



PUBLIC WORKS

PO Box 1110 Tampa, FL 33601-1110
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MEMORANDUM

DATE June 26, 2018

TO: Steve Morgan, Environmental Permitting Manager, FDEP
Maurice Barker, Biosolids Coordinator, FDEP
Lance Kautz, Environmental Specialist I, FDEP

FROM: Ron Wiesman, Manager, Public Works, SWMD

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: May 2018

**BOARD OF COUNTY
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**CHIEF DEVELOPMENT &
INFRASTRUCTURE SERVICES
ADMINISTRATOR**

Lucia E. Garsys

Biosolids Received (wet tons):	1514.39 tons of biosolids received for the month.
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. 9 windrows were formed and in active composting as of 5/31/18. Windrow temperatures were monitored daily. 10 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). 15 windrows have been turned. The previous 8 windrows have been moved to the curing section and combined for a total of 6 curing windrows. Sampling was performed on May 23, 2018. 929.66 tons of finished compost was picked up by Life Soils.
Attachments:	A-K; A-P: Windrow construction and temperature records.

RWW/ya
Attachments

CC: Beth Schinella, Division Director, Utility Operations, PUD
Kim Byer, Division Director, Solid Waste Management Division, PWD
Joseph O'Neill, Professional Engineer II, Solid Waste Management Division, PWD
Larry Ruiz, Section Manager, Public Works, SWMD

Attachment A

MSAP Process Temperature Chart Windrow# 18-4-3																						
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	4/4/18	156	157	154	148	138	134	124	120	136	130	119	108	161	159	154	150	147.75	145	137.75	131.5	
2	4/5/18	156	156	153	151	159	160	154	144	155	155	142	135	160	164	156	154	157.5	158.75	151.25	146	
3	4/6/18	160	158	151	145	153	149	145	139	150	147	139	134	145	142	150	152	152	149	146.25	142.5	
4	4/7/18	161	156	153	149	153	151	148	142	145	143	140	138	140	144	152	152	149.75	148.5	148.25	145.25	
5	4/8/18																					
6	4/9/18	156	158	154	152	152	158	161	154	151	149	144	142	157	151	152	152	154	154	152.75	150	
7	4/10/18	152	154	156	156	152	156	162	156	152	156	154	150	158	154	156	154	153.5	155	157	154	
8	4/11/18	143	143	156	159	150	156	160	155	155	158	159	157	160	157	158	156	152	153.5	158.25	156.75	
9	4/12/18	140	144	149	153	156	152	154	153	143	146	158	162	159	161	160	160	149.5	150.75	155.25	157	
10	4/13/18	142	146	158	160	153	159	160	152	140	149	155	159	152	158	157	156	146.75	153	157.5	156.75	
11	4/14/18	140	154	158	160	139	154	155	152	144	150	156	154	146	156	156	154	142.25	153.5	156.25	155	
12	4/15/18																					
13	4/16/18	156	158	160	162	136	155	141	145	134	156	141	148	154	156	156	154	145	156.25	149.5	152.25	
14	4/17/18	140	158	158	163	145	155	157	161	158	162	161	160	157	157	155	153	150	158	157.75	159.25	
15	4/18/18	152	162	164	162	154	162	162	158	146	158	164	162	144	160	164	160	149	160.5	163.5	160.5	
16	4/19/18	156	163	167	168	156	158	157	156	159	159	158	156	141	158	163	164	153	159.5	161.25	161	
17	4/20/18	150	156	160	168	155	160	161	166	157	160	158	151	166	169	169	172	157	161.25	162	164.25	
18	4/21/18	154	160	163	167	157	160	162	165	158	160	158	155	167	169	170	172	159	162.25	163.25	164.75	
19	4/22/18																					
20	4/23/18	145	148	156	161	148	152	156	161	140	146	152	159	144	146	152	155	144.25	148	154	159	Turn
21	4/24/18	157	164	166	166	154	160	162	162	155	159	160	161	140	157	162	165	151.5	160	162.5	163.5	
22	4/25/18	152	162	164	164	153	161	163	163	156	164	167	167	161	161	160	160	155.5	162	163.5	163.5	
23	4/26/18	134	140	143	153	140	147	151	150	138	146	151	155	142	147	153	161	138.5	145	149.5	154.75	
24	4/27/18	136	144	145	154	136	144	155	152	140	144	150	156	136	145	151	158	137	144.25	150.25	155	
25	4/28/18	142	144	150	155	141	147	152	158	144	150	152	155	140	142	150	155	141.75	145.75	151	155.75	
26	4/29/18																					
27	4/30/18	146	152	150	148	143	149	150	158	145	148	155	152	144	152	150	144	144.5	150.25	151.25	150.5	Turn
28	5/1/18	137	146	155	160	141	145	153	163	144	151	157	165	146	152	155	166	142	148.5	155	163.5	
29	5/2/18	154	158	166	162	146	156	164	161	144	156	163	160	144	158	164	162	147	157	164.25	161.25	
30	5/3/18	156	160	166	164	144	156	165	166	144	157	165	163	148	156	165	162	148	157.25	165.25	163.75	
31	5/4/18	144	155	166	166	138	148	164	166	140	154	164	161	144	156	166	163	141.5	153.25	165	164	
32	5/5/18	154	156	158	160	146	152	163	164	150	158	164	162	150	154	160	162	150	155	161.25	162	

Attachment B

MSAP Process Temperature Chart Windrow# 18-4-6																						
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	4/7/18	129	125	120	110	132	128	122	112	131	127	119	111	135	137	140	138	131.75	129.25	125.25	117.75	
2	4/8/18																					
3	4/9/18	138	136	131	127	144	139	132	131	142	136	130	128	158	148	146	142	145.5	139.75	134.75	132	
4	4/10/18	152	147	146	144	149	144	138	135	146	144	136	132	158	154	152	146	151.25	147.25	143	139.25	
5	4/11/18	160	162	156	152	156	157	155	148	148	148	143	139	152	156	159	159	154	155.75	153.25	149.5	
6	4/12/18	160	161	160	158	161	163	162	160	152	154	152	148	158	160	158	155	157.75	159.5	158	155.25	
7	4/13/18	153	159	161	160	149	153	158	160	152	156	161	163	150	156	160	164	151	156	160	161.75	
8	4/14/18	154	158	162	162	148	156	158	160	144	156	163	160	152	158	162	162	149.5	157	161.25	161	
9	4/15/18																					
10	4/16/18	156	160	162	162	144	156	158	161	144	157	162	161	148	156	161	162	148	157.25	160.75	161.5	
11	4/17/18	156	160	162	160	145	155	160	161	145	146	162	160	156	159	161	161	150.5	155	161.25	160.5	
12	4/18/18	155	159	163	162	145	158	160	161	148	152	162	160	158	160	161	161	151.5	157.25	161.5	161	
13	4/19/18	156	159	163	164	146	161	161	160	150	150	162	160	161	162	162	160	153.25	158	162	161	
14	4/20/18	140	150	152	163	150	155	155	161	150	148	148	144	160	161	166	170	150	153.5	155.25	159.5	
15	4/21/18	145	151	155	167	147	152	155	160	152	148	148	145	160	162	165	167	151	153.25	155.75	159.75	
16	4/22/18																					
17	4/23/18	138	142	149	155	139	149	153	157	137	140	145	151	138	142	149	153	138	143.25	149	154	
18	4/24/18	138	150	155	156	153	155	156	156	149	153	154	154	136	152	155	157	144	152.5	155	155.75	
19	4/25/18	152	155	158	159	156	157	157	157	145	151	154	155	158	162	163	162	152.75	156.25	158	158.25	Turn
20	4/26/18	146	151	155	160	139	144	149	152	143	146	152	158	145	150	154	158	143.25	147.75	152.5	157	
21	4/27/18	140	150	153	157	140	147	151	155	140	143	150	155	141	148	151	157	140.25	147	151.25	156	
22	4/28/18	142	152	155	162	141	146	152	155	141	148	151	157	143	150	152	160	141.75	149	152.5	158.5	
23	4/29/18																					
24	4/30/18	140	150	154	160	141	145	151	154	142	148	152	158	142	152	154	160	141.25	148.75	152.75	158	
25	5/1/18	145	149	151	154	140	144	150	157	142	147	155	159	153	157	161	160	145	149.25	154.25	157.5	
26	5/2/18	162	168	171	172	155	157	157	155	156	157	157	155	156	157	160	161	157.25	159.75	161.25	160.75	Turn
27	5/3/18	156	163	166	166	148	153	156	157	155	158	161	162	152	156	156	156	152.75	157.5	159.75	160.25	
28	5/4/18	152	148	160	164	149	154	162	164	153	159	161	158	148	159	164	167	150.5	155	161.75	163.25	
29	5/5/18	150	154	160	162	156	154	152	152	160	162	154	154	154	156	154	152	155	156.5	155	155	
30	5/6/18																					
31	5/7/18	148	156	162	152	154	154	152	151	156	160	154	152	154	154	152	151	153	156	155	151.5	
32	5/8/18	158	155	152	150	150	151	150	150	148	152	154	150	152	151	150	150	152	152.25	151.5	150	Turn
33	5/9/18	168	172	164	162	170	170	160	158	164	166	164	160	164	161	156	156	166.5	167.25	161	159	

Attachment C

MSAP Process Temperature Chart Windrow# 18-4-9																						
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	4/10/18	140	150	148	142	132	130	120	118	142	138	128	121	122	111	110	110	134	132.25	126.5	122.75	
2	4/11/18	145	156	156	152	135	132	126	125	154	150	133	128	130	118	116	114	141	139	132.75	129.75	
3	4/12/18	156	158	156	157	151	146	137	130	154	145	140	131	148	144	138	128	152.25	148.25	142.75	136.5	
4	4/13/18	158	160	156	158	154	152	140	132	150	148	140	135	152	148	140	130	153.5	152	144	138.75	
5	4/14/18	158	160	158	158	160	150	138	135	144	140	136	131	156	148	140	136	154.5	149.5	143	140	
6	4/15/18																					
7	4/16/18	158	160	161	158	156	156	142	140	152	152	145	137	158	150	142	140	156	154.5	147.5	143.75	
8	4/17/18	158	162	163	157	152	154	148	142	149	156	154	145	154	152	143	140	153.25	156	152	146	
9	4/18/18	158	162	162	160	152	152	148	144	150	154	156	154	156	158	154	152	154	156.5	155	152.5	
10	4/19/18	161	162	161	158	152	150	146	144	153	155	156	156	158	162	160	158	156	157.25	155.75	154	
11	4/20/18	158	160	166	164	150	157	150	148	160	150	155	151	160	162	160	158	157	157.25	157.75	155.25	
12	4/21/18	160	161	162	164	155	157	155	154	161	158	155	152	160	164	151	150	159	160	155.75	155	
13	4/22/18																					
14	4/23/18	140	146	149	153	143	146	150	152	148	153	153	158	141	146	150	154	143	147.75	150.5	154.25	
15	4/24/18	158	164	163	163	155	156	156	154	156	158	158	157	153	165	169	170	155.5	160.75	161.5	161	
16	4/25/18	155	164	165	165	155	157	156	153	155	158	157	157	163	165	164	161	157	161	160.5	159	
17	4/26/18	135	141	149	156	140	143	147	155	136	143	149	156	141	146	157	162	138	143.25	150.5	157.25	
18	4/27/18	140	141	145	150	143	144	150	152	138	141	150	155	140	144	150	158	140.25	142.5	148.75	153.75	
19	4/28/18	144	150	151	157	140	148	152	155	143	148	151	160	144	153	158	162	142.75	149.75	153	158.5	
20	4/29/18																					
21	4/30/18	144	152	152	156	138	148	152	156	141	148	152	156	144	152	158	160	141.75	150	153.5	157	Turn
22	5/1/18	133	139	146	157	139	143	146	153	140	145	150	155	145	152	160	165	139.25	144.75	150.5	157.5	
23	5/2/18	158	162	168	171	159	158	155	153	168	170	172	172	160	161	162	164	161.25	162.75	164.25	165	
24	5/3/18	141	165	170	171	151	153	154	152	159	165	165	165	161	164	164	164	153	161.75	163.25	163	
25	5/4/18	157	156	154	154	163	167	171	168	155	157	158	158	140	149	153	153	153.75	157.25	159	158.25	
26	5/5/18	158	166	160	152	166	164	160	158	166	164	160	160	160	166	166	158	162.5	165	161.5	157	Turn
27	5/6/18																					
28	5/7/18	156	166	160	152	164	164	161	160	164	164	160	160	158	164	166	158	160.5	164.5	161.75	157.5	
29	5/8/18	150	153	158	159	146	148	147	147	139	143	154	155	151	155	158	159	146.5	149.75	154.25	155	
30	5/9/18	156	163	168	171	153	158	158	157	146	158	160	166	158	162	163	161	153.25	160.25	162.25	163.75	
31	5/10/18	143	146	150	158	155	155	155	154	153	158	161	162	156	164	166	166	151.75	155.75	158	160	

Attachment D

MSAP Process Temperature Chart Windrow# 18-4-13																						
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	4/14/18	156	152	144	138	159	149	144	140	148	139	130	129	143	136	116	116	151.5	144	133.5	130.75	
2	4/15/18																					
3	4/16/18	152	152	148	140	155	152	145	142	151	144	131	129	152	139	129	125	152.5	146.75	138.25	134	
4	4/17/18	148	153	149	142	150	149	146	143	156	150	144	138	160	156	155	145	153.5	152	148.5	142	
5	4/18/18	150	154	149	144	152	153	148	146	155	156	152	147	156	158	156	150	153.25	155.25	151.25	146.75	
6	4/19/18	152	155	150	144	156	157	156	153	155	159	156	152	153	159	158	156	154	157.5	155	151.25	
7	4/20/18	147	144	138	136	160	160	158	155	150	150	158	156	138	150	161	168	148.75	151	153.75	153.75	
8	4/21/18	147	145	143	140	162	162	160	158	151	157	163	158	143	155	160	163	150.75	154.75	156.5	154.75	
9	4/22/18																					
10	4/23/18	136	140	144	149	140	143	148	150	142	148	151	156	138	141	146	150	139	143	147.25	151.25	
11	4/24/18	148	150	149	146	153	155	155	155	159	159	158	158	145	160	163	163	151.25	156	156.25	155.5	
12	4/25/18	152	157	158	156	155	163	166	166	158	160	160	158	158	163	164	163	155.75	160.75	162	160.75	
13	4/26/18	149	153	155	157	141	145	147	149	146	150	157	166	149	151	154	158	146.25	149.75	153.25	157.5	
14	4/27/18	145	151	157	161	142	144	150	153	145	152	157	162	150	151	157	160	145.5	149.5	155.25	159	
15	4/28/18	150	152	160	161	144	151	155	163	150	152	160	163	148	153	158	161	148	152	158.25	162	
16	4/29/18																					
17	4/30/18	144	150	158	162	142	148	154	160	148	150	160	162	146	150	158	160	145	149.5	157.5	161	
18	5/1/18	142	147	156	162	141	145	150	153	145	147	154	160	139	141	146	149	141.75	145	151.5	156	
19	5/2/18	156	156	154	154	151	151	162	162	166	168	171	172	160	168	171	171	158.25	160.75	164.5	164.75	Turn
20	5/3/18	152	152	152	151	160	162	163	163	158	164	168	170	162	168	173	174	158	161.5	164	164.5	
21	5/4/18	140	149	153	152	146	149	156	162	145	140	143	154	140	148	154	155	142.75	146.5	151.5	155.75	
22	5/5/18	144	156	158	158	145	153	159	163	150	156	158	161	148	157	160	158	146.75	155.5	158.75	160	
23	5/6/18																					
24	5/7/18	146	159	162	160	148	158	162	164	151	158	160	162	144	158	161	160	147.25	158.25	161.25	161.5	
25	5/8/18	148	165	166	161	152	166	166	168	162	160	162	162	142	160	164	161	151	162.75	164.5	163	
26	5/9/18	148	166	165	162	158	167	168	168	162	164	162	163	147	162	165	161	153.75	164.75	165	163.5	
27	5/10/18	146	166	165	160	158	168	168	168	163	164	162	164	150	166	166	163	154.25	166	165.25	163.75	
28	5/11/18	144	166	164	160	156	168	168	169	164	162	162	164	154	168	166	164	154.5	166	165	164.25	Turn
29	5/12/18	140	166	164	165	154	165	165	172	160	164	164	164	145	160	165	170	149.75	163.75	164.5	167.75	
30	5/13/18																					
31	5/14/18	136	164	164	164	161	166	168	171	157	164	164	163	138	148	164	166	148	160.5	165	166	
32	5/15/18	135	162	164	162	162	166	168	170	154	162	164	162	138	144	162	164	147.25	158.5	164.5	164.5	
33	5/16/18	138	157	162	161	154	162	166	170	150	158	161	163	140	152	160	162	145.5	157.25	162.25	164	

Attachment E

MSAP Process Temperature Chart Windrow# 18-4-17																						
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	4/18/18	160	158	138	124	150	141	122	118	150	156	138	112	150	152	118	114	152.5	151.75	129	117	
2	4/19/18	161	159	142	136	156	148	138	124	156	160	138	120	154	158	140	128	156.75	156.25	139.5	127	
3	4/20/18	162	163	154	140	156	158	146	140	158	159	150	141	156	160	151	141	158	160	150.25	140.5	
4	4/21/18	160	162	154	142	158	158	150	141	160	164	148	140	158	162	152	140	159	161.5	151	140.75	
5	4/22/18																					
6	4/23/18	155	150	145	144	158	146	141	148	151	149	145	140	152	150	147	142	154	148.75	144.5	143.5	
7	4/24/18	157	156	152	146	160	157	150	150	154	150	148	144	152	150	146	143	155.75	153.25	149	145.75	
8	4/25/18	157	158	154	150	158	159	155	152	156	152	150	146	152	150	147	143	155.75	154.75	151.5	147.75	
9	4/26/18	156	160	160	154	154	158	160	151	158	160	158	152	152	156	154	148	155	158.5	158	151.25	
10	4/27/18	156	159	161	152	155	158	160	150	158	160	158	150	156	162	160	146	156.25	159.75	159.75	149.5	
11	4/28/18	154	160	160	152	157	160	160	151	158	162	159	156	156	162	160	150	156.25	161	159.75	152.25	
12	4/29/18																					
13	4/30/18	157	161	158	152	159	161	161	152	157	163	160	160	156	162	160	154	157.25	161.75	159.75	154.5	
14	5/1/18	140	146	151	151	140	147	149	150	141	146	150	157	140	145	152	163	140.25	146	150.5	155.25	
15	5/2/18	162	166	168	168	150	153	155	155	154	153	153	152	138	154	162	162	151	156.5	159.5	159.25	
16	5/3/18	141	153	158	161	152	154	155	155	153	153	152	150	149	154	159	158	148.75	153.5	156	156	
17	5/4/18	145	150	150	151	153	156	159	163	156	160	166	166	158	157	157	159	153	155.75	158	159.75	
18	5/5/18	156	157	160	154	148	158	156	154	152	158	160	159	154	158	160	152	152.5	157.75	159	154.75	Turn
19	5/6/18																					
20	5/7/18	152	157	158	156	150	156	158	156	152	158	160	160	150	156	158	154	151	156.75	158.5	156.5	
21	5/8/18	151	155	155	156	150	154	157	156	140	156	160	160	146	149	150	152	146.75	153.5	155.5	156	
22	5/9/18	159	161	160	160	157	161	162	162	144	158	161	160	151	154	154	156	152.75	158.5	159.25	159.5	
23	5/10/18	163	171	175	177	158	165	171	171	165	164	162	160	165	168	168	167	162.75	167	169	168.75	Turn
24	5/11/18	151	158	170	173	158	161	164	166	152	155	159	163	148	152	156	160	152.25	156.5	162.25	165.5	
25	5/12/18	149	158	166	170	159	162	164	163	158	160	156	154	162	166	160	154	157	161.5	161.5	160.25	
26	5/13/18																					
27	5/14/18	158	161	161	166	150	152	158	160	158	161	162	162	150	152	151	151	154	156.5	158	159.75	
28	5/15/18	158	160	152	163	146	152	158	160	140	143	152	158	142	150	150	151	146.5	151.25	153	158	
29	5/16/18	152	147	152	158	151	146	150	164	141	144	150	157	144	149	154	158	147	146.5	151.5	159.25	
30	5/17/18	155	163	166	168	154	157	160	163	144	148	156	158	143	152	152	150	149	155	158.5	159.75	
31	5/18/18	150	162	162	163	153	160	161	163	140	146	148	152	142	150	151	151	146.25	154.5	155.5	157.25	
32	5/19/18	140	151	158	162	143	150	152	158	140	145	150	154	143	150	151	151	141.5	149	152.75	156.25	

Attachment F

MSAP Process Temperature Chart Windrow# 18-4-20																						
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	4/21/18	120	116	115	111	134	132	127	124	145	148	137	134	140	136	127	121	134.75	133	126.5	122.5	
2	4/22/18																					
3	4/23/18	132	130	129	126	144	139	135	132	145	139	136	133	142	138	133	131	140.75	136.5	133.25	130.5	
4	4/24/18	146	140	136	133	151	149	146	140	154	148	141	140	152	151	147	138	150.75	147	142.5	137.75	
5	4/25/18	152	148	141	136	155	155	153	150	156	150	146	144	153	152	151	147	154	151.25	147.75	144.25	
6	4/26/18	158	156	149	142	157	161	160	146	158	160	164	152	158	161	164	156	157.75	159.5	159.25	149	
7	4/27/18	158	156	152	150	156	160	162	148	156	160	164	156	156	160	164	158	156.5	159	160.5	153	
8	4/28/18	154	158	161	154	150	158	163	152	150	160	165	162	152	158	162	158	151.5	158.5	162.75	156.5	
9	4/29/18																					
10	4/30/18	146	158	162	156	146	157	164	156	146	159	165	163	148	156	162	159	146.5	157.5	163.25	158.5	
11	5/1/18	140	154	162	158	140	156	165	160	142	158	166	165	146	156	161	158	142	156	163.5	160.25	
12	5/2/18	162	161	158	157	157	157	155	156	146	153	157	158	143	151	156	160	152	155.5	156.5	157.75	
13	5/3/18	149	162	166	168	159	158	156	156	155	156	154	153	145	148	151	151	152	156	156.75	157	
14	5/4/18	134	146	152	154	150	156	159	160	143	149	153	156	141	145	151	154	142	149	153.75	156	
15	5/5/18	132	141	152	150	155	158	161	162	160	161	154	156	144	148	154	155	147.75	152	155.25	155.75	
16	5/6/18																					
17	5/7/18	132	140	143	152	153	161	162	162	158	161	161	163	152	158	153	153	148.75	155	154.75	157.5	Turn
18	5/8/18	149	152	155	154	151	157	156	154	160	164	166	169	152	157	161	161	153	157.5	159.5	159.5	
19	5/9/18	156	157	157	153	158	160	160	156	165	170	171	171	158	165	167	166	159.25	163	163.75	161.5	
20	5/10/18	153	153	151	151	151	153	151	149	158	158	158	159	161	162	161	159	155.75	156.5	155.25	154.5	
21	5/11/18	149	153	159	164	155	159	166	171	150	154	157	162	161	163	165	166	153.75	157.25	161.75	165.75	
22	5/12/18	163	162	158	157	162	162	159	156	146	164	160	158	158	164	162	158	157.25	163	159.75	157.25	
23	5/13/18																					
24	5/14/18	156	156	155	160	144	152	161	161	146	148	159	160	140	141	150	152	146.5	149.25	156.25	158.25	Turn
25	5/15/18	157	160	162	162	157	162	165	167	156	147	155	160	150	151	162	160	155	155	161	162.25	
26	5/16/18	156	162	166	164	156	160	164	166	150	150	156	160	148	152	160	160	152.5	156	161.5	162.5	
27	5/17/18	155	163	165	165	154	157	160	163	144	148	156	158	143	152	152	150	149	155	158.25	159	
28	5/18/18	152	162	162	163	153	160	161	163	140	146	148	152	142	150	151	151	146.75	154.5	155.5	157.25	
29	5/19/18	140	151	158	162	143	150	152	158	140	145	150	154	143	150	151	151	141.5	149	152.75	156.25	
30	5/20/18																					
31	5/21/18	132	136	141	146	138	146	148	151	132	138	141	144	138	140	140	141	135	140	142.5	145.5	

Attachment G

MSAP Process Temperature Chart Windrow# 18-4-24																						
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	4/25/18	156	152	138	124	150	141	122	118	150	156	138	112	150	148	118	114	151.5	149.25	129	117	
2	4/26/18	158	155	142	138	152	148	138	124	156	160	142	120	160	156	138	128	156.5	154.75	140	127.5	
3	4/27/18	161	159	154	140	156	158	146	140	158	159	150	141	158	163	151	141	158.25	159.75	150.25	140.5	
4	4/28/18	160	162	154	142	158	158	150	141	160	164	148	140	158	162	152	140	159	161.5	151	140.75	
5	4/29/18																					
6	4/30/18	161	160	158	153	155	160	158	150	159	161	153	151	152	154	150	148	156.75	158.75	154.75	150.5	
7	5/1/18	137	145	152	160	140	146	150	155	135	140	148	154	139	145	149	147	137.75	144	149.75	154	
8	5/2/18	157	160	159	158	159	163	162	160	160	162	161	156	155	158	158	160	157.75	160.75	160	158.5	
9	5/3/18	160	160	159	158	146	152	160	162	146	153	158	160	156	153	149	144	152	154.5	156.5	156	
10	5/4/18	154	156	160	160	158	159	160	163	157	160	162	163	157	164	166	165	156.5	159.75	162	162.75	
11	5/5/18	151	155	163	161	149	160	160	160	157	165	163	163	157	159	161	163	153.5	159.75	161.75	161.75	
12	5/6/18																					
13	5/7/18	148	152	160	162	156	158	160	161	158	163	162	161	158	160	162	163	155	158.25	161	161.75	
14	5/8/18	147	153	158	161	159	159	161	162	161	164	166	165	157	159	158	156	156	158.75	160.75	161	
15	5/9/18	150	159	166	169	164	167	166	164	168	172	173	170	162	165	165	160	161	165.75	167.5	165.75	Turn
16	5/10/18	163	158	168	170	167	170	171	169	166	169	172	172	164	170	171	170	165	166.75	170.5	170.25	
17	5/11/18	158	158	166	166	155	155	157	160	156	155	156	156	160	156	163	166	157.25	156	160.5	162	
18	5/12/18	154	156	172	170	152	158	166	165	149	156	160	158	154	157	162	164	152.25	156.75	165	164.25	
19	5/13/18																					
20	5/14/18	146	154	155	155	143	159	162	157	140	156	162	158	144	158	161	162	143.25	156.75	160	158	
21	5/15/18	140	153	160	161	141	158	160	160	143	151	150	160	141	158	160	160	141.25	155	157.5	160.25	
22	5/16/18	139	145	149	163	142	147	151	157	145	149	157	161	155	161	162	160	145.25	150.5	154.75	160.25	
23	5/17/18	148	162	161	159	152	158	162	161	153	163	162	161	154	162	163	164	151.75	161.25	162	161.25	Turn
24	5/18/18	150	160	161	160	160	164	166	167	160	163	168	168	153	160	168	167	155.75	161.75	165.75	165.5	
25	5/19/18	150	161	163	162	154	160	168	168	160	163	170	171	152	158	164	166	154	160.5	166.25	166.75	
26	5/20/18																					
27	5/21/18	132	138	140	142	149	158	160	166	158	160	162	168	150	155	162	166	147.25	152.75	156	160.5	
28	5/22/18	155	167	172	173	149	165	171	174	164	171	173	173	153	161	163	164	155.25	166	169.75	171	
29	5/23/18	160	166	170	172	166	171	174	175	162	168	171	170	156	161	163	163	161	166.5	169.5	170	
30	5/24/18	163	168	174	176	162	167	173	173	169	172	173	173	169	172	174	174	165.75	169.75	173.5	174	
31	5/25/18	164	169	172	173	163	171	173	173	161	170	174	175	163	169	172	172	162.75	169.75	172.75	173.25	

Attachment H

MSAP Process Temperature Chart Windrow# 18-4-28																						
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	4/29/18																					
2	4/30/18	146	145	136	132	150	146	140	134	152	140	132	126	140	132	128	120	147	140.75	134	128	
3	5/1/18	150	148	144	135	156	151	146	137	162	159	148	145	146	142	138	133	153.5	150	144	137.5	
4	5/2/18	156	150	148	140	142	156	150	142	160	162	153	150	144	141	138	134	150.5	152.25	147.25	141.5	
5	5/3/18	152	152	151	150	150	144	140	143	162	159	145	148	148	146	142	137	153	150.25	144.5	144.5	
6	5/4/18	158	165	154	142	142	159	149	145	158	164	157	150	156	163	151	142	153.5	162.75	152.75	144.75	
7	5/5/18	160	162	157	146	146	162	158	149	154	162	158	152	150	162	152	150	152.5	162	156.25	149.25	
8	5/6/18																					
9	5/7/18	156	158	152	148	147	159	152	150	151	161	153	156	144	158	153	152	149.5	159	152.5	151.5	
10	5/8/18	150	156	149	150	144	146	147	149	148	148	157	160	149	150	154	154	147.75	150	151.75	153.25	
11	5/9/18	154	156	156	154	154	153	152	150	156	161	164	165	156	156	157	158	155	156.5	157.25	156.75	
12	5/10/18	155	155	153	151	150	151	151	150	152	158	162	164	157	160	159	159	153.5	156	156.25	156	
13	5/11/18	134	142	149	153	145	149	155	155	150	154	161	164	140	145	151	158	142.25	147.5	154	157.5	
14	5/12/18	146	156	150	153	148	155	154	154	140	149	159	158	148	156	152	158	145.5	154	153.75	155.75	
15	5/13/18																					
16	5/14/18	140	150	152	152	144	149	152	154	140	145	152	154	143	152	148	156	141.75	149	151	154	
17	5/15/18	135	139	143	149	141	144	151	153	140	140	146	154	139	147	146	155	138.75	142.5	146.5	152.75	
18	5/16/18	137	140	146	152	139	142	147	151	139	144	144	152	141	145	150	154	139	142.75	146.75	152.25	
19	5/17/18	145	155	156	151	144	148	150	146	151	147	148	150	148	150	150	148	147	150	151	148.75	Turn
20	5/18/18	158	162	162	160	155	158	163	166	154	157	165	165	144	154	162	163	152.75	157.75	163	163.5	
21	5/19/18	156	159	165	162	152	156	161	162	155	158	165	166	142	152	162	164	151.25	156.25	163.25	163.5	
22	5/20/18																					
23	5/21/18	152	165	168	171	150	152	155	165	160	166	168	170	141	148	162	165	150.75	157.75	163.25	167.75	
24	5/22/18	141	144	144	144	142	146	148	148	144	145	165	169	152	164	167	167	144.75	149.75	156	157	
25	5/23/18	144	151	154	154	138	140	140	140	145	159	165	165	153	158	161	161	145	152	155	155	
26	5/24/18	135	138	142	142	138	141	141	141	155	162	171	171	156	158	161	162	146	149.75	153.75	154	Turn
27	5/25/18	149	151	150	148	150	156	149	145	161	160	156	153	145	148	148	148	151.25	153.75	150.75	148.5	
28	5/26/18	152	154	152	154	146	152	150	152	156	158	160	158	148	156	152	150	150.5	155	153.5	153.5	
29	5/27/18																					
30	5/28/18																					
31	5/29/18	157	158	156	154	142	145	150	152	146	157	164	168	156	160	156	156	150.25	155	156.5	157.5	
32	5/30/18	152	152	150	148	145	148	148	148	158	170	172	172	158	168	174	176	153.25	159.5	161	161	
33	5/31/18	150	152	149	147	144	148	148	148	146	165	170	172	166	168	175	177	151.5	158.25	160.5	161	

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-2		
Windrow Construction:			Date Commenced: 4-30-18		Date Completed: 5-2-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/30/18	Mike Bayne	20.72	26.94	44	16	
4/30/18	Mike Bayne	22.63	29.42	44	16	
4/30/18	Mike Bayne	22.58	29.35	44	16	
4/30/18	Mike Bayne	18.75	24.38	44	16	60
5/1/18	Mike Bayne	21.54	28.00	44	16	
5/1/18	Mike Bayne	22.69	29.50	44	16	
5/1/18	Jerry Devoe	20.18	26.23	44	16	44
5/2/18	Jerry Devoe	22.59	29.37	44	16	
5/2/18	Jerry Devoe	21.77	28.30	44	16	
5/2/18	Jerry Devoe	22.44	29.17	44	16	44
Totals		215.89	280.66	440.00	160.00	148.00
Windrow Construction ratio:			2.67 /1			
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-2																						
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	5/3/18	159	155	151	150	161	160	160	140	157	152	136	126	146	150	138	128	155.75	154.25	146.25	136	
2	5/4/18	160	162	152	152	158	160	158	146	157	159	145	134	157	154	148	136	158	158.75	150.75	142	
3	5/5/18	160	157	154	152	155	158	148	140	149	160	158	148	156	148	140	138	155	155.75	150	144.5	
4	5/6/18																					
5	5/7/18	161	158	158	156	150	161	150	138	150	160	158	141	158	150	132	140	154.75	157.25	149.5	143.75	
6	5/8/18	158	156	160	156	159	158	146	138	148	157	164	149	158	154	134	142	155.75	156.25	151	146.25	
7	5/9/18	156	158	164	160	154	161	163	144	164	166	166	152	159	162	161	156	158.25	161.75	163.5	153	
8	5/10/18	150	158	164	162	153	162	165	146	164	168	169	155	157	161	161	159	156	162.25	164.75	155.5	
9	5/11/18	148	154	156	161	152	158	160	150	152	155	158	157	150	156	161	158	150.5	155.75	158.75	156.5	
10	5/12/18	148	153	158	156	150	161	158	156	149	158	155	158	150	158	158	158	149.25	157.5	157.25	157	
11	5/13/18																					
12	5/14/18	144	152	159	155	145	156	163	160	146	159	162	160	152	158	158	157	146.75	156.25	160.5	158	
13	5/15/18	145	148	152	156	145	149	154	158	143	147	154	159	148	154	156	156	145.25	149.5	154	157.25	
14	5/16/18	147	149	151	157	149	151	154	156	145	149	152	155	147	151	156	150	147	150	153.25	154.5	
15	5/17/18	144	148	152	157	145	150	156	156	142	148	153	156	145	150	156	152	144	149	154.25	155.25	
16	5/18/18	158	162	158	158	150	156	163	157	161	163	163	162	142	150	150	148	152.75	157.75	158.5	156.25	Turn
17	5/19/18	155	158	158	160	152	154	158	155	157	160	161	159	148	156	156	154	153	157	158.25	157	
18	5/20/18																					
19	5/21/18	152	155	163	168	136	148	158	160	151	158	160	162	148	158	162	167	146.75	154.75	160.75	164.25	
20	5/22/18	159	165	165	164	164	168	170	170	148	160	162	163	149	156	158	158	155	162.25	163.75	163.75	
21	5/23/18	157	158	158	157	153	159	164	166	161	165	168	168	145	151	154	154	154	158.25	161	161.25	
22	5/24/18	148	150	151	151	155	160	164	165	148	148	150	148	148	151	152	152	149.75	152.25	154.25	154	
23	5/25/18	153	156	157	157	157	163	166	168	153	158	159	160	142	145	145	146	151.25	155.5	156.75	157.75	Turn
24	5/26/18	150	158	158	154	154	163	162	159	152	160	159	158	145	148	148	153	150.25	157.25	156.75	156	
25	5/27/18																					
26	5/28/18																					
27	5/29/18	152	156	158	158	158	161	161	160	154	158	162	162	147	149	150	152	152.75	156	157.75	158	
28	5/30/18	138	142	158	159	140	145	160	160	146	149	160	161	146	146	152	154	142.5	145.5	157.5	158.5	
29	5/31/18	141	145	158	159	150	154	158	160	146	149	160	160	144	147	155	156	145.25	148.75	157.75	158.75	

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-7		
Windrow Construction:			Date Commenced: 5-3-18		Date Completed: 5-7-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/3/18	Mike Bayne	20.65	26.85	44	16	
5/3/18	Mike Bayne	21.26	27.64	44	16	
5/3/18	Mike Bayne	21.95	28.54	44	16	44
5/4/18	Mike Bayne	22.65	29.45	44	16	
5/4/18	Mike Bayne	19.84	25.79	44	16	
5/4/18	Mike Bayne	21.57	28.04	44	16	44
5/5/18	Ron Wiesman	20.36	26.47	44	16	
5/5/18	Ron Wiesman	22.73	29.55	44	16	36
5/7/18	Jerry Devoe	21.50	27.95	44	16	
5/7/18	Jerry Devoe	21.23	27.60	44	16	36
Totals		213.74	277.86	440.00	160.00	160.00
Windrow Construction ratio:			2.74 /1			
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-7

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	5/8/18	156	152	140	138	150	148	134	130	160	158	132	130	140	131	120	110	151.5	147.25	131.5	127	
2	5/9/18	158	160	146	141	152	150	141	136	158	158	142	135	145	138	128	124	153.25	151.5	139.25	134	
3	5/10/18	158	158	152	145	150	150	153	148	158	157	150	143	152	146	135	131	154.5	152.75	147.5	141.75	
4	5/11/18	158	156	149	152	140	146	152	159	140	146	149	152	150	149	139	134	147	149.25	147.25	149.25	
5	5/12/18	158	155	148	144	161	157	151	149	153	148	144	138	148	151	146	141	155	152.75	147.25	143	
6	5/13/18																					
7	5/14/18	146	153	154	150	149	148	154	153	147	153	148	142	144	150	152	147	146.5	151	152	148	
8	5/15/18	143	156	158	154	148	158	156	154	158	158	150	146	143	149	152	148	148	155.25	154	150.5	
9	5/16/18	142	154	160	156	150	160	158	155	150	158	150	149	140	148	154	150	145.5	155	155.5	152.5	
10	5/17/18	139	154	163	156	146	156	158	156	146	152	151	152	138	148	154	152	142.25	152.5	156.5	154	
11	5/18/18	136	152	161	158	144	154	160	159	140	149	159	154	138	149	157	154	139.5	151	159.25	156.25	
12	5/19/18	140	152	160	158	141	150	158	162	139	143	160	155	140	148	158	156	140	148.25	159	157.75	
13	5/20/18																					
14	5/21/18	142	150	154	154	144	154	160	162	144	150	156	158	143	152	153	158	143.25	151.5	155.75	158	
15	5/22/18	139	148	151	153	146	165	158	164	144	152	153	157	145	156	156	156	143.5	155.25	154.5	157.5	
16	5/23/18	151	154	155	156	142	148	150	151	145	148	151	151	151	156	158	158	147.25	151.5	153.5	154	
17	5/24/18	159	161	158	156	158	165	154	168	158	162	156	161	148	155	158	158	155.75	160.75	156.5	160.75	
18	5/25/18	154	156	155	153	155	159	160	160	148	158	160	159	148	155	155	154	151.25	157	157.5	156.5	Turn
19	5/26/18	151	161	156	153	156	158	157	158	146	150	157	148	150	154	156	154	150.75	155.75	156.5	153.25	
20	5/27/18																					
21	5/28/18																					
22	5/29/18	156	161	163	162	151	158	158	156	152	156	156	155	148	156	158	160	151.75	157.75	158.75	158.25	
23	5/30/18	151	158	161	161	152	159	162	163	150	154	155	152	143	152	157	159	149	155.75	158.75	158.75	
24	5/31/18	152	158	159	159	151	158	162	163	146	153	158	160	150	154	156	158	149.75	155.75	158.75	160	

Attachment K

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-5-10	
Windrow Construction:			Date Commenced: 5-7-18		Date Completed: 5-10-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/7/18	Mike Bayne	22.58	29.35	44	16	
5/7/18	Mike Bayne	18.11	23.54	44	16	36
5/8/18	Mike Bayne	20.23	26.30	44	16	
5/8/18	Mike Bayne	22.42	29.15	44	16	
5/8/18	Mike Bayne	22.49	29.24	44	16	44
5/9/18	Mike Bayne	18.54	24.10	44	16	
5/9/18	Jerry Devoe	21.72	28.24	44	16	
5/9/18	Jerry Devoe	22.59	29.37	44	16	44
5/10/18	Jerry Devoe	22.64	29.43	44	16	
5/10/18	Jerry Devoe	22.09	28.72	44	16	36
Totals		213.41	277.43	440.00	160.00	160.00
Windrow Construction ratio:		2.74 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-10																						
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	5/11/18	149	144	143	140	162	156	140	136	160	157	155	152	160	158	150	147	157.75	153.75	147	143.75	
2	5/12/18	160	158	145	141	157	155	141	137	151	152	148	140	146	152	145	138	153.5	154.25	144.75	139	
3	5/13/18																					
4	5/14/18	156	160	152	144	143	154	144	136	142	150	150	142	145	149	140	138	146.5	153.25	146.5	140	
5	5/15/18	154	158	152	144	142	152	144	137	148	152	152	142	144	159	147	136	147	155.25	148.75	139.75	
6	5/16/18	154	156	154	146	141	152	144	137	148	152	150	144	144	159	147	136	146.75	154.75	148.75	140.75	
7	5/17/18	146	154	152	148	141	148	142	138	142	152	148	144	154	163	151	142	145.75	154.25	148.25	143	
8	5/18/18	142	152	152	146	138	140	142	138	138	150	148	142	131	148	150	140	137.25	147.5	148	141.5	
9	5/19/18	140	148	150	146	138	143	142	137	141	150	148	142	132	150	148	138	137.75	147.75	147	140.75	
10	5/20/18																					
11	5/21/18	139	140	144	144	140	138	136	136	139	138	144	136	138	136	148	139	139	138	143	138.75	
12	5/22/18	136	141	142	142	136	141	142	142	144	149	140	136	143	145	146	144	139.75	144	142.5	141	
13	5/23/18	147	147	147	145	142	143	142	142	139	140	142	142	146	147	147	147	143.5	144.25	144.5	144	
14	5/24/18	146	148	148	147	146	146	145	144	142	142	141	140	146	146	146	146	145	145.5	145	144.25	
15	5/25/18	136	138	138	138	141	142	142	143	143	143	143	143	141	141	141	140	140.25	141	141	141	Turn
16	5/26/18	153	151	149	148	140	153	156	158	137	141	142	142	142	150	152	152	143	148.75	149.75	150	
17	5/27/18																					
18	5/28/18																					
19	5/29/18	153	151	149	148	140	153	156	158	137	141	142	142	142	150	152	152	143	148.75	149.75	150	
20	5/30/18	148	149	149	147	140	145	145	142	144	152	152	151	138	148	151	150	142.5	148.5	149.25	147.5	
21	5/31/18	136	137	139	140	138	140	142	142	140	141	142	142	138	140	141	141	138	139.5	141	141.25	Turn

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-14		
Windrow Construction:			Date Commenced: 5-10-18		Date Completed: 5-14-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/10/18	Jerry Devoe	22.75	29.58	44	16	24
5/11/18	Jerry Devoe	22.69	29.50	44	16	
5/11/18	Jerry Devoe	26.21	34.07	44	16	
5/11/18	Jerry Devoe	22.46	29.20	44	16	44
5/12/18	Oscar Ochoa	22.64	29.43	44	16	
5/12/18	Oscar Ochoa	22.22	28.89	44	16	
5/12/18	Jerry Devoe	21.93	28.51	44	16	44
5/14/18	Mike Bayne	19.02	24.73	44	16	
5/14/18	Mike Bayne	22.94	29.82	44	16	
5/14/18	Mike Bayne	22.68	29.48	44	16	44
Totals		225.54	293.20	440.00	160.00	156.00
Windrow Construction ratio:		2.58 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-14																						
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	5/15/18	148	142	136	128	141	132	118	115	149	140	120	118	142	135	124	118	145	137.25	124.5	119.75	
2	5/16/18	154	150	134	140	148	136	122	120	156	144	127	121	146	138	130	130	151	142	128.25	127.75	
3	5/17/18	148	150	136	142	152	152	134	134	152	148	136	131	148	140	134	131	150	147.5	135	134.5	
4	5/18/18	150	151	138	140	152	160	142	136	150	148	140	136	146	142	138	135	149.5	150.25	139.5	136.75	
5	5/19/18	148	150	144	139	152	155	148	144	144	154	142	140	143	140	140	138	146.75	149.75	143.5	140.25	
6	5/20/18																					
7	5/21/18	132	135	136	136	131	135	136	138	132	135	140	142	134	138	139	140	132.25	135.75	137.75	139	
8	5/22/18	151	152	150	147	145	146	144	141	142	145	142	142	135	136	139	140	143.25	144.75	143.75	142.5	
9	5/23/18	143	146	146	144	141	143	143	143	141	142	142	141	134	138	139	139	139.75	142.25	142.5	141.75	
10	5/24/18	144	144	143	142	144	144	143	143	144	143	140	140	138	141	139	135	142.5	143	141.25	140	
11	5/25/18	142	144	144	142	137	140	141	141	141	143	143	142	141	142	141	140	140.25	142.25	142.25	141.25	
12	5/26/18	142	144	144	143	138	142	144	142	146	148	146	144	140	142	142	138	141.5	144	144	141.75	
13	5/27/18																					
14	5/28/18																					
15	5/29/18	141	143	144	143	137	145	146	145	149	151	149	145	136	138	136	138	140.75	144.25	143.75	142.75	
16	5/30/18	151	152	150	148	137	140	140	139	141	144	144	143	136	134	136	138	141.25	142.5	142.5	142	
17	5/31/18	143	148	149	149	143	147	148	147	135	139	140	140	138	142	142	140	139.75	144	144.75	144	

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-5-18	
Windrow Construction:			Date Commenced: 5-14-18		Date Completed: 5-18-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/14/18	Mike Bayne	0.18	0.23	4	4	
5/15/18	Mike Bayne	20.83	27.08	44	16	
5/15/18	Mike Bayne	23.19	30.15	44	16	
5/15/18	Mike Bayne	21.76	28.29	44	16	44
5/16/18	Mike Bayne	22.48	29.22	44	16	
5/16/18	Mike Bayne	23.02	29.93	44	16	
5/16/18	Mike Bayne	19.81	25.75	44	16	44
5/17/18	Mike Bayne	22.52	29.28	44	16	
5/17/18	Mike Bayne	21.89	28.46	44	16	
5/17/18	Mike Bayne	22.39	29.11	44	16	44
Totals		198.07	257.49	400.00	148.00	132.00
Windrow Construction ratio:		2.64 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-18																						
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	5/19/18	110	110	108	106	124	118	112	108	146	138	127	124	147	144	120	114	131.75	127.5	116.75	113	
2	5/20/18																					
3	5/21/18	148	144	138	132	159	155	152	148	154	150	148	136	152	150	144	140	153.25	149.75	145.5	139	
4	5/22/18	142	140	140	134	150	148	145	142	138	140	146	140	148	146	140	140	144.5	143.5	142.75	139	
5	5/23/18	134	134	142	136	142	142	140	139	148	148	144	143	138	140	139	140	140.5	141	141.25	139.5	
6	5/24/18	133	135	142	136	144	143	140	140	147	148	145	143	148	147	144	140	143	143.25	142.75	139.75	
7	5/25/18	135	137	142	136	148	149	145	143	147	147	142	142	144	146	142	138	143.5	144.75	142.75	139.75	
8	5/26/18	136	138	144	136	148	150	148	146	146	148	144	144	142	146	140	138	143	145.5	144	141	
9	5/27/18																					
10	5/28/18																					
11	5/29/18	134	134	142	136	152	155	157	157	142	144	141	139	140	140	137	135	142	143.25	144.25	141.75	
12	5/30/18	138	136	142	136	151	153	151	148	138	138	136	134	138	140	140	138	141.25	141.75	142.25	139	
13	5/31/18	134	135	140	136	145	149	152	156	143	146	145	142	135	137	135	133	139.25	141.75	143	141.75	

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-21		
Windrow Construction:		Date Commenced: 5-18-18		Date Completed: 5-21-18		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/18/18	Ron Wiesman	22.18	28.83	4	4	
5/18/18	Ron Wiesman	22.05	28.67	44	16	
5/18/18	Ron Wiesman	22.55	29.32	44	16	44
5/19/18	Oscar Ochoa	22.53	29.29	44	16	
5/19/18	Oscar Ochoa	22.65	29.45	44	16	
5/19/18	Oscar Ochoa	21.16	27.51	44	16	44
5/21/18	Mike Bayne	21.77	28.30	44	16	
5/21/18	Mike Bayne	22.24	28.91	44	16	
5/21/18	Mike Bayne	21.87	28.43	44	16	
5/21/18	Mike Bayne	20.34	26.44	44	16	64
Totals		219.34	285.14	400.00	148.00	152.00
Windrow Construction ratio:		2.45 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-21																						
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	5/22/18	124	120	116	113	147	145	140	122	135	132	131	131	111	108	104	101	129.25	126.25	122.75	116.75	
2	5/23/18	132	130	124	118	133	132	128	125	139	141	138	136	124	118	110	107	132	130.25	125	121.5	
3	5/24/18	131	131	135	120	133	133	130	127	140	141	139	137	132	120	125	114	134	131.25	132.25	124.5	
4	5/25/18	136	142	140	137	143	143	138	135	140	142	140	139	138	135	134	131	139.25	140.5	138	135.5	
5	5/26/18	142	146	142	138	148	144	140	138	145	144	142	142	147	144	140	136	145.5	144.5	141	138.5	
6	5/27/18																					
7	5/28/18																					
8	5/29/18	140	139	135	136	151	149	144	137	148	148	148	148	147	145	142	138	146.5	145.25	142.25	139.75	
9	5/30/18	134	138	140	138	144	148	141	137	138	144	148	146	142	144	140	138	139.5	143.5	142.25	139.75	
10	5/31/18	134	140	142	142	148	149	146	145	136	140	148	148	138	142	142	140	139	142.75	144.5	143.75	

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-24		
Windrow Construction:			Date Commenced: 5-22-18	Date Completed: 5-24-18		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/22/18	Mike Bayne	22.36	29.07	44	16	
5/22/18	Mike Bayne	20.12	26.16	44	16	
5/22/18	Mike Bayne	22.06	28.68	44	16	44
5/23/18	Mike Bayne	19.70	25.61	44	16	
5/23/18	Mike Bayne	18.88	24.54	44	16	
5/23/18	Mike Bayne	20.92	27.20	44	16	44
5/24/18	Oscar Ochoa	22.68	29.48	44	16	
5/24/18	Oscar Ochoa	22.73	29.55	44	16	
5/24/18	Oscar Ochoa	19.89	25.86	44	16	44
Totals		189.34	246.14	396.00	144.00	132.00
Windrow Construction ratio:		2.73 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-24																						
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	5/25/18	162	154	142	126	162	160	158	140	163	158	156	142	158	149	134	126	161.25	155.25	147.5	133.5	
2	5/26/18	161	164	156	139	160	162	160	153	161	160	158	142	158	152	142	136	160	159.5	154	142.5	
3	5/27/18																					
4	5/28/18																					
5	5/29/18	159	162	156	138	150	151	147	144	150	153	151	142	151	159	162	150	152.5	156.25	154	143.5	
6	5/30/18	153	150	140	135	161	164	164	160	153	153	150	140	151	154	154	151	154.5	155.25	152	146.5	
7	5/31/18	141	141	136	134	148	149	144	140	154	154	151	146	159	164	165	164	150.5	152	149	146	

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 18-5-26		
Windrow Construction:			Date Commenced: 5-25-18	Date Completed: 5-26-18		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/25/18	Oscar Ochoa	19.05	24.77	44	16	
5/25/18	Oscar Ochoa	22.33	29.03	44	16	
5/25/18	Oscar Ochoa	22.62	29.41	44	16	
5/25/18	Oscar Ochoa	19.77	25.70	44	16	60
5/26/18	Oscar Ochoa	19.74	25.66	44	16	
5/26/18	Oscar Ochoa	20.23	26.30	44	16	44
Totals		123.74	160.86	264.00	96.00	104.00
Windrow Construction ratio:		2.88 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 18-5-26																						
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	5/27/18																					
2	5/28/18																					
3	5/29/18	147	144	136	136	141	137	132	128	148	148	145	142					145.33	143	137.67	135.33	
4	5/30/18	147	145	140	134	145	140	137	134	148	149	148	148					146.67	144.67	141.67	138.67	
5	5/31/18	147	147	144	142	141	141	138	136	151	149	145	143					146.33	145.67	142.33	140.33	