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

Station Information

Station Number: W-244 Trip ID: 2012-244 River Basin: Kennebec
Waterbody: APPLE VALLEY LAKE HUC8 Name: Lower Kennebec
Town: Winthrop Latitude: 44 17 41.15 N
Mitigation Monitoring Site: No Longitude: 70 1 13.76 W

Sample Information

Sample ID: WA-244-2012E (1216) Type of Sample: PLANT RUBBINGS Date Sampled: 6/20/2012
Bottle # : 1216 Sampling Organization: BIOMONITORING UNIT Taxonomist: ACADEMY OF NATURAL SCIENCES

Classification Attainment

Statutory Class: GPA **Final Determination: A** Date: 9/20/2019
Model Result with P≥0.6: A **Reason for Determination: Model L&w**
Date Last Calculated: 2/27/2019 Comments:

Model Probabilities

First Stage Model
Class A: 0.98 Class C: 0.00
Class B: 0.02 NA: 0.00

B or Better Model
Class A or B 1.00
Class C or Non-Attainment 0.00

C or Better Model
Class A, B, or C 1.00
Non-Attainment 0.00

A Model
Class A 0.98
Class B or C or Non-Attainment 0.02

Model Variables

		Reference Range (10th or 90th percentile value)
Relative Richness of Diatoms in the Eunotiaceae Family	0.120	>0.09
Relative Density of Eutrophentic Diatoms	0.017	<0.15
Relative Richness of Oligosaprobic Diatoms	0.483	>0.37
Relative Richness of Intermediate Taxa	0.738	>0.61
Relative Richness of Sensitive Taxa	0.214	>0.13
Maine Tolerance Index Score for Wetland Epiphytic Algae	34.78	<38

Other Variables

	Density (cells/cm^2)	Relative Density	Richness	Relative Richness	Biovolume (um^3/cm^2)	Relative Biovolume
Total for Sample	44,596	-	50	-	552,425,622	-
Diatom Only	10,741	-	36	-	12,812,583	-
MTI Sensitive	8,917	0.268	9	0.214	72,619,757	0.195
MTI Intermediate	24,237	0.729	31	0.738	299,183,403	0.805
MTI Eurytopic	72	0.002	2	0.048	68,007	0.000
Ratio of MTI:						
Sensitive to Eurytopic	124.518	124.518	4.500	4.500	1,067.835	1067.835

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Water Chemistry

Sample Date: 6/20/2012 9:15:00 AM

Collection Method	Parameter	Value	Units	Qualifier
Grab Sample	Chloride	1	mg/l	
Grab Sample	Chlorophyll A	0.0033	mg/l	
Grab Sample	Chlorophyll A - Phaeophytin	0.0036	mg/l	
Grab Sample	Dissolved Organic Carbon	3.4	mg/l	
Grab Sample	Nitrate + Nitrite As Nitrogen		mg/l	U
Grab Sample	Orthophosphate As Phosphorus	3	ug/l	
Grab Sample	pH	7.2		
Grab Sample	Silica	3.4	mg/l	
Grab Sample	Silicon	1.6	mg/l	
Grab Sample	Specific Conductance	32.3	umhos/cm	
Grab Sample	Total Alkalinity	11	mg/l	
Grab Sample	Total Kjeldahl Nitrogen (organic And Nh3) As Nitrogen	0.3	mg/l	
Grab Sample	Total Phosphorus Mixed Forms (po4 And Organic) As Phosphorus	0.013	mg/l	
Grab Sample	True Color	23	unit	
In-situ	Dissolved Oxygen	8.1	mg/l	
In-situ	pH	6.37		
In-situ	Specific Conductance	28	us/cm	
In-situ	Temperature	22.6	deg c	

Landcover Summary - 2004 Data

Total Area (ac)	1015	High Int. Dev. %	0.0	Water %	5.9	Non-vegetated %	0.0
		Med Int. Dev. %	0.2	Wetland %	2.9	Tilled Agriculture %	0.0
		Low Int. Dev. %	0.7	Upland Woody %	89.2	Grassland %	1.1
		Development %	0.8	Natural %	92.2	Human Altered %	1.9
						Impervious %	0.9
Total Land (ac)	955	High Int. Dev. %	0.0	Water %	N/A	Non-vegetated %	N/A
		Med Int. Dev. %	0.2	Wetland %	3.1	Tilled Agriculture %	0.0
		Low Int. Dev. %	0.7	Upland Woody %	94.8	Grassland %	1.2
		Development %	0.9	Natural %	98.0	Human Altered %	2.0
						Impervious %	0.9

Summary of Habitat Characteristics

Human Disturbance

Total Score:	10
Hydrologic Modifications to Wetland:	2
Vegetative Modifications to Wetland:	4
Evidence of Chemical Pollutants:	0
Impervious Surface in Watershed:	2
Potential for NPS Pollution:	2

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Summary of Habitat Characteristics

Dominant Plant Species: PICKEREL WEED (PONTEDERIA CORDATA), WHITE WATERLILY (NYMPHAEA ODORATA), WATERSHIELD (BRASENIA SCHREBERI), BLADDERWORT (UTRICULARIA SP.), SPARGANIUM SP., POTAMOGETON SP., YELLOW WATER LILY (NUPHAR VARIEGATA).

Additional Plant Community Observations:

Habitat Classification:	Substrate Classification:
AQUATIC MACROPHYTE BED	SILT/MUCK SUBSTRATE
EMERGENT NON-PERSISTENT VEGETATION	DETRITUS SUBSTRATE

Visible Flow: Rain In Previous 24 Hours: Unknown

Sample Comments: BEAVER DAM CURRENTLY IMPOUNDS LAKE; HISTORIC DAM WASHED OUT IN 1994 - SITE IS RECOVERING. PEAT MATS WASHED OUT AND REMOVED INTENTIONALLY.

Additional Summary Variables

	Density (cells/cm^2)	Relative Density	Richness	Relative Richness	Biovolume (um^3/cm^2)	Relative Biovolume
Diatom Growth Forms and Motility:						
Unattached	5,496	0.512	6	0.167	8,452,214	0.660
Variable	519	0.048	4	0.111	153,080	0.012
Erect	1,361	0.127	8	0.222	2,922,859	0.228
Stalked	537	0.050	7	0.194	413,383	0.032
Prostrate	2,829	0.263	11	0.306	871,048	0.068
Motile	1,056	0.098	9	0.250	702,143	0.055

Additional Summary Variables

Station Number: W-244 Waterbody: APPLE VALLEY LAKE Town: Winthrop

Sample ID: WA-244-2012E (1216) Bottle # : 1216 Calculated: 2/27/2019

	Density (cells/cm^2)	Relative Density	Richness	Relative Richness	Biovolume (um^3/cm^2)	Relative Biovolume
Taxa Group:						
Pennate Diatom	10,706	0.240	35	0.700	12,799,908	0.023
Centric Diatom	36	0.001	1	0.020	12,675	0.000
Cyanobacteria	9,015	0.202	2	0.040	164,405	0.000
Filamentous Cyanobacteria	9,015	0.202	2	0.040	164,405	0.000
Green Algae	24,840	0.557	12	0.240	539,448,634	0.977
Colonial Green	2,685	0.060	1	0.020	411,799	0.001
Filamentous Green	21,675	0.486	8	0.160	474,819,957	0.860
Unicellular Green	0	0.000	0	0.000	0	0.000
Desmid	480	0.011	3	0.060	64,216,878	0.116
Red Algae	0	0.000	0	0.000	0	0.000
Euglenoid	0	0.000	0	0.000	0	0.000
Chrysophyte	0	0.000	0	0.000	0	0.000
Cryptophyte	0	0.000	0	0.000	0	0.000
Dinoflagellate	0	0.000	0	0.000	0	0.000
Yellow Green Algae	0	0.000	0	0.000	0	0.000
Haptophyte	0	0.000	0	0.000	0	0.000
Raphidophyte	0	0.000	0	0.000	0	0.000
Synurophyte	0	0.000	0	0.000	0	0.000
Diatom Autecology Groups:						
High Oxygen	8,360	0.862	18	0.621	11,749,497	0.940
Low Oxygen	36	0.004	1	0.034	7,898	0.001
N-Autotrophic	7,913	0.826	18	0.667	12,117,689	0.981
N-Heterotrophic	36	0.004	1	0.037	7,898	0.001
Oligosaprobic	2,453	0.253	14	0.483	3,636,522	0.291
Polysaprobic	358	0.037	2	0.069	121,489	0.010
Oligotrophentic	1,164	0.141	5	0.200	751,730	0.062
Eutrophentic	143	0.017	3	0.120	154,392	0.013
Acidobiontic	107	0.010	1	0.030	234,853	0.018
Brackish	18	0.002	1	0.030	1,167	0.000
Dry Condition	0	0.000	0	0.000	0	0.000

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Bottle # : 1216 **Waterbody:** Apple Valley Lake - W-244 **Town:** Winthrop

Sample ID: WA-244-2012E (1216) **Station Number:** W-244

Taxa Name	Group	Density (cells/ cm^2)	Relative Density			Biovolume (um^3/ cm^2)	Relative Biovolume	van Dam Index Values								Maine Epi Tolerance
			All	Rank	Diatoms			Form	Mot-ility	pH	N	O2	S	T	M	Sal	
Heteroleibleinia	Filamentous Cyanobacteria	6,330	14.194%	2		110,225	0.020%										
Hapalosiphon	Filamentous Cyanobacteria	2,685	6.022%	4		54,180	0.010%										25.2-S
Aulacoseira ambigua	Centric Diatom	36	0.080%	46	0.3%	12,675	0.002%	U	N	4	2	3	2	5	1	2	19.3-S
Asterionella formosa	Pennate Diatom	36	0.080%	46	0.3%	10,853	0.002%	U	N	4	2	2	2	4	1	2	37.1-I
Fragilaria gracilis	Pennate Diatom	215	0.482%	21	2.0%	17,490	0.003%	V	N	3	1	1	1	2		2	39.1-I
Fragilaria sepes	Pennate Diatom	161	0.361%	23	1.5%	123,431	0.022%	V	N	3	1	1	1	2	2	1	38.7-I
Staurosira construens var. venter	Pennate Diatom	107	0.241%	28	1.0%	8,497	0.002%	V	N	4	2	1	2	4	1	2	32.4-I
Staurosirella pinnata	Pennate Diatom	36	0.080%	46	0.3%	3,663	0.001%	V	N	4	2	1	2	7	3	2	48.5-I
Synedra rumpens	Pennate Diatom	36	0.080%	46	0.3%	4,755	0.001%	E	N	3				2		2	34.9-I
Ulnaria ulna	Pennate Diatom	322	0.723%	16	3.0%	113,591	0.021%	E	N	4	2	3	4		2	2	44.5-I
Tabellaria fenestrata	Pennate Diatom	18	0.040%	50	0.2%	100,976	0.018%	U	N	3	1	1	2	2		1	29.1-I
Tabellaria flocculosa	Pennate Diatom	5,156	11.561%	4	48.0%	8,211,061	1.486%	U	N	2	1	1	2	3	3	1	24.7-S
Tabellaria ventricosa	Pennate Diatom	36	0.080%	46	0.3%	21,808	0.004%	U	N								19.7-S
Tabellaria flocculosa (strain IV)	Pennate Diatom	215	0.482%	21	2.0%	94,840	0.017%	U	N	2	1	1	2	3	3	1	34.6-I
Achnanthidium minutissimum	Pennate Diatom	1,020	2.288%	12	9.5%	35,408	0.006%	P	N	6	2	1	2	7	3	2	49.5-I
Rossithidium linearis	Pennate Diatom	752	1.686%	13	7.0%	133,496	0.024%	P	V	3							32.1-I
Eunotia bilunaris	Pennate Diatom	54	0.120%	36	0.5%	15,889	0.003%	E	V	6	2	2	2	7	3	2	36.1-I
Eunotia flexuosa	Pennate Diatom	358	0.803%	15	3.3%	2,404,457	0.435%	E	V	2	1	1	1	2	3	1	27.2-I
Eunotia implicata	Pennate Diatom	54	0.120%	36	0.5%	107,772	0.020%	E	V	2					3	1	35.7-I
Eunotia incisa	Pennate Diatom	286	0.642%	18	2.7%	98,253	0.018%	E	V	2	1	1	1	1	2	1	28-I
Eunotia naegelii	Pennate Diatom	233	0.522%	19	2.2%	146,712	0.027%	E	V	2	1	1	1	1	3	1	28.5-I
Eunotia soleirolii	Pennate Diatom	18	0.040%	50	0.2%	31,430	0.006%	E	V	3	2	1	2	1	3	1	36.7-I
Cymbella cymbiformis	Pennate Diatom	36	0.080%	46	0.3%	62,850	0.011%	S	V	3	1	1	1	2	2	2	44.7-I
Encyonema neogracile	Pennate Diatom	54	0.120%	36	0.5%	14,195	0.003%	S	V	2	1	1	1	2	3	1	18.2-S
Encyonopsis microcephala	Pennate Diatom	179	0.401%	22	1.7%	8,875	0.002%	S	V	4	1	1	1	4	3	2	30.7-I
Gomphonema acuminatum	Pennate Diatom	72	0.161%	33	0.7%	133,819	0.024%	S	N	4	1	2	2	5	2	2	41.4-I
Gomphonema gracile	Pennate Diatom	125	0.281%	25	1.2%	125,638	0.023%	S	N	3	1	1	1	3	3	2	38.6-I
Gomphonema parvulum	Pennate Diatom	36	0.080%	46	0.3%	7,898	0.001%	S	N	3	3	4	4	5	3	2	55.7-E
Gomphonema truncatum	Pennate Diatom	36	0.080%	46	0.3%	60,109	0.011%	S	N	4	1	2	2	4	2	2	54.3-E
Brachysira microcephala	Pennate Diatom	107	0.241%	28	1.0%	12,780	0.002%	P	M	4	1	2	1	2	2	2	29.4-I
Brachysira brebissonii	Pennate Diatom	519	1.164%	14	4.8%	240,482	0.044%	P	M	2	1	2	1	1	3	1	17.6-S
Frustulia crassinervia	Pennate Diatom	107	0.241%	28	1.0%	234,853	0.043%	P	M	1	1	1	1	1	3	1	17.1-S
Mayamaea agrestis	Pennate Diatom	18	0.040%	50	0.2%	618	0.000%	P	M	3					3	2	
Navicula notha	Pennate Diatom	125	0.281%	25	1.2%	37,453	0.007%	P	M								28.4-I
Pinnularia interrupta	Pennate Diatom	36	0.080%	46	0.3%	26,869	0.005%	P	M	3	1	1	1	2	3	1	22.2-S
Stauroneis gracilis	Pennate Diatom	36	0.080%	46	0.3%	119,639	0.022%	P	M	2		2	1			2	
Nitzschia gracilis	Pennate Diatom	90	0.201%	32	0.8%	28,281	0.005%	P	H	3		2	2	3	1	1	37.6-I
Nitzschia incognita	Pennate Diatom	18	0.040%	50	0.2%	1,167	0.000%	P	H							4	48.5-I
Aphanochaete repens	Filamentous Green	1,726	3.871%	8		2,195,114	0.397%										41.8-I
Gloeocystis	Colonial Green	2,685	6.022%	4		411,799	0.075%										41.6-I
Bulbochaete	Filamentous Green	2,685	6.022%	4		12,444,025	2.253%										
Oedogonium	Filamentous Green	8,152	18.280%	1		180,309,973	32.640%										38.2-I

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Bottle # : 1216 **Waterbody:** Apple Valley Lake - W-244 **Town:** Winthrop

Sample ID: WA-244-2012E (1216) **Station Number:** W-244

Taxa Name	Group	Density (cells/ cm^2)	Relative Density		Biovolume (um^3/ cm^2)	Relative Biovolume	Form	Mot-ility	van Dam Index Values							Maine Epi Tolerance
			All	Rank Diatoms					pH	N	O2	S	T	M	Sal	
Cosmarium granatum	Desmid	96	0.215%	31	405,093	0.073%										45.1-I
Cosmarium undulatum var. minutum	Desmid	288	0.645%	17	63,803,634	11.550%										26.7-S
Cosmarium candianum	Desmid	96	0.215%	31	8,151	0.001%										
Mougeotia	Filamentous Green	5,850	13.118%	3	33,335,867	6.034%										37.5-I
Spirogyra	Filamentous Green	1,055	2.366%	11	78,663,180	14.240%										39.6-I
Spirogyra 15-20µm	Filamentous Green	1,055	2.366%	11	78,663,180	14.240%										
Spirogyra >100µm	Filamentous Green	1,055	2.366%	11	78,663,180	14.240%										
Gonatozygon aculeatum	Filamentous Green	96	0.215%	31	10,545,437	1.909%										