



Hillsborough County Florida

PUBLIC WORKS

PO Box 1110 Tampa, FL 33601-1110
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MEMORANDUM

DATE May 15, 2018

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

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

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: April 2018

BOARD OF COUNTY COMMISSIONERS

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CHIEF DEV. & INFRA. SERVICES ADMINISTRATOR

Lucia E. Garsys

Biosolids Received (wet tons):	1592.55 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. 8 windrows were formed and in active composting as of 4/30/18. Windrow temperatures were monitored daily. 10 windrows has met temperature and time requirements of the Process Further Reduce Pathogens (PFRP). 12 windrows have been turned. The previous 8 windrows have been moved to the curing section and combined for a total of 7 curing windrows. Sampling was performed on April 24, 2018. 1102.53 tons of finished 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
Joseph O'Neill, Professional Engineer II, Solid Waste Management Division, PWD

Attachment A

MSAP Process Temperature Chart Windrow# 18-3-5																						
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	3/6/18	154	150	148	140	150	146	140	138	148	144	138	132	150	140	136	130	150.5	145	140.5	135	
2	3/7/18	160	162	154	146	156	154	152	141	158	157	152	144	156	156	145	138	157.5	157.25	150.75	142.25	
3	3/8/18	159	161	156	152	158	154	154	148	162	159	154	151	157	158	155	149	159	158	154.75	150	
4	3/9/18	158	160	152	154	157	152	148	148	163	159	156	154	158	155	152	152	159	156.5	152	152	
5	3/10/18	158	160	156	156	152	156	152	150	160	160	158	156	160	158	154	152	157.5	158.5	155	153.5	
6	3/11/18																					
7	3/12/18	159	163	162	159	148	157	156	154	156	162	160	160	162	160	158	156	156.25	160.5	159	157.25	
8	3/13/18	156	160	162	160	148	156	158	158	150	160	160	160	160	160	161	160	153.5	159	160.25	159.5	
9	3/14/18	142	151	155	161	148	152	154	158	142	162	160	163	156	160	160	161	147	156.25	157.25	160.75	
10	3/15/18	158	161	164	164	160	164	158	160	159	160	164	161	156	160	158	160	158.25	161.25	161	161.25	
11	3/16/18	156	158	160	160	158	160	160	161	158	160	162	161	156	159	160	162	157	159.25	160.5	161	
12	3/17/18	149	152	160	162	155	158	160	163	159	158	160	161	158	158	160	162	155.25	156.5	160	162	
13	3/18/18																					
14	3/19/18	156	161	161	162	158	162	160	158	156	160	160	158	154	160	161	160	156	160.75	160.5	159.5	
15	3/20/18	154	160	162	164	158	162	161	160	154	158	160	158	152	158	160	160	154.5	159.5	160.75	160.5	
16	3/21/18	150	158	162	164	162	164	162	160	152	158	160	158	144	156	160	159	152	159	161	160.25	
17	3/22/18	150	157	163	164	161	163	163	160	151	158	161	159	144	155	160	159	151.5	158.25	161.75	160.5	
18	3/23/18	154	159	166	166	160	165	164	160	152	162	160	158	158	156	162	161	156	160.5	163	161.25	Turn
19	3/24/18	158	163	168	166	158	165	166	162	158	163	162	160	155	160	164	164	157.25	162.75	165	163	
20	3/25/18																					
21	3/26/18	162	165	166	167	161	164	166	164	160	163	163	161	158	163	164	163	160.25	163.75	164.75	163.75	
22	3/27/18	159	164	166	167	158	164	166	162	158	160	160	158	159	161	162	164	158.5	162.25	163.5	162.75	
23	3/28/18	159	164	165	166	156	163	165	162	158	160	160	158	158	159	162	164	157.75	161.5	163	162.5	
24	3/29/18	158	163	165	166	154	162	163	162	158	159	161	160	154	156	161	163	156	160	162.5	162.75	
25	3/30/18	158	162	165	165	152	160	162	162	158	159	162	161	150	154	161	161	154.5	158.75	162.5	162.25	
26	3/31/18	158	164	168	164	156	162	164	162	159	162	160	158	156	160	162	160	157.25	162	163.5	161	Turn
27	4/1/18																					
28	4/2/18	158	164	170	168	156	164	165	163	152	163	164	161	150	162	165	164	154	163.25	166	164	
29	4/3/18	160	158	154	150	150	151	150	148	151	160	164	160	156	160	162	162	154.25	157.25	157.5	155	
30	4/4/18	168	162	162	160	165	160	165	162	158	161	165	160	159	165	164	162	162.5	162	164	161	
31	4/5/18	166	164	165	161	164	168	163	165	161	165	167	165	162	168	168	163	163.25	166.25	165.75	163.5	
32	4/6/18	160	162	160	156	166	166	162	157	164	160	154	150	166	163	157	152	164	162.75	158.25	153.75	
33	4/7/18	160	161	163	161	163	165	167	160	163	162	160	156	163	165	162	159	162.25	163.25	163	159	

Attachment B

MSAP Process Temperature Chart Windrow# 18-3-8																						
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	3/9/18	152	150	138	136	150	144	128	126	156	150	123	122	156	154	130	112	153.5	149.5	129.75	124	
2	3/10/18	160	158	150	144	156	150	138	134	160	158	144	134	157	158	141	136	158.25	156	143.25	137	
3	3/11/18																					
4	3/12/18	160	160	158	152	152	156	150	146	160	161	157	148	154	159	152	142	156.5	159	154.25	147	
5	3/13/18	158	162	164	158	150	158	160	156	160	162	164	162	150	162	160	154	154.5	161	162	157.5	
6	3/14/18	157	162	164	160	160	162	162	158	158	162	165	160	156	162	164	160	157.75	162	163.75	159.5	
7	3/15/18	154	156	162	164	150	156	160	160	152	158	165	164	152	160	165	162	152	157.5	163	162.5	
8	3/16/18	154	160	162	162	148	154	158	158	152	158	164	162	153	160	164	162	151.75	158	162	161	
9	3/17/18	152	161	162	163	154	159	159	156	156	158	162	162	157	161	162	162	154.75	159.75	161.25	160.75	
10	3/18/18																					
11	3/19/18	154	159	162	163	150	159	160	160	156	158	165	162	157	161	164	162	154.25	159.25	162.75	161.75	
12	3/20/18	150	158	162	164	146	158	161	160	154	158	165	163	157	160	164	163	151.75	158.5	163	162.5	
13	3/21/18	146	156	162	164	143	158	162	160	154	158	165	163	156	160	165	163	149.75	158	163.5	162.5	
14	3/22/18	145	155	162	163	142	157	162	160	154	158	164	163	156	160	164	163	149.25	157.5	163	162.25	
15	3/23/18	152	158	162	164	148	158	164	162	154	159	166	164	155	161	164	164	152.25	159	164	163.5	
16	3/24/18	152	158	161	163	155	160	162	164	155	161	164	164	154	164	166	164	154	160.75	163.25	163.75	Turn
17	3/25/18																					
18	3/26/18	156	163	162	161	162	163	164	164	158	163	164	164	161	164	165	163	159.25	163.25	163.75	163	
19	3/27/18	153	158	161	162	157	162	164	162	157	161	164	163	160	162	166	165	156.75	160.75	163.75	163	
20	3/28/18	154	161	161	162	156	161	162	162	158	162	164	163	158	162	166	165	156.5	161.5	163.25	163	
21	3/29/18	152	161	163	164	156	160	163	162	158	162	165	165	158	160	165	164	156	160.75	164	163.75	
22	3/30/18	154	162	165	165	155	160	163	163	160	163	165	165	156	160	165	163	156.25	161.25	164.5	164	
23	3/31/18	152	160	163	164	156	160	163	162	155	161	164	165	154	158	164	164	154.25	159.75	163.5	163.75	Turn
24	4/1/18																					
25	4/2/18	154	160	163	162	150	156	165	164	150	159	165	165	155	160	163	163	152.25	158.75	164	163.5	
26	4/3/18	156	156	152	150	149	162	158	156	164	160	154	152	160	158	152	150	157.25	159	154	152	
27	4/4/18	163	166	162	156	165	168	166	164	167	166	160	158	165	166	162	156	165	166.5	162.5	158.5	
28	4/5/18	170	172	165	160	171	172	170	170	170	171	164	162	171	174	168	162	170.5	172.25	166.75	163.5	Turn
29	4/6/18	170	172	170	165	170	174	174	172	172	173	168	166	168	172	173	170	170	172.75	171.25	168.25	
30	4/7/18	170	172	172	169	168	172	174	173	170	171	167	165	172	176	171	172	170	172.75	171	169.75	
31	4/8/18																					
32	4/9/18	164	169	172	170	158	166	172	173	166	170	170	168	166	168	174	174	163.5	168.25	172	171.25	
33	4/10/18	158	166	172	174	148	160	171	173	162	168	172	170	158	162	174	176	156.5	164	172.25	173.25	

Attachment C

MSAP Process Temperature Chart Windrow# 18-3-12																						
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	3/13/18	144	130	118	114	150	148	116	112	144	130	118	114	132	122	118	116	142.5	132.5	117.5	114	
2	3/14/18	152	142	130	128	155	150	131	126	150	148	132	125	144	138	128	124	150.25	144.5	130.25	125.75	
3	3/15/18	160	153	138	132	158	160	140	132	152	154	138	130	156	144	134	128	156.5	152.75	137.5	130.5	
4	3/16/18	162	160	150	138	162	164	152	140	158	160	158	150	164	162	152	138	161.5	161.5	153	141.5	
5	3/17/18	161	164	154	139	162	162	156	140	156	162	165	156	163	162	156	146	160.5	162.5	157.75	145.25	
6	3/18/18																					
7	3/19/18	162	164	166	142	162	164	156	141	158	162	165	154	162	164	160	156	161	163.5	161.75	148.25	
8	3/20/18	160	162	161	146	160	162	158	144	156	160	166	162	160	162	164	160	159	161.5	162.25	153	
9	3/21/18	158	165	159	148	159	164	157	142	159	162	163	159	160	163	166	158	159	163.5	161.25	151.75	
10	3/22/18	158	162	160	148	157	161	160	146	156	160	164	162	158	161	164	156	157.25	161	162	153	
11	3/23/18	156	160	160	150	156	160	162	148	156	160	164	161	156	160	164	158	156	160	162.5	154.25	
12	3/24/18	154	158	161	154	150	158	163	152	150	160	165	162	152	158	162	158	151.5	158.5	162.75	156.5	
13	3/25/18																					
14	3/26/18	146	156	162	156	146	157	164	156	146	159	165	163	148	156	162	159	146.5	157	163.25	158.5	
15	3/27/18	144	156	162	156	146	157	164	156	146	159	165	163	148	156	162	159	146	157	163.25	158.5	
16	3/28/18	142	154	162	158	140	156	165	160	142	158	166	165	146	156	161	158	142.5	156	163.5	160.25	
17	3/29/18	144	156	161	160	148	157	163	160	148	162	168	166	148	160	163	160	147	158.75	163.75	161.5	
18	3/30/18	146	156	159	160	146	156	160	160	146	158	162	164	148	154	160	160	146.5	156	160.25	161	
19	3/31/18	144	156	160	160	142	152	159	160	142	157	161	162	146	152	160	161	143.5	154.25	160	160.75	
20	4/1/18																					
21	4/2/18	148	158	162	160	145	160	158	148	148	161	161	160	156	156	158	156	149.25	158.75	159.75	156	Turn
22	4/3/18	152	156	166	164	158	160	162	158	156	162	162	164	156	161	160	158	155.5	159.75	162.5	161	
23	4/4/18	160	164	168	164	162	168	168	166	159	166	170	172	154	169	161	160	158.75	166.75	166.75	165.5	
24	4/5/18	163	168	172	172	162	166	169	169	159	163	168	172	151	157	162	166	158.75	163.5	167.75	169.75	
25	4/6/18	160	161	168	168	158	162	166	167	156	160	165	169	152	158	162	164	156.5	160.25	165.25	167	
26	4/7/18	158	160	166	168	157	161	165	165	154	158	162	166	152	156	161	164	155.25	158.75	163.5	165.75	Turn
27	4/8/18																					

Attachment D

MSAP Process Temperature Chart Windrow# 18-3-16																						
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	3/17/18	152	150	141	140	142	135	131	129	141	137	132	130	134	122	122	120	142.25	136	131.5	129.75	
2	3/18/18																					
3	3/19/18	156	163	160	156	162	160	142	136	162	162	140	140	163	156	138	130	160.75	160.25	145	140.5	
4	3/20/18	156	164	162	160	160	161	150	144	162	163	152	148	162	158	141	132	160	161.5	151.25	146	
5	3/21/18	158	164	168	168	152	160	154	148	160	160	161	152	159	156	148	138	157.25	160	157.75	151.5	
6	3/22/18	160	162	166	168	159	162	160	154	160	161	160	152	158	157	150	140	159.25	160.5	159	153.5	
7	3/23/18	160	162	165	165	158	160	159	154	159	160	158	152	158	159	152	142	158.75	160.25	158.5	153.25	
8	3/24/18	158	158	164	165	156	156	158	154	154	158	150	152	156	159	153	144	156	157.75	156.25	153.75	
9	3/25/18																					
10	3/26/18	156	158	165	165	160	160	158	156	150	156	160	160	150	160	156	156	154	158.5	159.75	159.25	
11	3/27/18	156	160	164	165	160	162	159	156	154	162	160	160	154	160	156	156	156	161	159.75	159.25	
12	3/28/18	156	160	162	164	161	162	160	158	158	161	161	161	158	161	156	155	158.25	161	159.75	159.5	
13	3/29/18	156	158	160	163	163	164	160	158	158	160	160	162	162	161	156	154	159.75	160.75	159	159.25	
14	3/30/18	158	160	162	162	161	162	160	160	158	161	162	162	160	161	159	159	159.25	161	160.75	160.75	
15	3/31/18	158	160	160	164	158	162	162	162	159	162	164	164	158	161	163	162	158.25	161.25	162.25	163	
16	4/1/18																					
17	4/2/18	142	158	162	162	148	160	162	163	148	158	162	162	158	164	162	162	149	160	162	162.25	
18	4/3/18	138	158	162	162	146	158	161	162	144	154	160	163	154	162	162	163	145.5	158	161.25	162.5	
19	4/4/18	145	152	162	160	148	154	160	161	150	156	162	158	147	152	160	160	147.5	153.5	161	159.75	Turn
20	4/5/18	158	152	145	156	155	163	166	166	145	155	159	161	160	163	164	163	154.5	158.25	158.5	161.5	
21	4/6/18	140	145	152	156	145	151	158	163	140	155	159	164	150	153	156	160	143.75	151	156.25	160.75	
22	4/7/18	141	149	155	157	149	155	160	166	149	156	160	167	148	154	159	163	146.75	153.5	158.5	163.25	
23	4/8/18																					
24	4/9/18	160	162	162	164	160	170	173	174	158	166	174	175	160	172	170	172	159.5	167.5	169.75	171.25	Turn
25	4/10/18	156	164	162	164	159	168	172	174	157	166	172	174	159	170	172	173	157.75	167	169.5	171.25	
26	4/11/18	150	165	163	165	156	166	172	174	156	162	170	173	158	168	172	173	155	165.25	169.25	171.25	
27	4/12/18	146	164	162	164	150	166	172	175	150	160	170	173	152	166	172	174	149.5	164	169	171.5	
28	4/13/18	141	163	164	165	146	165	173	174	148	156	169	170	148	166	172	174	145.75	162.5	169.5	170.75	
29	4/14/18	137	161	165	165	142	165	173	174	142	152	157	165	145	166	172	175	141.5	161	166.75	169.75	
30	4/15/18																					
31	4/16/18	140	158	166	166	144	160	166	168	142	150	160	161	145	160	165	166	142.75	157	164.25	165.25	

Attachment E

MSAP Process Temperature Chart Windrow# 18-3-20																						
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	3/21/18	156	158	153	138	152	156	144	150	146	139	130	129	142	128	116	116	149	145.25	135.75	133.25	
2	3/22/18	161	161	153	144	155	158	149	150	149	139	131	129	146	139	129	125	152.75	149.25	140.5	137	
3	3/23/18	160	162	154	150	160	164	160	162	151	148	142	140	160	152	140	138	157.75	156.5	149	147.5	
4	3/24/18	160	162	160	154	160	160	158	158	154	152	154	160	164	158	150	142	159.5	158	155.5	153.5	
5	3/25/18																					
6	3/26/18	158	160	162	152	162	160	158	156	160	158	158	160	160	164	154	144	160	160.5	158	153	
7	3/27/18	156	158	162	154	160	160	158	156	159	158	158	160	162	164	157	150	159.25	160	158.75	155	
8	3/28/18	160	160	161	152	158	160	156	155	158	160	158	160	158	162	162	154	158.5	160.5	159.25	155.25	
9	3/29/18	159	162	162	160	158	161	158	158	150	161	163	165	152	162	164	156	154.75	161.5	161.75	159.75	
10	3/30/18	160	164	160	154	162	162	160	160	162	162	160	162	154	162	163	158	159.5	162.5	160.75	158.5	
11	3/31/18	158	166	160	152	160	164	160	158	158	164	160	160	156	160	161	160	158	163.5	160.25	157.5	
12	4/1/18																					
13	4/2/18	156	160	158	154	158	161	160	158	158	162	160	160	154	158	160	160	156.5	160.25	159.5	158	
14	4/3/18	155	158	156	154	154	160	160	158	156	162	160	160	150	158	158	158	153.75	159.5	158.5	157.5	
15	4/4/18	155	156	153	151	142	144	144	145	154	163	160	158	148	158	156	158	149.75	155.25	153.25	153	
16	4/5/18	150	152	154	155	140	146	148	150	152	162	162	158	146	160	154	156	147	155	154.5	154.75	
17	4/6/18	148	148	152	156	138	141	149	154	141	144	147	155	143	145	150	154	142.5	144.5	149.5	154.75	
18	4/7/18	144	150	152	157	140	146	150	153	140	146	150	159	145	149	154	158	142.25	147.75	151.5	156.75	Turn
19	4/8/18																					
20	4/9/18	158	164	162	162	155	158	160	162	146	158	161	163	148	162	170	171	151.75	160.5	163.25	164.5	
21	4/10/18	160	168	164	161	152	160	170	168	147	158	164	166	149	158	166	165	152	161	166	165	
22	4/11/18	161	165	166	162	154	161	172	173	160	160	168	171	143	158	164	166	154.5	161	167.5	168	
23	4/12/18	158	160	164	162	152	162	174	170	166	158	173	174	150	158	172	170	156.5	159.5	170.75	169	
24	4/13/18	152	156	160	164	150	160	162	168	150	156	164	166	150	156	161	166	150.5	157	161.75	166	
25	4/14/18	150	146	159	166	150	156	161	165	148	155	167	170	148	155	163	166	149	153	162.5	166.75	Turn
26	4/15/18																					
27	4/16/18	156	166	166	165	150	162	170	168	144	156	167	170	146	157	169	170	149	160.25	168	168.25	
28	4/17/18	154	162	168	170	148	158	169	168	142	156	168	170	144	158	172	173	147	158.5	169.25	170.25	
29	4/18/18	154	160	168	168	149	154	164	166	148	158	162	166	144	156	170	170	148.75	157	166	167.5	
30	4/19/18	152	158	164	166	148	152	160	162	150	158	160	162	142	150	166	168	148	154.5	162.5	164.5	
31	4/20/18	150	156	160	162	146	150	156	160	148	152	158	160	140	146	150	154	146	151	156	159	
32	4/21/18	150	154	159	160	145	150	155	160	148	152	156	158	138	142	144	149	145.25	149.5	153.5	156.75	
33	4/22/18																					

Attachment F

MSAP Process Temperature Chart Windrow# 18-3-23																						
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	3/24/18	152	151	150	132	146	148	150	141	141	145	138	127	142	148	151	138	145.25	148	147.25	134.5	
2	3/25/18																					
3	3/26/18	153	150	147	136	158	153	149	142	150	153	148	138	155	150	145	140	154	151.5	147.25	139	
4	3/27/18	158	152	146	138	158	151	144	146	156	150	144	140	157	154	149	144	157.25	151.75	145.75	142	
5	3/28/18	158	156	154	144	158	156	150	148	158	156	150	148	158	156	152	148	158	156	151.5	147	
6	3/29/18	156	160	158	150	158	158	156	158	156	154	157	152	160	158	156	152	157.5	157.5	156.75	153	
7	3/30/18	150	156	148	152	155	160	160	160	150	150	158	160	138	156	145	150	148.25	155.5	152.75	155.5	
8	3/31/18	147	152	151	155	158	160	161	162	143	148	151	155	141	156	148	151	147.25	154	152.75	155.75	
9	4/1/18																					
10	4/2/18	148	156	162	156	156	157	164	156	146	159	165	163	148	156	162	159	149.5	157	163.25	158.5	
11	4/3/18	151	154	162	158	158	162	162	158	152	158	166	165	146	156	161	158	151.75	157.5	162.75	159.75	
12	4/4/18	156	159	161	161	156	160	160	158	150	161	161	157	148	150	150	148	152.5	157.5	158	156	
13	4/5/18	155	158	161	162	162	165	160	160	150	161	159	157	156	158	156	155	155.75	160.5	159	158.5	
14	4/6/18	138	143	146	156	140	144	158	158	146	147	150	155	140	145	147	153	141	144.75	150.25	155.5	
15	4/7/18	133	140	143	159	145	148	158	158	145	149	152	157	149	154	157	160	143	147.75	152.5	158.5	
16	4/8/18																					
17	4/9/18	158	162	160	148	157	161	160	146	156	160	164	162	158	161	164	156	157.25	161	162	153	Turn
18	4/10/18	154	160	160	150	156	160	162	148	156	160	164	161	156	160	164	158	155.5	160	162.5	154.25	
19	4/11/18	141	155	161	161	155	164	165	165	138	140	143	146	155	160	164	164	147.25	154.75	158.25	159	
20	4/12/18	154	166	166	163	165	169	170	161	159	161	162	161	151	156	159	159	157.25	163	164.25	161	
21	4/13/18	135	144	150	154	137	143	155	162	145	150	157	160	140	145	152	160	139.25	145.5	153.5	159	
22	4/14/18	140	147	152	156	140	144	158	160	150	152	160	162	144	148	156	160	143.5	147.75	156.5	159.5	Turn
23	4/15/18																					
24	4/16/18	162	162	158	156	164	162	159	160	164	162	156	156	163	162	160	158	163.25	162	158.25	157.5	
25	4/17/18	158	162	164	164	159	162	160	162	162	162	164	164	162	160	164	164	160.25	161.5	163	163.5	
26	4/18/18	148	161	168	168	148	162	164	163	152	164	166	168	132	158	168	168	145	161.25	166.5	166.75	
27	4/19/18	150	160	170	172	150	164	168	166	160	164	168	170	148	164	170	170	152	163	169	169.5	
28	4/20/18	158	164	170	171	155	162	168	170	146	158	170	172	148	162	170	171	151.75	161.5	169.5	171	
29	4/21/18	160	168	164	161	152	164	170	168	147	158	164	166	149	158	166	165	152	162	166	165	
30	4/22/18																					
31	4/23/18	154	162	162	160	146	158	162	164	140	152	162	163	142	156	161	162	145.5	157	161.75	162.25	

Attachment G

MSAP Process Temperature Chart Windrow# 18-3-27																						
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	3/28/18	146	140	136	132	148	142	140	135	140	140	136	130	138	136	130	128	143	139.5	135.5	131.25	
2	3/29/18	150	148	140	138	158	160	150	146	158	151	148	140	148	146	143	140	153.5	151.25	145.25	141	
3	3/30/18	160	158	151	148	160	158	155	150	160	157	150	148	160	157	144	141	160	157.5	150	146.75	
4	3/31/18	158	152	150	146	155	153	151	150	160	160	158	153	157	151	152	143	157.5	154	152.75	148	
5	4/1/18																					
6	4/2/18	158	154	154	152	152	157	156	160	156	158	160	161	155	159	158	156	155.25	157	157	157.25	
7	4/3/18	152	148	160	158	152	156	160	158	154	158	162	160	152	158	162	160	152.5	155	161	159	
8	4/4/18	148	154	163	161	150	157	160	158	154	159	163	162	150	159	162	160	150.5	157.25	162	160.25	
9	4/5/18	144	156	164	161	148	157	161	158	152	160	164	164	148	160	163	159	148	158.25	163	160.5	
10	4/6/18	144	158	163	162	150	158	160	159	140	160	165	164	146	160	163	159	145	159	162.75	161	
11	4/7/18	146	160	162	160	148	157	160	163	143	158	163	164	146	160	163	160	145.75	158.75	162	161.75	
12	4/8/18																					
13	4/9/18	144	149	158	156	140	150	155	158	144	150	158	161	139	149	160	158	141.75	149.5	157.75	158.25	
14	4/10/18	142	148	158	158	138	148	158	158	140	148	158	160	138	148	155	159	139.5	148	157.25	158.75	
15	4/11/18	140	148	159	159	137	149	159	158	140	148	159	160	136	146	157	159	138.25	147.75	158.5	159	
16	4/12/18	147	160	165	170	149	160	164	161	144	154	158	162	145	158	164	165	146.25	158	162.75	164.5	
17	4/13/18	148	159	162	162	150	160	163	162	146	156	160	162	146	158	164	165	147.5	158.25	162.25	162.75	
18	4/14/18	150	157	157	160	152	160	162	164	149	158	160	163	147	160	164	167	149.5	158.75	160.75	163.5	Turn
19	4/15/18																					
20	4/16/18	141	141	151	154	152	158	163	165	149	152	157	160	144	148	152	158	146.5	149.75	155.75	159.25	
21	4/17/18	153	157	165	160	165	164	164	166	161	162	164	165	163	165	164	162	160.5	162	164.25	163.25	
22	4/18/18	150	154	160	162	156	154	152	152	160	162	154	154	154	156	154	152	155	156.5	155	155	Turn
23	4/19/18	152	158	162	161	158	160	162	162	162	164	161	158	158	164	165	165	157.5	161.5	162.5	161.5	
24	4/20/18	158	160	166	166	160	165	165	170	160	168	170	162	158	160	165	166	159	163.25	166.5	166	
25	4/21/18	153	165	167	171	158	163	167	172	156	169	167	165	157	162	165	170	156	164.75	166.5	169.5	
26	4/22/18																					
27	4/23/18	147	150	155	158	152	157	160	164	151	142	147	147	152	156	161	166	150.5	151.25	155.75	158.75	Turn
28	4/24/18	157	163	162	160	159	163	167	162	156	161	165	165	160	165	166	165	158	163	165	163	
29	4/25/18	158	155	164	162	150	160	150	160	156	157	160	161	152	151	150	150	154	155.75	156	158.25	
30	4/26/18	160	158	164	162	156	161	160	161	164	160	164	160	164	161	156	156	161	160	161	159.75	
31	4/27/18	158	158	170	164	160	166	166	162	160	161	168	166	162	166	160	158	160	162.75	166	162.5	
32	4/28/18	158	156	167	164	156	161	166	160	158	162	164	162	160	164	162	160	158	160.75	164.75	161.5	
33	4/29/18																					

Attachment H

MSAP Process Temperature Chart Windrow# 18-3-30																						
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	4/1/18	148	146	142	136	152	144	148	141	152	141	134	132	148	144	142	137	150	143.75	141.5	136.5	
2	4/2/18	149	146	141	138	150	148	144	137	160	156	152	143	151	147	138	134	152.5	149.25	143.75	138	
3	4/3/18	142	140	136	136	136	136	136	133	151	150	148	143	155	150	146	141	146	144	141.5	138.25	
4	4/4/18	152	156	154	151	159	160	160	158	154	155	154	151	154	160	158	155	154.75	157.75	156.5	153.75	
5	4/5/18	155	157	156	153	155	158	158	158	161	162	159	157	145	155	158	158	154	158	157.75	156.5	
6	4/6/18	140	141	150	154	140	145	152	157	138	141	145	151	134	142	142	148	138	142.25	147.25	152.5	
7	4/7/18	137	142	148	151	139	143	150	156	136	143	150	154	133	139	142	145	136.25	141.75	147.5	151.5	
8	4/8/18																					
9	4/9/18	140	145	152	156	140	149	152	155	134	136	141	145	135	140	143	147	137.25	142.5	147	150.75	
10	4/10/18	144	148	153	151	146	149	150	152	134	141	143	146	138	140	143	150	140.5	144.5	147.25	149.75	
11	4/11/18	155	157	156	155	158	164	164	164	165	167	164	163	156	158	158	156	158.5	161.5	160.5	159.5	
12	4/12/18	156	159	158	155	158	158	158	156	162	164	162	160	153	156	158	158	157.25	159.25	159	157.25	
13	4/13/18	135	139	155	160	142	156	163	163	135	142	158	165	138	143	150	154	137.5	145	156.5	160.5	
14	4/14/18	140	140	156	162	142	155	161	163	140	144	161	162	144	144	153	158	141.5	145.75	157.75	161.25	
15	4/15/18																					
16	4/16/18	141	144	150	155	141	145	152	160	144	147	152	156	136	138	140	145	140.5	143.5	148.5	154	
17	4/17/18	148	148	149	150	146	142	154	158	144	152	158	159	134	141	146	149	143	145.75	151.75	154	
18	4/18/18	146	152	156	154	142	162	156	156	140	156	160	158	136	148	156	154	141	154.5	157	155.5	Turn
19	4/19/18	158	161	161	160	156	158	156	152	165	160	164	161	157	159	160	152	159	159.5	160.25	156.25	
20	4/20/18	150	157	160	166	157	161	155	151	169	170	171	171	150	158	158	161	156.5	161.5	161	162.25	
21	4/21/18	158	162	165	171	162	160	158	155	176	177	172	171	153	158	158	161	162.25	164.25	163.25	164.5	
22	4/22/18																					
23	4/23/18	139	143	150	159	140	148	154	160	139	142	147	147	152	156	161	166	142.5	147.25	153	158	Turn
24	4/24/18	156	162	167	169	150	153	157	162	154	156	159	162	144	146	155	160	151	154.25	159.5	163.25	
25	4/25/18	157	160	162	162	158	164	167	171	159	165	169	172	153	158	161	164	156.75	161.75	164.75	167.25	
26	4/26/18	142	146	149	149	140	143	146	155	140	142	147	153	149	154	156	156	142.75	146.25	149.5	153.25	
27	4/27/18	138	144	153	150	136	141	147	155	140	144	150	153	144	150	155	158	139.5	144.75	151.25	154	
28	4/28/18	144	148	157	160	142	145	151	160	144	148	152	155	150	153	158	161	145	148.5	154.5	159	Turn
29	4/29/18																					
30	4/30/18	150	161	162	163	148	160	161	162	149	160	156	158	148	159	162	162	148.75	160	160.25	161.25	

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-3	
Windrow Construction:			Date Commenced: 3-30-18		Date Completed: 4-3-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/30/18	Jerry Devoe	21.62	28.11	44	16	
3/30/18	Jerry Devoe	22.68	29.48	44	16	36
3/31/18	Jerry Devoe	23.19	30.15	44	16	
3/31/18	Jerry Devoe	18.03	23.44	44	16	36
4/2/18	Mike Bayne	21.61	28.09	44	16	
4/2/18	Mike Bayne	22.09	28.72	44	16	
4/2/18	Mike Bayne	21.14	27.48	44	16	
4/2/18	Mike Bayne	23.18	30.13	44	16	60
4/3/18	Mike Bayne	23.24	30.21	44	16	20
Totals		196.78	255.81	396.00	144.00	152.00
Windrow Construction ratio:		2.71 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	Turn
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	
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

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-6	
Windrow Construction:			Date Commenced: 4-3-18		Date Completed: 4-6-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/3/18	Mike Bayne	20.30	26.39	44	16	
4/3/18	Jerry Devoe	20.23	26.30	44	16	36
4/4/18	Jerry Devoe	22.96	29.85	44	16	
4/4/18	Jerry Devoe	21.52	27.98	44	16	
4/4/18	Jerry Devoe	22.33	29.03	44	16	44
4/5/18	Mike Bayne	19.01	24.71	44	16	
4/5/18	Mike Bayne	21.61	28.09	44	16	
4/5/18	Mike Bayne	24.13	31.37	44	16	44
4/6/18	Mike Bayne	22.91	29.78	44	16	20
Totals		195.00	253.50	396.00	144.00	144.00
Windrow Construction ratio:		2.70 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	Turn
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	
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	

Attachment K

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-9	
Windrow Construction:			Date Commenced: 4-6-18		Date Completed: 4-9-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/6/18	Mike Bayne	20.76	26.99	44	16	
4/6/18	Jerry Devoe	25.72	33.44	44	16	40
4/7/18	Jerry Devoe	18.17	23.62	44	16	
4/7/18	Jerry Devoe	23.09	30.02	44	16	
4/7/18	Jerry Devoe	22.56	29.33	44	16	44
4/9/18	Mike Bayne	23.74	30.86	44	16	
4/9/18	Mike Bayne	19.82	25.77	44	16	
4/9/18	Mike Bayne	22.99	29.89	44	16	
4/9/18	Mike Bayne	22.47	29.21	44	16	60
Totals		199.32	259.12	396.00	144.00	144.00
Windrow Construction ratio:		2.64 /1				
Note: Yard waste yards = number of buckets * 4.00						

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

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-13	
Windrow Construction:			Date Commenced: 4-10-18		Date Completed: 4-13-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/10/18	Mike Bayne	22.31	29.00	44	16	
4/10/18	Mike Bayne	24.53	31.89	44	16	
4/10/18	Mike Bayne	23.46	30.50	44	16	44
4/11/18	Mike Bayne	27.69	36.00	44	16	
4/11/18	Mike Bayne	19.95	25.94	44	16	36
4/12/18	Jerry Devoe	23.88	31.04	44	16	
4/12/18	Jerry Devoe	28.49	37.04	44	16	36
4/13/18	Jerry Devoe	20.91	27.18	44	16	
4/13/18	Jerry Devoe	21.73	28.25	44	16	
4/13/18	Jerry Devoe	22.74	29.56	44	16	44
Totals		235.69	306.40	440.00	160.00	160.00
Windrow Construction ratio:		2.48 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-17	
Windrow Construction:			Date Commenced: 4-14-18		Date Completed: 4-17-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/14/18	Mike Bayne	20.94	27.22	44	16	
4/14/18	Mike Bayne	24.77	32.20	44	16	
4/14/18	Mike Bayne	19.04	24.75	44	16	
4/14/18	Mike Bayne	19.94	25.92	44	16	60
4/16/18	Mike Bayne	23.00	29.90	44	16	
4/16/18	Jerry Devoe	22.91	29.78	44	16	
4/16/18	Jerry Devoe	21.29	27.68	44	16	
4/16/18	Jerry Devoe	21.25	27.63	44	16	
4/16/18	Jerry Devoe	19.52	25.38	44	16	80
4/17/18	Jerry Devoe	22.36	29.07	44	16	24
Totals		215.02	279.53	440.00	160.00	164.00
Windrow Construction ratio:		2.73 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-20	
Windrow Construction:			Date Commenced: 4-17-18		Date Completed: 4-20-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/17/18	Mike Bayne	21.69	28.20	44	16	20
4/18/18	Mike Bayne	21.71	28.22	44	16	
4/18/18	Mike Bayne	22.33	29.03	44	16	
4/18/18	Mike Bayne	22.66	29.46	44	16	44
4/19/18	Oscar Ochoa	16.14	20.98	44	16	
4/19/18	Oscar Ochoa	22.65	29.45	44	16	
4/19/18	Oscar Ochoa	15.37	19.98	44	16	44
4/20/18	Jerry Devoe	22.24	28.91	44	16	
4/20/18	Jerry Devoe	16.11	20.94	44	16	
4/20/18	Jerry Devoe	22.55	29.32	44	16	44
Totals		203.45	264.49	440.00	160.00	152.00
Windrow Construction ratio:		2.84 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-24	
Windrow Construction:			Date Commenced: 4-21-18		Date Completed: 4-24-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/21/18	Jerry Devoe	17.24	22.41	44	16	
4/21/18	Jerry Devoe	21.91	28.48	44	16	36
4/23/18	Jerry Devoe	23.24	30.21	44	16	
4/23/18	Jerry Devoe	19.97	25.96	44	16	
4/23/18	Jerry Devoe	21.87	28.43	44	16	
4/23/18	Jerry Devoe	22.86	29.72	44	16	60
4/24/18	Mike Bayne	22.03	28.64	44	16	
4/24/18	Mike Bayne	20.24	26.31	44	16	
4/24/18	Mike Bayne	21.63	28.12	44	16	44
Totals		190.99	248.29	396.00	144.00	140.00
Windrow Construction ratio:		2.74 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 18-4-28	
Windrow Construction:			Date Commenced: 4-25-18		Date Completed: 4-28-18	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/25/18	Mike Bayne	21.79	28.33	44	16	
4/25/18	Mike Bayne	23.58	30.65	44	16	
4/25/18	Mike Bayne	22.79	29.63	44	16	44
4/26/18	Mike Bayne	17.05	22.17	44	16	
4/26/18	Mike Bayne	25.94	33.72	44	16	36
4/27/18	Mike Bayne	17.60	22.88	44	16	
4/27/18	Jerry Devoe	21.44	27.87	44	16	36
4/28/18	Jerry Devoe	21.64	28.13	44	16	
4/28/18	Jerry Devoe	18.91	24.58	44	16	
4/28/18	Jerry Devoe	18.77	24.40	44	16	44
Totals		209.51	272.36	440.00	160.00	160.00
Windrow Construction ratio:		2.79 /1				
Note: Yard waste yards = number of buckets * 4.00						

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	