

## **2011 EIGHTEENMILE CREEK WATERSHED STUDY**

The Eighteenmile Creek watershed (*Figure 4*) is located along the southern shore of Lake Ontario in Niagara County, New York. Eighteenmile Creek flows generally to the north and discharges into Lake Ontario, through Olcott Harbor, approximately 18 miles east of the mouth of the Niagara River. The watershed has a drainage area of approximately 90 square miles and includes Eighteenmile Creek; the two main tributaries, the East Branch and the Gulf, and minor tributaries. In addition, much of the flow in the main branch of Eighteenmile Creek comes from water diverted from the New York State Barge Canal.

On August 31, 2011 and again on October 20, 2011 an intensive watershed bacteriological sampling program was conducted by departmental staff. This survey included collecting samples from the swim area at Olcott Beach, as well as collecting samples from up to seventeen stations along Eighteenmile Creek and its associated plume in Lake Ontario (*Figures 5, 6 & 7*). Sampling was repeated at the same stations on the second sampling event and expanded to include the Creek's plume in Lake Ontario, after a moderate amount of rainfall (0.56 in) occurred the night before. Water samples were tested for Air & Water Temperature, pH, Fecal Coliform and E.coli (*Table 6 & 7*). Lab Reports are available (*Attachment 7*).

Table 6. Water Quality Parameter Results for Watershed Points (August 31, 2011).

Sample Date: 08/31/2011		18 MILE CREEK SAMPLING							
Samplers: Joseph Baronich & Rene Herc									
Sample	Location	Latitude	Longitude	Sample Time	pH	H <sub>2</sub> O Temp	Air Temp	Fecal Coliform	e.Coli
Number	See Map	North	West	EST	SU	° F	° F	CFU/100ml	CFU/100ml
<b>New York State Bathing Beach Water Quality Limits</b>								<b>1,000</b>	<b>235</b>
14	18 Mile East of Canal	43.176250	78.686100	1:35 PM	7.7	75	79	60	10
13	18 Mile West of Canal	43.176500	78.686440	1:30 PM	7.8	77	79	110	130
12	18 Mile Up Str w/wTP	43.184580	78.703120	12:50 PM	7.7	78	79	380	190
11	Lopt w/wTP Effluent	43.186280	78.706110	1:15 PM	7.5	76	82	7,200	6,200
10	18 Mi Down Str w/wTP	43.189570	78.705570	12:35 PM	7.7	75	79	3,100	1,500
9	18Mile East Branch	43.228617	78.704006	12:10 PM	7.8	76	78	170	210
8	18 Mile Junction	43.228810	78.704440	12:05 PM	7.7	76	78	780	1,600
7	18 Mile West Branch	43.228647	78.704522	12:00 PM	7.8	76	78	610	1,700
6	2nd Dam	43.278990	78.707580	11:20 AM	7.8	75	76	630	560
5	Burt Dam Above	43.313500	78.715060	10:50 AM	8.1	75	70	20	10
4	Burt Dam Below	43.313920	78.715690	10:30 AM	7.8	72	70	260	170
3	West Beach	43.339153	78.720989	10:05 AM	7.9	73	74	<10	<10
2	18 Mile Mouth	43.340800	78.719470	9:55 AM	7.8	73	74	40	20
1	Olcott Beach	43.339630	78.713150	9:30 AM	7.8	73	74	210	160
Lab: Erie Co. Public Health Lab					SU = Standard Units		CFU = Colony Forming Units		
					° F = Degrees Fahrenheit		EST = Eastern Standard Time		

Table 7. Water Quality Parameter Results for Watershed Points (October 20, 2011).

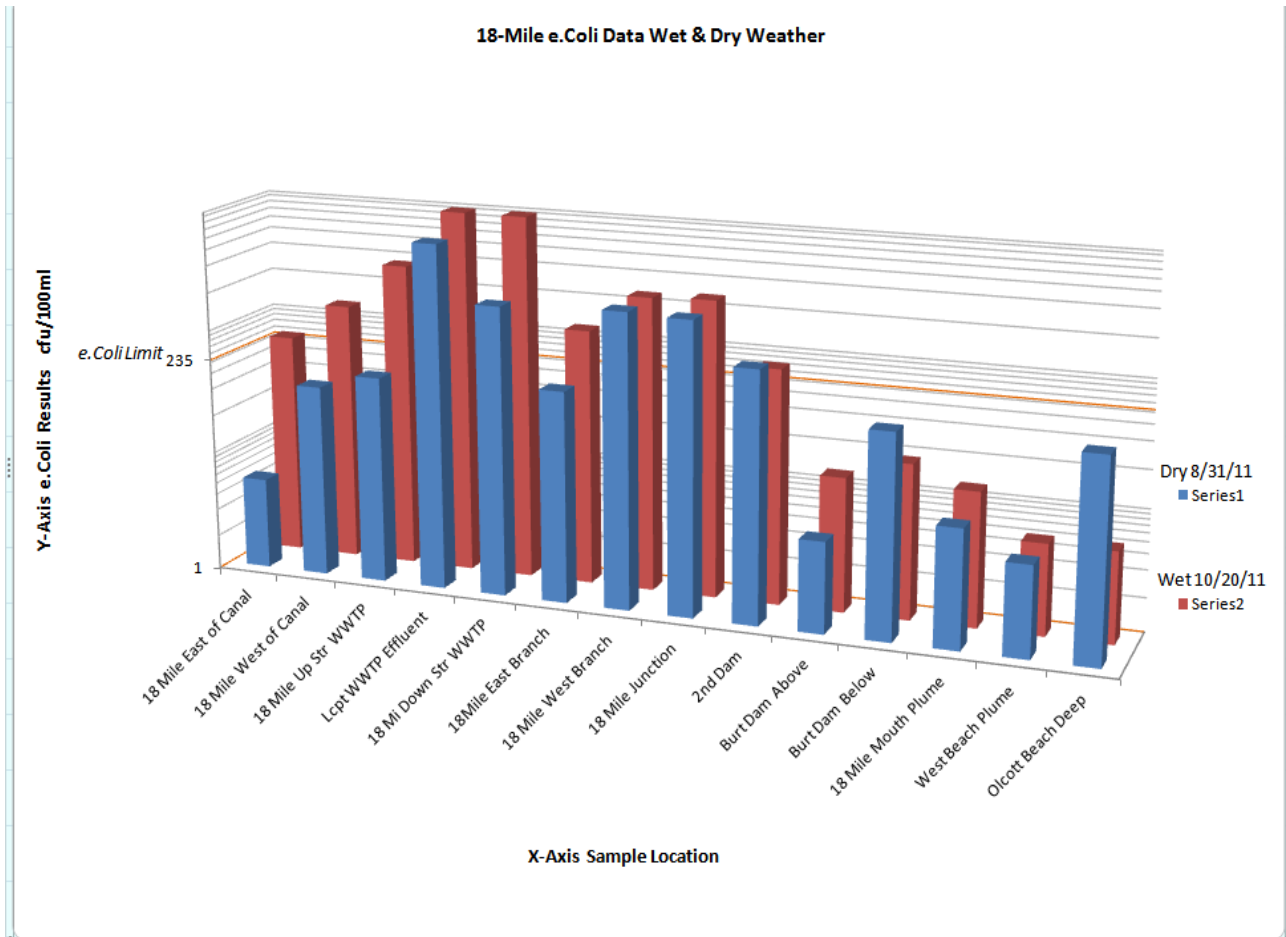
18 MILE CREEK SAMPLING									
Sample Date: 10/20/2011									
Samplers: Joseph Baronich & David Zak									
Sample	Location	Latitude	Longitude	Sample Time	pH	H <sub>2</sub> O Temp	Air Temp	Fecal Coliform	e.Coli
Number	See Map	North	West	EST	SU	°F	°F	CFU/100ml	CFU/100ml
<b>New York State Bathing Beach Water Quality Limits</b>								<b>1,000</b>	<b>235</b>
1	18 Mile East of Canal	43.176250	78.686100	8:50AM	7.7	52	51	420	280
2	18 Mile West of Canal	43.176500	78.686440	8:55AM	7.7	54	51	1,700	720
3	18 Mile Up Str W/WTP	43.184580	78.703120	9:10AM	8.0	52	50	3,600	2,300
4	Lcpt W/WTP Effluent	43.186280	78.706110	9:30AM	7.2	58	50	>10,000	>10,000
5	18 Mi Down Str W/WTP	43.189570	78.705570	9:40AM	7.5	54	50	>10,000	>10,000
6	18Mile East Branch	43.228617	78.704006	10:10AM	7.6	57	48	510	650
7	18 Mile West Branch	43.228647	78.704522	10:15AM	7.7	56	49	3,300	1,700
8	18 Mile Junction	43.228810	78.704440	10:20AM	7.6	56	49	2,500	1,800
9	2nd Dam	43.278990	78.707580	10:45AM	7.7	55	52	620	380
10	Burt Dam Above	43.313500	78.715060	11:00AM	7.7	55	50	70	30
11	Burt Dam Below	43.313920	78.715690	11:20AM	7.6	56	50	50	50
12	18 Mile Harbor	43.336789	78.716153	11:03AM	7.3	54	50	110	60
13	18 Mile Mouth Plume	43.340783	78.719036	11:11AM	7.5	54	50	40	30
14	West Beach Plume	43.340783	78.721369	11:14AM	7.5	54	50	10	<10
15	Plume West of Beach	43.341414	78.716036	11:17AM	7.5	53	50	20	30
16	Plume at Beach	43.341669	78.713139	11:21AM	7.5	53	50	40	20
17	Plume East of Beach	43.341931	78.711211	11:25AM	7.5	54	50	10	30
18	Olcott Beach Deep	43.339525	78.712661	11:40AM	7.7	55	50	40	10
19	Olcott Beach Shallow	43.339483	78.712661	11:45AM	7.7	55	50	20	40

Lab: Erie Co. Public Health Lab

SU = Standard Units  
°F = Degrees Fahrenheit

CFU = Colony Forming Units  
EST = Eastern Standard Time

Graph 1. Water Quality Parameter Results for Watershed Points (August 31, 2011 & October 20, 2011).



**Conclusions.** Overall, bacteria levels were higher on the second sampling event after a moderate amount of rainfall the night before (0.56 in.) (Graph 1). During each sampling event, bacteria levels were at acceptable levels (well within bathing beach water quality limits) at the Burt Dam (Graph 2) and continued downstream to the bathing beach area. The sampling does show that bacteria levels can be extremely high upstream of the Burt Dam and under higher rainfall conditions, could likely contribute to higher bacteria levels at the beach.



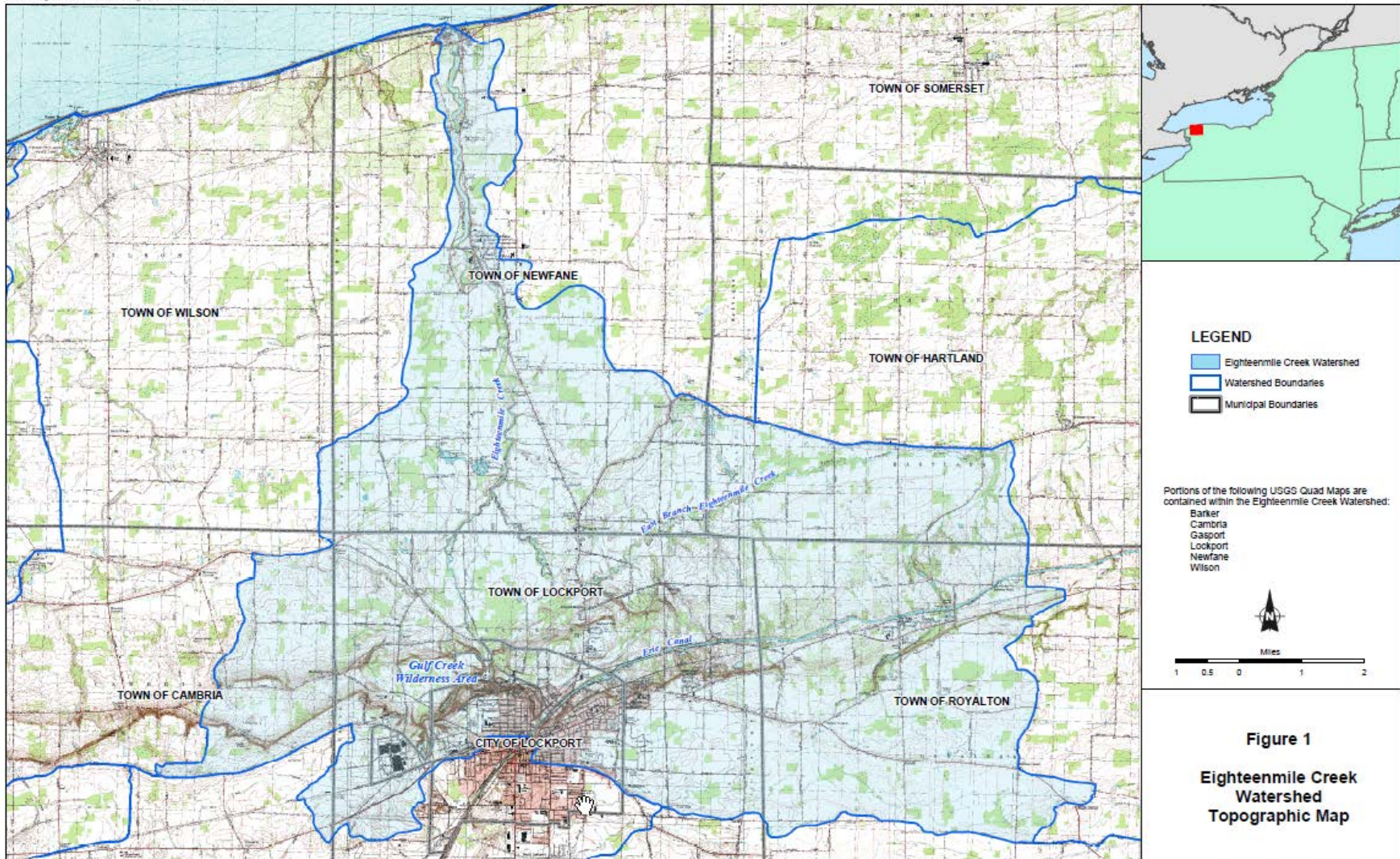


Figure 4. Eighteenmile Creek Watershed



Sampling of 18 Mile Creek  
August 31, 2011

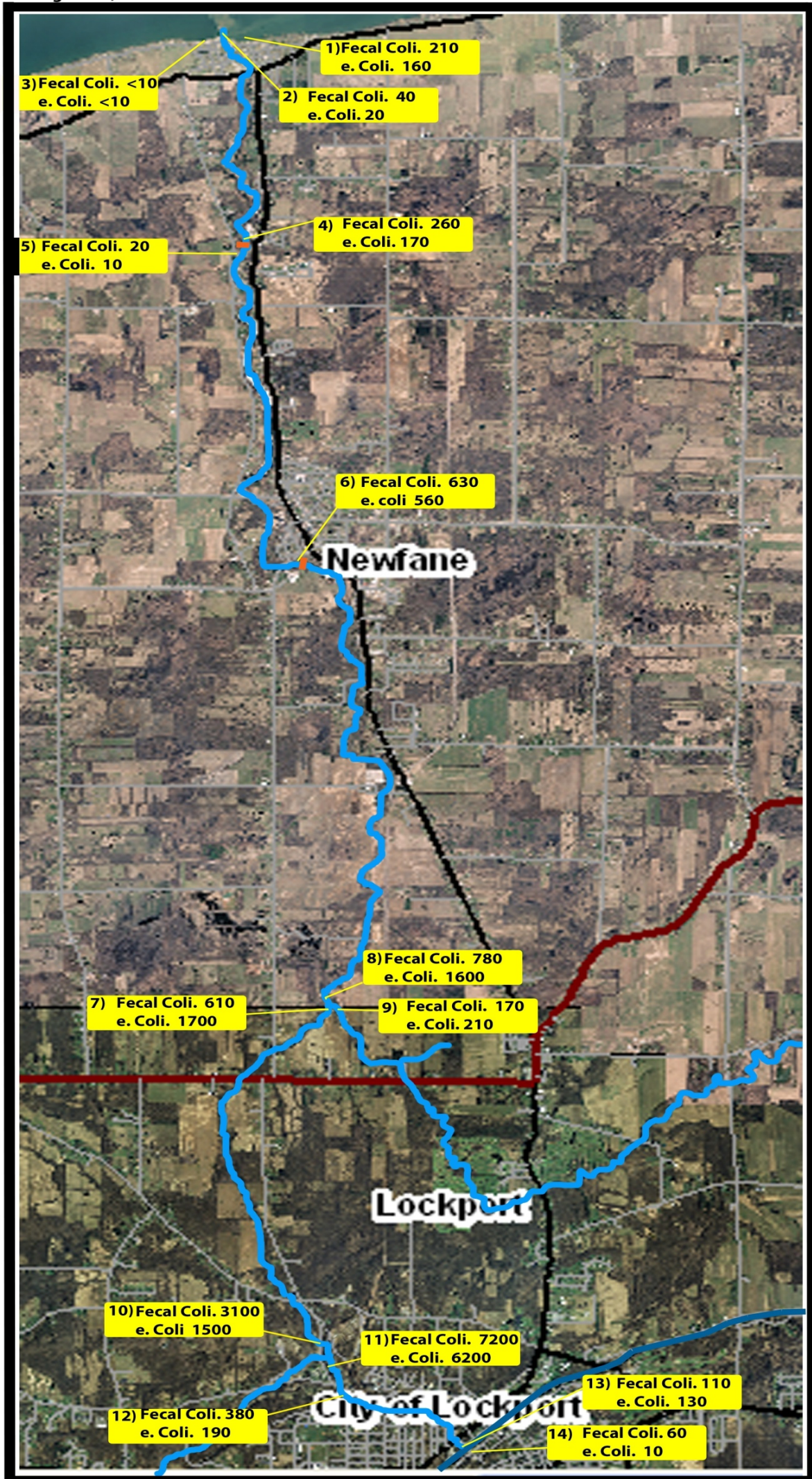


Figure 5. Eighteenmile Creek Sample Points Aug 31, 2011.



Sampling of 18 Mile Creek  
October 20, 2011

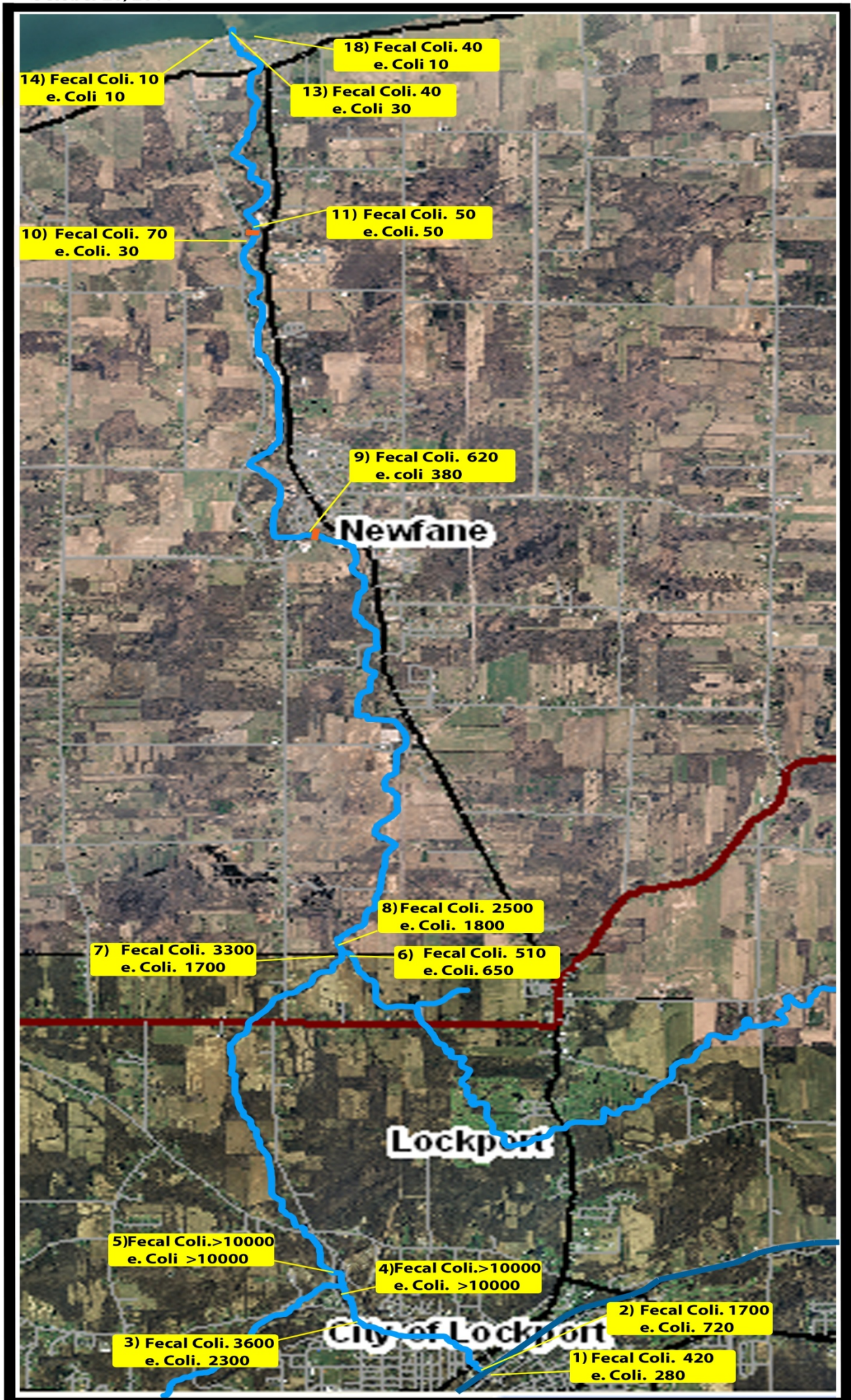


Figure 6. Eighteenmile Creek Sample Points Oct 20, 2011.



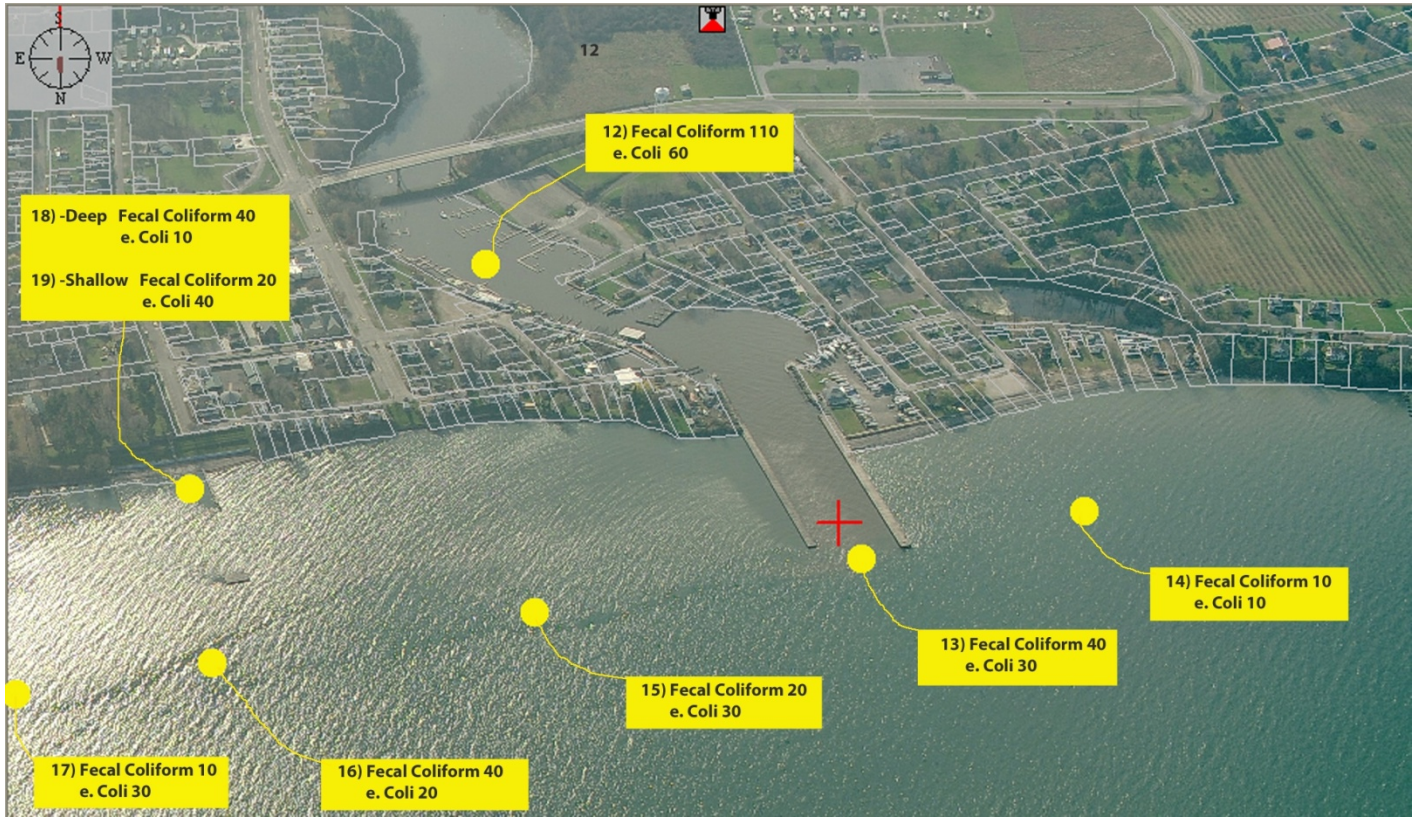
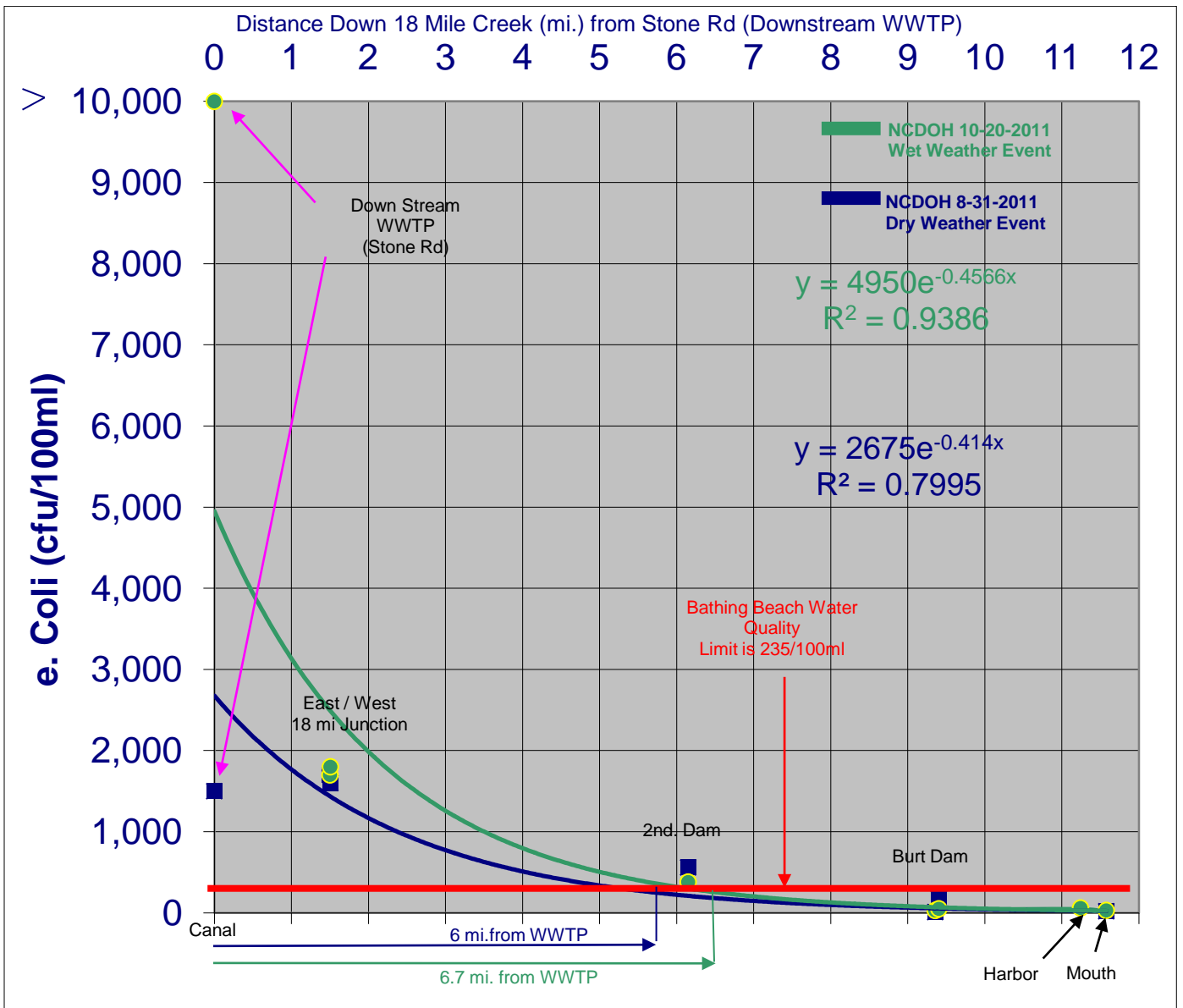


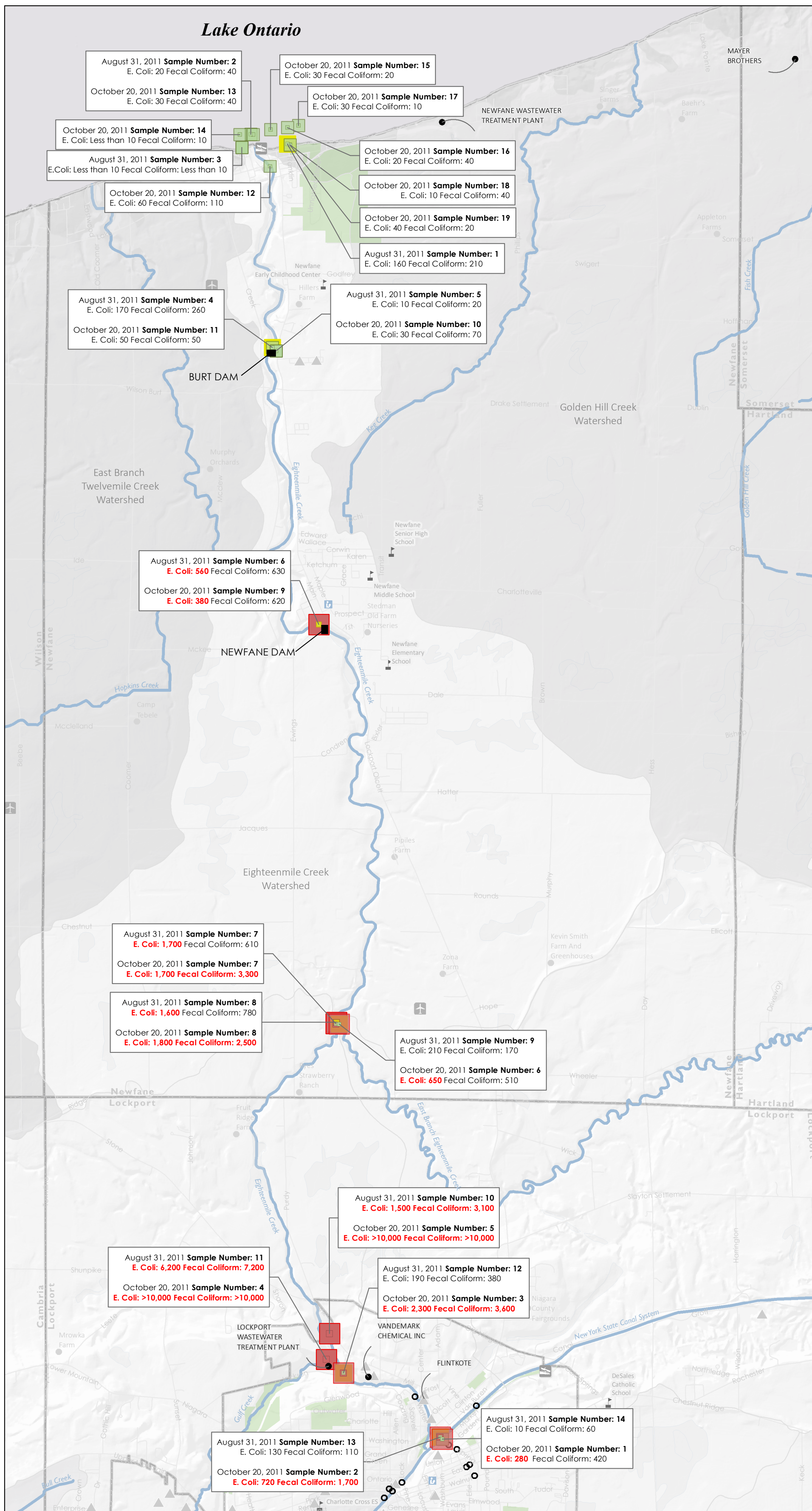
Figure 7. Mouth of Eighteenmile Creek/Lake Ontario Sample Points Oct 20, 2011.



Graph 2. Water Quality Parameter Results for Watershed Points (August 31, 2011 & October 20, 2011).



# Niagara County Environmental Health Eighteenmile Creek Water Quality Parameter Results



## SAMPLING

### Fecal Coliform (CFU/100 ml)

- 10 - 620
- 621 - 999
- 1,000 - Greater than 10,000

### e.Coli (CFU/100 ml)

- Less than 10 - 100
- 101 - 234
- 235 - 6,200

## KEY

- 📖 Library
- 🎓 School (K-12)
- NYSDEC State Pollutant Discharge Elimination System (SPDES)
- 🚤 Boat Launch/Marina
- ⦿ Combined Sewer Overflow (CSO)
- ▲ NYSDEC Remediation Sites
- ✈ Airport
- 🌊 Stream/Creek (USGS NHD)
- 🛣 Street (NYS Street Centerline)
- 🌿 NYSDEC Freshwater Wetland (2014)
- 🌳 Park
- 🏠 Municipality

### Data Sources:

- Park, Municipal Boundary, Library, School, Airfield: Niagara County Office of Real Property (2014)
- SPDES, Wetlands, Marina, CSO, Remedial Sites: NYSDEC (2015)
- Streets: NYS GIS Program Office (2014)
- Stream/Creeks: USGS NHD (2015)
- Sampling Data: Niagara County Environmental Health Department (2011)