

Supporting Information

Impact of an Extreme Winter Storm Event on the Coagulation/Flocculation Processes in a Prototype Surface Water Treatment Plant: Causes and Mitigating Measures

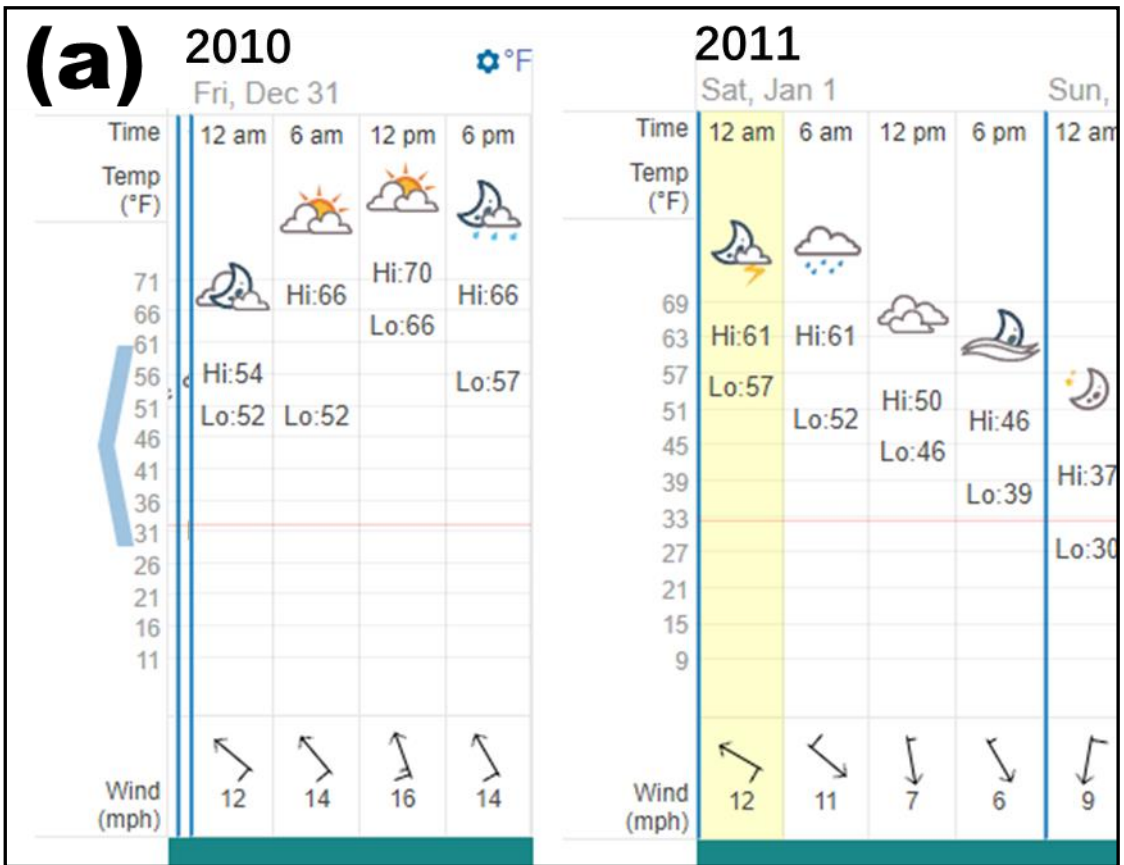
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













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(b)

City of Decatur Weather History for December 31, 2010

Show weather for: December 31, 2010

Time	Conditions	Conditions		Comfort			Barometer	Visibility
		Temp	Weather	Wind	Humidity			
12:02 am Fri, Dec 31		54 °F	Light rain. Mostly cloudy.	9 mph	 67%	30.03 "Hg	10 mi	
12:53 am		54 °F	Overcast.	17 mph	 69%	30.02 "Hg	10 mi	
1:53 am		52 °F	Overcast.	14 mph	 72%	30.03 "Hg	10 mi	
2:53 am		52 °F	Overcast.	12 mph	 72%	30.02 "Hg	10 mi	
3:53 am		51 °F	Overcast.	13 mph	 71%	30.01 "Hg	10 mi	
4:53 am		52 °F	Overcast.	10 mph	 72%	30.03 "Hg	10 mi	
5:53 am		52 °F	Overcast.	10 mph	 72%	30.04 "Hg	10 mi	
6:53 am		52 °F	Overcast.	8 mph	 72%	30.06 "Hg	10 mi	
7:53 am		54 °F	Overcast.	13 mph	 74%	30.07 "Hg	10 mi	
8:53 am		55 °F	Overcast.	10 mph	 74%	30.09 "Hg	10 mi	
9:53 am		58 °F	Mostly cloudy.	12 mph	 70%	30.10 "Hg	10 mi	
10:53 am		61 °F	Broken clouds.	16 mph	 67%	30.07 "Hg	10 mi	
11:53 am		66 °F	Partly sunny.	22 mph	 61%	30.02 "Hg	10 mi	
12:53 pm		68 °F	Partly sunny.	20 mph	 57%	29.98 "Hg	10 mi	
1:53 pm		69 °F	Partly sunny.	15 mph	 55%	29.97 "Hg	10 mi	
2:53 pm		69 °F	Partly sunny.	14 mph	 55%	29.96 "Hg	10 mi	
3:53 pm		68 °F	Overcast.	15 mph	 55%	29.95 "Hg	10 mi	
4:53 pm		68 °F	Overcast.	16 mph	 55%	29.96 "Hg	10 mi	
5:53 pm		67 °F	Overcast.	15 mph	 59%	29.98 "Hg	10 mi	
6:53 pm		67 °F	Overcast.	17 mph	 59%	29.98 "Hg	10 mi	
7:53 pm		65 °F	Light rain. Mostly cloudy.	17 mph	 66%	29.99 "Hg	10 mi	
9:03 pm		61 °F	Heavy rain. Fog.	15 mph	 83%	30.00 "Hg	4 mi	
9:53 pm		59 °F	Light rain. Mostly cloudy.	10 mph	 90%	29.99 "Hg	10 mi	
10:53 pm		58 °F	Rain. Fog.	15 mph	 93%	29.94 "Hg	6 mi	
11:02 pm		57 °F	Light rain. Mostly cloudy.	12 mph	 94%	29.98 "Hg	8 mi	

(c)

City of Decatur Weather History for January 1, 2011

Show weather for: January 1, 2011

Time	Conditions			Comfort			
	Temp	Weather	Wind	Humidity	Barometer	Visibility	
12:00 am Sat, Jan 1	57 °F	Strong thunderstorms. Fog	7 mph	94%	29.93 "Hg	1 mi	
12:10 am	57 °F	Strong thunderstorms. Fog	15 mph	94%	29.93 "Hg	2 mi	
12:53 am	57 °F	Light rain. Fog	15 mph	93%	29.86 "Hg	6 mi	
2:05 am	57 °F	Strong thunderstorms. Fog	13 mph	94%	29.85 "Hg	6 mi	
2:53 am	57 °F	Strong thunderstorms. Fog	9 mph	94%	29.88 "Hg	1 mi	
3:56 am	57 °F	Strong thunderstorms. Fog	12 mph	100%	29.88 "Hg	3 mi	
4:05 am	57 °F	Strong thunderstorms. Fog	13 mph	100%	29.88 "Hg	5 mi	
4:53 am	59 °F	Rain. Fog	13 mph	100%	29.87 "Hg	6 mi	
6:00 am	61 °F	Thunderstorms. Fog	16 mph	94%	29.89 "Hg	5 mi	
6:53 am	59 °F	Overcast	6 mph	96%	29.89 "Hg	10 mi	
7:55 am	61 °F	Rain. Overcast	12 mph	94%	29.91 "Hg	1 mi	
8:10 am	61 °F	Rain. Mostly cloudy	6 mph	94%	29.92 "Hg	2 mi	
9:04 am	55 °F	Light rain. Fog	18 mph	94%	29.94 "Hg	3 mi	
9:53 am	53 °F	Light rain. Fog	8 mph	96%	29.97 "Hg	3 mi	
10:53 am	52 °F	Fog	9 mph	93%	30.01 "Hg	5 mi	
11:53 am	51 °F	Fog	15 mph	96%	30.00 "Hg	2 mi	
12:53 pm	50 °F	Mostly cloudy	14 mph	89%	30.04 "Hg	10 mi	
1:53 pm	50 °F	Overcast	8 mph	71%	30.05 "Hg	10 mi	
2:53 pm	50 °F	Overcast	10 mph	62%	30.05 "Hg	10 mi	
3:53 pm	50 °F	Overcast	6 mph	59%	30.06 "Hg	10 mi	
4:53 pm	49 °F	Mostly cloudy	5 mph	59%	30.07 "Hg	10 mi	
5:53 pm	46 °F	Passing clouds	No wind	76%	30.12 "Hg	10 mi	
6:53 pm	46 °F	Passing clouds	6 mph	71%	30.13 "Hg	10 mi	
7:53 pm	44 °F	Clear	6 mph	71%	30.13 "Hg	10 mi	
8:53 pm	44 °F	Clear	6 mph	68%	30.14 "Hg	10 mi	
9:53 pm	42 °F	Passing clouds	5 mph	73%	30.16 "Hg	10 mi	
10:53 pm	41 °F	Passing clouds	8 mph	70%	30.16 "Hg	10 mi	
11:53 pm	39 °F	Clear	7 mph	67%	30.16 "Hg	10 mi	

Figure S1. Weather History of Decatur, AL, USA (a) weather graph, (b) weather history for Dec.

31, 2010 and (c) weather history for Jan. 1, 2011 (Information from the Website:

<https://www.timeanddate.com/weather/@7317841/historic?month=11&year=2010>).

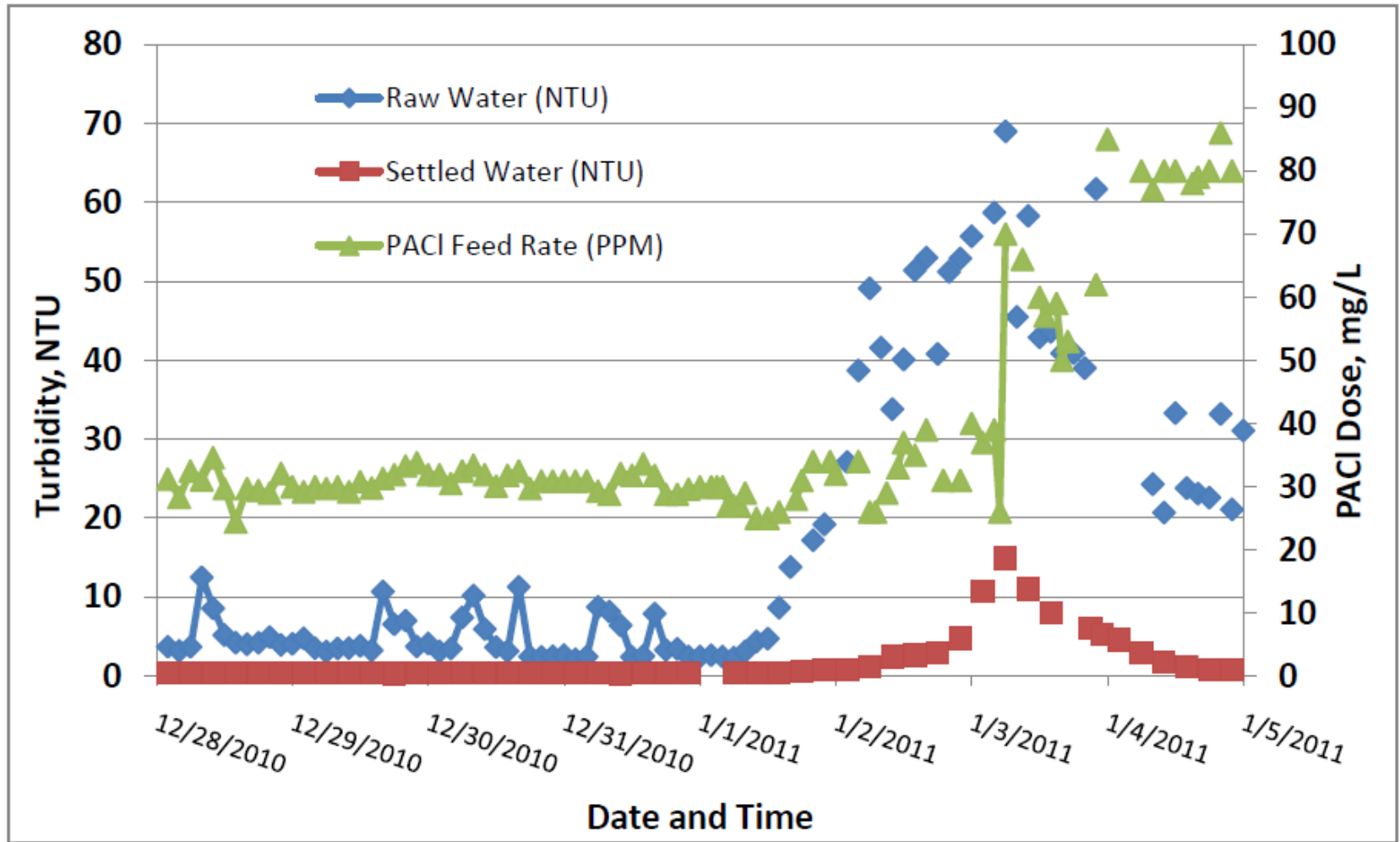


Figure S2. Data of turbidity of the raw water and the treated water, and the PACI feeding dose for the plant from Dec. 28, 2010 to Jan. 5, 2011

Table S1. Summary of concentrations of main elements in the river water.

Item	Level (mg·L⁻¹)	Item	Level (mg·L⁻¹)	Item	Level (mg·L⁻¹)
Na	2.7924	Fe	0.002679	K	1.5050
Si	0.0477	Cu	0.003194	Mn	0.0011
AL	0.0016	Sn	0.003431	P	0.0048
Be	0.0001	B	0.0769	Li	0.0014
Pb	0.0006	Ni	0.031317	Ba	0.0255
Co	0.0002	Sb	0.001864	Mo	0.0080
Ag	0.0003	As	0.00146	Sr	0.0220
Cr	0.0005	V	NA	Cd	0.0001
Zn	NA	Se	NA		