

**Maine Department of Environmental Protection  
Biological Monitoring Program  
Wetland Epiphytic Algae Aquatic Life Classification Attainment Report**

**Station Information**

<b>Station Number: W-209</b>	Trip ID: 2009-209	River Basin: St. John
Waterbody: LITTLE MADAWASKA RIVER		HUC8 Name: Aroostook
Town: New Sweden		Latitude: 47 0 43.06 N
Mitigation Monitoring Site: No		Longitude: 68 6 51.86 W

**Sample Information**

<b>Sample ID: WA-209-2009E (867)</b>	Type of Sample: PLANT RUBBINGS	Date Sampled: 7/8/2009
Bottle #: 867	Sampling Organization: BIOMONITORING UNIT	Taxonomist: ACADEMY OF NATURAL SCIENCES

**Classification Attainment**

<b>Statutory Class: A</b>	<b>Final Determination: B</b>	Date: 9/19/2019
Model Result with $P \geq 0.6$ : B	<b>Reason for Determination: Model L&amp;w</b>	
Date Last Calculated: 2/26/2019	Comments:	

**Model Probabilities**

<u>First Stage Model</u>		<u>C or Better Model</u>	
Class A: 0.01	Class C: 0.30	Class A, B, or C	1.00
Class B: 0.69	NA: 0.00	Non-Attainment	0.00
<u>B or Better Model</u>		<u>A Model</u>	
Class A or B	0.71	Class A	0.01
Class C or Non-Attainment	0.30	Class B or C or Non-Attainment	0.99

**Model Variables**

		<u>Reference Range (10th or 90th percentile value)</u>
Relative Richness of Diatoms in the Eunotiaceae Family	0.128	>0.09
Relative Density of Eutrophentic Diatoms	0.166	<0.15
Relative Richness of Oligosaprobic Diatoms	0.431	>0.37
Relative Richness of Intermediate Taxa	0.689	>0.61
Relative Richness of Sensitive Taxa	0.066	>0.13
Maine Tolerance Index Score for Wetland Epiphytic Algae	42.41	<38

**Other Variables**

	Density (cells/cm <sup>2</sup> )	Relative Density	Richness	Relative Richness	Biovolume (um <sup>3</sup> /cm <sup>2</sup> )	Relative Biovolume
Total for Sample	40,569	-	78	-	162,647,736	-
Diatom Only	18,197	-	70	-	13,013,902	-
MTI Sensitive	1,729	0.054	4	0.066	4,494,442	0.033
MTI Intermediate	26,232	0.820	42	0.689	131,210,591	0.954
MTI Eurytopic	4,024	0.126	15	0.246	1,799,896	0.013
Ratio of MTI:						
Sensitive to Eurytopic	0.430	0.430	0.267	0.267	2.497	2.497

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**Water Chemistry**

**Sample Date:** 7/8/2009 2:45:00 AM

Collection Method	Parameter	Value	Units	Qualifier
Grab Sample	Chloride	1	mg/l	
Grab Sample	Chlorophyll A	0.0078	mg/l	
Grab Sample	Chlorophyll A - Phaeophytin	0.0077	mg/l	
Grab Sample	Dissolved Organic Carbon	9.8	mg/l	
Grab Sample	Nitrate + Nitrite As Nitrogen	0.01	mg/l	
Grab Sample	Orthophosphate As Phosphorus	2	ug/l	
Grab Sample	pH	7.4		
Grab Sample	Silica	2.9	mg/l	
Grab Sample	Silicon	1.3	mg/l	
Grab Sample	Specific Conductance	72.7	umhos/cm	
Grab Sample	Total Alkalinity	34	mg/l	
Grab Sample	Total Kjeldahl Nitrogen (organic And Nh3) As Nitrogen	0.5	mg/l	
Grab Sample	Total Phosphorus Mixed Forms (po4 And Organic) As Phosphorus	0.023	mg/l	
Grab Sample	True Color	60	unit	
In-situ	Dissolved Oxygen	10	mg/l	
In-situ	pH	7.03		
In-situ	Specific Conductance	68	us/cm	
In-situ	Temperature	20.6	deg c	

**Landcover Summary - 2004 Data**

Total Area (ac)	79092	High Int. Dev. %	0.0	Water %	2.1	Non-vegetated %	0.6
		Med Int. Dev. %	0.0	Wetland %	7.1	Tilled Agriculture %	1.8
		Low Int. Dev. %	1.3	Upland Woody %	84.8	Grassland %	2.2
		Development %	1.3	Natural %	92.3	Human Altered %	5.5
						Impervious %	0.3
Total Land (ac)	77400	High Int. Dev. %	0.0	Water %	N/A	Non-vegetated %	N/A
		Med Int. Dev. %	0.0	Wetland %	7.2	Tilled Agriculture %	1.9
		Low Int. Dev. %	1.3	Upland Woody %	86.6	Grassland %	2.2
		Development %	1.4	Natural %	94.4	Human Altered %	5.6
						Impervious %	0.3

**Summary of Habitat Characteristics**

Human Disturbance

Total Score:	5
Hydrologic Modifications to Wetland:	2
Vegetative Modifications to Wetland:	0
Evidence of Chemical Pollutants:	0
Impervious Surface in Watershed:	2
Potential for NPS Pollution:	1

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**Summary of Habitat Characteristics**

Dominant Plant Species: SEDGES, ELODEA, POTOMOGETON, SPARGANIUM

Additional Plant Community Observations:

Habitat Classification:  
AQUATIC MACROPHYTE BED

Substrate Classification:  
CLAY SUBSTRATE

Visible Flow: Rain In Previous 24 Hours: Unknown

Sample Comments: CREEK CHUB, BLACK-NOSED DACE AND COMMON SHINER CAUGHT IN NET IN SEDGES AT EDGE

**Additional Summary Variables**

	<b>Density (cells/cm<sup>2</sup>)</b>	<b>Relative Density</b>	<b>Richness</b>	<b>Relative Richness</b>	<b>Biovolume (um<sup>3</sup>/cm<sup>2</sup>)</b>	<b>Relative Biovolume</b>
Diatom Growth Forms and Motility:						
Unattached	1,516	0.083	6	0.086	1,405,878	0.108
Variable	2,214	0.122	10	0.143	332,484	0.026
Erect	5,095	0.280	14	0.200	8,254,160	0.634
Stalked	2,790	0.153	12	0.171	989,475	0.076
Prostrate	6,581	0.362	28	0.400	2,031,906	0.156
Motile	2,517	0.138	22	0.314	1,746,205	0.134



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**Bottle # :** 867

**Waterbody:** Little Madawaska River - W-209

**Town:** New Sweden

**Sample ID:** WA-209-2009E (867)

**Station Number:** W-209

Taxa Name	Group	Density (cells/ cm <sup>2</sup> )	Relative Density		Biovolume (um <sup>3</sup> / cm <sup>2</sup> )	Relative Biovolume	Form	Mot- ility	van Dam Index Values							Maine Epi Tolerance		
			All	Rank Diatoms					pH	NO2	S	T	M	Sal				
<i>Leptolyngbya</i>	Filamentous Cyanobacteria	6,264	15.441%	1		20,427	0.013%											
<i>Aulacoseira alpigena</i>	Centric Diatom	121	0.299%	46	0.7%	8,700	0.005%	U	N	2	1	1	1	1	1	1		24.8-S
<i>Aulacoseira granulata</i>	Centric Diatom	91	0.224%	53	0.5%	41,126	0.025%	U	N	4	2	3	2	5	1	2		45.6-I
<i>Cyclotella bodanica</i> var. <i>lemanica</i>	Centric Diatom	152	0.374%	38	0.8%	820,000	0.504%	U	N	3	1	1	1	1		1		28.6-I
<i>Discostella stelligera</i>	Centric Diatom	61	0.150%	76	0.3%	13,740	0.008%	U	N							1	2	31.3-I
<i>Asterionella formosa</i>	Pennate Diatom	61	0.150%	76	0.3%	17,817	0.011%	U	N	4	2	2	2	4	1	2		37.1-I
<i>Fragilaria gracilis</i>	Pennate Diatom	455	1.121%	19	2.5%	16,862	0.010%	V	N	3	1	1	1	2		2		39.1-I
<i>Fragilaria mesolepta</i>	Pennate Diatom	455	1.121%	19	2.5%	156,836	0.096%	V	N	4						2		72-E
<i>Fragilaria crotonensis</i>	Pennate Diatom	91	0.224%	53	0.5%	30,505	0.019%	V	N	4	2	2	2	3	1	2		51.4-I
<i>Fragilaria neoproducta</i>	Pennate Diatom	121	0.299%	46	0.7%	24,747	0.015%	V	N		1	1	1			1		
<i>Fragilaria vaucheriae</i>	Pennate Diatom	212	0.523%	30	1.2%	38,182	0.023%	V	N	4	2	3	3	5	3	2		51.3-I
<i>Fragilaria rhabdosoma</i>	Pennate Diatom	30	0.075%	78	0.2%	10,163	0.006%	V	N	4	1	1	2	5	2	2		
<i>Fragilaria sepes</i>	Pennate Diatom	546	1.346%	15	3.0%	16,287	0.010%	V	N	3	1	1	1	2	2	1		38.7-I
<i>Pseudostaurosira brevistriata</i>	Pennate Diatom	121	0.299%	46	0.7%	17,306	0.011%	E	N	4	1	1	1	7	2	2		34.9-I
<i>Staurosira construens</i>	Pennate Diatom	61	0.150%	76	0.3%	12,107	0.007%	V	N	4	1	1	2	4	1	2		44-I
<i>Staurosira construens</i> var. <i>venter</i>	Pennate Diatom	61	0.150%	76	0.3%	5,487	0.003%	V	N	4	2	1	2	4	1	2		32.4-I
<i>Staurosirella pinnata</i>	Pennate Diatom	182	0.449%	33	1.0%	21,309	0.013%	V	N	4	2	1	2	7	3	2		48.5-I
<i>Synedra rumpens</i>	Pennate Diatom	152	0.374%	38	0.8%	16,683	0.010%	E	N	3				2		2		34.9-I
<i>Ulnaria acus</i>	Pennate Diatom	212	0.523%	30	1.2%	236,023	0.145%	E	N	4	2	2	3	5	2	2		57.4-E
<i>Ulnaria delicatissima</i>	Pennate Diatom	152	0.374%	38	0.8%	150,051	0.092%	E	N	3				3	1	2		52.2-I
<i>Tabellaria flocculosa</i>	Pennate Diatom	1,031	2.542%	9	5.7%	504,494	0.310%	U	N	2	1	1	2	3	3	1		24.7-S
<i>Achnanthydium minutissimum</i>	Pennate Diatom	3,427	8.447%	4	18.8%	92,784	0.057%	P	N	6	2	1	2	7	3	2		49.5-I
<i>Achnanthydium thienemannii</i>	Pennate Diatom	303	0.748%	24	1.7%	34,210	0.021%	P	N									
<i>Rossethidium linearis</i>	Pennate Diatom	91	0.224%	53	0.5%	32,055	0.020%	P	V	3								32.1-I
<i>Rossethidium pusillum</i>	Pennate Diatom	91	0.224%	53	0.5%	7,532	0.005%	P	V	3	1	1	1	1		2		47.7-I
<i>Cocconeis placentula</i>	Pennate Diatom	91	0.224%	53	0.5%	51,024	0.031%	P	N	4	2	3	2	5	2	2		67.9-E
<i>Cocconeis placentula</i> var. <i>lineata</i>	Pennate Diatom	61	0.150%	76	0.3%	68,096	0.042%	P	N	4	2	3	2	5	2	2		53.6-E
<i>Eunotia bilunaris</i>	Pennate Diatom	1,365	3.364%	6	7.5%	392,048	0.241%	E	V	6	2	2	2	7	3	2		36.1-I
<i>Eunotia bilunaris</i> var. <i>linearis</i>	Pennate Diatom	243	0.598%	26	1.3%	278,149	0.171%	E	V	2						2		
<i>Eunotia diodon</i>	Pennate Diatom	61	0.150%	76	0.3%	70,966	0.044%	E	V	2	1	1	1	1	4	1		
<i>Eunotia faba</i>	Pennate Diatom	121	0.299%	46	0.7%	67,934	0.042%	E	V	2	1	1	1	2	2	1		
<i>Eunotia flexuosa</i>	Pennate Diatom	1,334	3.289%	7	7.3%	2,680,841	1.648%	E	V	2	1	1	1	2	3	1		27.2-I
<i>Eunotia formica</i>	Pennate Diatom	516	1.271%	17	2.8%	3,959,517	2.434%	E	V	2	1	1	1	3	2	2		26.5-S
<i>Eunotia incisa</i>	Pennate Diatom	394	0.972%	20	2.2%	114,623	0.070%	E	V	2	1	1	1	1	2	1		28-I
<i>Eunotia minor</i>	Pennate Diatom	61	0.150%	76	0.3%	17,945	0.011%	E	V	2				1	4	1		38-I
<i>Eunotia naegelii</i>	Pennate Diatom	303	0.748%	24	1.7%	230,342	0.142%	E	V	2	1	1	1	1	3	1		28.5-I
<i>Eunotia rhomboidea</i>	Pennate Diatom	61	0.150%	76	0.3%	21,731	0.013%	E	V	2	1	1	1	1	3	1		19.8-S
<i>Encyonema silesiacum</i>	Pennate Diatom	303	0.748%	24	1.7%	81,761	0.050%	S	V	3	2	3	3	7	1	2		45.6-I
<i>Encyonopsis subminuta</i>	Pennate Diatom	121	0.299%	46	0.7%	20,542	0.013%	S	V									46.4-I
<i>Encyonopsis krammeri</i>	Pennate Diatom	61	0.150%	76	0.3%	5,070	0.003%	S	V									
<i>Amphora aequalis</i>	Pennate Diatom	61	0.150%	76	0.3%	11,476	0.007%	P	M									

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Taxa Name	Group	Density (cells/ cm <sup>2</sup> )	Relative Density			Biovolume (um <sup>3</sup> / cm <sup>2</sup> )	Relative Biovolume	Form	Mot- ility	van Dam Index Values							Maine Epi Tolerance
			All	Rank	Diatoms					pH	NO2	S	T	M	Sal		
<i>Amphora copulata</i>	Pennate Diatom	61	0.150%	76	0.3%	41,462	0.025%	P	M	4	2	2	2	5	1	2	52.4-I
<i>Gomphonema acuminatum</i>	Pennate Diatom	212	0.523%	30	1.2%	285,926	0.176%	S	N	4	1	2	2	5	2	2	41.4-I
<i>Gomphonema angustatum</i>	Pennate Diatom	698	1.719%	12	3.8%	184,519	0.113%	S	N	4	1	1	1	1		2	57.8-E
<i>Gomphonema gracile</i>	Pennate Diatom	243	0.598%	26	1.3%	175,889	0.108%	S	N	3	1	1	1	3	3	2	38.6-I
<i>Gomphonema parvulus</i>	Pennate Diatom	516	1.271%	17	2.8%	7,949	0.005%	S	N								69.5-E
<i>Gomphonema parvulum</i>	Pennate Diatom	121	0.299%	46	0.7%	26,905	0.017%	S	N	3	3	4	4	5	3	2	55.7-E
<i>Gomphonema longilineare</i>	Pennate Diatom	61	0.150%	76	0.3%	54,347	0.033%	S	N								
<i>Gomphonema minusculum</i>	Pennate Diatom	303	0.748%	24	1.7%	23,291	0.014%	S	N								50.7-I
<i>Gomphonema olivaceoides var. hutchinsoniana</i>	Pennate Diatom	61	0.150%	76	0.3%	4,818	0.003%	S	N								
<i>Gomphonema italicum</i>	Pennate Diatom	91	0.224%	53	0.5%	118,460	0.073%	S	N								69.7-E
<i>Amphipleura pellucida</i>	Pennate Diatom	91	0.224%	53	0.5%	58,628	0.036%	P	M	4	2	2	4	2	2	2	31-I
<i>Brachysira microcephala</i>	Pennate Diatom	182	0.449%	33	1.0%	13,003	0.008%	P	M	4	1	2	1	2	2	2	29.4-I
<i>Cavinula lapidosa</i>	Pennate Diatom	61	0.150%	76	0.3%	51,569	0.032%	P	M	2	1	1	1		4	1	
<i>Diploneis marginestriata</i>	Pennate Diatom	61	0.150%	76	0.3%	6,078	0.004%	P	M				1			1	
<i>Navicula canalis</i>	Pennate Diatom	61	0.150%	76	0.3%	11,467	0.007%	P	M	4					5	2	
<i>Navicula cryptocephala</i>	Pennate Diatom	546	1.346%	15	3.0%	160,585	0.099%	P	M	4	2	3	3	7	2	2	66.2-E
<i>Navicula radiosa</i>	Pennate Diatom	61	0.150%	76	0.3%	42,065	0.026%	P	M	3	2	2	2	4	3	2	49-I
<i>Navicula rhynchocephala</i>	Pennate Diatom	121	0.299%	46	0.7%	36,052	0.022%	P	M	4	2	4	2	7	2	2	54.4-E
<i>Navicula rostellata</i>	Pennate Diatom	182	0.449%	33	1.0%	108,887	0.067%	P	M	4	2	2	2	5	2	2	61.2-E
<i>Navicula viridulacalcis</i>	Pennate Diatom	61	0.150%	76	0.3%	270,105	0.166%	P	M								56.1-E
<i>Neidium affine</i>	Pennate Diatom	61	0.150%	76	0.3%	119,470	0.073%	P	M	3	1	1	1	4	1	2	
<i>Pinnularia nodosa</i>	Pennate Diatom	61	0.150%	76	0.3%	117,913	0.072%	P	M	2	1	1	1	1	3	1	32.9-I
<i>Sellaphora pupula</i>	Pennate Diatom	152	0.374%	38	0.8%	62,693	0.039%	P	M	3	2	3	3	4	2	2	51.3-I
<i>Stauroneis anceps</i>	Pennate Diatom	30	0.075%	78	0.2%	46,568	0.029%	P	M	3	2	2	2	4	2	2	29.2-I
<i>Stauroneis smithii</i>	Pennate Diatom	61	0.150%	76	0.3%	11,804	0.007%	P	M	4	2	1	2	7	3	2	
<i>Eolimna minima</i>	Pennate Diatom	61	0.150%	76	0.3%	2,575	0.002%	P	M	4	3	4	4	5	3	2	53.2-E
<i>Nitzschia incognita</i>	Pennate Diatom	152	0.374%	38	0.8%	9,888	0.006%	P	H							4	48.5-I
<i>Nitzschia paleacea</i>	Pennate Diatom	61	0.150%	76	0.3%	2,560	0.002%	P	H	4	4	3	3	5	2	2	49-I
<i>Nitzschia recta</i>	Pennate Diatom	212	0.523%	30	1.2%	350,372	0.215%	P	H	4	2	2	2	7	1	2	54-E
<i>Nitzschia subtilis</i>	Pennate Diatom	121	0.299%	46	0.7%	210,987	0.130%	P	H	2						2	51.4-I
<i>Dinobryon sertularia</i>	Chrysophyte	2,088	5.147%	5		409,931	0.252%										37.7-I
<i>Gloeocystis</i>	Colonial Green	4,922	12.132%	3		922,234	0.567%										41.6-I
<i>Scenedesmus acutus</i>	Colonial Green	1,193	2.941%	8		39,462	0.024%										44.8-I
<i>Scenedesmus quadricauda</i>	Colonial Green	597	1.471%	13		21,510	0.013%										58-E
<i>Oedogonium</i>	Filamentous Green	5,668	13.971%	2		123,665,247	76.033%										38.2-I
<i>Chlamydomonas</i>	Unicellular Green	746	1.838%	11		194,910	0.120%										43.4-I
<i>Zygnema</i>	Filamentous Green	895	2.206%	10		24,360,113	14.977%										