

**2013 SUMMARY OF BEACHES REGULATED BY THE MONROE COUNTY
DEPARTMENT OF PUBLIC HEALTH**

ONTARIO BEACH:

Season - June 21, 2013 to September 2, 2013

Open Daily, 74 days

Open: 32 days 43 %
Closed: 42 days 57 %

Accurate prediction of condition: 48 days 65 %
Inaccurate prediction of condition: 26 days 35 %

If no model was employed and the beach was open all days:

Open Clean (Accurate): 42 days 52%
Open Dirty (Inaccurate): 32 days 48%

With Model:

Open Clean 24 days 32%
Open Dirty 8 days 11%

Operation of the beach with the model would have resulted in 16 additional days when swimmers were at low risk as evidenced by sample results for all sections of the beach <235 MPN/100mL sample, and would have resulted in 21 additional days of elevated risk as evidenced by results of one or more samples > 235 MPN/100mL.

Reasons for Closure: (Given reason was partially or totally responsible for the closure issued on a day)

Rainfall	8 %	1.5 accurate	2 inaccurate
River Flow	1 %		0.5 inaccurate
Clarity	27 %	8.7 accurate	2.7 inaccurate
Algae	8 %	1.7 accurate	1.7 inaccurate
Prior Day Bacteria	56 %	12.1 accurate	11.1 inaccurate

Accuracy is based on status predicted by the operating model on a given day in relation to the results of samples collected on that day. There were 8 inaccuracies where the beach was open with a subsequently reported exceedance of the Health Standard. There were 18 inaccuracies where the beach was closed and was subsequently found to be bacteriologically safe with all samples reported at less than the 235 MPN/100 mL single sample standard. The major factor in closure was prior day bacteria values, which were about evenly accurate and inaccurate in predicting the condition on the day subsequent to their collection. Rainfall, which is usually the most accurate predictor, was inaccurate for

two early season storms where total rainfall only exceeded the criteria of 0.7” of rain in the prior 24 hours by 0.07”. This may be a result of washoff of contaminated materials from impervious surfaces during frequent low intensity spring storms and lower than average temperatures. Algal volumes were not excessive as defined by the “1500 cubic feet or more per beach section” criterion, however algal volumes were nevertheless noticeable from first appearance of Cladophora in late July throughout the remainder of the season. Even when algal volumes were not high enough to close the beach, the material was often accompanied by elevated bacteria counts and poor water clarity. Poor water clarity was more than three times more likely to accurately predict elevated bacteria levels than to be an inaccurate predictor. The usual arrival in June of Spirogyra algae did not occur in 2013, possibly also a result of the cool, wet, cloudy spring conditions. The Pediastrum bloom that has occurred at Ontario Beach in the recent past also did not materialize in the summer of 2013.

While a new criterion was put into effect for closure in response to elevated bacteria on the prior day, implementation of this criterion had little effect on opening of the beach in 2013 because either more than one sample from the prior day exceeded the single sample standard or another environmental condition also predicted riskier conditions for bathers. In general, while conditions in the early season were excellent for swimming, after late July conditions in the near shore shifted drastically, conditions were very poor for swimming.

ONTARIO BEACH LONG TERM PERFORMANCE (DAYS)

	Closed/ Dirty (TP)	Open/Clean (TN)	Closed/Clean (FP)	Open/Dirty (FN)
1998	22	31	10	17
1999	23	36	8	13
2000	31	29	6	14
2001	16	37	8	19
2002	7	44	14	8
2003	13	35	12	13
2004	18	31	15	16
2005	14	42	11	13
2006	10	38	20	12
2007	10	34	16	15
2008	17	35	9	12
2009	24	31	18	7
2010	23	33	19	6
2011	19	33	10	19
2012	26	26	18	11
2013	24	24	18	8

ONTARIO BEACH LONG TERM PERFORMANCE

	Accurate Predictions ((TP+TN)/(TP+TN+FP+FN))*100	Inaccurate Prediction ((FN+FP)/(TP+TN+FP+FN))*100
1998	66%	34%
1999	74%	26%
2000	75%	25%
2001	66%	34%
2002	70%	30%
2003	66%	34%
2004	61%	39%
2005	69%	31%
2006	60%	40%
2007	59%	41%
2008	71%	29%
2009	69%	31%
2010	64%	36%
2011	64%	36%
2012	67%	33%
2013	65%	35%
98-13 Average	67 %	33%
Year	Inaccurate Prediction and Unsafe Condition (FN/(TP+TN+FP+FN)) *100	Inaccurate Prediction and Safe Condition (FP/(TP+TN+FP+FN))*100
1998	21%	13%
1999	16%	10%
2000	17%	8%
2001	24%	10%
2002	11%	19%
2003	18%	16%
2004	20%	19%
2005	16%	14%
2006	15%	25%
2007	20%	21%
2008	16%	12%
2009	9%	22%
2010	7.4%	23%
2011	12.3%	23.5%
2012	13.6%	22.2%
2013	10.8%	24.3%
98-2013 Average	15.4%	17.6%

ONTARIO BEACH REASONS FOR CLOSURES

Year	# of Open days	% Open	# of Closed days	% Closed	% River Flow	% Rain	% Algae	% Water clarity	% Bacteria	Total %
1976	50	76	16	24	3	84	0	13	0	100
1977	58	76	17	24	23	59	0	18	0	100
1978	69	94	4	6	0	88	12	0	0	100
1979	66	92	6	8	0	50	8	42	0	100
1980	68.5	94	4.5	6	33	45	0	22	0	100
1981	66	82	14	18	0	43	18	39	0	100
1982	72	90	8	10	0	44	12	19	25	100
1983	59	81	14	19	3	36	18	43	0	100
1984	42.5	58	30.5	42	16	16	12	56	0	100
1985	65	89	8	11	0	6	31	56	6	99
1986	47	69	21	31	0	43	0	57	0	100
1987	66	84	13	16	0	50	12	38	0	100
1988	61	84	12	16	0	58	8	33	0	99
1989	53	75	18	25	0	17	0	83	0	100
1990	53	73	20	27	0	40	28	32	0	100
1991	53	73	20	27	0	20	20	60	0	100
1992	31	46	36	54	28	28	5	36	3	100
1993	51	76	16	24	0	9	31	53	6	99
1994	40	54	34	46	3	23	36	28	9	99
1995	40	54	34	46	0	4	51	38	7	100
1996	39	53	34	47	9	12	38	38	3	100
1997	52	71	21	29	17	9	14	60	0	100
1998	48	60	32	40	24	20	12	35	9	100
1999	49	61	31	39	2	6	37	47	8	100
2000	43	54	37	46	1	15	41	27	16	100
2001	56	70	24	30	0	3	17	38	42	100
2002	52	71	21	29	5	2	7	86	0	100
2003	48	66	25	34	24	0	2	48	26	100
2004	49	61	31	39	6	9	33	52	0	100
2005	55	69	25	31	2	9	17	71	1	100
2006	50	62.5	30	37.5	1.3	20.3	2.7	73	2.7	100
2007	49	65	26	35	0	5	54	22	19	100
2008	46	63	27	37	0	13	19	17	51	100
2009	38	47.5	42	52.5	4.4	20.2	0	23	52.4	100
2010	39	48.1	42	51.9	0	16.3	7	36	40.7	100
2011	52	64	29	36	0	14.3	6.9	31.6	47.2	100
2012	37	45.7	44	54.3	0	7.6	1.1	21.2	70.1	100
2013	32	43	42	57	1	8.3	7.8	27	56	100
Avg.	51.2	68.3	23.9	31.7	5.4	25.0	16.3	40	13.2	100

ONTARIO BEACH STATUS 2013

June	July	August	September
	1 Open	1 Open	1 Closed ^{8,9}
	2 Closed ^{5,8}	2 Open	2 Closed ⁹
	3 Closed ⁸	3 Closed ⁹	
	4 Closed ^{3,8}	4 Closed ^{8,9}	
	5 Open	5 Closed ^{8,9}	
	6 Open	6 Closed ^{7,9}	
	7 Open	7 Closed ⁹	
	8 Open	8 Open	
	9 Open	9 Closed ⁹	
	10 Open	10 Closed ^{5,8}	
	11 Closed ⁸	11 Closed ⁹	
	12 Closed ^{8,9}	12 Closed ⁹	
	13 Open	13 Closed ⁹	
	14 Open	14 Closed ^{8,9}	
	15 Open	15 Closed ^{8,9}	
	16 Open	16 Closed ^{7,8,9}	
	17 Open	17 Closed ^{7,8,9}	
	18 Open	18 Closed ^{7,8,9}	
	19 Closed ⁹	19 Closed ⁸	
	20 Closed ^{5,9}	20 Closed ^{7,8,9}	
21 Open	21 Closed ^{8,9}	21 Closed ⁹	
22 Open	22 Closed ⁹	22 Closed ⁹	
23 Open	23 Open	23 Closed ^{8,9}	
24 Open	24 Closed ⁸	24 Closed ⁹	
25 Open	25 Closed ^{7,9}	25 Closed ⁹	
26 Open	26 Closed ⁷	26 Closed ⁸	
27 Open	27 Open	27 Closed ^{5,9}	
28 Open	28 Open	28 Closed ⁹	
29 Closed ⁵	29 Open	29 Open	
30 Open	30 Closed ⁹	30 Open	
	31 Closed ⁹	31 Open	

5. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall (0600-0600) is 0.7"-1.5".

6. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall total (0600-0600) is greater than or equal to 1.5".

7. Algae or other organic debris excessive, defined as > 1500 ft³ (6.5%)

8. Secchi disk depth is < 0.6 m. The beach is closed until the secchi disk is ≥ 0.8 m.

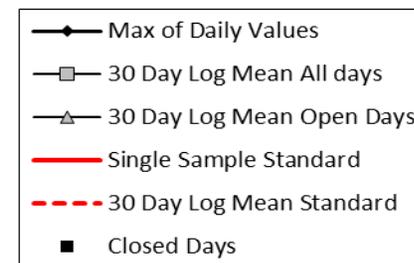
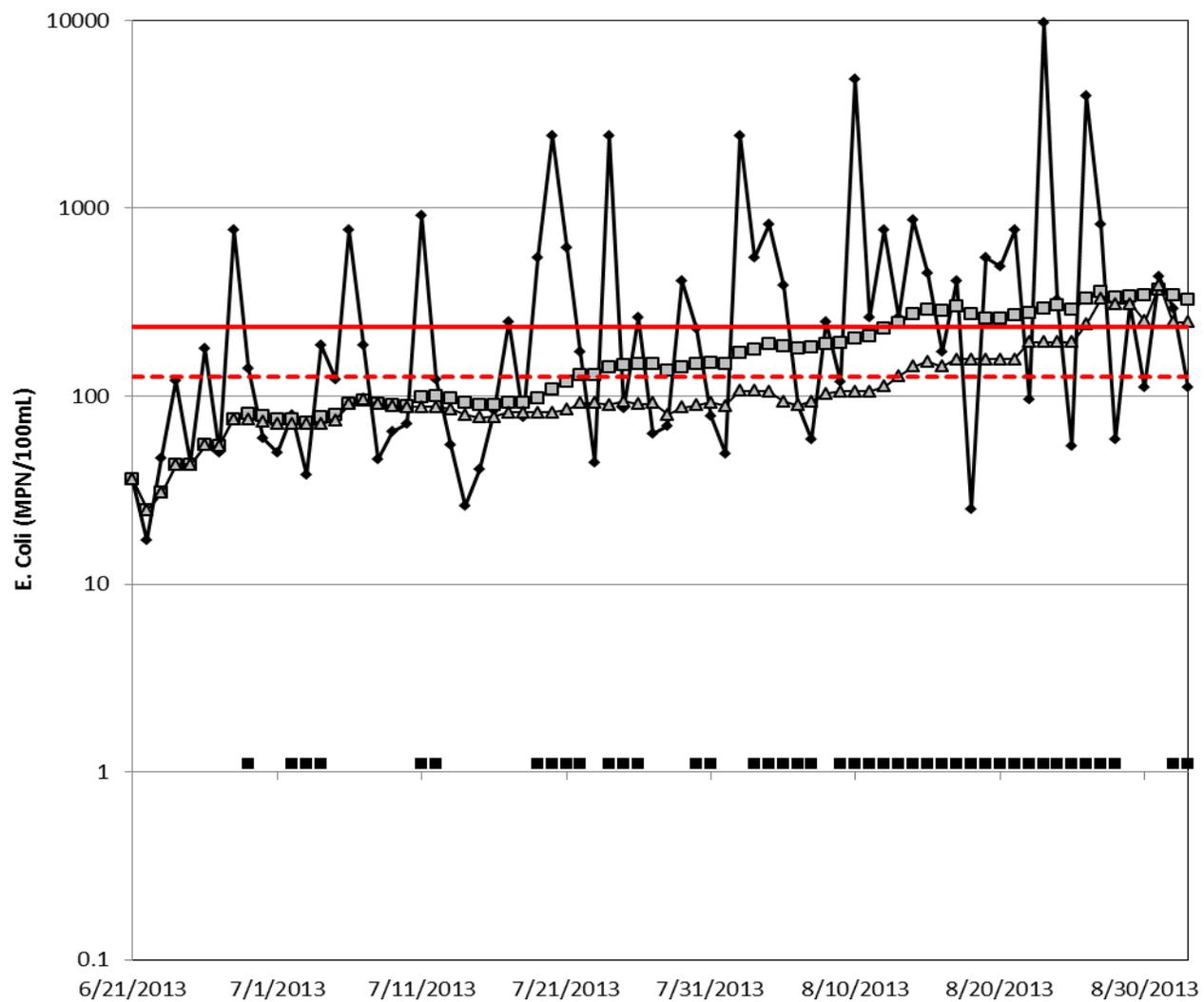
9. E. coli results for the prior day are greater than 235 MPN/100mL

ONTARIO BEACH 2013 OPERATING CRITERIA

CRITERIA	ACTION
1. Genesee River Stormwater: Rainfall (Glenwood Pump Station or 243) total (0600-0600) rainfall is > 0.7"; and peak rainfall intensity is > 0.4/hr".	A watch period is determined for each storm based on rainfall, river flow, and the time of peak rainfall intensity. (Beach Operating Manual p. 4) The beach is closed if the Genesee River flows west during the watch period.
2. Genesee River High Flow: Average flow (0600-0600) is greater than 3500 cubic feet per second (cfs) and less than 5000 cfs.	A pollution watch is in effect as long as flow remains greater than 3500 cfs. The beach is closed when the river flows west toward Ontario Beach.
3. Genesee River Extreme High Flow: Average flow (0600-0600) is greater than 5000 cfs.	The beach is closed until flow decreases to criterion #2 or monitoring instituted as part of the pollution watch indicates that the river is not a source of Fecal Coliform bacteria.
5. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall (0600-0600) is 0.7"-1.5".	The beach is closed for 24 hours.
6. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall total (0600-0600) is greater than or equal to 1.5".	The beach is closed for 48 hours.
7. Algae or other organic debris exceeds 1500 cubic feet in any beach section.	Affected sections of the beach are closed.
8. Secchi disk depth is \leq 0.6 m.	The beach is closed until the secchi disk is \geq 0.8 m.
9. E. coli results for the prior day are greater than 235 MPN/100mL	If bacteriological results for a single section of the beach exceed the 235 MPN/100mL standard, an advisory will be posted but the beach can remain open. If the standard is exceeded for any more than one section of the beach, or the exceedance persists into a second day, the entire beach will close until all beach sections are below the single sample standard.

Criterion 4 was discontinued in 2001. Criterion 4: (Local Stormwater: Lake Ontario West Basin (Ontario Beach or Irondequoit Pump Station gauges 0600-0600) rainfall 0.3" – 0.7" or peak rainfall intensity is > 0.2"/hr.

Ontario Beach 2013



DURAND EASTMAN BEACH

Season-June 23, 2013 to September 2, 2013

Open daily, 72 days

Open: 57 days 79 %
Closed: 15 days 21 %

Accurate prediction of condition: 54 days 75 %

Inaccurate prediction of condition: 18 days 25 %

If no model was employed and the beach was open all days

Open Clean (Accurate): 61 days 84.8 %

Open Dirty (Inaccurate): 11 days 15.2%

With Model:

Open Clean 50 days 69%

Open Dirty 7 days 10%

Reasons for Closure:

Rainfall	33.3 %	4 Accurate	1 Inaccurate
River Flow	3.3 %		0.5 Inaccurate
Clarity	20 %		3 Inaccurate
Algae	0 %		
Prior Day Bacteria	43.3 %		6.5 Inaccurate

There were 7 inaccuracies where the beach was open with a subsequent reported exceedance of the Health Standard. There were 11 inaccuracies where the beach was closed and subsequently found to be safe. Decimal values arise from days when more than one criterion contributes to closure of the beach.

All factors with the exception of rainfall were inaccurate for closures in 2013. This is thought to be a result of the generally better conditions caused by the pier sheltering the effect of the Genesee River flow to the east and a lack of large summer storms on the lake.

DURAND EASTMAN BEACH LONG TERM PERFORMANCE (DAYS)

	Closed/ Dirty (TP)	Open/Clean (TN)	Closed/Clean (FP)	Open/Dirty (FN)
2006	11	24	8	2
2007	7	64	10	8
2008	10	45	19	3
2009	16	41	21	4
2010	12	47	20	4
2011	9	44	12	7
2012	3	52	11	6
2013	4	50	11	7

DURAND EASTMAN BEACH LONG TERM PERFORMANCE

Year	Accurate Predictions ((TP+TN)/(TP+TN+FP+FN))*100	Inaccurate Prediction ((FN+FP)/(TP+TN+FP+FN))*100
2006	77 %	23 %
2007	80 %	20 %
2008	71 %	29%
2009	70%	30%
2010	71%	29%
2011	74%	26%
2012	76%	24%
2013	75	25
Average 2006-13	74.25%	25.75%
Year	Inaccurate Prediction and Unsafe Condition (FN/(TP+TN+FP+FN))*100	Inaccurate Prediction and Safe Condition (FP/(TP+TN+FP+FN))*100
2006	4 %	18 %
2007	9 %	11 %
2008	4 %	25%
2009	5%	26%
2010	5%	24%
2011	9.7%	16.7%
2012	8.3%	15.3%
2013	5.6%	15.3%
Average 2006-13	6.3%	18.9%

DURAND EASTMAN BEACH LONG TERM PERFORMANCE

	# of Open days	% Open	# of Closed days	% Closed	% River Flow	% Rain	% Algae	% Water clarity	% Bacteria	Total %
2006	26	58	19	42	0	29	0	66	5	100
2007	72	81	17	19	0	37	0	46	18	100
2008	48	62	30	38	0	46	0	16	38	100
2009	45	70	39	30	1	56	0	16	26	99
2010	51	61.4	32	38.6	0	30.2	0	42.7	27.1	100
2011	51	71	21	29	0	25.4	0	25.4	49.2	100
2012	58	81	14	19	0	35.7	0	10.7	53.6	100
2013	57	79.2	15	20.8	3.3	33.3	0	20	43.3	100
Avg	65	70.4	23.4	29.6	0.54	36.6	0	30.4	32.5	100

DURAND EASTMAN BEACH STATUS 2013

June	July	August	September
	1 Closed ⁹	1 Open	1 Open
	2 Closed ⁴	2 Open	2 Closed ⁸
	3 Closed ⁹	3 Closed ⁹	
	4 Closed ^{3,4}	4 Open	
	5 Open	5 Open	
	6 Open	6 Open	
	7 Open	7 Open	
	8 Open	8 Open	
	9 Open	9 Open	
	10 Open	10 Closed ⁴	
	11 Open	11 Closed ⁹	
	12 Closed ^{8,9}	12 Open	
	13 Open	13 Open	
	14 Open	14 Open	
	15 Open	15 Open	
	16 Open	16 Open	
	17 Open	17 Open	
	18 Open	18 Open	
	19 Open	19 Open	
	20 Closed ⁴	20 Open	
	21 Closed ^{8,9}	21 Open*	
	22 Open	22 Open	
23 Open	23 Open	23 Open*	
24 Open	24 Closed ⁸	24 Closed ⁹	
25 Open	25 Open	25 Open	
26 Open	26 Open	26 Open	
27 Open	27 Open	27 Closed	
28 Open	28 Open	28 Open	
29 Closed ⁴	29 Open	29 Open	
30 Open*	30 Open	30 Open	
	31 Open	31 Open	

3. Genesee River Extreme High Flow: Average flow (0600-0600) is greater than 5000 cfs.

4. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall (0600-0600) is 0.4"-1.5".

5. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall (0600-0600) is 1.5-3".

8. Secchi disk depth is < 0.6 m. The beach is closed until the secchi disk is ≥ 0.8 m.

9. E. coli results for the prior day are greater than 235 MPN/100mL

* Advisory Day

DURAND EASTMAN BEACH 2013 OPERATING CRITERIA	
CRITERIA	ACTION
1. Genesee River Stormwater: Rainfall (Glenwood Pump Station or 243) total (0600-0600) rainfall is > 0.7"; and peak rainfall intensity is > 0.4/hr".	A watch period is determined for each storm based on rainfall, river flow, and the time of peak rainfall intensity. (Beach Operating Manual p. 4) The beach is closed if the Genesee River flows east during the watch period.
2. Genesee River High Flow: Average flow (0600-0600) is greater than 3500 cubic feet per second (cfs) and less than 5000 cfs.	A pollution watch is in effect as long as flow remains greater than 3500 cfs. The beach is closed when the river flows east toward Durand Beach unless monitoring instituted as part of the pollution watch indicates that the river is not a source of Fecal Coliform bacteria (measured as E. Coli).
3. Genesee River Extreme High Flow: Average flow (0600-0600) is greater than 5000 cfs.	The beach is closed until flow decreases to criterion #2 or monitoring instituted as part of the pollution watch indicates that the river is not a source of Fecal Coliform bacteria (measured as E. Coli).
4. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall (0600-0600) is 0.4"-1.5".	The beach is closed for the remainder of that day and an additional 24 hours.
5. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall total (0600-0600) is greater than 1.5" and less than or equal to 3".	The beach is closed for the remainder of the day and an additional 48 hours.
6. Local Stormwater: (Ontario Beach or Irondequoit Pump station gage) Rainfall total (0600-0600) is greater than or equal to 3 inches.	The beach is closed for the remainder of the day and an additional 72 hours.
7. Algae or other organic debris exceeds 1500 cubic feet.(for a 300 foot beach)	The beach is closed.
8. Secchi disk depth is \leq 0.6 m.	The beach is closed until the secchi disk is \geq 0.8 m.
9. E. coli results for the prior day are greater than 235 MPN/100mL	If bacteriological results for the beach exceed the 235 MPN/100mL standard, an advisory will be posted but the beach can remain open. If the exceedance persists into a second day, the entire beach will close until the beach section is below the single sample standard.

Durand Eastman Beach 2013

