

Big Stream Fact Sheet

Big Stream flows into the west shore of Seneca Lake at Glenora Point. Its watershed is dominated by agriculture, though it passes through Dundee and receives effluent from the waste water treatment plant (WWTP) that is southeast of the village. Big Stream has a relatively large watershed area and makes up approximately 7% of the inflow to Seneca Lake. It is classified by the DEC as a “Class C” fishing stream.



SLPWA has sampled and tested Big Stream during 2014 and 2015 at the five locations shown on the map (CSCS, CC14A, UDWP, BSDG and BSGP). The location, just upstream of the Dundee WWPT (identified as UDWP), was added in 2015 to investigate the impact of that point source.

Results

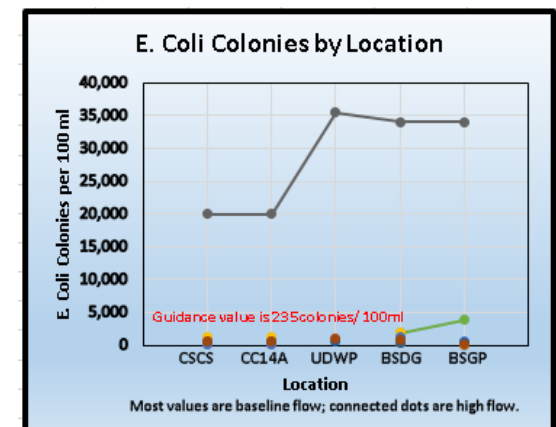
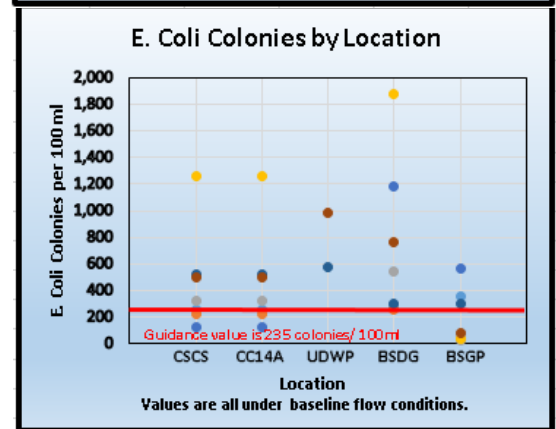
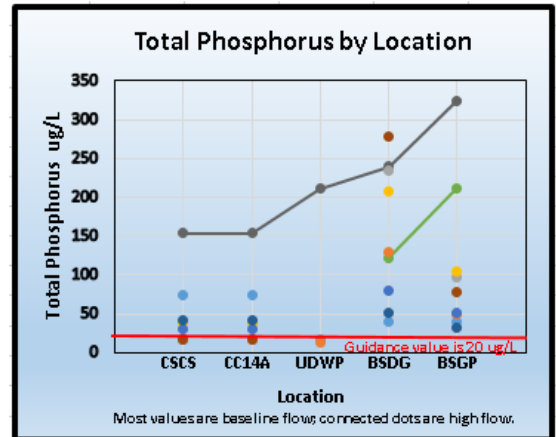
Results for phosphorus (a plant and algae fertilizer) and E. coli bacteria (indicator of human and animal wastes) are the most concerning of the attributes tested. The graphs show the individual values for phosphorus and E. coli from all samples. Note that phosphorus levels during base flow conditions are reasonably low for the three locations upstream of the WWTP, and rise considerably (~5X) just downstream of the plant. The samples from high flow periods show large increases of phosphorus, likely due to agricultural field run-off. Phosphorus as a nutrient source in water bodies is highly linked to weed and algae growth. 2015 saw Seneca Lakes first confirmed toxic algae blooms (HABS). HABS were reported along the shore north, south and east of the mouth of Big Stream.

E. coli (that bacteria which is found in the intestines of humans and animals) is not regulated in Class C streams. E.coli results are high for Big Stream under normal flow conditions. Most were mostly above the guidance values for an A Class water body, and often several multiples of that level. Those values are seen in the graph on the right.

During one of the high flow conditions the E.coli levels jumped to dramatically high levels (100X+ the guidance values!), again likely due to run-off from agriculture operations.

The very high levels that are seen in the highest of flow conditions pollute Seneca Lake (a "Class A" drinking water supply), with this dangerous bacteria. This data does not indicate the waste water treatment facility as a significant contributor to the high bacteria levels.

Actions to address these issues should occur at the community and state level. Upgrades or replacement of the WWTP can address the high phosphorus output. Improvement in "best practices" and/or regulatory controls on agricultural practices can have impact on the dramatic run-off effects seen for both phosphorus and E.coli levels.



Big Stream Data

Location Code	GPS Coordinates	Site Name	Team Contact	Sampling Date	Type of Event	Water Temperature (degrees C)	pH	Dissolved Oxygen mg/L	Chloride mg/L	Soluble Reactive Phosphorus ug/L	Total Phosphorus (ug/L)	Nitrate-Nitrite Nitrogen (mg/L)	Kjeldahl Total Nitrogen (mg/L)	Specific Conduct (Ms/cm)	Coliform (Col/100 ml)	E.coli (Col/100 ml)	Turbidity (NTU)	Hardness Mg/L as CaCo3	Total Suspended Solids (ml/L)	
Guidance Values							6.5-8.5 (Classes A- C) 6.0-9.0 (Class D)		50		20	1		150-500	2400	235				
CSCS 42.4885 -77.0478	Crystal Sprgs @ Crystal Sprgs Rd.	Mary Rose	5/19/2014	BF	10.0	7.25	9.2	15.6	3.0	74.3	0.50	0.18	219.0	4,000	260					
			7/21/2014	BF	14.0	8.25	8.8	9.9	15.4*	17.4	0.14	0.45	346.0	12,000	220	6.0	182.0	3.0		
			9/8/2014	BF	13.5	8.25	8.2	11.3	18.9	16.1	0.09	0.15	366.0	11,000	320	4.3	207.0	<1.25		
			11/17/2014	BF	3.0	7.75	9.9	16.9	9.0	37.7	0.03	0.15	415.0	5,500	1,260	6.2	184.0	1.5		
			5/18/2015	BF	14.5	7.5	8.4	19.9	18.5	30.1	0.08	0.28	299.0	8,000	120	4.4	136.0	3.3		
			6/9/2015	SW			---	---	---	---	---	---	---	---	---	---	---	---	---	---
			7/13/2015	BF	15.0	7.75	8.2	24.4	43.7	41.8	0.30	0.40	332.0	27,000	520	4.6	159.0	1.8		
			8/17/2015	BF	15.0	7.75	7.6	16.2	23.3	17.0	0.11	---	351.0	9,000	500	6.2	182.0	2.8		
9/30/2015	SW	14.5	7.25	7.4	20.2	89.8	154.0	1.29	1.09	237.0	100,000	20,000	38.0	95.5	33.0					
CC14A 42.5277 -77.0021	Chubb Creek @ 14A	Mary Rose	5/19/2014	BF	10.0	7.5	10.0	26.7	26.9	22.4	1.16	0.24	279.0	10,500	320					
			7/21/2014	BF	19.0	8.25	9.6	40.4	11*	9.9	0.98	0.32	420.0	9,500	400	1.5	171.0	<2.5		
			9/8/2014	BF	15.5	8.25	9.2	40.0	16.2	12.4	0.73	0.23	412.0	7,000	840	1.6	172.0	2.0		
			11/17/2014	BF	2.0	7.75	11.1	43.0	10.5	8.0	0.59	0.17	459.0	1,680	<20	1.2	176.0	<1.25		
			5/18/2015	BF	15.5	8	9.0	34.8	12.0	17.3	1.25	0.30	369.0	9,500	300	3.4	140.0	2.3		
			6/9/2015	SW			---	---	---	---	---	---	---	---	---	---	---	---	---	
			7/13/2015	BF	16.5	8.25	---	47.9	20.5	24.3	1.61	0.81	421.0	11,500	360	1.5	150.0	0.6		
			8/17/2015	BF	20.0	7.75	7.4	51.9	11.9	13.8	1.04	---	452.0	6,000	420	2.0	181.0	0.6		
9/30/2015	SW	14.5	7	7.7	27.0	95.0	210.0	1.39	1.25	237.0	100,000	27,500	100.0	77.5	54.0					
42.5178 -76.9744	Upstream of Dundee WWTP	Mary Rose	7/13/2015	BF	20.5		9.2		15.2	16.4		0.46		6,000	580	1.99				
			8/17/2015	BF	19.0		8.2		14.5	13.0			17,000	980						
			9/30/2015	SW	15.5		---		99.8	211.0			100,000	35,500						
BSDG 42.5091 -76.9628	Big Stream @ Dundee-Glenora Rd.	MaryAnn Marks	5/19/2014	BF	9.5	7.5	9.7	27.9	46.4	39.6	1.02	0.19	305	7,500	280					
			7/21/2014	BF	19.5	8.25	9.5	66.3	105*	130.0	1.43	0.53	603	8,000	260	28.6	240	37.5		
			9/8/2014	BF	15.5	8.5	9.0	72.3	214.8	235.0	2.31	0.32	625	21,000	540	8.42	253	2.0		
			11/17/2014	BF	3.5	8	11.0	75.0	186.0	208.0	2.21	0.23	675	5,000	1,880	2.16	242	<1.25		
			5/18/2015	BF	16.0	8	9.0	35.9	61.7	79.3	0.99	0.64	408	5,000	1,180	5.57	147	2.5		
			6/9/2015	SW	16.0	8	7.7	51.6	56.9	122.0	1.48	0.93	447	40,500	1,880	85.8	157	73.0		
			7/13/2015	BF	17.0	8.25	8.2	58.0	45.2	50.7	1.34	0.45	468	1,800	300	5.4	176	12.8		
			8/17/2015	BF	20.0	8.25	8.0	79.1	250.0	279.0	1.92	0.56	627	9,000	760	21.5	238	19.8		
9/30/2015	SW	16.0	7.25	7.4	28.2	98.7	240.0	1.66	1.71	274	100,000	34,000	140	96.3	105.0					
BSGP 42.49 -76.9143	Big Stream Mouth@ Glenora Pt.	MaryAnn Marks	5/19/2014	BF	9.5	7.75	10.0	27.4	40.7	39.5	1.20	0.17	299	9,500	360					
			7/21/2014	BF	20.0	8.5	9.5	63.4	48.5*	48.5	1.05	0.41	567	13,000	40	2.3	250	3.0		
			9/8/2014	BF	15.5	8.5	9.8	67.7	104.4	97.4	1.57	0.28	585	2,000	20	1.87	246	0.6		
			11/17/2014	BF	2.0	8	12.1	73.4	87.6	105.0	1.65	0.20	647	2,580	40	1.51	241	0.6		
			5/18/2015	BF	16.0	8.25	9.0	46.0	34.7	51.3	0.78	0.55	396	4,500	560	4.56	148	2.8		
			6/9/2015	SW	16.5	8.25	8.4	42.0	62.5	212.0	1.43	1.24	389	35,500	3,850	56	145	47.0		
			7/13/2015	BF	18.0	8.25	8.2	48.0	37.2	32.7	1.35	0.44	448	18,000	300	2.13	165	1.5		
			8/17/2015	BF	20.0	8.25	7.8	73.7	85.6	78.5	1.23	0.41	580	3,500	80	1.49	226	0.6		
9/30/2015	SW	15.5	7.75	7.8	31.5	91.2	325.0	2.16	2.23	300	100,000	34,000	220	108	192.0					

BF= Base Flow; SW= Storm Water