



**PUBLIC WORKS**

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**BOARD OF COUNTY  
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**INTERNAL AUDITOR**

Peggy Caskey

**CHIEF DEV. & INFRA.  
SERVICES ADMINISTRATOR**

Lucia E. Garsys

**MEMORANDUM**

**DATE** February 16, 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

**SUBJECT:** Hillsborough County Biosolids Composting Monthly Report: January 2018

|                                    |  |
|------------------------------------|--|
| Biosolids Received (wet tons):     | 1642.75 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.<br>7 windrows were formed and in active composting as of 12/31/17. Windrow temperatures were monitored daily.<br>8 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP).<br>12 windrows have been turned.<br>The previous 8 windrows have been moved to the curing section and combined for a total of 7 curing windrows.<br>Sampling was performed on January 30, 2018.<br>1205.11 tons of finished compost was picked up by Life Soils. |
| Attachments:                       | A-O: 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  
Ron Wiesman, Manager, Solid Waste Management Division, PWD

## Attachment A

| <b>MSAP Process Temperature Chart Windrow# 17-12-2</b>           |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/3/17  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 2  | 12/4/17  | 152     | 144 | 137 | 134 | 155     | 155 | 146 | 130 | 148     | 146 | 140 | 130 | 148     | 137 | 110 | 104 | 150.75  | 145.5  | 133.25 | 124.5  |      |
| 3  | 12/5/17  | 157     | 154 | 145 | 142 | 152     | 154 | 156 | 152 | 147     | 146 | 144 | 140 | 150     | 151 | 140 | 132 | 151.5   | 151.25 | 146.25 | 141.5  |      |
| 4  | 12/6/17  | 157     | 157 | 150 | 146 | 154     | 156 | 156 | 152 | 148     | 148 | 146 | 142 | 152     | 152 | 146 | 138 | 152.75  | 153.25 | 149.5  | 144.5  |      |
| 5  | 12/7/17  | 156     | 160 | 155 | 150 | 156     | 158 | 157 | 151 | 150     | 150 | 148 | 143 | 156     | 154 | 149 | 145 | 154.5   | 155.5  | 152.25 | 147.25 |      |
| 6  | 12/8/17  | 158     | 162 | 154 | 150 | 160     | 158 | 158 | 154 | 154     | 156 | 152 | 144 | 156     | 158 | 152 | 148 | 157     | 158.5  | 154    | 149    |      |
| 7  | 12/9/17  | 158     | 161 | 153 | 152 | 160     | 158 | 160 | 158 | 150     | 152 | 156 | 150 | 154     | 158 | 156 | 154 | 155.5   | 157.25 | 156.25 | 153.5  |      |
| 8  | 12/10/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 9  | 12/11/17 | 156     | 160 | 154 | 154 | 156     | 158 | 161 | 160 | 148     | 150 | 154 | 148 | 152     | 158 | 158 | 155 | 153     | 156.5  | 156.75 | 154.25 |      |
| 10   | 12/12/17 | 156     | 157 | 154 | 156 | 152     | 160 | 163 | 162 | 147     | 147 | 154 | 145 | 152     | 158 | 158 | 156 | 151.75  | 155.5  | 157.25 | 154.75 |      |
| 11   | 12/13/17 | 151     | 155 | 157 | 157 | 151     | 158 | 162 | 163 | 150     | 153 | 153 | 151 | 150     | 158 | 162 | 161 | 150.5   | 156    | 158.5  | 158    |      |
| 12   | 12/14/17 | 154     | 156 | 156 | 155 | 149     | 152 | 154 | 156 | 150     | 150 | 149 | 148 | 156     | 158 | 159 | 154 | 152.25  | 154    | 154.5  | 153.25 |      |
| 13   | 12/15/17 | 153     | 152 | 147 | 140 | 150     | 155 | 155 | 151 | 145     | 144 | 142 | 138 | 154     | 152 | 148 | 137 | 150.5   | 150.75 | 148    | 141.5  |      |
| 14   | 12/16/17 | 150     | 150 | 148 | 145 | 149     | 152 | 155 | 150 | 148     | 146 | 141 | 140 | 150     | 155 | 150 | 145 | 149.25  | 150.75 | 148.5  | 145    |      |
| 15   | 12/17/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 16   | 12/18/17 | 151     | 156 | 158 | 158 | 148     | 158 | 164 | 164 | 154     | 154 | 154 | 152 | 157     | 161 | 163 | 162 | 152.5   | 157.25 | 159.75 | 159    |      |
| 17   | 12/19/17 | 158     | 160 | 160 | 157 | 156     | 159 | 161 | 161 | 150     | 152 | 151 | 150 | 159     | 162 | 162 | 160 | 155.75  | 158.25 | 158.5  | 157    | Turn |
| 18   | 12/20/17 | 156     | 160 | 158 | 156 | 154     | 156 | 161 | 158 | 152     | 156 | 154 | 152 | 156     | 160 | 160 | 160 | 154.5   | 158    | 158.25 | 156.5  |      |
| 19   | 12/21/17 | 151     | 160 | 162 | 163 | 152     | 156 | 159 | 161 | 155     | 157 | 157 | 158 | 156     | 160 | 162 | 160 | 153.5   | 158.25 | 160    | 160.5  |      |
| 20   | 12/22/17 | 152     | 150 | 153 | 160 | 152     | 155 | 155 | 160 | 152     | 155 | 154 | 156 | 160     | 162 | 159 | 161 | 154     | 155.5  | 155.25 | 159.25 |      |
| 21   | 12/23/17 | 150     | 153 | 153 | 158 | 154     | 154 | 156 | 157 | 155     | 155 | 154 | 154 | 158     | 161 | 163 | 163 | 154.25  | 155.75 | 156.5  | 158    |      |
| 22   | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 23   | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 24   | 12/26/17 | 144     | 153 | 160 | 160 | 142     | 142 | 146 | 152 | 152     | 154 | 154 | 152 | 143     | 154 | 160 | 163 | 145.25  | 150.75 | 155    | 156.75 | Turn |
| 25   | 12/27/17 | 167     | 170 | 171 | 168 | 164     | 158 | 155 | 154 | 165     | 169 | 167 | 166 | 163     | 162 | 157 | 155 | 164.75  | 164.75 | 162.5  | 160.75 |      |
| 26   | 12/28/17 | 156     | 163 | 165 | 162 | 160     | 158 | 156 | 158 | 164     | 166 | 168 | 168 | 160     | 162 | 159 | 162 | 160     | 162.25 | 162    | 162.5  |      |
| 27   | 12/29/17 | 150     | 150 | 149 | 147 | 148     | 145 | 143 | 144 | 163     | 164 | 169 | 170 | 159     | 162 | 164 | 166 | 155     | 155.25 | 156.25 | 156.75 |      |
| 28   | 12/30/17 | 148     | 152 | 156 | 156 | 146     | 148 | 150 | 154 | 158     | 160 | 166 | 167 | 156     | 158 | 162 | 164 | 152     | 154.5  | 158.5  | 160.25 |      |
| 29   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 30   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 31   | 1/2/18   | 130     | 149 | 152 | 154 | 131     | 146 | 152 | 154 | 140     | 149 | 160 | 162 | 141     | 145 | 152 | 161 | 135.5   | 147.25 | 154    | 157.75 | Turn |
| 32   | 1/3/18   | 151     | 165 | 168 | 168 | 138     | 159 | 163 | 160 | 148     | 160 | 163 | 164 | 158     | 151 | 167 | 172 | 148.75  | 158.75 | 165.25 | 166    |      |
| 33   | 1/4/18   | 153     | 147 | 155 | 161 | 133     | 148 | 151 | 159 | 138     | 149 | 152 | 160 | 142     | 155 | 157 | 164 | 141.5   | 149.75 | 153.75 | 161    |      |
| 34   | 1/5/18   | 137     | 153 | 154 | 167 | 140     | 149 | 158 | 162 | 141     | 153 | 158 | 162 | 142     | 156 | 166 | 168 | 140     | 152.75 | 159    | 164.75 |      |
| 35   | 1/6/18   | 140     | 155 | 168 | 170 | 143     | 151 | 160 | 164 | 145     | 154 | 160 | 164 | 145     | 158 | 168 | 170 | 143.25  | 154.5  | 164    | 167    |      |

## Attachment B

| <b>MSAP Process Temperature Chart Windrow# 17-12-7</b>           |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/8/17  | 141     | 138 | 131 | 118 | 138     | 136 | 128 | 122 | 136     | 132 | 130 | 114 | 134     | 131 | 128 | 110 | 137.25  | 134.25 | 129.25 | 116    |      |
| 2  | 12/9/17  | 148     | 144 | 136 | 124 | 142     | 140 | 132 | 128 | 140     | 136 | 132 | 125 | 138     | 134 | 128 | 126 | 142     | 138.5  | 132    | 125.75 |      |
| 3  | 12/10/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 12/11/17 | 148     | 148 | 136 | 134 | 148     | 150 | 146 | 144 | 146     | 140 | 138 | 132 | 144     | 150 | 140 | 141 | 146.5   | 147    | 140    | 137.75 |      |
| 5  | 12/12/17 | 150     | 150 | 138 | 140 | 152     | 156 | 154 | 151 | 146     | 144 | 144 | 140 | 146     | 159 | 156 | 152 | 148.5   | 152.25 | 148    | 145.75 |      |
| 6  | 12/13/17 | 134     | 140 | 142 | 145 | 152     | 155 | 155 | 156 | 145     | 145 | 142 | 141 | 153     | 156 | 159 | 159 | 146     | 149    | 149.5  | 150.25 |      |
| 7  | 12/14/17 | 140     | 145 | 148 | 149 | 148     | 151 | 152 | 151 | 149     | 147 | 146 | 144 | 152     | 156 | 159 | 160 | 147.25  | 149.75 | 151.25 | 151    |      |
| 8  | 12/15/17 | 149     | 151 | 150 | 144 | 150     | 150 | 147 | 145 | 147     | 145 | 140 | 135 | 155     | 158 | 160 | 161 | 150.25  | 151    | 149.25 | 146.25 |      |
| 9  | 12/16/17 | 150     | 153 | 150 | 146 | 152     | 148 | 144 | 152 | 150     | 145 | 140 | 138 | 155     | 160 | 162 | 165 | 151.75  | 151.5  | 149    | 150.25 |      |
| 10   | 12/17/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 11   | 12/18/17 | 142     | 141 | 141 | 142 | 151     | 156 | 159 | 156 | 153     | 157 | 154 | 150 | 148     | 153 | 156 | 158 | 148.5   | 151.75 | 152.5  | 151.5  |      |
| 12   | 12/19/17 | 148     | 144 | 142 | 142 | 146     | 149 | 152 | 158 | 154     | 156 | 154 | 150 | 148     | 150 | 156 | 160 | 149     | 149.75 | 151    | 152.5  |      |
| 13   | 12/20/17 | 152     | 144 | 144 | 142 | 145     | 150 | 152 | 158 | 154     | 156 | 154 | 150 | 146     | 151 | 156 | 158 | 149.25  | 150.25 | 151.5  | 152    |      |
| 14   | 12/21/17 | 156     | 145 | 145 | 143 | 144     | 150 | 152 | 156 | 154     | 156 | 154 | 150 | 142     | 151 | 158 | 162 | 149     | 150.5  | 152.25 | 152.75 |      |
| 15   | 12/22/17 | 150     | 145 | 143 | 145 | 140     | 150 | 152 | 158 | 150     | 154 | 155 | 155 | 148     | 156 | 160 | 162 | 147     | 151.25 | 152.5  | 155    |      |
| 16   | 12/23/17 | 147     | 145 | 144 | 145 | 144     | 148 | 154 | 156 | 149     | 151 | 154 | 155 | 144     | 155 | 157 | 160 | 146     | 149.75 | 152.25 | 154    |      |
| 17   | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 18   | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 19   | 12/26/17 | 132     | 150 | 160 | 163 | 140     | 152 | 155 | 161 | 143     | 153 | 158 | 160 | 142     | 148 | 154 | 158 | 139.25  | 150.75 | 156.75 | 160.5  |      |
| 20   | 12/27/17 | 132     | 140 | 145 | 151 | 144     | 147 | 154 | 157 | 151     | 155 | 159 | 161 | 148     | 152 | 155 | 162 | 143.75  | 148.5  | 153.25 | 157.75 |      |
| 21   | 12/28/17 | 151     | 148 | 152 | 150 | 148     | 152 | 154 | 148 | 152     | 156 | 158 | 157 | 156     | 154 | 156 | 156 | 151.75  | 152.5  | 155    | 152.75 | Turn |
| 22   | 12/29/17 | 145     | 143 | 146 | 154 | 148     | 151 | 155 | 157 | 148     | 151 | 153 | 155 | 160     | 161 | 157 | 162 | 150.25  | 151.5  | 152.75 | 157    |      |
| 23   | 12/30/17 | 148     | 150 | 152 | 156 | 146     | 150 | 158 | 160 | 148     | 152 | 154 | 157 | 158     | 160 | 160 | 162 | 150     | 153    | 156    | 158.75 |      |
| 24   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 25   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 26   | 1/2/18   | 143     | 146 | 151 | 154 | 133     | 144 | 147 | 151 | 144     | 147 | 152 | 154 | 145     | 153 | 158 | 161 | 141.25  | 147.5  | 152    | 155    |      |
| 27   | 1/3/18   | 136     | 144 | 158 | 163 | 138     | 149 | 152 | 152 | 139     | 156 | 160 | 162 | 137     | 145 | 155 | 159 | 137.5   | 148.5  | 156.25 | 159    |      |
| 28   | 1/4/18   | 156     | 158 | 160 | 155 | 142     | 142 | 143 | 141 | 140     | 153 | 156 | 158 | 137     | 148 | 156 | 158 | 143.75  | 150.25 | 153.75 | 153    |      |
| 29   | 1/5/18   | 155     | 156 | 158 | 158 | 146     | 142 | 150 | 152 | 155     | 156 | 160 | 161 | 161     | 161 | 160 | 157 | 154.25  | 153.75 | 157    | 157    | Turn |
| 30   | 1/6/18   | 158     | 159 | 160 | 161 | 148     | 144 | 152 | 152 | 157     | 167 | 169 | 170 | 163     | 163 | 165 | 160 | 156.5   | 158.25 | 161.5  | 160.75 |      |
| 31   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 32   | 1/8/18   | 154     | 143 | 166 | 169 | 153     | 163 | 166 | 169 | 150     | 151 | 154 | 156 | 158     | 163 | 166 | 168 | 153.75  | 155    | 163    | 165.5  |      |
| 33   | 1/9/18   | 145     | 163 | 170 | 172 | 160     | 161 | 161 | 166 | 148     | 158 | 161 | 163 | 158     | 162 | 167 | 170 | 152.75  | 161    | 164.75 | 167.75 |      |
| 34   | 1/10/18  | 150     | 164 | 171 | 168 | 162     | 163 | 166 | 168 | 150     | 159 | 164 | 168 | 160     | 164 | 170 | 173 | 155.5   | 162.5  | 167.75 | 169.25 |      |
| 35   | 1/11/18  | 142     | 145 | 158 | 162 | 145     | 151 | 158 | 161 | 140     | 152 | 156 | 162 | 145     | 155 | 157 | 166 |         |        |        | 162.75 |      |

## Attachment C

| <b>MSAP Process Temperature Chart Windrow# 17-12-11</b>          |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/12/17 | 151     | 153 | 153 | 152 | 155     | 155 | 153 | 154 | 150     | 152 | 153 | 153 | 153     | 153 | 146 | 142 | 152.25  | 153.25 | 151.25 | 150.25 |      |
| 2  | 12/13/17 | 152     | 154 | 156 | 155 | 150     | 158 | 158 | 160 | 138     | 148 | 155 | 157 | 166     | 168 | 170 | 160 | 151.5   | 157    | 159.75 | 158    |      |
| 3  | 12/14/17 | 140     | 145 | 148 | 149 | 133     | 144 | 148 | 150 | 143     | 147 | 149 | 151 | 132     | 140 | 148 | 152 | 137     | 144    | 148.25 | 150.5  |      |
| 4  | 12/15/17 | 151     | 152 | 150 | 147 | 151     | 155 | 153 | 150 | 152     | 153 | 150 | 148 | 159     | 158 | 153 | 148 | 153.25  | 154.5  | 151.5  | 148.25 |      |
| 5  | 12/16/17 | 150     | 151 | 152 | 148 | 152     | 160 | 162 | 160 | 150     | 148 | 145 | 140 | 155     | 150 | 148 | 145 | 151.75  | 152.25 | 151.75 | 148.25 |      |
| 6  | 12/17/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 7  | 12/18/17 | 153     | 157 | 156 | 154 | 159     | 162 | 162 | 159 | 148     | 152 | 156 | 158 | 160     | 165 | 168 | 162 | 155     | 159    | 160.5  | 158.25 |      |
| 8  | 12/19/17 | 151     | 156 | 160 | 162 | 156     | 160 | 161 | 158 | 146     | 151 | 156 | 158 | 150     | 153 | 155 | 158 | 150.75  | 155    | 158    | 159    |      |
| 9  | 12/20/17 | 150     | 155 | 158 | 160 | 152     | 160 | 160 | 156 | 148     | 154 | 158 | 159 | 150     | 156 | 158 | 160 | 150     | 156.25 | 158.5  | 158.75 |      |
| 10   | 12/21/17 | 150     | 154 | 156 | 156 | 156     | 157 | 155 | 152 | 150     | 156 | 160 | 159 | 151     | 158 | 163 | 164 | 151.75  | 156.25 | 158.5  | 157.75 |      |
| 11   | 12/22/17 | 144     | 150 | 152 | 155 | 155     | 159 | 155 | 160 | 150     | 155 | 154 | 158 | 160     | 161 | 162 | 158 | 152.25  | 156.25 | 155.75 | 157.75 |      |
| 12   | 12/23/17 | 144     | 149 | 152 | 153 | 154     | 156 | 156 | 158 | 151     | 152 | 154 | 156 | 160     | 159 | 158 | 158 | 152.25  | 154    | 155    | 156.25 |      |
| 13   | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 14   | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 15   | 12/26/17 | 152     | 160 | 162 | 163 | 143     | 150 | 152 | 158 | 152     | 158 | 161 | 161 | 154     | 158 | 163 | 165 | 150.25  | 156.5  | 159.5  | 161.75 | Turn |
| 16   | 12/27/17 | 152     | 155 | 159 | 161 | 155     | 157 | 160 | 163 | 156     | 156 | 158 | 160 | 150     | 155 | 157 | 161 | 153.25  | 155.75 | 158.5  | 161.25 |      |
| 17   | 12/28/17 | 148     | 152 | 156 | 158 | 150     | 154 | 156 | 158 | 151     | 153 | 156 | 160 | 148     | 152 | 156 | 161 | 149.25  | 152.75 | 156    | 159.25 |      |
| 18   | 12/29/17 | 137     | 148 | 151 | 153 | 139     | 142 | 144 | 150 | 137     | 138 | 141 | 146 | 144     | 147 | 156 | 162 | 139.25  | 143.75 | 148    | 152.75 |      |
| 19   | 12/30/17 | 140     | 146 | 156 | 155 | 138     | 140 | 148 | 151 | 136     | 138 | 142 | 148 | 142     | 146 | 156 | 161 | 139     | 142.5  | 150.5  | 153.75 |      |
| 20   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 21   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 22   | 1/2/18   | 131     | 133 | 141 | 145 | 136     | 134 | 142 | 148 | 133     | 136 | 140 | 145 | 136     | 141 | 151 | 156 | 134     | 136    | 143.5  | 148.5  | Turn |
| 23   | 1/3/18   | 154     | 158 | 161 | 163 | 146     | 151 | 155 | 158 | 132     | 144 | 150 | 154 | 140     | 157 | 162 | 162 | 143     | 152.5  | 157    | 159.25 |      |
| 24   | 1/4/18   | 135     | 141 | 152 | 154 | 139     | 144 | 149 | 151 | 136     | 140 | 145 | 150 | 135     | 142 | 156 | 157 | 136.25  | 141.75 | 150.5  | 153    |      |
| 25   | 1/5/18   | 146     | 153 | 154 | 159 | 141     | 146 | 152 | 155 | 138     | 141 | 145 | 150 | 137     | 150 | 162 | 162 | 140.5   | 147.5  | 153.25 | 156.5  |      |
| 26   | 1/6/18   | 148     | 155 | 159 | 161 | 143     | 148 | 154 | 157 | 140     | 143 | 144 | 151 | 140     | 153 | 165 | 166 | 142.75  | 149.75 | 155.5  | 158.75 |      |
| 27   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 28   | 1/8/18   | 135     | 139 | 142 | 145 | 136     | 139 | 141 | 144 | 151     | 155 | 157 | 160 | 137     | 141 | 148 | 153 | 139.75  | 143.5  | 147    | 150.5  |      |
| 29   | 1/9/18   | 160     | 162 | 164 | 166 | 158     | 166 | 170 | 171 | 153     | 156 | 158 | 159 | 168     | 171 | 171 | 168 | 159.75  | 163.75 | 165.75 | 166    | Turn |
| 30   | 1/10/18  | 154     | 158 | 159 | 159 | 160     | 166 | 168 | 170 | 167     | 166 | 167 | 165 | 161     | 163 | 165 | 167 | 160.5   | 163.25 | 164.75 | 165.25 |      |
| 31   | 1/11/18  | 145     | 151 | 155 | 158 | 145     | 154 | 161 | 160 | 148     | 156 | 158 | 158 | 146     | 158 | 161 | 164 | 146     | 154.75 | 158.75 | 160    |      |
| 32   | 1/12/18  | 136     | 145 | 150 | 160 | 134     | 143 | 150 | 152 | 132     | 145 | 150 | 154 | 131     | 146 | 155 | 158 | 133.25  | 144.75 | 151.25 | 156    |      |
| 33   | 1/13/18  | 138     | 146 | 154 | 158 | 136     | 143 | 156 | 152 | 134     | 144 | 151 | 154 | 133     | 148 | 156 | 160 | 135.25  | 145.25 | 154.25 | 156    |      |
| 34   | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 35   | 1/15/18  | 150     | 166 | 171 | 174 | 165     | 169 | 172 | 172 | 159     | 166 | 168 | 168 | 152     | 168 | 175 | 175 | 156.5   | 167.25 | 171.5  | 172.25 |      |

## Attachment D

| <b>MSAP Process Temperature Chart Windrow# 17-12-14</b>          |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/15/17 | 140     | 138 | 136 | 124 | 142     | 145 | 140 | 138 | 135     | 127 | 122 | 120 | 145     | 148 | 140 | 138 | 140.5   | 139.5  | 134.5  | 130    |      |
| 2  | 12/16/17 | 145     | 140 | 138 | 132 | 140     | 146 | 140 | 139 | 137     | 132 | 129 | 126 | 145     | 149 | 142 | 136 | 141.75  | 141.75 | 137.25 | 133.25 |      |
| 3  | 12/17/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 12/18/17 | 145     | 152 | 152 | 140 | 153     | 155 | 153 | 150 | 152     | 155 | 156 | 158 | 162     | 164 | 161 | 153 | 153     | 156.5  | 155.5  | 150.25 |      |
| 5  | 12/19/17 | 145     | 154 | 152 | 143 | 150     | 154 | 154 | 150 | 150     | 154 | 157 | 159 | 159     | 162 | 162 | 159 | 151     | 156    | 156.25 | 152.75 |      |
| 6  | 12/20/17 | 144     | 156 | 154 | 146 | 148     | 155 | 156 | 154 | 148     | 154 | 158 | 160 | 154     | 158 | 162 | 160 | 148.5   | 155.75 | 157.5  | 155    |      |
| 7  | 12/21/17 | 156     | 160 | 156 | 152 | 146     | 155 | 158 | 158 | 144     | 144 | 158 | 160 | 151     | 156 | 159 | 161 | 149.25  | 153.75 | 157.75 | 157.75 |      |
| 8  | 12/22/17 | 145     | 150 | 152 | 149 | 143     | 152 | 155 | 150 | 141     | 145 | 156 | 156 | 147     | 150 | 160 | 162 | 144     | 149.25 | 155.75 | 154.25 |      |
| 9  | 12/23/17 | 144     | 149 | 150 | 147 | 145     | 151 | 153 | 153 | 142     | 145 | 152 | 153 | 145     | 153 | 156 | 157 | 144     | 149.5  | 152.75 | 152.5  |      |
| 10   | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 11   | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 12   | 12/26/17 | 140     | 152 | 153 | 155 | 152     | 160 | 161 | 163 | 143     | 151 | 155 | 155 | 150     | 160 | 162 | 163 | 146.25  | 155.75 | 157.75 | 159    |      |
| 13   | 12/27/17 | 141     | 157 | 160 | 163 | 149     | 150 | 153 | 155 | 143     | 147 | 154 | 159 | 151     | 155 | 159 | 161 | 146     | 152.25 | 156.5  | 159.5  |      |
| 14   | 12/28/17 | 138     | 154 | 159 | 161 | 148     | 152 | 154 | 156 | 144     | 148 | 156 | 160 | 150     | 152 | 156 | 158 | 145     | 151.5  | 156.25 | 158.75 |      |
| 15   | 12/29/17 | 132     | 143 | 146 | 152 | 145     | 153 | 156 | 156 | 145     | 152 | 158 | 160 | 147     | 151 | 150 | 154 | 142.25  | 149.75 | 152.5  | 155.5  |      |
| 16   | 12/30/17 | 132     | 140 | 151 | 156 | 140     | 152 | 154 | 156 | 139     | 151 | 158 | 161 | 142     | 150 | 152 | 155 | 138.25  | 148.25 | 153.75 | 157    |      |
| 17   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 18   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 19   | 1/2/18   | 143     | 147 | 148 | 148 | 150     | 155 | 158 | 160 | 146     | 152 | 155 | 155 | 156     | 158 | 159 | 158 | 148.75  | 153    | 155    | 155.25 | Turn |
| 20   | 1/3/18   | 150     | 158 | 158 | 160 | 134     | 140 | 144 | 148 | 138     | 144 | 146 | 148 | 132     | 138 | 144 | 156 | 138.5   | 145    | 148    | 153    |      |
| 21   | 1/4/18   | 153     | 156 | 158 | 160 | 148     | 151 | 153 | 156 | 146     | 156 | 158 | 161 | 157     | 155 | 153 | 151 | 151     | 154.5  | 155.5  | 157    |      |
| 22   | 1/5/18   | 149     | 154 | 156 | 158 | 146     | 149 | 152 | 158 | 144     | 155 | 158 | 161 | 154     | 159 | 162 | 164 | 148.25  | 154.25 | 157    | 160.25 |      |
| 23   | 1/6/18   | 150     | 156 | 159 | 162 | 148     | 151 | 154 | 160 | 147     | 158 | 158 | 163 | 156     | 160 | 161 | 167 | 150.25  | 156.25 | 158    | 163    |      |
| 24   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 25   | 1/8/18   | 148     | 150 | 154 | 157 | 142     | 150 | 161 | 163 | 143     | 153 | 157 | 160 | 146     | 156 | 158 | 160 | 144.75  | 152.25 | 157.5  | 160    | Turn |
| 26   | 1/9/18   | 166     | 168 | 165 | 162 | 158     | 160 | 159 | 156 | 161     | 163 | 170 | 168 | 153     | 156 | 162 | 160 | 159.5   | 161.75 | 164    | 161.5  |      |
| 27   | 1/10/18  | 141     | 155 | 159 | 160 | 158     | 169 | 172 | 176 | 158     | 165 | 171 | 175 | 167     | 167 | 170 | 172 | 156     | 164    | 168    | 170.75 |      |
| 28   | 1/11/18  | 142     | 151 | 156 | 159 | 150     | 157 | 161 | 168 | 154     | 160 | 164 | 166 | 160     | 164 | 166 | 166 | 151.5   | 158    | 161.75 | 164.75 |      |
| 29   | 1/12/18  | 145     | 152 | 158 | 160 | 140     | 150 | 153 | 163 | 140     | 153 | 158 | 160 | 158     | 160 | 165 | 165 | 145.75  | 153.75 | 158.5  | 162    |      |
| 30   | 1/13/18  | 147     | 157 | 159 | 161 | 146     | 154 | 153 | 166 | 144     | 157 | 161 | 163 | 160     | 163 | 165 | 168 | 149.25  | 157.75 | 159.5  | 164.5  |      |
| 31   | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 32   | 1/15/18  | 138     | 145 | 153 | 162 | 132     | 139 | 144 | 148 | 148     | 156 | 160 | 167 | 146     | 148 | 150 | 156 | 141     | 147    | 151.75 | 158.25 |      |
| 33   | 1/16/18  | 163     | 170 | 174 | 176 | 143     | 150 | 161 | 164 | 156     | 164 | 170 | 172 | 141     | 153 | 159 | 161 | 150.75  | 159.25 | 166    | 168.25 | Turn |
| 34   | 1/17/18  | 162     | 168 | 170 | 174 | 140     | 150 | 158 | 162 | 155     | 160 | 168 | 171 | 140     | 150 | 155 | 160 | 149.25  | 157    | 162.75 | 166.75 |      |

## Attachment E

| <b>MSAP Process Temperature Chart Windrow# 17-12-19</b>          |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/20/17 | 140     | 138 | 136 | 132 | 142     | 140 | 132 | 130 | 141     | 140 | 135 | 134 | 134     | 132 | 130 | 130 | 139.25  | 137.5  | 133.25 | 131.5  |      |
| 2  | 12/21/17 | 150     | 152 | 151 | 147 | 153     | 153 | 146 | 142 | 158     | 158 | 155 | 153 | 151     | 146 | 132 | 130 | 153     | 152.25 | 146    | 143    |      |
| 3  | 12/22/17 | 150     | 152 | 148 | 143 | 145     | 149 | 148 | 146 | 150     | 152 | 160 | 161 | 154     | 152 | 148 | 145 | 149.75  | 151.25 | 151    | 148.75 |      |
| 4  | 12/23/17 | 144     | 152 | 148 | 145 | 148     | 150 | 148 | 147 | 152     | 154 | 158 | 158 | 155     | 153 | 146 | 144 | 149.75  | 152.25 | 150    | 148.5  |      |
| 5  | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 6  | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 7  | 12/26/17 | 143     | 151 | 156 | 152 | 153     | 155 | 151 | 150 | 152     | 158 | 156 | 156 | 158     | 161 | 155 | 153 | 151.5   | 156.25 | 154.5  | 152.75 |      |
| 8  | 12/27/17 | 144     | 152 | 156 | 158 | 143     | 145 | 150 | 152 | 151     | 154 | 157 | 162 | 158     | 157 | 153 | 152 | 149     | 152    | 154    | 156    |      |
| 9  | 12/28/17 | 148     | 154 | 156 | 158 | 146     | 148 | 152 | 154 | 150     | 152 | 154 | 158 | 152     | 154 | 150 | 152 | 149     | 152    | 153    | 155.5  |      |
| 10   | 12/29/17 | 153     | 156 | 158 | 161 | 146     | 156 | 159 | 158 | 145     | 148 | 154 | 156 | 141     | 145 | 149 | 152 | 146.25  | 151.25 | 155    | 156.75 |      |
| 11   | 12/30/17 | 148     | 152 | 158 | 160 | 144     | 152 | 158 | 158 | 141     | 146 | 156 | 156 | 139     | 144 | 152 | 152 | 143     | 148.5  | 156    | 156.5  |      |
| 12   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 13   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 14   | 1/2/18   | 131     | 138 | 140 | 140 | 132     | 141 | 145 | 147 | 139     | 140 | 142 | 147 | 140     | 142 | 146 | 150 | 135.5   | 140.25 | 143.25 | 146    |      |
| 15   | 1/3/18   | 151     | 156 | 158 | 157 | 142     | 148 | 150 | 150 | 141     | 151 | 153 | 153 | 144     | 155 | 158 | 159 | 144.5   | 152.5  | 154.75 | 154.75 |      |
| 16   | 1/4/18   | 145     | 148 | 151 | 153 | 143     | 150 | 152 | 154 | 153     | 155 | 157 | 157 | 147     | 151 | 153 | 156 | 147     | 151    | 153.25 | 155    |      |
| 17   | 1/5/18   | 134     | 144 | 152 | 155 | 138     | 143 | 147 | 149 | 144     | 156 | 153 | 151 | 145     | 156 | 158 | 157 | 140.25  | 149.75 | 152.5  | 153    |      |
| 18   | 1/6/18   | 138     | 147 | 155 | 157 | 140     | 145 | 149 | 153 | 146     | 154 | 155 | 152 | 147     | 158 | 159 | 158 | 142.75  | 151    | 154.5  | 155    | Turn |
| 19   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 20   | 1/8/18   | 147     | 150 | 152 | 154 | 150     | 152 | 153 | 154 | 141     | 152 | 161 | 164 | 156     | 158 | 160 | 161 | 148.5   | 153    | 156.5  | 158.25 |      |
| 21   | 1/9/18   | 164     | 168 | 168 | 170 | 155     | 161 | 165 | 166 | 150     | 152 | 152 | 148 | 142     | 153 | 156 | 156 | 152.75  | 158.5  | 160.25 | 160    |      |
| 22   | 1/10/18  | 140     | 146 | 150 | 154 | 138     | 141 | 142 | 144 | 153     | 159 | 160 | 161 | 133     | 148 | 151 | 153 | 141     | 148.5  | 150.75 | 153    |      |
| 23   | 1/11/18  | 138     | 142 | 149 | 155 | 142     | 142 | 146 | 146 | 142     | 149 | 156 | 160 | 141     | 149 | 152 | 155 | 140.75  | 145.5  | 150.75 | 154    |      |
| 24   | 1/12/18  | 138     | 141 | 150 | 160 | 146     | 146 | 145 | 150 | 136     | 145 | 155 | 160 | 146     | 152 | 160 | 163 | 141.5   | 146    | 152.5  | 158.25 |      |
| 25   | 1/13/18  | 135     | 140 | 148 | 157 | 149     | 147 | 146 | 149 | 134     | 146 | 153 | 158 | 146     | 151 | 158 | 161 | 141     | 146    | 151.25 | 156.25 |      |
| 26   | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 27   | 1/15/18  | 140     | 154 | 165 | 171 | 156     | 164 | 166 | 166 | 158     | 166 | 170 | 172 | 152     | 164 | 168 | 173 | 151.5   | 162    | 167.25 | 170.5  | Turn |
| 28   | 1/16/18  | 150     | 158 | 161 | 160 | 148     | 151 | 153 | 162 | 159     | 162 | 166 | 169 | 157     | 163 | 166 | 170 | 153.5   | 158.5  | 161.5  | 165.25 |      |
| 29   | 1/17/18  | 150     | 156 | 160 | 160 | 142     | 150 | 150 | 160 | 155     | 160 | 164 | 168 | 155     | 160 | 165 | 170 | 150.5   | 156.5  | 159.75 | 164.5  |      |
| 30   | 1/18/18  | 138     | 159 | 165 | 169 | 153     | 161 | 167 | 170 | 151     | 160 | 166 | 171 | 158     | 161 | 168 | 171 | 150     | 160.25 | 166.5  | 170.25 |      |
| 31   | 1/19/18  | 142     | 146 | 149 | 152 | 140     | 146 | 150 | 153 | 148     | 156 | 160 | 162 | 141     | 152 | 159 | 161 | 142.75  | 150    | 154.5  | 157    |      |
| 32   | 1/20/18  | 144     | 148 | 150 | 153 | 143     | 148 | 151 | 154 | 150     | 158 | 162 | 164 | 144     | 154 | 161 | 163 | 145.25  | 152    | 156    | 158.5  |      |
| 33   | 1/21/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 34   | 1/22/18  | 145     | 146 | 152 | 155 | 144     | 146 | 153 | 157 | 150     | 158 | 165 | 170 | 145     | 155 | 163 | 167 | 146     | 151.25 | 158.25 | 162.25 |      |

## Attachment F

| <b>MSAP Process Temperature Chart Windrow# 17-12-22</b>          |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 12/23/17 | 126     | 127 | 126 | 124 | 121     | 126 | 127 | 125 | 125     | 124 | 122 | 114 | 131     | 130 | 128 | 125 | 125.75  | 126.75 | 125.75 | 122    |      |
| 2  | 12/24/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 3  | 12/25/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 12/26/17 | 132     | 142 | 150 | 153 | 143     | 154 | 152 | 150 | 134     | 140 | 148 | 153 | 140     | 143 | 142 | 140 | 137.25  | 144.75 | 148    | 149    |      |
| 5  | 12/27/17 | 141     | 146 | 154 | 158 | 143     | 145 | 150 | 155 | 148     | 154 | 156 | 154 | 152     | 154 | 152 | 150 | 146     | 149.75 | 153    | 154.25 |      |
| 6  | 12/28/17 | 144     | 144 | 152 | 156 | 142     | 145 | 148 | 150 | 142     | 152 | 154 | 154 | 148     | 150 | 152 | 150 | 144     | 147.75 | 151.5  | 152.5  |      |
| 7  | 12/29/17 | 131     | 134 | 147 | 154 | 141     | 145 | 145 | 144 | 139     | 150 | 152 | 153 | 144     | 148 | 151 | 151 | 138.75  | 144.25 | 148.75 | 150.5  |      |
| 8  | 12/30/17 | 132     | 136 | 148 | 152 | 140     | 146 | 146 | 144 | 138     | 148 | 154 | 154 | 142     | 148 | 154 | 152 | 138     | 144.5  | 150.5  | 150.5  |      |
| 9  | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 10   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 11   | 1/2/18   | 131     | 134 | 140 | 140 | 136     | 138 | 143 | 147 | 131     | 139 | 150 | 153 | 131     | 134 | 143 | 145 | 132.25  | 136.25 | 144    | 146.25 |      |
| 12   | 1/3/18   | 156     | 153 | 154 | 161 | 145     | 149 | 153 | 154 | 150     | 156 | 158 | 161 | 138     | 150 | 153 | 154 | 147.25  | 152    | 154.5  | 157.5  |      |
| 13   | 1/4/18   | 134     | 146 | 149 | 152 | 141     | 144 | 146 | 147 | 144     | 152 | 159 | 151 | 136     | 145 | 149 | 150 | 138.75  | 146.75 | 150.75 | 150    |      |
| 14   | 1/5/18   | 151     | 153 | 155 | 157 | 147     | 151 | 154 | 153 | 144     | 142 | 150 | 154 | 151     | 153 | 154 | 154 | 148.25  | 149.75 | 153.25 | 154.5  |      |
| 15   | 1/6/18   | 153     | 155 | 157 | 159 | 148     | 153 | 157 | 155 | 147     | 144 | 152 | 155 | 152     | 154 | 156 | 159 | 150     | 151.5  | 155.5  | 157    |      |
| 16   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 17   | 1/8/18   | 146     | 149 | 154 | 161 | 143     | 146 | 150 | 152 | 133     | 140 | 143 | 152 | 136     | 141 | 150 | 152 | 139.5   | 144    | 149.25 | 154.25 |      |
| 18   | 1/9/18   | 138     | 142 | 162 | 171 | 161     | 164 | 166 | 167 | 160     | 165 | 167 | 168 | 156     | 159 | 159 | 160 | 153.75  | 157.5  | 163.5  | 166.5  | Turn |
| 19   | 1/10/18  | 146     | 150 | 160 | 164 | 143     | 149 | 154 | 156 | 147     | 157 | 163 | 165 | 146     | 156 | 157 | 159 | 145.5   | 153    | 158.5  | 161    |      |
| 20   | 1/11/18  | 142     | 149 | 158 | 161 | 140     | 146 | 154 | 152 | 151     | 157 | 160 | 164 | 141     | 148 | 155 | 158 | 143.5   | 150    | 156.75 | 158.75 |      |
| 21   | 1/12/18  | 146     | 152 | 160 | 162 | 140     | 143 | 148 | 152 | 154     | 162 | 161 | 168 | 148     | 151 | 155 | 160 | 147     | 152    | 156    | 160.5  |      |
| 22   | 1/13/18  | 147     | 154 | 159 | 163 | 142     | 145 | 148 | 150 | 156     | 160 | 163 | 167 | 152     | 155 | 156 | 157 | 149.25  | 153.5  | 156.5  | 159.25 |      |
| 23   | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 24   | 1/15/18  | 139     | 143 | 149 | 154 | 145     | 154 | 156 | 153 | 159     | 161 | 161 | 158 | 150     | 155 | 158 | 157 | 148.25  | 153.25 | 156    | 155.5  |      |
| 25   | 1/16/18  | 132     | 134 | 133 | 131 | 154     | 161 | 161 | 161 | 156     | 159 | 158 | 155 | 151     | 156 | 158 | 155 | 148.25  | 152.5  | 152.5  | 150.5  |      |
| 26   | 1/17/18  | 132     | 132 | 133 | 131 | 150     | 160 | 161 | 162 | 155     | 158 | 159 | 155 | 150     | 156 | 157 | 160 | 146.75  | 151.5  | 152.5  | 152    |      |
| 27   | 1/18/18  | 137     | 141 | 150 | 157 | 148     | 153 | 156 | 156 | 157     | 160 | 161 | 161 | 137     | 152 | 156 | 158 | 144.75  | 151.5  | 155.75 | 158    | Turn |
| 28   | 1/19/18  | 155     | 157 | 159 | 161 | 154     | 157 | 159 | 163 | 144     | 148 | 151 | 155 | 147     | 150 | 154 | 156 | 150     | 153    | 155.75 | 158.75 |      |
| 29   | 1/20/18  | 157     | 159 | 161 | 163 | 156     | 159 | 161 | 165 | 149     | 151 | 153 | 157 | 149     | 152 | 155 | 157 | 152.75  | 155.25 | 157.5  | 160.5  |      |
| 30   | 1/21/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 31   | 1/22/18  | 150     | 159 | 165 | 167 | 155     | 159 | 163 | 167 | 149     | 151 | 153 | 158 | 145     | 151 | 153 | 157 | 149.75  | 155    | 158.5  | 162.25 |      |
| 32   | 1/23/18  | 155     | 158 | 160 | 163 | 156     | 158 | 163 | 167 | 148     | 150 | 155 | 159 | 150     | 152 | 157 | 160 | 152.25  | 154.5  | 158.75 | 162.25 |      |

## Attachment G

(Note: 3 temperature points for this window because it was a 100 feet shorter).

| <b>MSAP Process Temperature Chart Window# 17-12-27</b>           |          |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
|--|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|----|----|----|---------|--------|--------|--------|------|
| 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  | 12/28/17 | 120     | 116 | 114 | 112 | 119     | 122 | 124 | 127 | 110     | 108 | 105 | 104 |         |    |    |    | 116.33  | 115.33 | 114.33 | 114.33 |      |
| 2  | 12/29/17 | 138     | 136 | 128 | 119 | 138     | 132 | 131 | 130 | 131     | 128 | 121 | 116 |         |    |    |    | 135.67  | 132    | 126.67 | 121.67 |      |
| 3  | 12/30/17 | 140     | 141 | 132 | 128 | 146     | 140 | 136 | 132 | 137     | 133 | 130 | 128 |         |    |    |    | 141     | 138    | 132.67 | 129.33 |      |
| 4  | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 5  | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 6  | 1/2/18   | 142     | 142 | 133 | 131 | 133     | 143 | 146 | 148 | 142     | 144 | 154 | 159 |         |    |    |    | 139     | 143    | 144.33 | 146    |      |
| 7  | 1/3/18   | 146     | 144 | 134 | 132 | 154     | 158 | 160 | 161 | 145     | 158 | 162 | 166 |         |    |    |    | 148.33  | 153.33 | 152    | 153    |      |
| 8  | 1/4/18   | 137     | 138 | 136 | 134 | 137     | 140 | 149 | 152 | 136     | 143 | 147 | 148 |         |    |    |    | 136.67  | 140.33 | 144    | 144.67 |      |
| 9  | 1/5/18   | 138     | 144 | 151 | 153 | 144     | 150 | 155 | 158 | 144     | 150 | 144 | 144 |         |    |    |    | 142     | 148    | 150    | 151.67 |      |
| 10   | 1/6/18   | 140     | 149 | 153 | 155 | 148     | 153 | 158 | 160 | 147     | 152 | 145 | 145 |         |    |    |    | 145     | 151.33 | 152    | 153.33 |      |
| 11   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 12   | 1/8/18   | 138     | 141 | 148 | 148 | 140     | 148 | 154 | 156 | 156     | 157 | 161 | 163 |         |    |    |    | 144.67  | 148.67 | 154.33 | 155.67 |      |
| 13   | 1/9/18   | 156     | 162 | 164 | 166 | 151     | 160 | 162 | 166 | 156     | 154 | 155 | 148 |         |    |    |    | 154.33  | 158.67 | 160.33 | 160    |      |
| 14   | 1/10/18  | 137     | 142 | 145 | 147 | 157     | 159 | 161 | 164 | 155     | 160 | 164 | 166 |         |    |    |    | 149.67  | 153.67 | 156.67 | 159    |      |
| 15   | 1/11/18  | 135     | 140 | 142 | 149 | 142     | 150 | 156 | 158 | 148     | 152 | 159 | 162 |         |    |    |    | 141.67  | 147.33 | 152.33 | 156.33 |      |
| 16   | 1/12/18  | 137     | 147 | 149 | 152 | 131     | 145 | 150 | 156 | 145     | 150 | 155 | 160 |         |    |    |    | 137.67  | 147.33 | 151.33 | 156    |      |
| 17   | 1/13/18  | 135     | 144 | 150 | 155 | 132     | 141 | 146 | 154 | 142     | 147 | 151 | 152 |         |    |    |    | 136.33  | 144    | 149    | 153.67 |      |
| 18   | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 19   | 1/15/18  | 158     | 164 | 166 | 166 | 145     | 151 | 156 | 161 | 152     | 161 | 161 | 153 |         |    |    |    | 151.67  | 158.67 | 161    | 160    | Turn |
| 20   | 1/16/18  | 156     | 158 | 158 | 156 | 152     | 158 | 161 | 164 | 158     | 164 | 164 | 166 |         |    |    |    | 155.33  | 160    | 161    | 162    |      |
| 21   | 1/17/18  | 150     | 157 | 158 | 160 | 150     | 157 | 163 | 168 | 155     | 163 | 163 | 166 |         |    |    |    | 151.67  | 159    | 161.33 | 164.67 |      |
| 22   | 1/18/18  | 158     | 160 | 160 | 158 | 154     | 158 | 161 | 165 | 162     | 168 | 168 | 170 |         |    |    |    | 158     | 162    | 163    | 164.33 |      |
| 23   | 1/19/18  | 132     | 136 | 144 | 150 | 136     | 144 | 146 | 149 | 143     | 149 | 155 | 159 |         |    |    |    | 137     | 143    | 148.33 | 152.67 |      |
| 24   | 1/20/18  | 133     | 140 | 148 | 138 | 146     | 148 | 152 | 146 | 153     | 160 | 162 | 160 |         |    |    |    | 144     | 149.33 | 154    | 148    |      |
| 25   | 1/21/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 26   | 1/22/18  | 133     | 141 | 148 | 150 | 138     | 149 | 148 | 155 | 140     | 150 | 161 | 163 |         |    |    |    | 137     | 146.67 | 152.33 | 156    |      |
| 27   | 1/23/18  | 133     | 142 | 150 | 151 | 136     | 140 | 148 | 150 | 146     | 152 | 161 | 165 |         |    |    |    | 138.33  | 144.67 | 153    | 155.33 |      |
| 28   | 1/24/18  | 144     | 152 | 156 | 156 | 142     | 156 | 158 | 160 | 152     | 156 | 162 | 160 |         |    |    |    | 146     | 154.67 | 158.67 | 158.67 | Turn |
| 29   | 1/25/18  | 165     | 166 | 165 | 161 | 168     | 171 | 175 | 175 | 166     | 170 | 173 | 176 |         |    |    |    | 166.33  | 169    | 171    | 170.67 |      |
| 30   | 1/26/18  | 166     | 172 | 173 | 169 | 168     | 173 | 174 | 174 | 163     | 175 | 172 | 172 |         |    |    |    | 165.67  | 173.33 | 173    | 171.67 |      |
| 31   | 1/27/18  | 162     | 171 | 173 | 172 | 165     | 173 | 173 | 174 | 160     | 175 | 173 | 173 |         |    |    |    | 162.33  | 173    | 173    | 173    |      |
| 32   | 1/28/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |    |    |    |         |        |        |        |      |
| 33   | 1/29/18  | 152     | 166 | 172 | 172 | 154     | 156 | 168 | 172 | 156     | 154 | 167 | 174 |         |    |    |    | 154     | 158.67 | 169    | 172.67 |      |



## Attachment H

| <b>MSAP Process Temperature Chart Windrow# 17-12-30</b>                 |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|---|----------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| <b>Temperature: Shading equals temperature 131 or greater for PFRP.</b> |          |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 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   | 12/31/17 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 2   | 1/1/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 3   | 1/2/18   | 144     | 141 | 137 | 133 | 138     | 143 | 136 | 132 | 138     | 136 | 115 | 113 | 143     | 132 | 119 | 112 | 140.75  | 138    | 126.75 | 122.5  |      |
| 4   | 1/3/18   | 142     | 146 | 151 | 156 | 146     | 145 | 140 | 135 | 145     | 145 | 140 | 140 | 148     | 142 | 135 | 130 | 145.25  | 144.5  | 141.5  | 140.25 |      |
| 5   | 1/4/18   | 146     | 145 | 142 | 140 | 152     | 148 | 140 | 137 | 138     | 136 | 134 | 132 | 152     | 144 | 136 | 132 | 147     | 143.25 | 138    | 135.25 |      |
| 6   | 1/5/18   | 150     | 151 | 149 | 145 | 154     | 152 | 152 | 144 | 136     | 132 | 136 | 138 | 157     | 148 | 140 | 143 | 149.25  | 145.75 | 144.25 | 142.5  |      |
| 7   | 1/6/18   | 152     | 154 | 151 | 150 | 154     | 154 | 153 | 147 | 138     | 133 | 137 | 140 | 159     | 148 | 151 | 145 | 150.75  | 147.25 | 148    | 145.5  |      |
| 8   | 1/7/18   |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 9   | 1/8/18   | 159     | 157 | 154 | 150 | 157     | 153 | 151 | 147 | 148     | 146 | 144 | 140 | 148     | 148 | 146 | 142 | 153     | 151    | 148.75 | 144.75 |      |
| 10  | 1/9/18   | 158     | 158 | 154 | 143 | 162     | 159 | 154 | 143 | 150     | 154 | 150 | 144 | 151     | 152 | 148 | 146 | 155.25  | 155.75 | 151.5  | 144    |      |
| 11  | 1/10/18  | 154     | 150 | 143 | 148 | 160     | 160 | 158 | 150 | 150     | 152 | 150 | 146 | 155     | 157 | 154 | 152 | 154.75  | 154.75 | 151.25 | 149    |      |
| 12  | 1/11/18  | 138     | 143 | 150 | 154 | 158     | 163 | 165 | 168 | 148     | 151 | 148 | 147 | 155     | 157 | 154 | 152 | 149.75  | 153.5  | 154.25 | 155.25 |      |
| 13  | 1/12/18  | 132     | 136 | 144 | 150 | 132     | 140 | 143 | 144 | 134     | 141 | 143 | 155 | 135     | 142 | 144 | 150 | 133.25  | 139.75 | 143.5  | 149.75 |      |
| 14  | 1/13/18  | 134     | 137 | 146 | 151 | 135     | 143 | 145 | 148 | 132     | 142 | 145 | 156 | 136     | 139 | 143 | 144 | 134.25  | 140.25 | 144.75 | 149.75 |      |
| 15  | 1/14/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 16  | 1/15/18  | 158     | 166 | 166 | 164 | 156     | 161 | 164 | 164 | 154     | 159 | 159 | 157 | 150     | 154 | 154 | 154 | 154.5   | 160    | 160.75 | 159.75 |      |
| 17  | 1/16/18  | 161     | 165 | 165 | 165 | 160     | 165 | 167 | 167 | 148     | 148 | 145 | 144 | 153     | 154 | 152 | 151 | 155.5   | 158    | 157.25 | 156.75 |      |
| 18  | 1/17/18  | 148     | 151 | 152 | 150 | 156     | 156 | 158 | 161 | 134     | 142 | 145 | 154 | 148     | 151 | 153 | 153 | 146.5   | 150    | 152    | 154.5  |      |
| 19  | 1/18/18  | 160     | 165 | 166 | 166 | 153     | 160 | 162 | 162 | 148     | 151 | 151 | 149 | 142     | 151 | 155 | 155 | 150.75  | 156.75 | 158.5  | 158    |      |
| 20  | 1/19/18  | 134     | 136 | 145 | 148 | 139     | 143 | 147 | 148 | 140     | 151 | 153 | 158 | 134     | 145 | 150 | 154 | 136.75  | 143.75 | 148.75 | 152    |      |
| 21  | 1/20/18  | 136     | 140 | 146 | 150 | 141     | 145 | 148 | 150 | 142     | 153 | 155 | 160 | 139     | 144 | 153 | 156 | 139.5   | 145.5  | 150.5  | 154    |      |
| 22  | 1/21/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 23  | 1/22/18  | 136     | 138 | 145 | 150 | 140     | 143 | 145 | 152 | 140     | 153 | 156 | 161 | 139     | 145 | 148 | 156 | 138.75  | 144.75 | 148.5  | 154.75 |      |
| 24  | 1/23/18  | 135     | 149 | 152 | 155 | 147     | 150 | 156 | 158 | 143     | 154 | 156 | 158 | 134     | 142 | 145 | 150 | 139.75  | 148.75 | 152.25 | 155.25 |      |
| 25  | 1/24/18  | 132     | 146 | 154 | 155 | 145     | 148 | 156 | 158 | 142     | 154 | 155 | 157 | 134     | 142 | 148 | 151 | 138.25  | 147.5  | 153.25 | 155.25 |      |
| 26  | 1/25/18  | 158     | 165 | 168 | 166 | 152     | 158 | 160 | 162 | 150     | 153 | 153 | 153 | 151     | 158 | 158 | 159 | 152.75  | 158.5  | 159.75 | 160    |      |
| 27  | 1/26/18  | 142     | 144 | 150 | 150 | 144     | 145 | 144 | 144 | 149     | 151 | 152 | 160 | 136     | 140 | 145 | 150 | 142.75  | 145    | 147.75 | 151    |      |
| 28  | 1/27/18  | 143     | 144 | 150 | 152 | 143     | 145 | 144 | 143 | 142     | 155 | 157 | 161 | 137     | 140 | 148 | 152 | 141.25  | 146    | 149.75 | 152    |      |
| 29  | 1/28/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 30  | 1/29/18  | 139     | 155 | 159 | 163 | 140     | 146 | 151 | 155 | 141     | 150 | 155 | 156 | 143     | 158 | 161 | 161 | 140.75  | 152.25 | 156.5  | 158.75 |      |
| 31  | 1/30/18  | 160     | 165 | 168 | 169 | 151     | 156 | 158 | 158 | 145     | 155 | 157 | 157 | 153     | 161 | 161 | 160 | 152.25  | 159.25 | 161    | 161    |      |
| 32  | 1/31/18  | 141     | 145 | 146 | 148 | 140     | 143 | 143 | 142 | 139     | 139 | 139 | 137 | 136     | 138 | 138 | 138 | 139     | 141.25 | 141.5  | 141.25 |      |

## Attachment I

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                          | Windrow # 18-1-4   |                        |               |
|---|---------------|------------------|--------------------------|--------------------|------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 12-30-17 |                    | Date Completed: 1-4-18 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)        | Yard Waste (yards) | Overs (yards)          | Cover (yards) |
| 12/30/17  | Oscar Ochoa   | 20.34            | 26.44                    | 44                 | 16                     |               |
| 12/30/17  | Oscar Ochoa   | 20.55            | 26.72                    | 44                 | 16                     | 32            |
| 1/2/18  | Mike Bayne    | 22.30            | 28.99                    | 44                 | 16                     |               |
| 1/2/18  | Oscar Ochoa   | 21.38            | 27.79                    | 44                 | 16                     |               |
| 1/2/18  | Oscar Ochoa   | 22.26            | 28.94                    | 44                 | 16                     | 44            |
| 1/3/18  | Oscar Ochoa   | 15.02            | 19.53                    | 44                 | 16                     |               |
| 1/3/18  | Oscar Ochoa   | 21.92            | 28.50                    | 44                 | 16                     |               |
| 1/3/18  | Oscar Ochoa   | 21.40            | 27.82                    | 44                 | 16                     | 44            |
| 1/4/18  | Jery Devoe    | 20.87            | 27.13                    | 44                 | 16                     |               |
| 1/4/18  | Jery Devoe    | 21.76            | 28.29                    | 44                 | 16                     |               |
| 1/4/18  | Jery Devoe    | 21.65            | 28.15                    | 44                 | 16                     | 44            |
| Totals  |               | 229.45           | 298.29                   | 484.00             | 176.00                 | 164.00        |
| Windrow Construction ratio:                                     |               |                  | 2.76 /1                  |                    |                        |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                  |                          |                    |                        |               |

| MSAP Process Temperature Chart Windrow# 18-1-4                   |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/5/18  | 132     | 134 | 130 | 126 | 131     | 130 | 122 | 118 | 130     | 128 | 120 | 116 | 131     | 130 | 124 | 120 | 131     | 130.5  | 124    | 120    |      |
| 2  | 1/6/18  | 135     | 136 | 134 | 128 | 134     | 132 | 126 | 118 | 132     | 131 | 124 | 121 | 132     | 131 | 126 | 122 | 133.25  | 132.5  | 127.5  | 122.25 |      |
| 3  | 1/7/18  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 1/8/18  | 139     | 140 | 138 | 137 | 136     | 135 | 132 | 131 | 140     | 140 | 133 | 131 | 134     | 132 | 133 | 131 | 137.25  | 136.75 | 134    | 132.5  |      |
| 5  | 1/9/18  | 146     | 144 | 140 | 140 | 140     | 136 | 135 | 133 | 140     | 142 | 136 | 133 | 135     | 138 | 134 | 132 | 140.25  | 140    | 136.25 | 134.5  |      |
| 6  | 1/10/18 | 152     | 150 | 154 | 151 | 142     | 140 | 144 | 146 | 140     | 144 | 137 | 133 | 140     | 143 | 136 | 134 | 143.5   | 144.25 | 142.75 | 141    |      |
| 7  | 1/11/18 | 154     | 156 | 156 | 155 | 145     | 145 | 144 | 145 | 144     | 141 | 136 | 136 | 147     | 144 | 139 | 135 | 147.5   | 146.5  | 143.75 | 142.75 |      |
| 8  | 1/12/18 | 154     | 152 | 149 | 146 | 145     | 142 | 142 | 140 | 155     | 151 | 145 | 138 | 146     | 149 | 150 | 140 | 150     | 148.5  | 146.5  | 141    |      |
| 9  | 1/13/18 | 157     | 153 | 150 | 147 | 145     | 146 | 144 | 141 | 156     | 150 | 147 | 143 | 148     | 146 | 146 | 141 | 151.5   | 148.75 | 146.75 | 143    |      |
| 10   | 1/14/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 11   | 1/15/18 | 160     | 156 | 154 | 150 | 154     | 152 | 144 | 137 | 151     | 154 | 147 | 137 | 160     | 158 | 154 | 148 | 156.25  | 155    | 149.75 | 143    |      |
| 12   | 1/16/18 | 157     | 160 | 156 | 152 | 145     | 140 | 136 | 138 | 149     | 146 | 142 | 138 | 156     | 160 | 156 | 148 | 151.75  | 151.5  | 147.5  | 144    |      |
| 13   | 1/17/18 | 158     | 154 | 150 | 139 | 148     | 156 | 144 | 142 | 152     | 150 | 148 | 146 | 160     | 156 | 152 | 148 | 154.5   | 154    | 148.5  | 143.75 |      |
| 14   | 1/18/18 | 150     | 162 | 168 | 172 | 145     | 144 | 140 | 138 | 154     | 154 | 149 | 140 | 152     | 153 | 149 | 144 | 150.25  | 153.25 | 151.5  | 148.5  |      |
| 15   | 1/19/18 | 146     | 147 | 149 | 150 | 144     | 146 | 147 | 149 | 140     | 142 | 145 | 149 | 137     | 144 | 149 | 151 | 141.75  | 144.75 | 147.5  | 149.75 |      |
| 16   | 1/20/18 | 147     | 149 | 151 | 152 | 146     | 147 | 149 | 151 | 142     | 145 | 148 | 150 | 140     | 146 | 150 | 153 | 143.75  | 146.75 | 149.5  | 151.5  |      |
| 17   | 1/21/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 18   | 1/22/18 | 148     | 149 | 153 | 155 | 146     | 148 | 149 | 153 | 140     | 146 | 148 | 153 | 140     | 148 | 150 | 154 | 143.5   | 147.75 | 150    | 153.75 |      |
| 19   | 1/23/18 | 151     | 154 | 156 | 154 | 145     | 148 | 150 | 153 | 144     | 147 | 152 | 153 | 149     | 147 | 146 | 145 | 147.25  | 149    | 151    | 151.25 |      |
| 20   | 1/24/18 | 150     | 156 | 155 | 154 | 144     | 148 | 150 | 152 | 144     | 146 | 148 | 152 | 146     | 148 | 146 | 146 | 146     | 149.5  | 149.75 | 151    |      |
| 21   | 1/25/18 | 148     | 158 | 152 | 152 | 145     | 148 | 148 | 148 | 148     | 146 | 142 | 139 | 156     | 156 | 154 | 150 | 149.25  | 152    | 149    | 147.25 | Turn |
| 22   | 1/26/18 | 143     | 145 | 148 | 150 | 139     | 140 | 142 | 146 | 139     | 144 | 148 | 150 | 152     | 153 | 155 | 157 | 143.25  | 145.5  | 148.25 | 150.75 |      |
| 23   | 1/27/18 | 144     | 147 | 150 | 151 | 141     | 142 | 144 | 147 | 140     | 146 | 149 | 152 | 154     | 155 | 157 | 158 | 144.75  | 147.5  | 150    | 152    |      |
| 24   | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 25   | 1/29/18 | 148     | 157 | 163 | 165 | 140     | 144 | 144 | 142 | 146     | 146 | 144 | 143 | 153     | 155 | 154 | 152 | 146.75  | 150.5  | 151.25 | 150.5  |      |
| 26   | 1/30/18 | 143     | 152 | 158 | 164 | 148     | 150 | 148 | 144 | 145     | 146 | 145 | 142 | 161     | 164 | 162 | 156 | 149.25  | 153    | 153.25 | 151.5  |      |
| 27   | 1/31/18 | 158     | 154 | 148 | 142 | 140     | 137 | 135 | 133 | 140     | 138 | 135 | 132 | 156     | 154 | 151 | 145 | 148.5   | 145.75 | 142.25 | 138    | Turn |

## Attachment J

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                        | Windrow # 18-1-9   |                        |               |
|---|---------------|------------------|------------------------|--------------------|------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 1-5-18 |                    | Date Completed: 1-9-18 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)      | Yard Waste (yards) | Overs (yards)          | Cover (yards) |
| 1/5/18  | Jerry Devoe   | 19.63            | 25.52                  | 44                 | 16                     |               |
| 1/5/18  | Jerry Devoe   | 23.53            | 30.59                  | 44                 | 16                     |               |
| 1/5/18  | Jerry Devoe   | 21.56            | 28.03                  | 44                 | 16                     | 44            |
| 1/6/18  | Oscar Ochoa   | 20.58            | 26.75                  | 44                 | 16                     |               |
| 1/6/18  | Oscar Ochoa   | 21.17            | 27.52                  | 44                 | 16                     |               |
| 1/6/18  | Oscar Ochoa   | 20.01            | 26.01                  | 44                 | 16                     | 44            |
| 1/8/18  | Mike Bayne    | 20.40            | 26.52                  | 44                 | 16                     |               |
| 1/8/18  | Mike Bayne    | 21.05            | 27.37                  | 44                 | 16                     |               |
| 1/8/18  | Mike Bayne    | 20.59            | 26.77                  | 44                 | 16                     |               |
| 1/8/18  | Mike Bayne    | 22.43            | 29.16                  | 44                 | 16                     | 60            |
| 1/9/18  | Mike Bayne    | 22.04            | 28.65                  | 44                 | 16                     | 20            |
| Totals  |               | 232.99           | 302.89                 | 484.00             | 176.00                 | 168.00        |
| Windrow Construction ratio:                                     |               | 2.73 /1          |                        |                    |                        |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                  |                        |                    |                        |               |

| MSAP Process Temperature Chart Windrow# 18-1-9                   |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/10/18 | 136     | 131 | 128 | 120 | 134     | 130 | 126 | 118 | 134     | 131 | 125 | 121 | 132     | 131 | 126 | 112 | 134     | 130.75 | 126.25 | 117.75 |      |
| 2  | 1/11/18 | 138     | 134 | 131 | 125 | 137     | 131 | 130 | 126 | 136     | 133 | 128 | 124 | 135     | 133 | 130 | 122 | 136.5   | 132.75 | 129.75 | 124.25 |      |
| 3  | 1/12/18 | 140     | 137 | 135 | 133 | 140     | 134 | 132 | 131 | 141     | 140 | 135 | 131 | 138     | 136 | 136 | 131 | 139.75  | 136.75 | 134.5  | 131.5  |      |
| 4  | 1/13/18 | 132     | 135 | 133 | 132 | 139     | 136 | 134 | 132 | 142     | 139 | 137 | 133 | 138     | 136 | 134 | 134 | 137.75  | 136.5  | 134.5  | 132.75 |      |
| 5  | 1/14/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 6  | 1/15/18 | 145     | 145 | 142 | 140 | 148     | 148 | 145 | 142 | 138     | 136 | 136 | 133 | 141     | 136 | 134 | 131 | 143     | 141.25 | 139.25 | 136.5  |      |
| 7  | 1/16/18 | 144     | 144 | 142 | 141 | 149     | 150 | 146 | 143 | 138     | 136 | 138 | 133 | 144     | 139 | 135 | 134 | 143.75  | 142.25 | 140.25 | 137.75 |      |
| 8  | 1/17/18 | 150     | 148 | 136 | 140 | 150     | 148 | 144 | 142 | 136     | 140 | 140 | 136 | 142     | 140 | 136 | 135 | 144.5   | 144    | 139    | 138.25 |      |
| 9  | 1/18/18 | 139     | 142 | 142 | 142 | 151     | 152 | 150 | 148 | 140     | 138 | 136 | 132 | 150     | 144 | 136 | 133 | 145     | 144    | 141    | 138.75 |      |
| 10   | 1/19/18 | 132     | 134 | 139 | 140 | 132     | 136 | 141 | 146 | 133     | 134 | 134 | 136 | 132     | 135 | 137 | 138 | 132.25  | 134.75 | 137.75 | 140    |      |
| 11   | 1/20/18 | 132     | 138 | 141 | 145 | 133     | 140 | 145 | 149 | 132     | 135 | 135 | 137 | 133     | 137 | 138 | 139 | 132.5   | 137.5  | 139.75 | 142.5  |      |
| 12   | 1/21/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 13   | 1/22/18 | 132     | 136 | 142 | 148 | 133     | 140 | 146 | 149 | 132     | 135 | 139 | 137 | 133     | 138 | 140 | 141 | 132.5   | 137.25 | 141.75 | 143.75 |      |
| 14   | 1/23/18 | 148     | 150 | 152 | 150 | 150     | 144 | 145 | 150 | 140     | 142 | 143 | 144 | 138     | 142 | 144 | 142 | 144     | 144.5  | 146    | 146.5  |      |
| 15   | 1/24/18 | 148     | 152 | 152 | 150 | 148     | 146 | 145 | 150 | 142     | 142 | 143 | 142 | 141     | 142 | 142 | 144 | 144.75  | 145.5  | 145.5  | 146.5  |      |
| 16   | 1/25/18 | 150     | 153 | 153 | 151 | 147     | 148 | 144 | 150 | 143     | 144 | 142 | 142 | 142     | 142 | 140 | 146 | 145.5   | 146.75 | 144.75 | 147.25 |      |
| 17   | 1/26/18 | 140     | 143 | 146 | 147 | 141     | 143 | 146 | 149 | 144     | 138 | 140 | 142 | 133     | 142 | 146 | 149 | 139.5   | 141.5  | 144.5  | 146.75 |      |
| 18   | 1/27/18 | 141     | 145 | 147 | 149 | 143     | 145 | 147 | 150 | 147     | 140 | 142 | 144 | 135     | 145 | 148 | 150 | 141.5   | 143.75 | 146    | 148.25 |      |
| 19   | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 20   | 1/29/18 | 147     | 151 | 154 | 154 | 160     | 158 | 156 | 154 | 143     | 146 | 145 | 143 | 146     | 148 | 146 | 143 | 149     | 150.75 | 150.25 | 148.5  |      |
| 21   | 1/30/18 | 140     | 140 | 139 | 138 | 146     | 147 | 145 | 143 | 140     | 144 | 144 | 142 | 141     | 144 | 144 | 142 | 141.75  | 143.75 | 143    | 141.25 |      |
| 22   | 1/31/18 | 153     | 154 | 152 | 149 | 154     | 157 | 155 | 152 | 141     | 142 | 142 | 142 | 141     | 144 | 144 | 142 | 147.25  | 149.25 | 148.25 | 146.25 |      |

## Attachment K

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                        |                   | Windrow # 18-1-12       |               |               |
|---|---------------|------------------------|-------------------|-------------------------|---------------|---------------|
| Windrow Construction:   |               | Date Commenced: 1-9-18 |                   | Date Completed: 1-12-18 |               |               |
| Date  | Operator Name | Biosolids (tons)       | Biosolids (yards) | Yard Waste (yards)      | Overs (yards) | Cover (yards) |
| 1/9/18  | Mike Bayne    | 21.69                  | 28.20             | 44                      | 16            |               |
| 1/9/18  | Mike Bayne    | 20.97                  | 27.26             | 44                      | 16            | 36            |
| 1/10/18   | Mike Bayne    | 21.08                  | 27.40             | 44                      | 16            |               |
| 1/10/18   | Mike Bayne    | 19.81                  | 25.75             | 44                      | 16            |               |
| 1/10/18   | Mike Bayne    | 20.48                  | 26.62             | 44                      | 16            | 44            |
| 1/11/18   | Mike Bayne    | 20.07                  | 26.09             | 44                      | 16            |               |
| 1/11/18   | Mike Bayne    | 19.26                  | 25.04             | 44                      | 16            |               |
| 1/11/18   | Mike Bayne    | 18.19                  | 23.65             | 44                      | 16            | 44            |
| 1/12/18   | Jerry Devoe   | 22.59                  | 29.37             | 44                      | 16            |               |
| 1/12/18   | Jerry Devoe   | 21.93                  | 28.51             | 44                      | 16            |               |
| 1/12/18   | Jerry Devoe   | 19.78                  | 25.71             | 44                      | 16            | 44            |
| <b>Totals</b>   |               | 225.85                 | 293.61            | 484.00                  | 176.00        | 168.00        |
| <b>Windrow Construction ratio:</b>                              |               | 2.82 /1                |                   |                         |               |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                        |                   |                         |               |               |

| <b>MSAP Process Temperature Chart Windrow# 18-1-12</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/13/18 | 138     | 136 | 131 | 126 | 140     | 137 | 132 | 128 | 141     | 135 | 130 | 122 | 136     | 132 | 129 | 15  | 138.75  | 135    | 130.5  | 97.75  |      |
| 2  | 1/14/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 3  | 1/15/18 | 148     | 146 | 142 | 136 | 152     | 144 | 148 | 141 | 152     | 141 | 134 | 132 | 148     | 144 | 142 | 137 | 150     | 143.75 | 141.5  | 136.5  |      |
| 4  | 1/16/18 | 149     | 146 | 141 | 138 | 150     | 148 | 144 | 137 | 160     | 156 | 152 | 143 | 151     | 147 | 138 | 134 | 152.5   | 149.25 | 143.75 | 138    |      |
| 5  | 1/17/18 | 142     | 140 | 136 | 136 | 136     | 136 | 136 | 133 | 151     | 150 | 148 | 143 | 155     | 150 | 146 | 141 | 146     | 144    | 141.5  | 138.25 |      |
| 6  | 1/18/18 | 146     | 147 | 146 | 141 | 152     | 152 | 148 | 143 | 159     | 159 | 156 | 140 | 155     | 156 | 152 | 144 | 153     | 153.5  | 150.5  | 142    |      |
| 7  | 1/19/18 | 149     | 146 | 148 | 150 | 143     | 147 | 149 | 151 | 132     | 136 | 139 | 142 | 135     | 138 | 140 | 143 | 139.75  | 141.75 | 144    | 146.5  |      |
| 8  | 1/20/18 | 144     | 148 | 150 | 152 | 146     | 149 | 151 | 153 | 134     | 138 | 140 | 141 | 137     | 140 | 142 | 144 | 140.25  | 143.75 | 145.75 | 147.5  |      |
| 9  | 1/21/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 10   | 1/22/18 | 140     | 145 | 152 | 156 | 140     | 149 | 152 | 155 | 134     | 136 | 141 | 145 | 135     | 140 | 143 | 147 | 137.25  | 142.5  | 147    | 150.75 |      |
| 11   | 1/23/18 | 144     | 144 | 148 | 151 | 146     | 149 | 150 | 152 | 134     | 141 | 143 | 146 | 138     | 140 | 143 | 140 | 140.5   | 143.5  | 146    | 147.25 |      |
| 12   | 1/24/18 | 148     | 150 | 152 | 152 | 144     | 150 | 152 | 153 | 140     | 144 | 148 | 146 | 144     | 148 | 146 | 142 | 144     | 148    | 149.5  | 148.25 |      |
| 13   | 1/25/18 | 148     | 151 | 154 | 156 | 144     | 151 | 155 | 151 | 142     | 152 | 154 | 152 | 148     | 152 | 150 | 146 | 145.5   | 151.5  | 153.25 | 151.25 |      |
| 14   | 1/26/18 | 147     | 150 | 154 | 157 | 136     | 141 | 147 | 150 | 144     | 153 | 154 | 156 | 150     | 152 | 155 | 157 | 144.25  | 149    | 152.5  | 155    |      |
| 15   | 1/27/18 | 148     | 151 | 155 | 157 | 139     | 142 | 149 | 151 | 146     | 155 | 157 | 159 | 152     | 154 | 156 | 159 | 146.25  | 150.5  | 154.25 | 156.5  |      |
| 16   | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 17   | 1/29/18 | 152     | 156 | 157 | 156 | 151     | 155 | 155 | 154 | 147     | 156 | 161 | 160 | 151     | 157 | 157 | 155 | 150.25  | 156    | 157.5  | 156.25 |      |
| 18   | 1/30/18 | 155     | 158 | 158 | 157 | 151     | 155 | 156 | 154 | 146     | 148 | 145 | 142 | 150     | 157 | 161 | 161 | 150.5   | 154.5  | 155    | 153.5  |      |
| 19   | 1/31/18 | 154     | 156 | 158 | 156 | 149     | 154 | 154 | 152 | 160     | 162 | 157 | 152 | 154     | 158 | 158 | 155 | 154.25  | 157.5  | 156.75 | 153.75 |      |

## Attachment L

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                        | Windrow # 18-1-12  |                         |               |
|---|---------------|------------------|------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 1-9-18 |                    | Date Completed: 1-12-18 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)      | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 1/9/18  | Mike Bayne    | 21.69            | 28.20                  | 44                 | 16                      |               |
| 1/9/18  | Mike Bayne    | 20.97            | 27.26                  | 44                 | 16                      | 36            |
| 1/10/18   | Mike Bayne    | 21.08            | 27.40                  | 44                 | 16                      |               |
| 1/10/18   | Mike Bayne    | 19.81            | 25.75                  | 44                 | 16                      |               |
| 1/10/18   | Mike Bayne    | 20.48            | 26.62                  | 44                 | 16                      | 44            |
| 1/11/18   | Mike Bayne    | 20.07            | 26.09                  | 44                 | 16                      |               |
| 1/11/18   | Mike Bayne    | 19.26            | 25.04                  | 44                 | 16                      |               |
| 1/11/18   | Mike Bayne    | 18.19            | 23.65                  | 44                 | 16                      | 44            |
| 1/12/18   | Jerry Devoe   | 22.59            | 29.37                  | 44                 | 16                      |               |
| 1/12/18   | Jerry Devoe   | 21.93            | 28.51                  | 44                 | 16                      |               |
| 1/12/18   | Jerry Devoe   | 19.78            | 25.71                  | 44                 | 16                      | 44            |
| <b>Totals</b>   |               | 225.85           | 293.61                 | 484.00             | 176.00                  | 168.00        |
| <b>Windrow Construction ratio:</b>                              |               | 2.82 /1          |                        |                    |                         |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                  |                        |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 18-1-17</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/18/18 | 138     | 136 | 131 | 128 | 136     | 132 | 130 | 124 | 140     | 136 | 132 | 128 | 134     | 131 | 128 | 122 | 137     | 133.75 | 130.25 | 125.5  |      |
| 2  | 1/19/18 | 141     | 138 | 135 | 132 | 140     | 135 | 134 | 130 | 145     | 141 | 138 | 133 | 141     | 138 | 134 | 133 | 141.75  | 138    | 135.25 | 132    |      |
| 3  | 1/20/18 | 144     | 140 | 137 | 135 | 142     | 137 | 134 | 132 | 146     | 144 | 142 | 134 | 143     | 140 | 136 | 132 | 143.75  | 140.25 | 137.25 | 133.25 |      |
| 4  | 1/21/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 5  | 1/22/18 | 147     | 142 | 138 | 133 | 145     | 139 | 134 | 132 | 148     | 146 | 142 | 134 | 150     | 148 | 136 | 132 | 147.5   | 143.75 | 137.5  | 132.75 |      |
| 6  | 1/23/18 | 148     | 143 | 138 | 136 | 146     | 140 | 134 | 133 | 145     | 145 | 142 | 141 | 145     | 143 | 140 | 136 | 146     | 142.75 | 138.5  | 136.5  |      |
| 7  | 1/24/18 | 146     | 142 | 140 | 136 | 146     | 142 | 136 | 134 | 145     | 146 | 142 | 140 | 144     | 142 | 138 | 136 | 145.25  | 143    | 139    | 136.5  |      |
| 8  | 1/25/18 | 146     | 142 | 140 | 136 | 142     | 144 | 138 | 135 | 145     | 145 | 142 | 139 | 142     | 144 | 137 | 136 | 143.75  | 143.75 | 139.25 | 136.5  |      |
| 9  | 1/26/18 | 145     | 146 | 144 | 141 | 149     | 146 | 141 | 135 | 149     | 145 | 143 | 140 | 145     | 145 | 138 | 132 | 147     | 145.5  | 141.5  | 137    |      |
| 10   | 1/27/18 | 148     | 146 | 144 | 142 | 150     | 144 | 143 | 138 | 150     | 147 | 145 | 143 | 145     | 146 | 140 | 138 | 148.25  | 145.75 | 143    | 140.25 |      |
| 11   | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 12   | 1/29/18 | 155     | 155 | 150 | 144 | 149     | 150 | 147 | 143 | 146     | 146 | 144 | 142 | 148     | 146 | 142 | 137 | 149.5   | 149.25 | 145.75 | 141.5  |      |
| 13   | 1/30/18 | 154     | 154 | 153 | 151 | 159     | 163 | 159 | 154 | 143     | 142 | 138 | 136 | 153     | 151 | 145 | 140 | 152.25  | 152.5  | 148.75 | 145.25 |      |
| 14   | 1/31/18 | 159     | 156 | 151 | 145 | 156     | 155 | 150 | 146 | 148     | 149 | 147 | 144 | 150     | 148 | 144 | 138 | 153.25  | 152    | 148    | 143.25 |      |

## Attachment M

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                         |                   | Windrow # 18-1-22       |               |               |
|---|---------------|-------------------------|-------------------|-------------------------|---------------|---------------|
| Windrow Construction:   |               | Date Commenced: 1-18-18 |                   | Date Completed: 1-22-18 |               |               |
| Date  | Operator Name | Biosolids (tons)        | Biosolids (yards) | Yard Waste (yards)      | Overs (yards) | Cover (yards) |
| 1/18/18   | Jerry Devoe   | 18.37                   | 23.88             | 40                      | 20            |               |
| 1/18/18   | Jerry Devoe   | 21.17                   | 27.52             | 40                      | 20            | 36            |
| 1/19/18   | Jerry Devoe   | 19.59                   | 25.47             | 40                      | 20            |               |
| 1/19/18   | Jerry Devoe   | 22.81                   | 29.65             | 40                      | 20            |               |
| 1/19/18   | Jerry Devoe   | 22.91                   | 29.78             | 40                      | 20            | 44            |
| 1/20/18   | Oscar Ochoa   | 19.44                   | 25.27             | 40                      | 20            |               |
| 1/20/18   | Oscar Ochoa   | 20.45                   | 26.59             | 40                      | 20            | 36            |
| 1/22/18   | Mike Bayne    | 22.47                   | 29.21             | 40                      | 20            |               |
| 1/22/18   | Mike Bayne    | 21.80                   | 28.34             | 40                      | 20            | 40            |
| <b>Totals</b>   |               | 189.01                  | 245.71            | 360.00                  | 180.00        | 156.00        |
| <b>Windrow Construction ratio:</b>                              |               | 2.83 /1                 |                   |                         |               |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                         |                   |                         |               |               |

| <b>MSAP Process Temperature Chart Windrow# 18-1-22</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/23/18 | 146     | 140 | 136 | 132 | 142     | 135 | 131 | 129 | 141     | 137 | 132 | 130 | 134     | 122 | 122 | 120 | 140.75  | 133.5  | 130.25 | 127.75 |      |
| 2  | 1/24/18 | 144     | 142 | 138 | 134 | 146     | 141 | 135 | 131 | 148     | 144 | 137 | 135 | 141     | 135 | 132 | 130 | 144.75  | 140.5  | 135.5  | 132.5  |      |
| 3  | 1/25/18 | 144     | 144 | 138 | 135 | 156     | 148 | 142 | 136 | 152     | 148 | 145 | 141 | 148     | 143 | 137 | 133 | 150     | 145.75 | 140.5  | 136.25 |      |
| 4  | 1/26/18 | 149     | 146 | 145 | 140 | 159     | 155 | 150 | 139 | 161     | 157 | 154 | 145 | 150     | 144 | 140 | 134 | 154.75  | 150.5  | 147.25 | 139.5  |      |
| 5  | 1/27/18 | 151     | 148 | 147 | 144 | 160     | 156 | 151 | 140 | 162     | 159 | 156 | 150 | 151     | 144 | 141 | 136 | 156     | 151.75 | 148.75 | 142.5  |      |
| 6  | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 7  | 1/29/18 | 158     | 157 | 154 | 149 | 160     | 160 | 158 | 155 | 160     | 160 | 156 | 150 | 152     | 154 | 153 | 145 | 157.5   | 157.75 | 155.25 | 149.75 |      |
| 8  | 1/30/18 | 148     | 145 | 142 | 138 | 152     | 155 | 155 | 152 | 158     | 161 | 160 | 155 | 150     | 148 | 143 | 137 | 152     | 152.25 | 150    | 145.5  |      |
| 9  | 1/31/18 | 146     | 145 | 139 | 136 | 156     | 161 | 162 | 160 | 156     | 157 | 155 | 151 | 152     | 149 | 143 | 137 | 152.5   | 153    | 149.75 | 146    |      |

## Attachment N

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                         |                    | Windrow # 18-1-25       |               |
|---|---------------|------------------|-------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 1-22-18 |                    | Date Completed: 1-25-18 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 1/22/18   | Mike Bayne    | 21.46            | 27.90                   | 44                 | 16                      |               |
| 1/22/18   | Mike Bayne    | 23.94            | 31.12                   | 44                 | 16                      | 36            |
| 1/23/18   | Mike Bayne    | 22.70            | 29.51                   | 44                 | 16                      |               |
| 1/23/18   | Mike Bayne    | 19.64            | 25.53                   | 44                 | 16                      |               |
| 1/23/18   | Mike Bayne    | 18.70            | 24.31                   | 44                 | 16                      | 44            |
| 1/24/18   | Mike Bayne    | 21.93            | 28.51                   | 44                 | 16                      |               |
| 1/24/18   | Mike Bayne    | 19.80            | 25.74                   | 44                 | 16                      |               |
| 1/24/18   | Jerry Devoe   | 19.70            | 25.61                   | 44                 | 16                      | 44            |
| 1/25/18   | Jerry Devoe   | 20.70            | 26.91                   | 44                 | 16                      |               |
| 1/25/18   | Jerry Devoe   | 21.69            | 28.20                   | 44                 | 16                      | 36            |
| <b>Totals</b>   |               | 210.26           | 273.34                  | 440.00             | 160.00                  | 160.00        |
| <b>Windrow Construction ratio:</b>                              |               | 2.78 /1          |                         |                    |                         |               |
| Note: Yard waste yards = number of buckets * 4.00               |               |                  |                         |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 18-1-25</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/26/18 | 140     | 148 | 136 | 123 | 149     | 145 | 136 | 130 | 161     | 160 | 150 | 146 | 160     | 156 | 151 | 138 | 152.5   | 152.25 | 143.25 | 134.25 |      |
| 2  | 1/27/18 | 141     | 140 | 138 | 135 | 150     | 144 | 139 | 136 | 162     | 159 | 151 | 148 | 158     | 154 | 152 | 147 | 152.75  | 149.25 | 145    | 141.5  |      |
| 3  | 1/28/18 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 1/29/18 | 146     | 149 | 146 | 140 | 153     | 154 | 151 | 146 | 156     | 155 | 143 | 137 | 159     | 158 | 155 | 153 | 153.5   | 154    | 148.75 | 144    |      |
| 5  | 1/30/18 | 142     | 142 | 140 | 139 | 144     | 143 | 137 | 135 | 152     | 154 | 148 | 142 | 156     | 160 | 156 | 150 | 148.5   | 149.75 | 145.25 | 141.5  |      |
| 6  | 1/31/18 | 144     | 139 | 136 | 133 | 153     | 153 | 148 | 144 | 146     | 148 | 146 | 143 | 156     | 156 | 150 | 145 | 149.75  | 149    | 145    | 141.25 |      |

## Attachment O

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                         | Windrow # 18-1-29  |                         |               |
|---|---------------|------------------|-------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 1-25-18 |                    | Date Completed: 1-29-18 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 1/25/18   | Jerry Devoe   | 21.69            | 28.20                   | 44                 | 16                      |               |
| 1/25/18   | Jerry Devoe   | 18.55            | 24.12                   | 44                 | 16                      | 36            |
| 1/26/18   | Jerry Devoe   | 19.41            | 25.23                   | 44                 | 16                      |               |
| 1/26/18   | Jerry Devoe   | 22.17            | 28.82                   | 44                 | 16                      |               |
| 1/26/18   | Jerry Devoe   | 21.08            | 27.40                   | 44                 | 16                      | 44            |
| 1/27/18   | Oscar Ochoa   | 20.55            | 26.72                   | 44                 | 16                      |               |
| 1/27/18   | Oscar Ochoa   | 23.86            | 31.02                   | 44                 | 16                      | 36            |
| 1/29/18   | Mike Bayne    | 17.52            | 22.78                   | 44                 | 16                      |               |
| 1/29/18   | Mike Bayne    | 22.39            | 29.11                   | 44                 | 16                      |               |
| 1/29/18   | Mike Bayne    | 22.07            | 28.69                   | 44                 | 16                      | 44            |
| <b>Totals</b>   |               | 209.29           | 272.08                  | 440.00             | 160.00                  | 160.00        |
|   |               |                  |                         |                    |                         |               |
|   |               |                  |                         |                    |                         |               |
| <b>Windrow Construction ratio:</b>                              |               | 2.79 /1          |                         |                    |                         |               |
|   |               |                  |                         |                    |                         |               |
|   |               |                  |                         |                    |                         |               |

Note: Yard waste yards = number of buckets \* 4.00

| <b>MSAP Process Temperature Chart Windrow# 18-1-29</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| 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  | 1/30/18 | 140     | 138 | 131 | 124 | 136     | 120 | 112 | 100 | 142     | 135 | 130 | 126 | 128     | 110 | 112 | 106 | 136.5   | 125.75 | 121.25 | 114    |      |
| 2  | 1/31/18 | 148     | 146 | 141 | 132 | 140     | 122 | 116 | 108 | 150     | 144 | 134 | 131 | 132     | 120 | 112 | 112 | 142.5   | 133    | 125.75 | 120.75 |      |