MEMO

To: Alan Shelvey, DPW Commissioner

From: Evan Pilachowski, City Engineer

Date: December 10, 2009

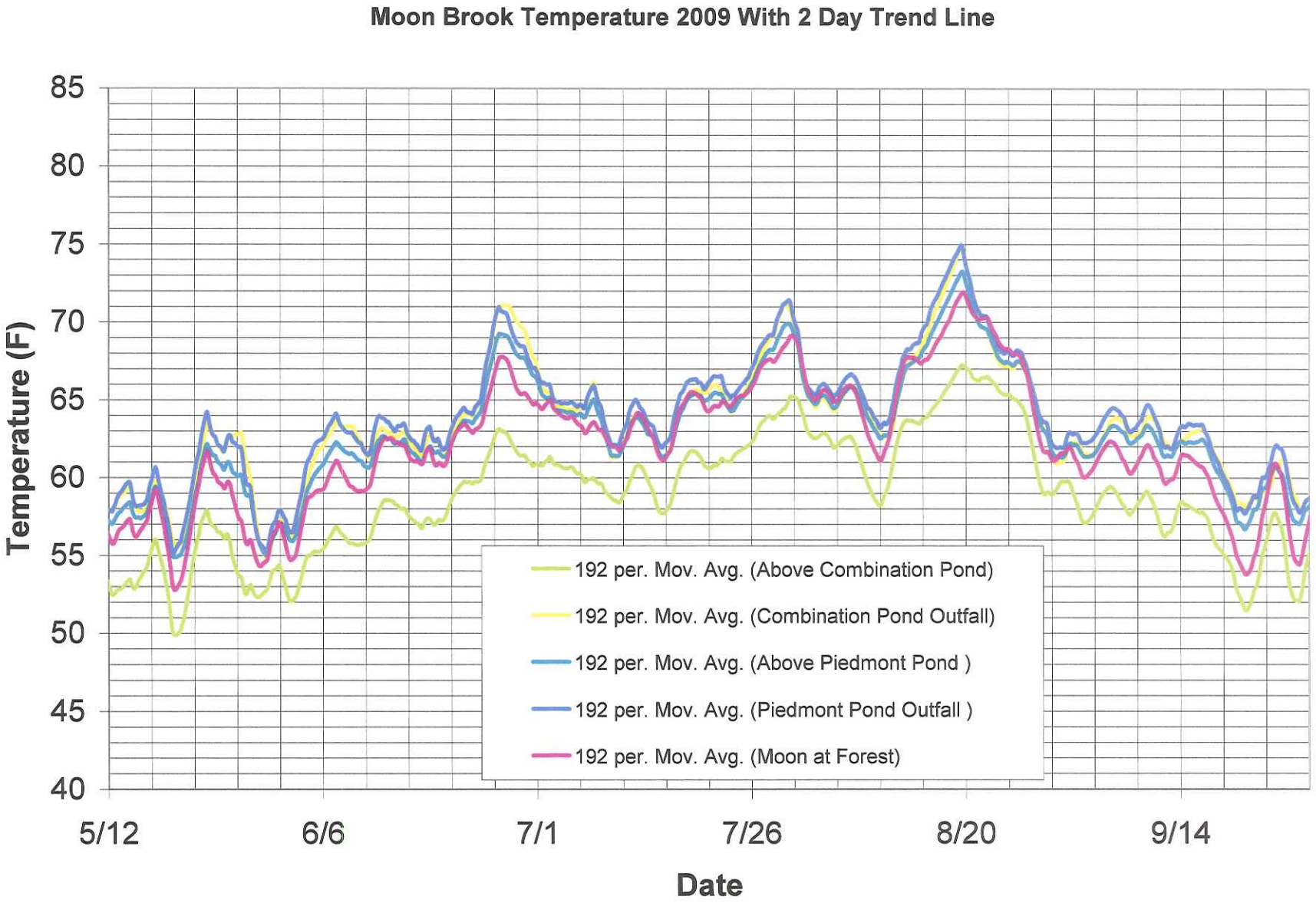
Re: 2009 Brook Temperature Monitoring Summary

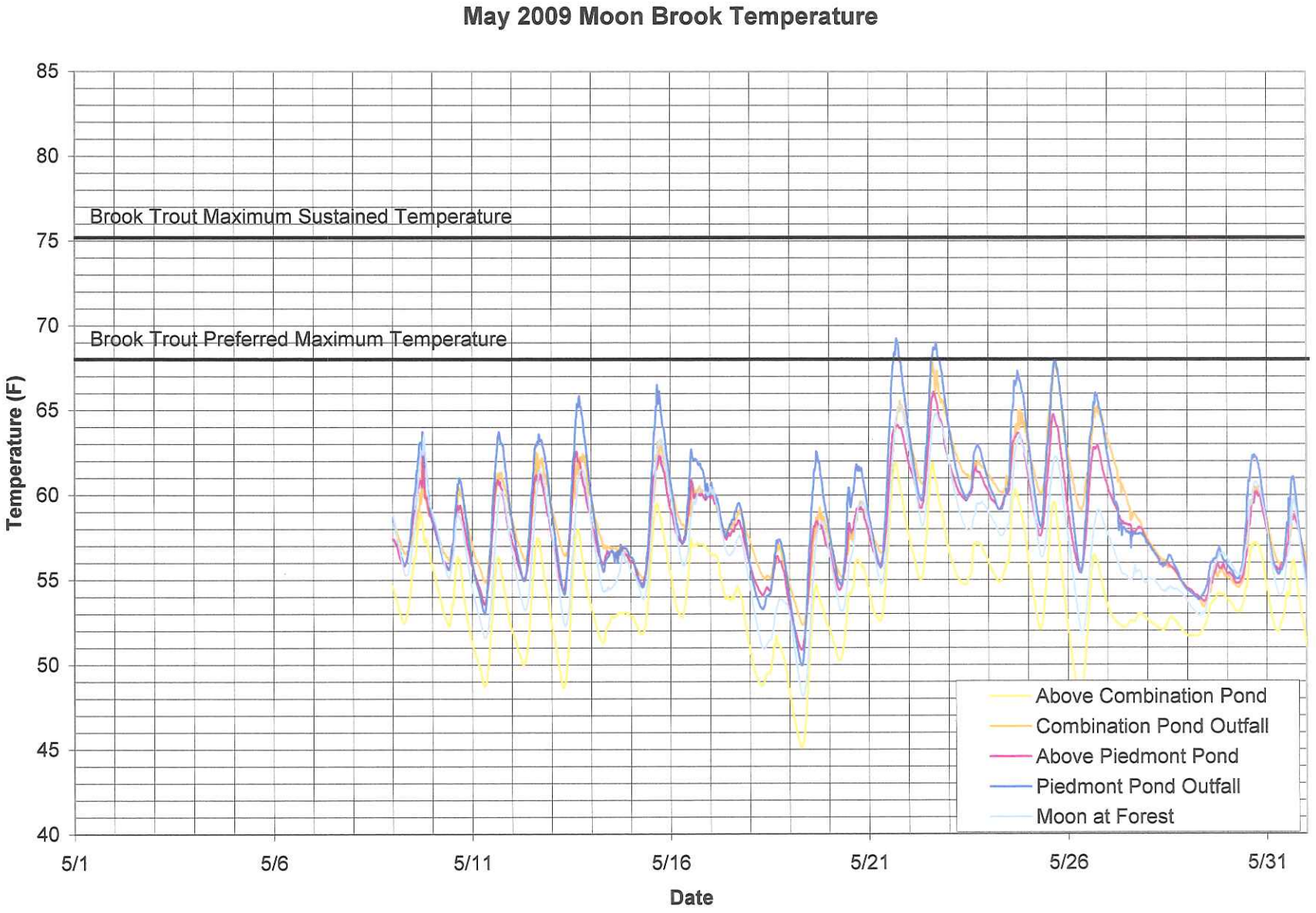
I have analyzed the temperature monitoring data from 2009. Graphs are attached that summarize the findings. In addition to the graphs, I have analyzed the habitat suitability of Moon Brook for brook trout in relation to temperature and the accuracy of the determination of Moon Brook as a Coldwater Fishery according to standards established by the Surface Water Quality Bureau of the New Mexico Environment Department (Bureau). According to a study conducted by the Bureau in July of 1999, a coldwater fishery is classified as having instantaneous temperatures below 75.2 °F (24 °C), no single day with temperatures above 68 °F (20 °C) for more than 8 hours, and no more than three days in a row with maximum temperatures above 68 °F (20 °C). The following table was prepared using these standards for the 162 day period from May 9, 2009 to October 18, 2009.

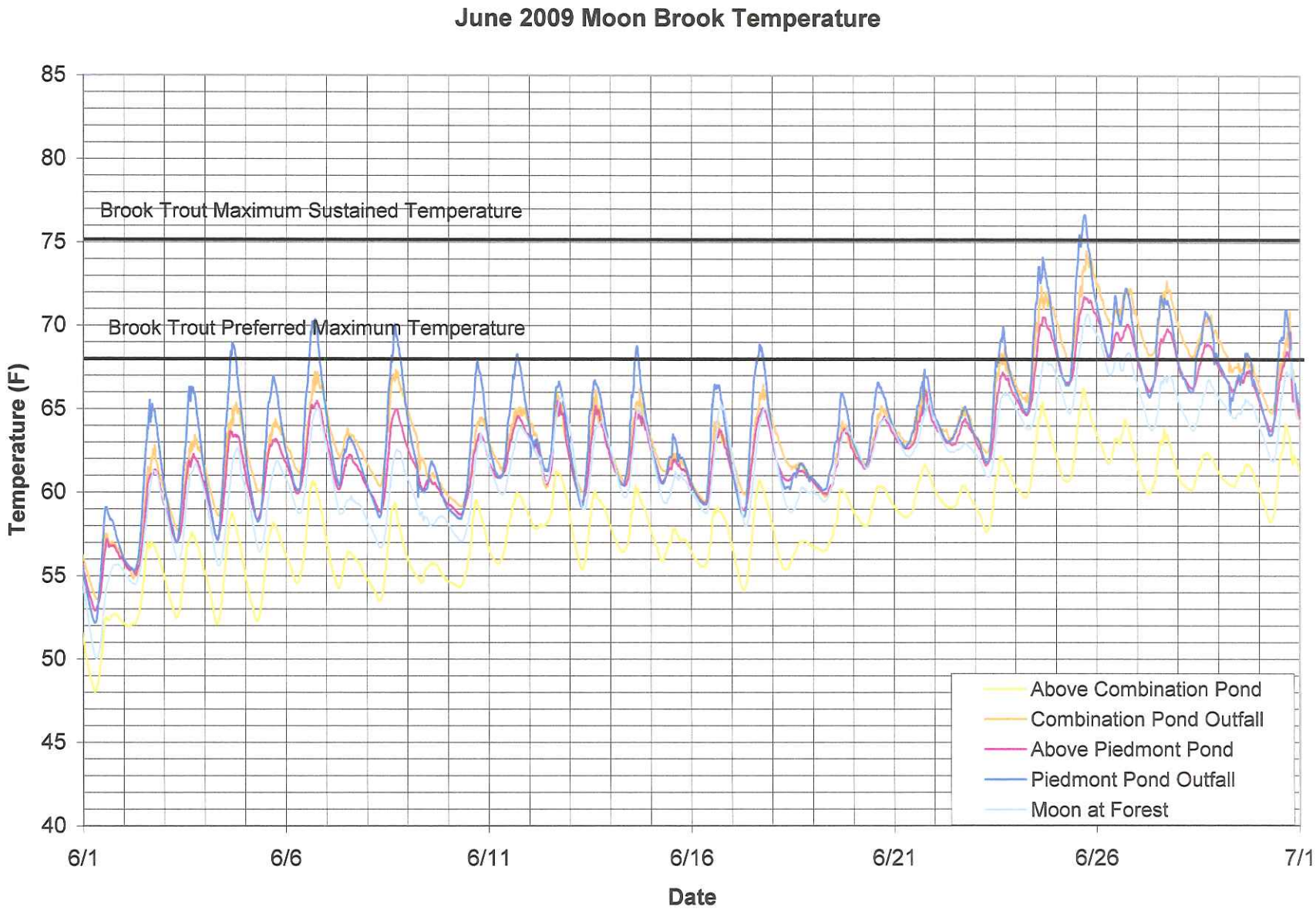
Location	Number of Day Outside Coldwater Fisheries Criteria
Paint Mine Brook*	2
Mussey Brook Above Fairgrounds	21
Mussey Brook Below Fairgrounds	23
Moon Brook Above Combination Pond	1
Moon Brook Below Combination Pond Outfall	22
Moon Brook Above Piedmont Pond	22
Moon Brook Below Piedmont Pond Outfall	27
Moon Brook at Forest St	23
Tenney Brook at Sewards	21
Tenney Brook at Lincoln Ave	27

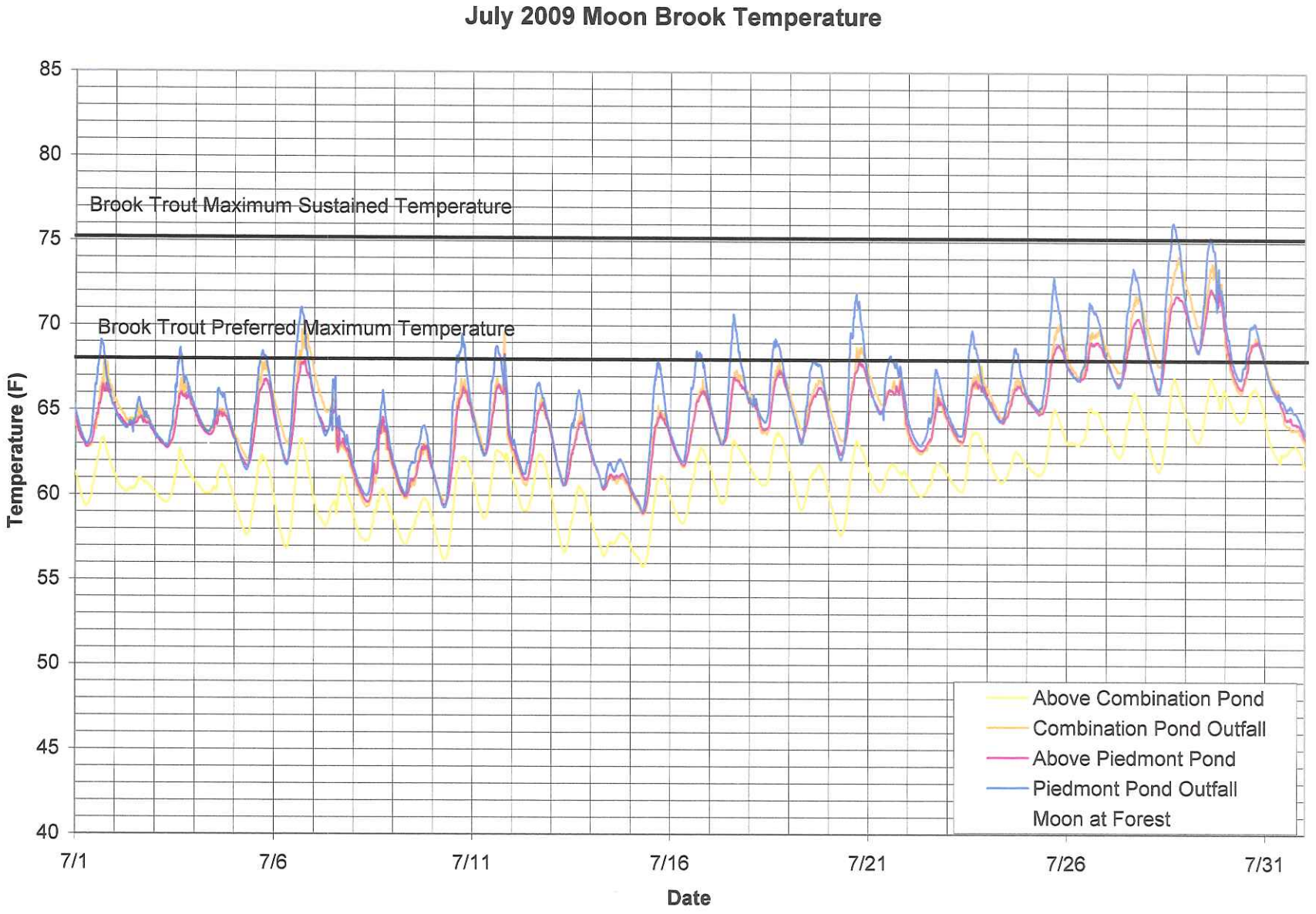
* 6-19-09 to 10/18/2009

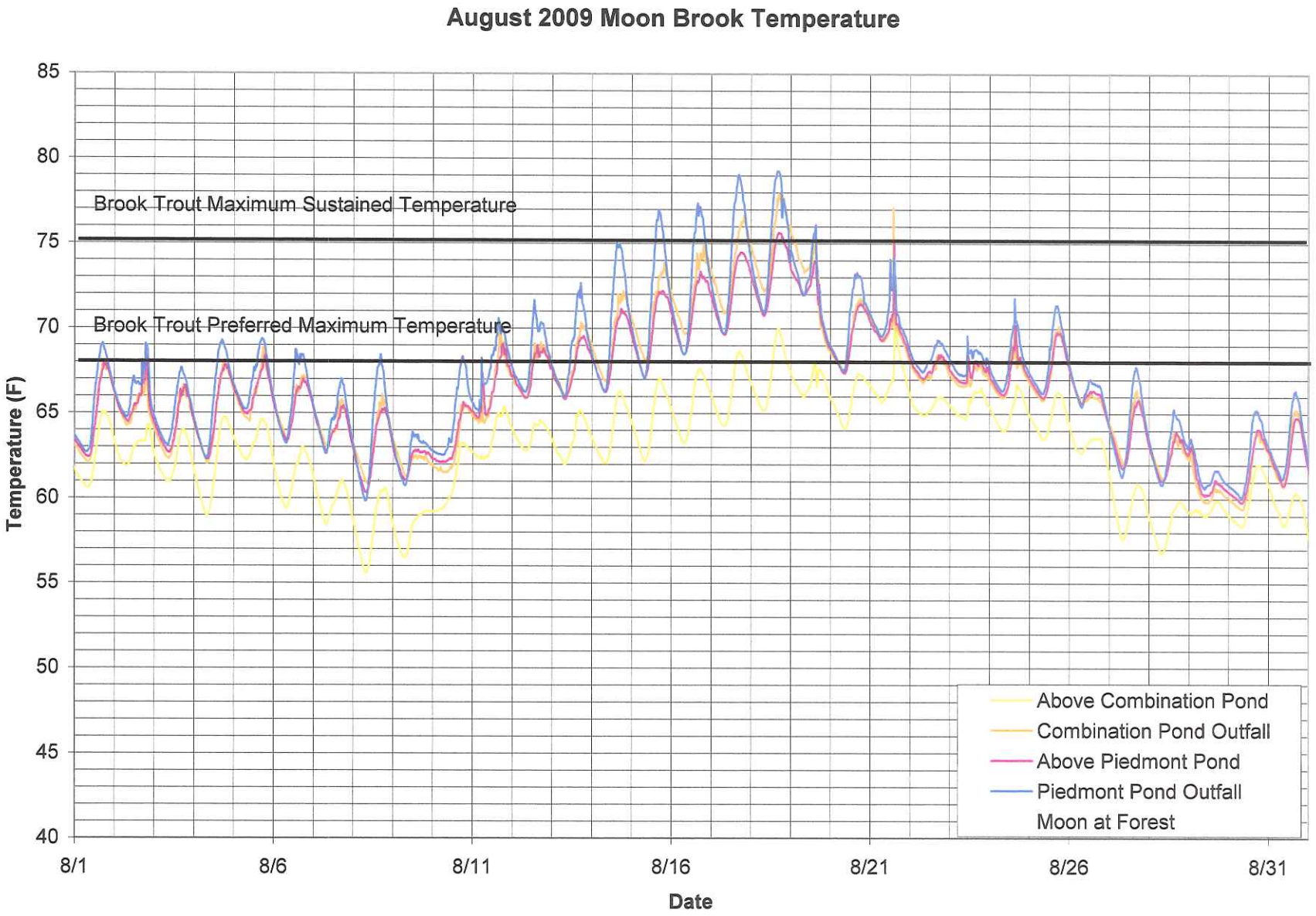
As in years past, temperature gains through Combination Pond have been the most significant measured temperature increase (+/- 6 to 8 degrees F). There are lesser temperature gains as Moon Brook and Mussey Brook flow through Piedmont Pond (+/- 1 to 2 degrees F) and Fairgrounds (+/- 1 degree F) respectively. This is the first year that temperature measurements have been taken on both sides of Dunklee Pond on Tenney Brook. There was a small, but measureable temperature increase from a point upstream to downstream of the pond (+/- 1 degree F).

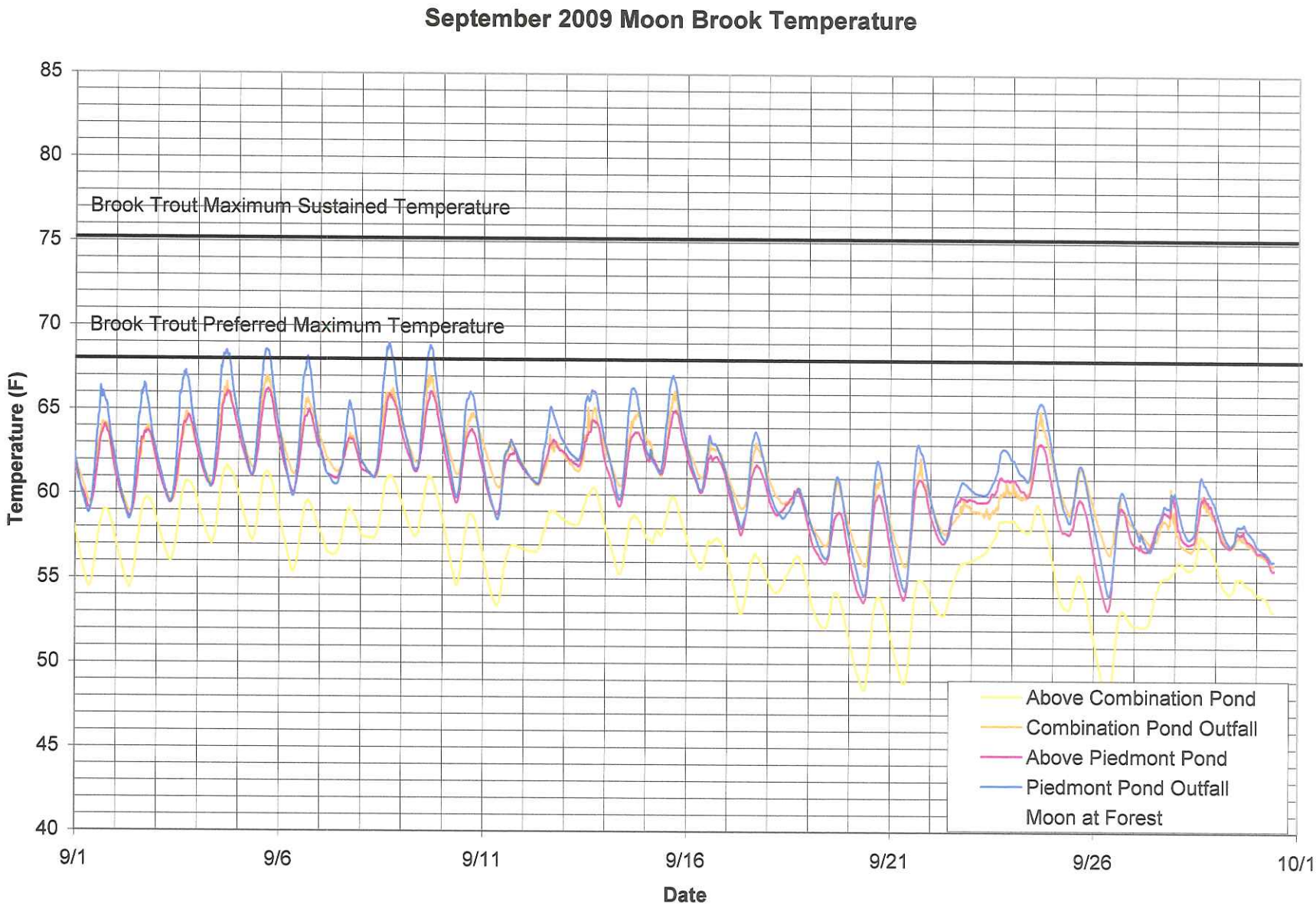

Moon Brook Temperature 2009 With 2 Day Trend Line
Temperature (F)
85
80
75
70
65
60
55
50
45
40
5/12
6/6
7/1
7/26
8/20
9/14
Date
192 per. Mov. Avg. (Above Combination Pond)
192 per. Mov. Avg. (Combination Pond Outfall)
192 per. Mov. Avg. (Above Piedmont Pond)
192 per. Mov. Avg. (Piedmont Pond Outfall)
192 per. Mov. Avg. (Moon at Forest)

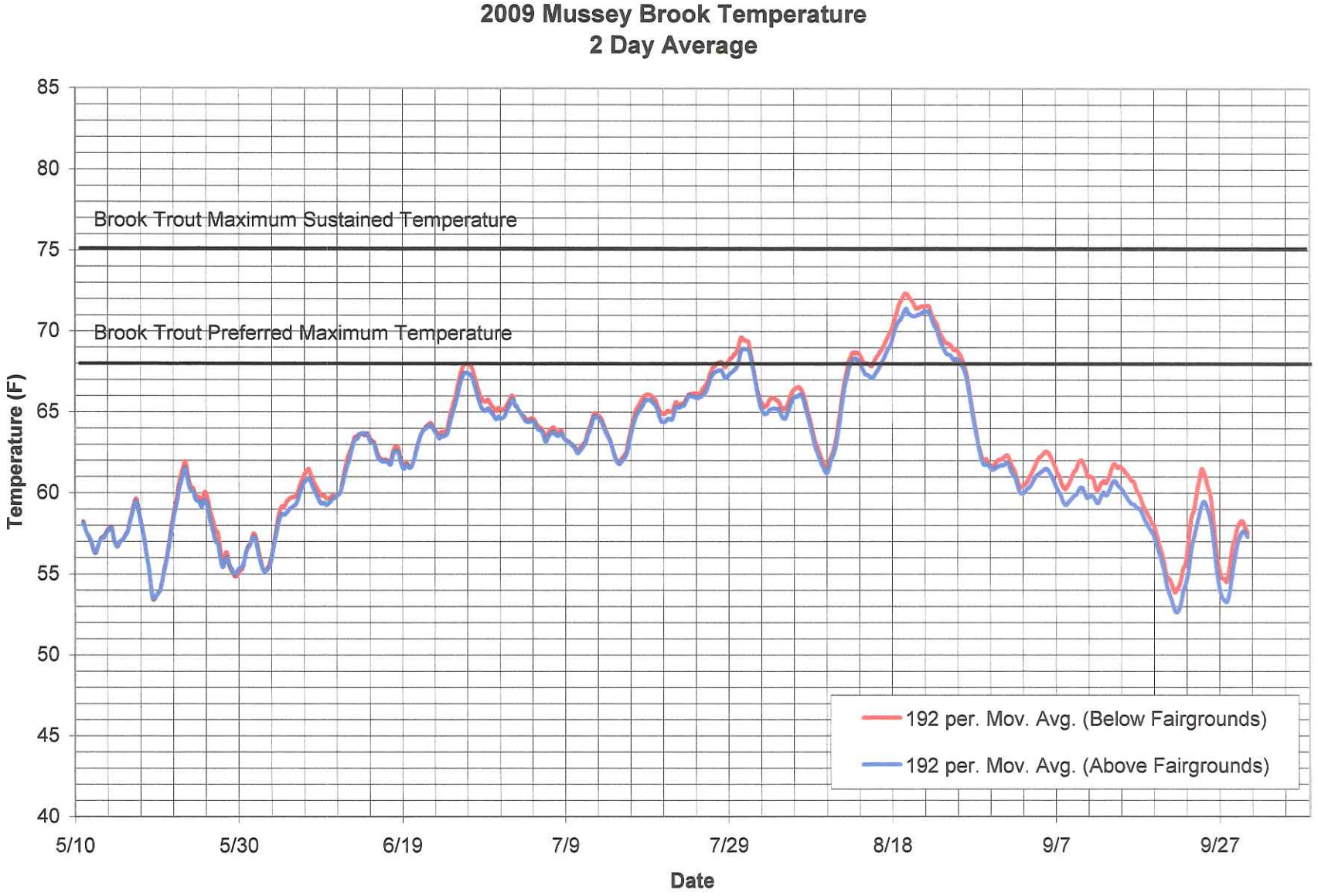
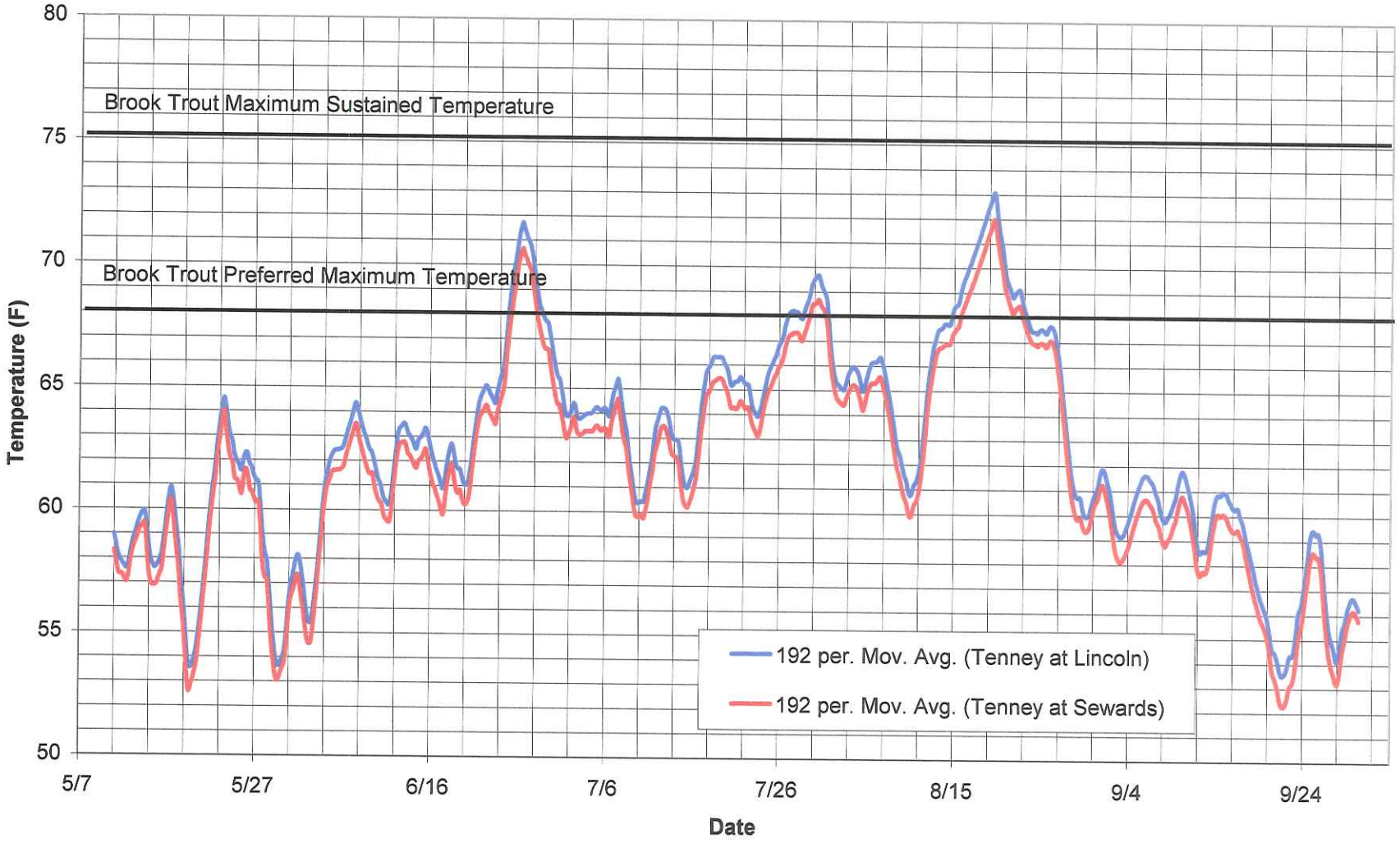

May 2009 Moon Brook Temperature
85
80
75
70
65
60
55
50
45
40
Temperature (F)
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
5/1
5/6
5/11
5/16
5/21
5/26
5/31
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Forest


June 2009 Moon Brook Temperature
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
Temperature (F)
85
80
75
70
65
60
55
50
45
40
6/1
6/6
6/11
6/16
6/21
6/26
7/1
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Forest


July 2009 Moon Brook Temperature
85
80
75
70
65
60
55
50
45
40
Temperature (F)
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
7/1
7/6
7/11
7/16
7/21
7/26
7/31
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Forest


August 2009 Moon Brook Temperature
Temperature (F)
85
80
75
70
65
60
55
50
45
40
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
8/1
8/6
8/11
8/16
8/21
8/26
8/31
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Forest


September 2009 Moon Brook Temperature
85
80
75
70
65
60
55
50
45
40
Temperature (F)
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
9/1
9/6
9/11
9/16
9/21
9/26
10/1
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Forest


2009 Mussey Brook Temperature
2 Day Average
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
192 per. Mov. Avg. (Below Fairgrounds)
192 per. Mov. Avg. (Above Fairgrounds)
Temperature (F)
85
80
75
70
65
60
55
50
45
40
5/10
5/30
6/19
7/9
7/29
8/18
9/7
9/27
Date

2009 Tenney Brook Temperature
2 Day Average