	149	150.25	
8	7/25/17	138	143	142	139	150	147	142	136	152	148	143	138	154	152	147	142	148.5	147.5	143.5	138.75	
9	7/26/17	132	136	140	141	140	145	150	151	138	142	145	152	140	150	152	160	137.5	143.25	146.75	151	
10	7/27/17	133	140	142	143	138	148	151	152	132	144	152	155	138	143	152	160	135.25	143.75	149.25	152.5	
11	7/28/17	132	143	148	150	138	143	148	151	132	148	153	160	136	152	152	156	134.5	146.5	150.25	154.25	
12	7/29/17	140	143	150	150	142	143	148	150	140	143	152	150	142	148	150	150	141	144.25	150	150	
13	7/30/17																					
14	7/31/17	141	150	152	153	150	158	147	145	142	148	151	150	140	143	148	150	143.25	149.75	149.5	149.5	

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-20	
Windrow Construction:			Date Commenced: 7-17-17		Date Completed: 7-20-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/17/17	Mike Bayne	21.08	27.40	56.00		20
7/18/17	Mike Bayne	22.41	29.13	56.00		
7/18/17	Mike Bayne	22.44	29.17	56.00		
7/18/17	Mike Bayne	21.74	28.26	56.00		44
7/19/17	Mike Bayne	22.53	29.29	56.00		
7/19/17	Mike Bayne	22.46	29.20	56.00		
7/19/17	Mike Bayne	22.06	28.68	56.00		44
7/20/17	Mike Bayne	22.30	28.99	56.00		20
Totals		177.02	230.13	448.00	0.00	128.00
Windrow Construction ratio:		2.50 /1				

MSAP Process Temperature Chart Windrow# 17-7-20																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/21/17	156	142	136	134	148	138	125	118	156	150	140	130	144	129	112	108	151	139.75	128.25	122.5	
2	7/22/17	160	154	156	148	158	158	140	126	157	159	152	139	162	154	144	132	159.25	156.25	148	136.25	
3	7/23/17																					
4	7/24/17	160	162	154	150	160	161	146	140	162	162	152	141	162	160	146	138	161	161.25	149.5	142.25	
5	7/25/17	158	162	154	150	161	162	150	143	162	165	153	144	162	162	149	140	160.75	162.75	151.5	144.25	
6	7/26/17	158	162	156	152	160	162	152	150	161	164	152	149	160	162	150	142	159.75	162.5	152.5	148.25	
7	7/27/17	158	162	161	160	160	161	160	158	160	164	162	158	158	162	164	156	159	162.25	161.75	158	
8	7/28/17	159	162	162	160	159	162	160	159	157	164	162	158	156	164	164	156	157.75	163	162	158.25	
9	7/29/17	156	160	162	161	158	160	160	160	156	162	161	158	151	164	160	156	155.25	161.5	160.75	158.75	
10	7/30/17																					
11	7/31/17	151	160	163	162	152	159	161	160	154	162	160	158	149	166	160	156	151.5	161.75	161	159	

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-24	
Windrow Construction:			Date Commenced: 7-21-17		Date Completed: 7-24-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/20/17	Mike Bayne	22.46	29.20	56.00		20
7/21/17	Jerry Devoe	22.41	29.13	56.00		
7/21/17	Jerry Devoe	22.88	29.74	56.00		
7/21/17	Jerry Devoe	23.43	30.46	56.00		44
7/22/17	Jerry Devoe	22.53	29.29	56.00		
7/22/17	Jerry Devoe	20.68	26.88	56.00		24
7/24/17	Mike Bayne	20.44	26.57	56.00		
7/24/17	Mike Bayne	23.65	30.75	56.00		
7/24/17	Mike Bayne	21.90	28.47	56.00		44
Totals		200.38	260.49	504.00	0.00	132.00
Windrow Construction ratio:		2.44 /1				

MSAP Process Temperature Chart Windrow# 17-7-24																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	7/25/17	148	151	142	135	134	131	126	122	134	129	124	121	139	132	120	113	138.75	135.75	128	122.75	
2	7/26/17	138	141	143	148	138	141	148	138	141	145	150	140	138	142	132	130	138.75	142.25	143.25	139	
3	7/27/17	140	142	142	141	138	142	143	142	138	141	143	142	138	142	143	142	138.5	141.75	142.75	141.75	
4	7/28/17	137	134	146	142	148	146	136	132	145	144	134	145	142	138	144	142	143	140.5	140	140.25	
5	7/29/17	139	158	142	145	158	159	146	140	160	160	148	146	159	158	146	146	154	158.75	145.5	144.25	
6	7/30/17																					
7	7/31/17	140	156	154	146	157	160	153	150	158	160	150	148	156	161	150	149	152.75	159.25	151.75	148.25	

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-7-28	
Windrow Construction:			Date Commenced: 7-25-17		Date Completed: 7-28-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
7/25/17	Mike Bayne	22.46	29.20	56.00		20
7/25/17	Jerry Devoe	22.41	29.13	56.00		
7/25/17	Jerry Devoe	22.88	29.74	56.00		
7/26/17	Jerry Devoe	23.43	30.46	56.00		44
7/26/17	Jerry Devoe	22.53	29.29	56.00		
7/26/17	Jerry Devoe	20.68	26.88	56.00		24
7/27/17	Mike Bayne	20.44	26.57	56.00		
7/27/17	Mike Bayne	23.65	30.75	56.00		
7/28/17	Mike Bayne	21.90	28.47	56.00		44
Totals		200.38	260.49	504.00	0.00	132.00
Windrow Construction ratio:		2.44 /1				

MSAP Process Temperature Chart Windrow# 17-7-28																		
Temperature: Shading equals temperature 131 or greater for PFRP.																		
Days	Date	Point 1				Point 2				Point 3				Point 4				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	
1	7/29/17	123	128	123	120	119	120	118	116	123	132	138	140	121	123	130	132	
2	7/30/17																	
3	7/31/17	136	138	128	130	132	129	128	124	131	132	136	136	135	136	132	132	