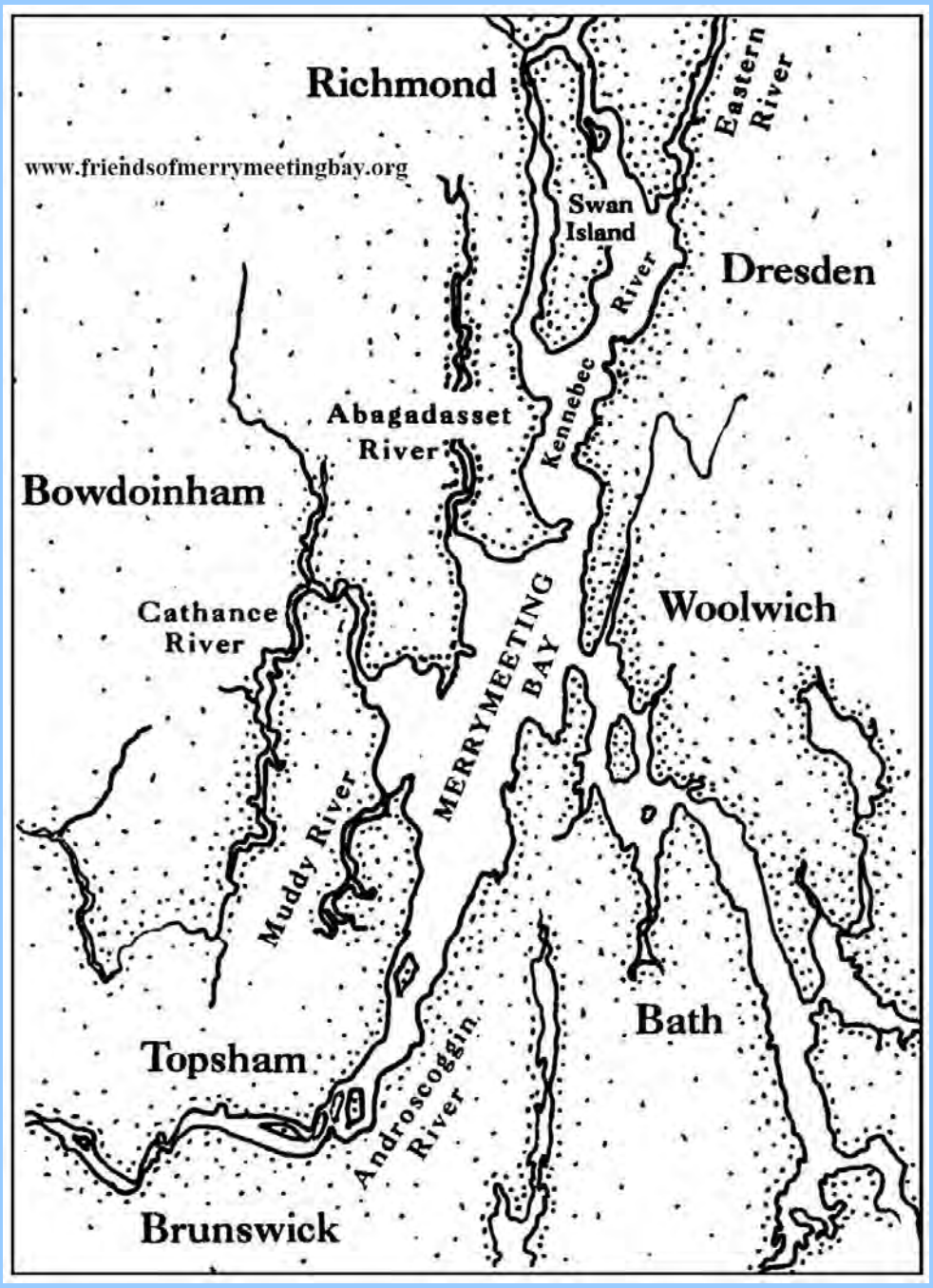
Friends of Merrymeeting Bay

DEP Triennial Review Comments

6/29/2025



The Department's own submission guidelines state:

"Maine's Water Quality Classification System is **goal-based**.

When proposing an upgrade in classification, recommend waters that either presently attain or with reasonable application of improved treatment or Best Management Practices (BMPs), could reasonably be expected to attain, the standards and criteria of a higher proposed class."

Friends of Merrymeeting Bay
P.O. Box 233, Richmond, ME 04357 www.fomb.org

6/29/25

Megan Sims
Maine Department of Environmental Protection
Water Quality Standards Coordinator
508-8776
Meagan.Sims@maine.gov

Via Email

Megan,

Please accept these comments from Friends of Merrymeeting Bay (FOMB) in regards to the 2026 Triennial Review of water quality proposals.

We support the Grow L+A nomination for upgrading the (upper) lower Androscoggin between Worumbo dam and Gulf Island Pond from a C to a B however, it appears the actual past data for the section are a bit sporadic and we hope to change that with our longitudinal profiles from last year (one trial run), this year (expected six profiles) and probably next year. We do not support the idea of changing classifications to include something between the current C and B although if it were done, B should stay as is to avoid confusion. We support the upgrade for this section provided our data and others substantiate it and trust that by the time the Board and certainly the legislature consider this, further data of ours will be in hand.

Water Sampling

In the past, FOMB volunteers have done some sampling (see Site Map for years) above the Gulf Island Pond (GIP) oxygen diffusers (from 982 N. River Rd.) and below them (Bates Boathouse). This was in the early- mid-2000's. Our years of water quality data are **here** in the Chemical section of our Cybrary. We later did a few years of sampling from the Auburn Boat Launch but from the very early days we have sampled in Durham (for O2 and later total and fecal bacteria), first from the boat launch and when access there became a bit obscured, a mile or so down the road in the straight section of river across from the farmland. When FOMB became part of the VRMP program we were asked to stop using Winkler Titration methodology for dissolved oxygen and so the Durham monitor continued as bacteria (by this time E.coli and total coliform using IDEXX Colilert) only. We have sampled at one of the Durham sites from 2004 through the present.

In 2021 FOMB contracted with Moody Mountain Environmental for a survey of **Benthic Macro Invertebrates (BMI) in the lower Androscoggin River**, deploying rock baskets at six locations with the first four being above Worumbo dam (1-4) in the current proposed upgrade area and last two (5, 6) between Worumbo dam and Brunswick dam. Aquatic life at Sites 1, 2, and 3 all were appropriate for Class B according to Moody Mountain and the DEP. Site 4 was more appropriate for Class C but being in the upper Worumbo impoundment falls under the hydropower exclusion which elevates the classification to B.

Recognizing the paucity of comprehensive data for the proposed upgrade area (the Grow L+A proposal notes relevant Brookfield and DEP data), last summer FOMB, working with **Point of View Helicopter Services**,

trialed a comprehensive sampling run using a helicopter equipped with amphibious floats. Because FOMB membership is concentrated closer to the Bay, getting enough volunteers to sample the upper lower river particularly in coordination with our existing sampling program, is not feasible using standard ground-based methods. In contrast, the helicopter worked very well, allowing two people (pilot and sampler) to land on the water, get DO meter readings and capture a water sample for bacteria analysis. Two people could cover 10 sites in about 1.5 hours from leaving the Auburn airport to returning there.

Our helo sampling sites began below the mouth of Sabattus Stream at our BMI Site 4 and went up into GIP. They also included BMI Sites 1-3. FOMB and Merrymeeting Bay Trout Unlimited (MMBTU) are funding six sampling flights this year and hopefully in 2026. We are focused on times of low flows and hot weather with tentatively one flight in June, two in July, two in August and one in September. Just last week we made the first 2025 flight and data from this and the 2024 trial are attached. Of note from these two samplings are the relative homogeneity of DO and bacteria levels throughout, which does provide an argument for limited site sampling being sufficient.

Classification

Unfortunately the Department continues to misinterpret state and federal statute by insisting all sections of river must meet the proposed classification 100% of the time. The Department also conflates classification with discharge permitting and ignores the statutory language around allowance for natural conditions.

We have attached two legal opinions (Conservation Law Foundation [CLF] and **Greenfire Law**), also presented during the previous upgrade efforts. Aside from particulars regarding data on the section from Worumbo to the Bay, the analyses regarding federal and state law remains the same. A few excerpts and areas covered from Greenfire are below:

Maine DEP has a nondiscretionary duty to recommend the lower Androscoggin for reclassification because it attains the Class B standard.

Under federal and Maine law, a water quality standard is composed of narrative or quantitative criteria, designated uses, and an anti-degradation policy. The Clean Water Act (CWA) and Maine's anti-degradation policy require that "[w]hen the actual quality of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected. The board shall recommend to the Legislature that that water be reclassified in the next higher classification."[2] Simply put, if actual data show that the lower Androscoggin in fact meets the standard for a Class B water, then the Maine Board of Environmental Protection has a non-discretionary duty to recommend to the legislature that it be so classified.

Field data demonstrates the lower Androscoggin meets Class B water quality criteria

First, there is no requirement to show even that the *actual* Class B water quality numeric standards need be attained one hundred percent of the time in every section of the reach being reviewed, much less that some remote, modeled scenario should dictate the classification of the reach. For example, some of the more stringent chemical criteria are stated as averages, meaning that measurements above and below that number are to be expected.[11]

Additionally, instances of non-attainment are anticipated as a designated use is maintained by law, "whether or not that use is being attained."[12] Finally, the EPA explicitly directs that "States are encouraged to designate uses that the State believes can be attained in the future."[13]

Second, flexibility is allowed in assessing the proper classification based upon the unique natural features of the water at issue. For example, some natural conditions, such as the incoming tides from Merrymeeting Bay and Sediment Oxygen Demand may cause the lower Androscoggin to fail to achieve a water quality criterion from time to time. But these natural conditions expressly may not be used to determine non-attainment of a use.[14]

DEP's interpretation would moor a reach to its lowest possibly quality days rather than pulling it towards its best uses attained since the Clean Water Act was adopted—and that is the exact opposite of what the law requires. After all, the purpose of the Clean Water Act is to eliminate water pollution, not to accommodate it by preventing progress towards more protective standards because of exceptionally rare hypothetical events.[15]

DEP has relied on inappropriate factors to recommend against reclassification in the past.

In previous years DEP staff recommended against reclassification of the Androscoggin to Class B for the following reasons, none of which is appropriate in the face of actual attainment of the Class B standard:
a) Under modeled "critical" once-in-a-decade low flow, high temperature conditions, the lower Androscoggin might fail to meet Class B standard,

b) Waste discharge permits might have to be altered and might not be allowed at all under Class B designation because of the requirement to consider modeled once-in-a-decade low flow, high temperature conditions,

c) Impoundments create low dissolved oxygen concentrations, and

d) Upstream pollution.

Pollution assimilation modeling cannot be used to overcome classification based on demonstration of uses actually being attained.

DEP's recommendation against reclassification of the lower Androscoggin primarily was based on modeling. DEP determined that "the existing models provide sufficient information to support the Department's previous assessment that there is no feasible approach to ensure attainment of Class B. But the models DEP relied upon are used to minimize risk of harm to aquatic resources when permitting a discharge, not to determine whether a use is present in a river stretch. As such, they are designed to be conservative in permitting harmful impact to waters—emphasize worst-case scenarios to build in a margin of safety to guard against degradation of the nations' waters. The models are not intended to be used to thwart the purpose of the anti-degradation policy.

Essentially, there is *supposed to be* a rebuttable presumption that water quality standards consistent with actual water quality should stand.[31] And, there is no ability to constrain a reach at a lower classification where the water is actually attaining the designated uses and standards of a more protective classification.[32] Thus, there is not properly room for a Use Attainability Analysis here. Anti-degradation policy—the ratcheting always towards improved quality--ensures that water quality is continually improved over time and that improvements are maintained. Effectively, DEP's attachment of proof of attainment under the most dire possible modeled scenario reverses the ratchet direction of the state and federal anti-degradation policy and statute.

Use of the water body to receive waste water discharges is not a permissible consideration in establishing appropriate classification.

There are no other factors that should be considered in determining what class the lower Androscoggin is actually attaining. DEP expressly may not take into account industrial discharge capacity needs in determining uses.[33]
DEP improperly invited consideration of the waste-assimilative capacity of the River as part of the reclassification review, stating that waste permitting limits "is an important requirement [to consider] when a reclassification is being evaluated. It is highly recommended that the Legislature fully understands any new licensing requirements that will be imposed on any discharge prior to a reclassification decision being made."[34] In short, the DEP was directing the legislature to be careful not to eliminate the ability of the water legally to support the waste disposal needs of industry, which is not allowed.[35]

Naturally occurring conditions cannot be used as evidence of non-attainment of water quality standards.

DEP's analysis of dissolved oxygen deficiency relied on naturally occurring conditions. "Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other

water quality criteria to fall below the minimum standards specified in sections 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions."[36]

Upstream conditions must be ameliorated rather than used as an excuse to avoid protecting downstream water quality.

DEP concluded that "river sampling showed a nutrient loading from sources upstream."[37] The States designation of those upstream sources should not negatively impact downstream waters.[38] Further, "[n]o waste load allocation can be developed or NPDES permit issued that would result in standards being violated. With respect to antidegradation, that means existing uses must be protected, water quality may not be lowered in [Outstanding Natural Resource Waters], and in the case of waters whose quality exceeds that necessary for the section 101(a)(2) goals of the Act, an activity cannot result in a lowering of water quality unless the applicable public participation, intergovernmental review, and baseline control requirements of the antidegradation policy have been met."[39]

Conclusion

In conclusion, the DEP should present to the Board of Environmental Protection and the legislature the factual basis for the lower Androscoggin's attainment of Class B criterion and character and refrain from including within that recommendation any argument that might be construed as a Use Attainability Analysis.

********** Greenfire Law

Provided FOMB/MMBTU and other data show actual conditions of the upper lower Androscoggin reflect those of Class B most of the time, the Department should support the upgrade with the Board. If the Department continues in their refusal to support upgrades consistent with actual conditions, then the Board, as they did last time, should correctly follow the statutes and recommend this upgrade to the Joint Legislative Committee on Environment and Natural Resources, while also directing the Department to do so.

Thank you for your consideration,

Ed Friedman, Chair
207-666-3372

Exhibit 1 Greenfire Law Memo
Exhibit 2 CLF Memo
Exhibit 3 Sampling Map
Exhibit 4 FOMB Helicopter Sampling Results 2024 & 2025 to Date
Exhibit 5 Helicopter Sampling Sites
Exhibit 6 FOMB Historical Water Quality Data 1999-2024
Exhibit 7 Aquatic Life Determination Study of the Lower Androscoggin River (BMI Study)

Exhibit 1

Why Upgrade?

1. The Legislature declares it is the State's objective to restore and maintain the chemical, physical and biological integrity of the State's waters… (§464.1.)

2. Anti-degradation language prohibits backsliding in water quality. (§464 (F)(4))

3. An upgrade locks in water quality improvements.

4. A cleaner river has well-documented economic and quality of life benefits.

5. Sixty percent of our wildlife species inhabit river corridors and benefit as do we.

6. It is the law!

Memorandum of Law

RE: Reclassification of the Lower Androscoggin River to Class B

From: Rachel Doughty, Greenfire Law, PC

Date: March 31, 2020

The lower Androscoggin must be designated Class B because of its demonstrated achievement of the minimum standards for that classification. Maine has for many years resisted upgrading the water quality classification of the Lower Androscoggin from Class C to Class B by eliding the non-discretionary state and federal anti-degradation policy with the use attainability analysis, which can only be used to remove legally-designated uses.

Contents

Rachel Doughty • Greenfire Law • 2550 9th Street • Berkeley • California • 94710
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Analysis

Maine Department of Environmental Protection (DEP) is presently preparing recommendations to the legislature as part of the State's triennial mandatory review of water quality standards.[1] Under the federal and Maine anti-degradation laws, DEP must recommend a change in use classification for the lower Androscoggin from Class C to Class B because that is the standard of water quality it is actually achieving the overwhelming majority of the time. Maine may not avoid reclassification of the lower reach based on hypothetical, once-in-a-decade modeled events. Nor may the lower Androscoggin be kept in Class C to permit the greatest flexibility to accommodate industrial waste assimilation as a priority.

I. Maine DEP has a nondiscretionary duty to recommend the lower Androscoggin for reclassification because it attains the Class B standard.

Under federal and Maine law, a water quality standard is composed of narrative or quantitative criteria, designated uses, and an anti-degradation policy. The Clean Water Act (CWA) and Maine's anti-degradation policy require that "[w]hen the actual quality of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected. The board shall recommend to the Legislature that that water be reclassified in the next higher classification."[2] Simply put, if actual data show that the lower Androscoggin in fact meets the standard for a Class B water, then the Maine Board of Environmental Protection has a non-discretionary duty to recommend to the legislature that it be so classified.

A. Field data demonstrates the lower Androscoggin meets Class B water quality criteria.

Actual field data shows the lower Androscoggin achieves Class B water quality criterion for dissolved oxygen (DO). Maine's dissolved oxygen criterion for Class B is:

> The dissolved oxygen content of Class B waters may not be less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million and the 1-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas.[3]

FOMB has monitored the River since 1999 following EPA and or DEP protocols.[4] Using these DEP-approved protocols FOMB collected data spanning the years 1999 to present--731 individual DO

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[1] 33 U.S.C.S. § 1313(c)(1).

[2] 38 M.R.S. § 464.4.F.4 (emphasis added); see also 40 C.F.R. § 131.20(i) ("Where existing water quality standards specify designated uses less than those which are presently being attained, the State shall revise its standards to reflect the uses actually being attained.").

[3] 38 M.R.S. § 465.3.B.

[4] Exhibit 29, *Friends of Casco Bay EPA Quality Assurance Plan* under which FOMB operated until 2018, Exhibit 34, *MDEP VRMP Sampling Protocols* also used since 2009, Exhibit 28 FOMB, *Volunteer River Monitoring Program 2009-2018* (including DO and *E. coli* data) *See also* Exhibits 30 (Auburn Boat Launch DO data 2010-

samples--on the lower Androscoggin.[5] Of these samples, only 16--two percent--fell below the Class B 7mg/L criterion for DO, mostly within the acceptable range of calibration error of 0.6 mg/L.[6] Thus, actual sampling of the lower Androscoggin demonstrates attainment with the DO criterion for Class B 98% of the time.[7]

Likewise, field data shows the lower Androscoggin achieves Class B water quality criterion for *E. coli*. Maine's *E. coli* criterion for Class B is:

> Between May 15th and September 30th, the number of *Escherichia coli* bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 64 per 100 milliliters or an instantaneous level of 236 per 100 milliliters. In determining human and domestic animal origin, the department shall assess licensed and unlicensed sources using available diagnostic procedures.[8]

E. coli sampling has been done since 2006. Again, the results were overwhelmingly above the Class B criterion.[9]

DEP, in its 2018 Proposed Reclassifications seemed to imply that if a scenario can be imagined and modeled demonstrating a once in ten year failure to meet a criterion of a water quality standard for a particular class, then the reach cannot be reclassified to the standard it meets the overwhelming majority of the time.[10] The law is not that inflexible—certainly not in the direction implied.

First, there is no requirement to show even that the *actual* Class B water quality numeric standards need be attained one hundred percent of the time in every section of the reach being reviewed, much less that some remote, modeled scenario should dictate the classification of the reach. For example, some of the more stringent chemical criteria are stated as averages, meaning that measurements above and below that

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2011), 35, 36, 37 (Applied Biomonitoring-FOMB Reports covering DO and E. coli for years 2009-2012) and 38 (Complete FOMB raw data.1999-2019.

[5] *See* Exhibit 38 (FOMB Complete WQ Data Files and Exhibits).

[6] *See* Exhibit 27, Peter Milholland, *Quality Assurance Project Plan for Friends of Casco Bay Citizen Stewards Water Quality Monitoring Program* (Sept. 15, 2006) p. 52 (describing calibration protocol) and Table 2. Under the federal EPA Quality Assurance Plan governing DO sampling for Friends of Merrymeeting Bay and Friend of Casco Bay, during annual refreshers there was an allowance of 0.6 mg/L leeway between test reading and calibrated sample. In other words, a DO test result of as low as 6.4 would be within acceptable parameters for attainment of 7mg/L, the Class B standard. The occasional low DO reading over the years has generally been on the order of 6.8 or 6.9 well within the allowed margin of error.

[7] Calculated from Exhibit 38 (FOMB Complete WQ Data Files and Exhibits).

[8] 38 M.R.S. § 465.3.B.

[9] *See* attached, Exhibit 26: *Geomeric means chart for 2006-2019*; *See also*, Exhibit 38: FOMB Complete WQ Data Files and Exhibits 35, 36, 37: Applied Biomonitoring Reports 2010, 2011, 2013

[10] In a October 25, 2019, letter to Senators Libby and Claxton (Exhibit 30), the DEP stated at page 3 that it considered the anti-degradation mandate "in the full context of the water quality laws including the sections of law that establish the conditions under which a discharge may be licensed." So, citing findings made when determining the waste assimilative capacity of the water, the DEP concluded that a water cannot be recommended for a more protected classification if it cannot meet that standard in a modeled "7-day low flow that can be expected to occur with a frequency of once in 10 years."

number are to be expected.[11] Additionally, instances of non-attainment are anticipated as a designated use is maintained by law, "whether or not that use is being attained."[12] Finally, the EPA explicitly directs that "States are encouraged to designate uses that the State believes can be attained in the future."[13]

Second, flexibility is allowed in assessing the proper classification based upon the unique natural features of the water at issue. For example, some natural conditions, such as the incoming tides from Merrymeeting Bay and Sediment Oxygen Demand may cause the lower Androscoggin to fail to achieve a water quality criterion from time to time. But these natural conditions expressly may not be used to determine non-attainment of a use.[14]

DEP's interpretation would moor a reach to its lowest possibly quality days rather than pulling it towards its best uses attained since the Clean Water Act was adopted—and that is the exact opposite of what the law requires. After all, the purpose of the Clean Water Act is to eliminate water pollution, not to accommodate it by preventing progress towards more protective standards because of exceptionally rare hypothetical events.[15]

B. The actual uses of the lower Androscoggin are consistent with Class B designation.

Currently, the lower Androscoggin "[f]rom its confluence with the Ellis River to a line formed by the extension of the Bath-Brunswick boundary across Merrymeeting Bay in a northwesterly direction" is designated Class C.[16] The designated uses of Class B and Class C are substantially the same, differing only in whether the habitat supported by the reach is characterized as unimpaired:

> **Class B:** waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under

[11] *See, e.g.*, 38 M.R.S. § 465.3.B (describing even the most stringent criterion for Class B dissolved oxygen as a 7-day *mean*).

[12] 38 M.R.S. § 464.2-A.F.

[13] Section 2.4

[14]

> Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in section 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions.

38 M.R.S. § 464.4.C.

[15] *See* 33 U.S.C. § 1251(a) ("The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—**(1)** it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985.")

[16] 38 M.R.S. § 467.1.A(2).

> Title 12, section 403; navigation; and as habitat for fish and other aquatic life. The habitat must be characterized as unimpaired.[17]

"'Unimpaired' means without a diminished capacity to support aquatic life." 38 M.R.S. § 466.11. The lower Androscoggin has and does support unimpaired aquatic life, and is not listed as impaired on this section for any relevant parameter.[18] Biological monitoring of the freeflowing sections of the Lower Androscoggin demonstrates attainment of Class B aquatic life standards.[19]

In determining what uses must be protected and maintained, the DEP may consider the actually designated uses contained in the Class B and C standards, as well as:

> (a) Aquatic, estuarine and marine life present in the water body;
>
> (b) Wildlife that utilize the water body;
>
> (c) Habitat, including significant wetlands, within a water body supporting existing populations of wildlife or aquatic, estuarine or marine life, or plant life that is maintained by the water body;
>
> (d) The use of the water body for recreation in or on the water, fishing, water supply, or commercial activity that depends directly on the preservation of an existing level of water quality; [. . .] and
>
> (e) Any other evidence that, for divisions (a), (b) and (c), demonstrates their ecological significance because of their role or importance in the functioning of the ecosystem or their rarity and, for division (d), demonstrates its historical or social significance.[20]

The lower Androscoggin provides exceptional and unique habitat. It feeds tidal wetlands that have been recognized by the U.S. Fish and Wildlife Service "highest value habitat," including for multiple rare inter-tidal plants and endangered, threatened and species of special concern (e.g., creeper, tidewater mucket, yellow lamp mussels, dry land sedge, etc.). It sustains, silver maple floodplain and birch-oak rocky communities. It is a spawning and nursery area for endangered short nose sturgeon, and Atlantic salmon

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[17] 38 M.R.S. § 465.3.A (emphasis added)Compare:

> **Class C:** Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life.

38 M.R.S. § 465.4.A.

[18] It is listed as impaired for PCBs, but so are other reaches that are designated Class B.

[19] *See* Exhibit 31, Maine Department of Environmental Protection, *Lower Androscoggin River Basin Water Quality Study Modeling Report* (March 2011), Appendix D (Station 954 (below Pejepscot Dam, free-flowing) attained Class B aquatic life standard.) Other stations were taken from impoundments and impoundments attained Class C aquatic life criteria, which by law must be treated as attaining A or B criteria in these locations. 38 M.R.S. § 464. 10.A(1). *See also* Exhibit 32 (FOMB annotations to Exhibit 31, *Appendix D* (Aquatic Life)).

[20] 38 M.R.S. § 465.4.F.

and threatened Atlantic sturgeon. Other significant diadromous fish including alewives, blueback herring, sea lamprey, American eel striped bass, rainbow smelt and American shad. The river provides sites for multiple bald eagle nests [13 to GIP], and several Peregrine falcon nests. [21]

The maintenance of a clean and lower Androscoggin is a critical economic resource to Maine as well.[22] It is well loved for recreation-fishing, hiking and paddling.[23] As a result, there is overwhelming support for reclassifying the Lower Androscoggin to protect it as an economic and recreational asset.[24]

And, even if water has degraded since the Clean Water Act was adopted, any "uses which have actually occurred on or after November 28, 1975, in or on a water body whether or not the uses are included in the standard for classification of the particular water body" must be protected in the absence of a use attainability analysis and a specific finding to eliminate a use.[25]

The lower Androscoggin clearly meets the use, criteria, and anti-degradation components for Class B waters and DEP's analysis should end here with a recommended change to that classification for the Board.

II. DEP has relied on inappropriate factors to recommend against reclassification in the past.

In previous years DEP staff recommended against reclassification of the Androscoggin to Class B for the following reasons, none of which is appropriate in the face of actual attainment of the Class B standard:

a) Under modeled "critical" once-in-a-decade low flow, high temperature conditions, the lower Androscoggin might fail to meet Class B standard,

b) Waste discharge permits might have to be altered and might not be allowed at all under Class B designation because of the requirement to consider modeled once-in-a-decade low flow, high temperature conditions,

c) Impoundments create low dissolved oxygen concentrations, and

d) Upstream pollution.

A. Pollution assimilation modeling cannot be used to overcome classification based on demonstration of uses actually being attained.

DEP's recommendation against reclassification of the lower Androscoggin primarily was based on modeling. DEP determined that "the existing models provide sufficient information to support the Department's previous assessment that there is no feasible approach to ensure attainment of Class B

[21] *See* Exhibits 9 to 18

[22] *See* Exhibits 8,15, 16, and 17.

[23] *See id.* and Exhibits 18-22 (describing protected lands and trails along the River).

[24] Exhibit 7 (compiled support letters); Exhibit 8 (Economic Benefit Articles), Exhibit 6 (Comprehensive Plan Excerpts).

[25] *See* 38 M.R.S. § 464.F.(1).

dissolved oxygen criteria in the lower Androscoggin River."[26] But the models DEP relied upon are used to minimize risk of harm to aquatic resources when permitting a discharge, not to determine whether a use is present in a river stretch. As such, they are designed to be conservative in permitting harmful impact to waters—emphasize worst-case scenarios to build in a margin of safety to guard against degradation of the nations' waters. The models are not intended to be used to thwart the purpose of the anti-degradation policy.

What DEP essentially did was perform a perfunctory Use Attainability Analysis to argue that the River should not be classified as the law would otherwise require.[27] But, a Use Attainability Analysis is appropriate in only two circumstances: when designating a use not included in the CWA and if removing a designated use.[28] DEP has been called upon to do neither of these things with regard to the lower Androscoggin, and the DEP may not use a use attainability analysis to avoid its *non-discretionary obligation* to recommend reclassification to a higher standard reflective of actual use and water quality.[29] Only *after* a use has been designated may the DEP perform a Use Attainability Analysis and consider the sort of things put before the Board here (e.g., economic effect on permits of reclassifying the River).[30]

Essentially, there is *supposed to be* a rebuttable presumption that water quality standards consistent with actual water quality should stand.[31] And, there is no ability to constrain a reach at a lower classification where the water is actually attaining the designated uses and standards of a more protective classification.[32] Thus, there is not properly room for a Use Attainability Analysis here. Anti-degradation policy—the ratcheting always towards improved quality--ensures that water quality is continually improved over time and that improvements are maintained. Effectively, DEP's attachment of proof of attainment under the most dire possible modeled scenario reverses the ratchet direction of the state and federal anti-degradation policy and statute.

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[26] Oct. 25, 2019 Kavanaugh letter at pp. 7-8.

[27] To remove a designated use, DEP must make a number of findings demonstrating why that use is not attainable, hold a public hearing, and demonstrate that the conditions of 40 C.F.R. § 131.10(g) are met.[27]

[28] 38 M.R.S. § 464.2-A.A; *see also* 40 C.F.R § 131.10(h).

"'Use attainability analysis' means a structured scientific assessment of the factors affecting the attainment of a designated use in a water body. The assessment may include consideration of physical, chemical, biological and economic factors." 38 M.R.S. § 466.11-A.

[29] 38 M.R.S. § 464.4.F.4 ("When the actual quality of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected. The board shall recommend to the Legislature that that water be reclassified in the next higher classification.") (emphasis added).

[30] *See* above, Section I, discussing what the Board can consider in making its classification recommendation.

[31] *Idaho Mining Ass'n v. Browner*, 90 F. Supp. 2d 1078, 1097-98 (D. Idaho 2000).

[32] *Kan. Nat. Res. Council, Inc. v. Whitman*, 255 F. Supp. 2d 1208, 1209 (D. Kan. 2003)

B. Use of the water body to receive waste water discharges is not a permissible consideration in establishing appropriate classification.

There are no other factors that should be considered in determining what class the lower Androscoggin is actually attaining. DEP expressly may not take into account industrial discharge capacity needs in determining uses.[33]

DEP improperly invited consideration of the waste-assimilative capacity of the River as part of the reclassification review, stating that waste permitting limits "is an important requirement [to consider] when a reclassification is being evaluated. . . It is highly recommended that the Legislature fully understands any new licensing requirements that will be imposed on any discharge prior to a reclassification decision being made."[34] In short, the DEP was directing the legislature to be careful not to eliminate the ability of the water legally to support the waste disposal needs of industry, which is not allowed.[35]

C. Naturally occurring conditions cannot be used as evidence of non-attainment of water quality standards.

DEP's analysis of dissolved oxygen deficiency relied on naturally occurring conditions. "Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in sections 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions."[36]

D. Upstream conditions must be ameliorated rather than used as an excuse to avoid protecting downstream water quality.

DEP concluded that "river sampling showed a nutrient loading from sources upstream."[37] The States designation of those upstream sources should not negatively impact downstream waters.[38] Further, "[n]o waste load allocation can be developed or NPDES permit issued that would result in standards being violated. With respect to antidegradation, that means existing uses must be protected, water quality may not be lowered in [Outstanding Natural Resource Waters], and in the case of waters whose quality exceeds that necessary for the section 101(a)(2) goals of the Act, an activity cannot result in a lowering of

[33] 38 M.R.S. § 465.4.F (d) ("Use of the water body to receive or transport waste water discharges is not considered an existing use for purposes of this antidegradation policy"); 40 C.F.R. § 131.10 ("In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States.")

[34] Exhibit 33, Oct. 25, 2019 letter at p. 5.

[35] *See* above, n. 33.

[36] 38 M.R.S. § 464.4.C.

[37] Oct. 25, 2019 letter at 7.

[38] 40 C.F.R. § 131.10(b).

water quality unless the applicable public participation, intergovernmental review, and baseline control requirements of the antidegradation policy have been met."[39]

III. Conclusion

In conclusion, the DEP should present to the Board of Environmental Protection and the legislature the factual basis for the lower Androscoggin's attainment of Class B criterion and character and refrain from including within that recommendation any argument that might be construed as a Use Attainability Analysis.

[39] U.S. EPA, Clean Water Act Handbook, Chapter 4, p. 14.

Exhibit 2

38 M.R.S.A. § 464 (F) (4)

"When the ***actual quality*** *of any classified water exceeds the minimum standards of the next highest classification,* ***that higher water quality must be maintained and protected****. The board* ***shall recommend*** *to the Legislature that water be reclassified in the next higher classification."*

A Legal Opinion: Excerpt from Conservation Law Foundation BEP Comments 10/2/2008
The Lower Androscoggin River

"The Department's refusal to recommend an upgrade violates the legal standard in the Clean Water Act that a state shall revise its standards to reflect uses and water quality actually being attained. 40 C.F.R. §131.10(i). See also id. §131.6(d); 38 M.R.S.A. §464(4)(F). Thus, the Committee's [or Board's] analysis must be based on existing water quality-not hypothetical modeling with point sources operating at maximum licensed discharge. Indeed, the Committee [or Board] is specifically prohibited from considering maximum licensed loads because both state and federal regulations prohibit consideration of waste discharge or transport as a designated use. 40 C.F.R. §131.10(a); 38 M.R.S.A. §464(4)(F)(1)(d).

CLF strongly disagrees with the Department's recommendation and rationale for not upgrading this river segment. The Department has stated that proponents must provide water quality data and modeling showing "the likelihood of attainment of Class B water quality criteria at maximum licensed loads." See Reclassification Memorandum at 29. This makes no logical, legal or economic sense. First, no one operates at maximum licensed loads; rather a large buffer is generally built into all permits to avoid violations. Thus, DEP is requesting an impossible and unnecessary showing.

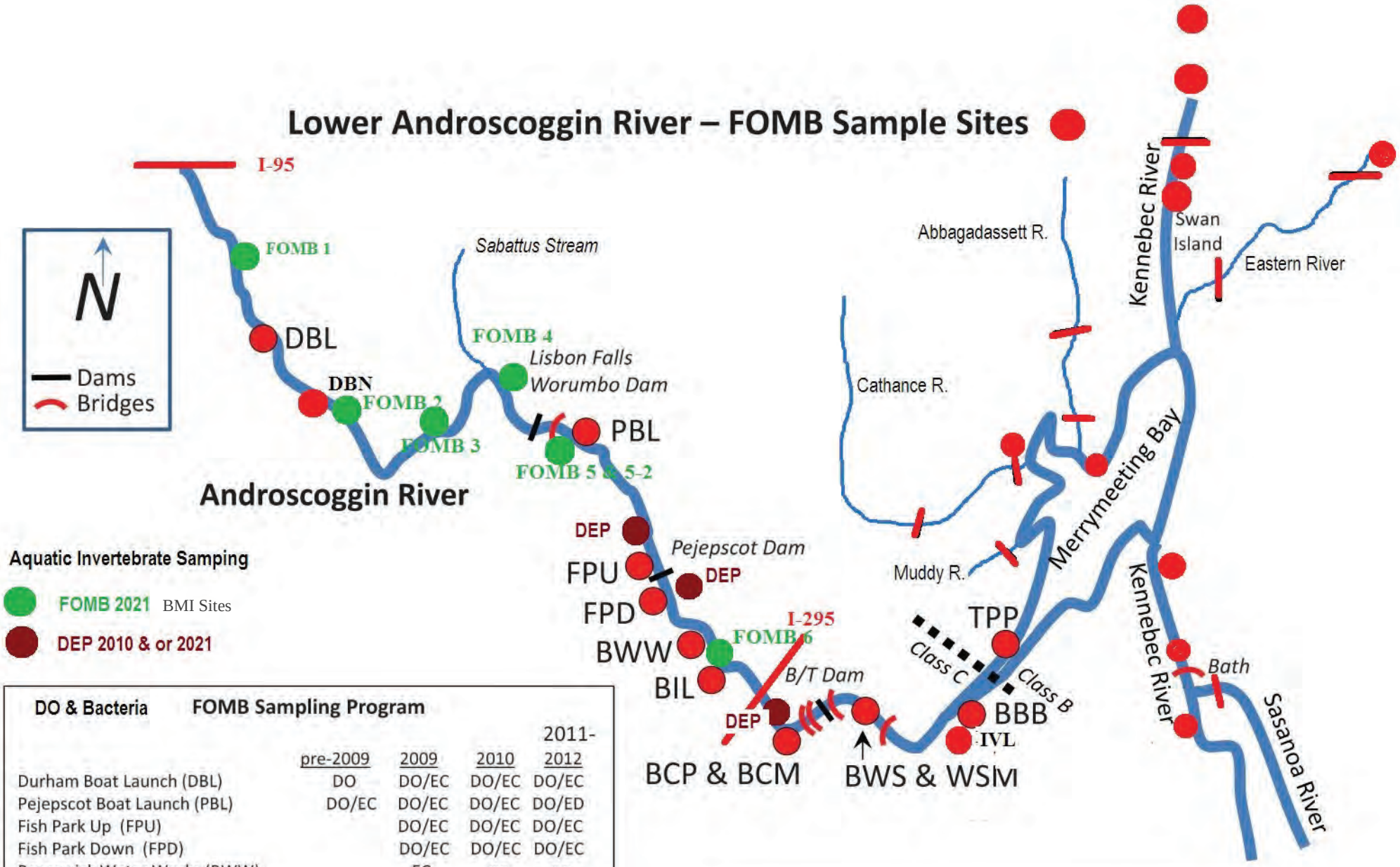
Second, the Department's recommendation violates the legal standard in the Clean Water Act that a state shall revise its standards to reflect uses and water quality actually being attained. 40 C.F.R. §131.10(i). See also id. § 131.6(d); 38 M.R.S.A. § 464(4)(F). Thus, the Board's analysis must be based on existing water quality - not hypothetical modeling with point sources operating at maximum licensed discharge. Indeed, the Board is specifically prohibited from considering maximum licensed loads because both state and federal regulations prohibit consideration of waste discharge or transport as a designated use. 40 C.F.R. § 131.10(a); 38 M.R.S.A. § 464(4)(F)(l)(d).

Third, as many of the dischargers in this watershed have already recognized, water quality upgrades are generally good for surrounding communities. As has been shown over and over again, clean water is an economic boon. Examples abound throughout New England, including the recent revival of Boston Harbor, the Portland Waterfront, the Auburn Riverfront, and the resurgence of Merrymeeting Bay and the Kennebec River. The Androscoggin River deserves the same.

CLF believes that the data, including both dissolved oxygen levels and recreational uses, shows that existing uses in the lower Androscoggin have improved over time and that the river currently attains the higher bacteria and dissolved oxygen standards set forth in the Class B designation. As noted by the Department, it has no reason to question the data; indeed, it has relied upon data supplied by the proponent in prior reclassifications. Therefore, barring a showing that the data is invalid, the Board must recommend upgrading this section."

Exhibit 3

Lower Androscoggin River – FOMB Sample Sites



Aquatic Invertebrate Samping

FOMB 2021 BMI Sites

DEP 2010 & or 2021

DO & Bacteria FOMB Sampling Program

	pre-2009	2009	2010	2011-2012
Durham Boat Launch (DBL)	DO	DO/EC	DO/EC	DO/EC
Pejepscot Boat Launch (PBL)	DO/EC	DO/EC	DO/EC	DO/ED
Fish Park Up (FPU)		DO/EC	DO/EC	DO/EC
Fish Park Down (FPD)		DO/EC	DO/EC	DO/EC
Brunswick Water Works (BWW)		EC	na	na
Brunswick Interstate Ledges (BIL)		DO/EC	DO/EC	DO/EC
Brunswick Canoe Portage (BCP)		DO/EC	DO/EC	DO/EC
Brunswick Canoe Mooring (BCM)		DO/EC	DO/EC	na
Brunswick Water St. Boat Launch (BWS)	EC	DO/EC	DO/EC	DO/EC
Water Street Mooring (WSM)		DO/EC	DO/EC	na
Brunswick Bay Bridge (BBB)	EC	DO/EC	DO/EC	DO/EC
Topsham Pleasant Pt. (TPP)	DO	DO	DO	DO

Upstream Monitoring	pre-2009	2009	2010-2012
Gulf Island Pond Above	DO		
Gulf Island Pond Below (Bates Boathouse)	DO		
Auburn Boat Launch		DO	DO

Exhibit 4

Upper Lower Androscoggin Helicopter Water Sampling Profile 8/24/24-FOMB

Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
A1	44° 0.524N	70° 5.169W	6:22	7.8	90.2	61.6	21.5	6	15	18.5	1119.9
A2	43° 59.573N	70° 6.839W	6:31	7.8	89	61	21.4	4	15	23.8	1299.7
A3	44° 0.116N	70° 9.076W	6:40	7.7	88.9	60.5	21.5	3	12	24.3	980.4
A4	44° 2.744N	70° 11.278W	6:51	7.8	89.6	60.7	21.4	4	13	20.1	816.4
BR	44° 3.917N	70° 12.457W	6:55	7.8	98.1	61.5	21.2				
A5	44° 13.010N	70° 13.010W	7:03	7.7	88.8	55.3	21.5	4	15	24.6	727
A6	44° 6.364N	70° 13.406W	7:10	7.7	88.8	54.8	21.5	8	15	9.7	613.1
A7	44° 7.791N	70° 12.358W	7:19	7.8	90.1	54.9	21.5	9	16	13.5	547.5
A8	44° 8.421N	70° 12.125W	7:24	7.8	89.9	55.2	21.5	7	16	13.5	648.8
A9	44° 9.586N	70° 12.415W	7:29	7.9	92.9	54.5	22.1	8	16	10.8	547.5

Site Notes

A1-FOMB Site 4 from BMI study-below Sabbatus mouth
A2-FOMB Site 3 from BMI study-in westerly rapid below Durham
A3-FOMB Site 2 from BMI study-Shallows opposite FOMB DBN
A4-FOMB eagle nest site XF
BR-Bottom of Benner Rips-done to see if rapids elevated DO
A5-Little Andy alt site below bridge
A6-Upstream of island between O'Reilly's and long building on east
A7-Below Deer Rips upstream of double points-east bank
A8-Start of narrows above Deer Rips dam
A9-GIP 850' above first island opposite west point, below rocks

Notes

DEP YSI ProSOLO meter #46- Calibrated (99.7%) Used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
Had not pre-planned to do Benton Rips so no bacteria and forgot depth
USGS Auburn Flows-3,840 cfs, median- 2,920 cfs. Checked 4:15 am & 9:15 am-same readings
Ed Friedman & Mauricio Handler
Engine start 6am. Depart KLEW 6:15. End sampling 7:33. Back at KLEW 7:50

Upper Lower Androscoggin Helicopter Water Sampling Profile 6/26/25-FOMB

Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
A1	44° 0.524N	70° 5.169W	6:37	8	92.9	75.2	23.1	4	19	42.2	1986
A2	43° 59.573	70° 6.839W	6:52	7.9	91.5	74.7	22.7	2	19	22.8	2419.6
A3	44° 0.116N	70° 9.076W	7:00	7.9	91.6	74.2	22.6	2	19	50.4	2419.6
A4	44° 2.744N	70° 11.278	7:12	8	93.9	74.1	22.7	2	19	58.1	816.4
BR	44° 3.917N	70° 12.457	7:18	7.9	91.6	74.2	22.5	4	19	47.8	571.7
A5	44° 13.010	70° 13.010	7:25	7.9	92.1	68.5	22.6	4	19	59.8	640.5
A6	44° 6.364N	70° 13.406	7:28	7.9	91.2	68.3	22.6	4	19	51.2	980.4
A7	44° 7.791N	70° 12.358	7:42	8	92.6	7.6	22.8	4	19	32.8	1986.3
A8	44° 8.421N	70° 12.125	7:47	7.9	92.5	67.7	22.9	4	19	31.8	436.2
A9	44° 9.586N	70° 12.415	7:53	8.8	107.2	68.7	25.7	4	19	37.9	238.2
A1	Replicate		6:46	8	92.9	75.2	23.1	4	19	30.5	2419.6
Lab Blank			9:30							0	0

Site Notes

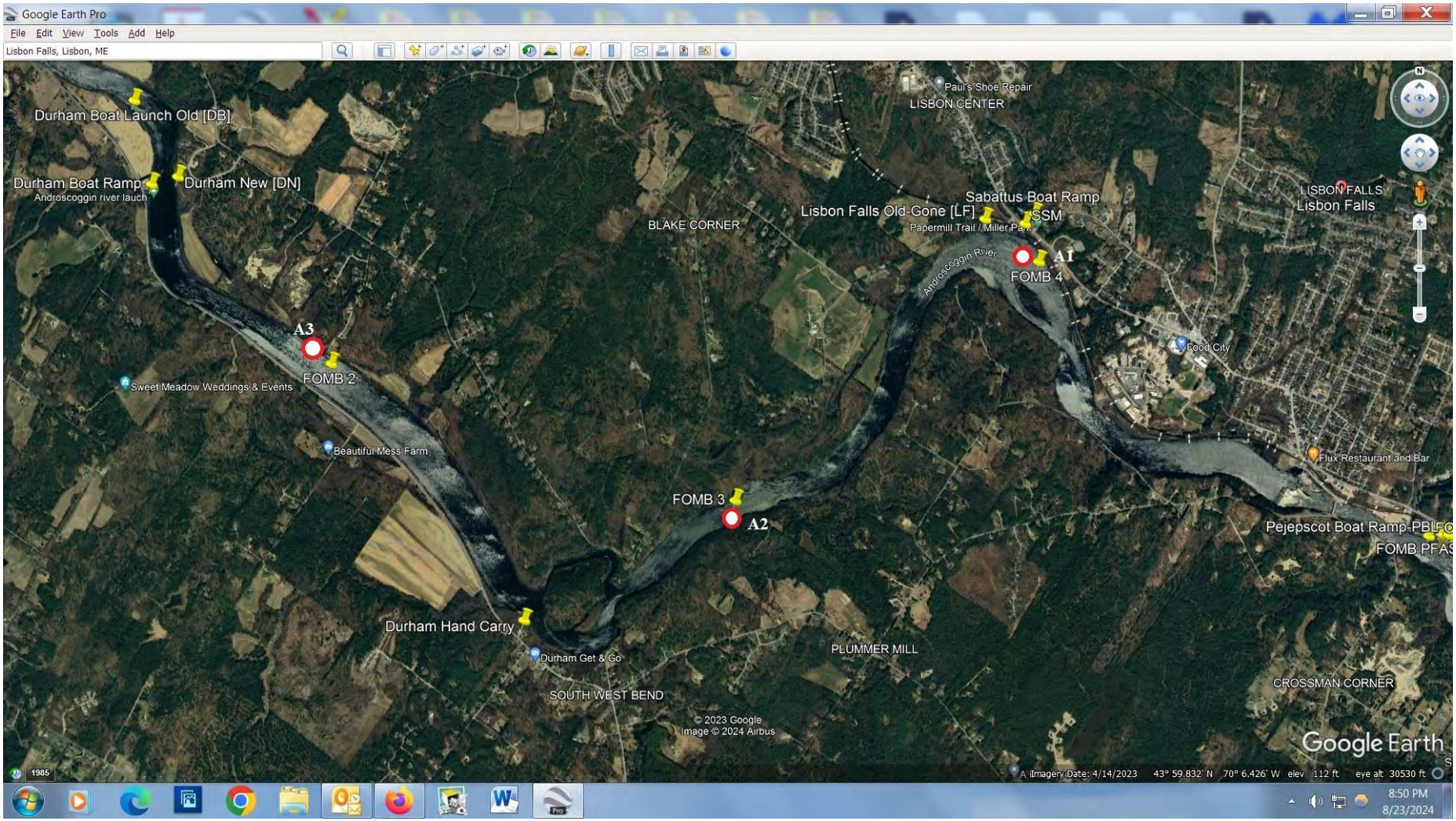
A1-FOMB Site 4 from BMI study-below Sabbatus mouth
A2-FOMB Site 3 from BMI study-in westerly rapid below Durham
A3-FOMB Site 2 from BMI study-Shallows opposite FOMB DBN
A4-FOMB Site 4 from BMI study. Eagle nest site XF
Br-Bottom of Benner Rips-below LAPCA
A5-Little Andy alt site below bridge
A6-Upstream of island between O'Reilly's and long building on east
A7-Below Deer Rips upstream of double points-east bank
A8-Start of narrows above Deer Rips dam. At 10'-same readings
A9-GIP 850' above first island opposite west point, below rocks (A8)

Notes

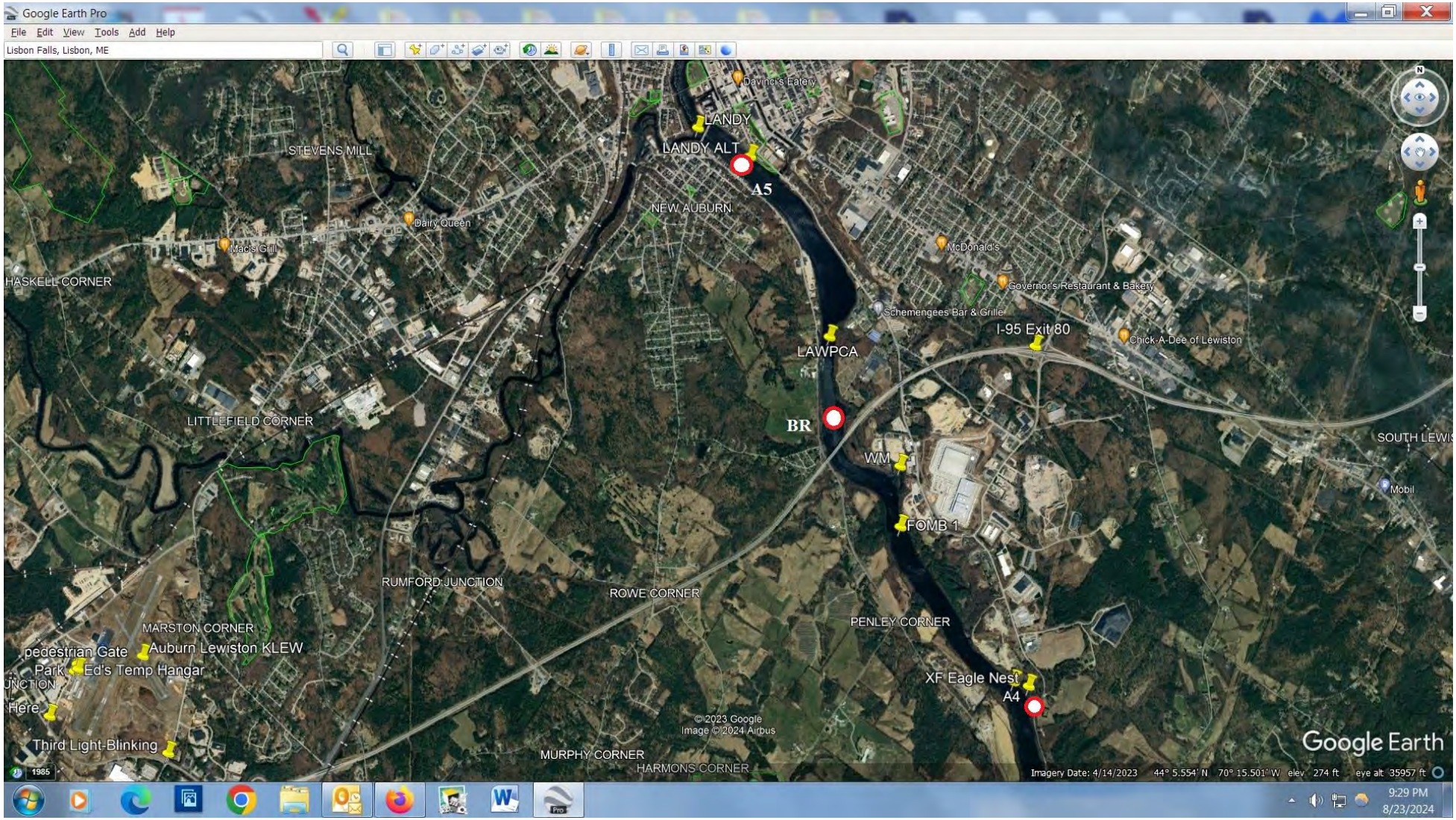
DEP YSI ProSOLO meter #46- Calibrated ((99.9%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-3,150 cfs, median-4,240 cfs. Checked 6:45 am & 8:00 am-same readings. 3,25 at 4:15am.
Ed Friedman & Kathy Claerr
Engine start 6:17am. Depart KLEW 6:30. End sampling 7:57. Back at KLEW 8:10

Exhibit 5

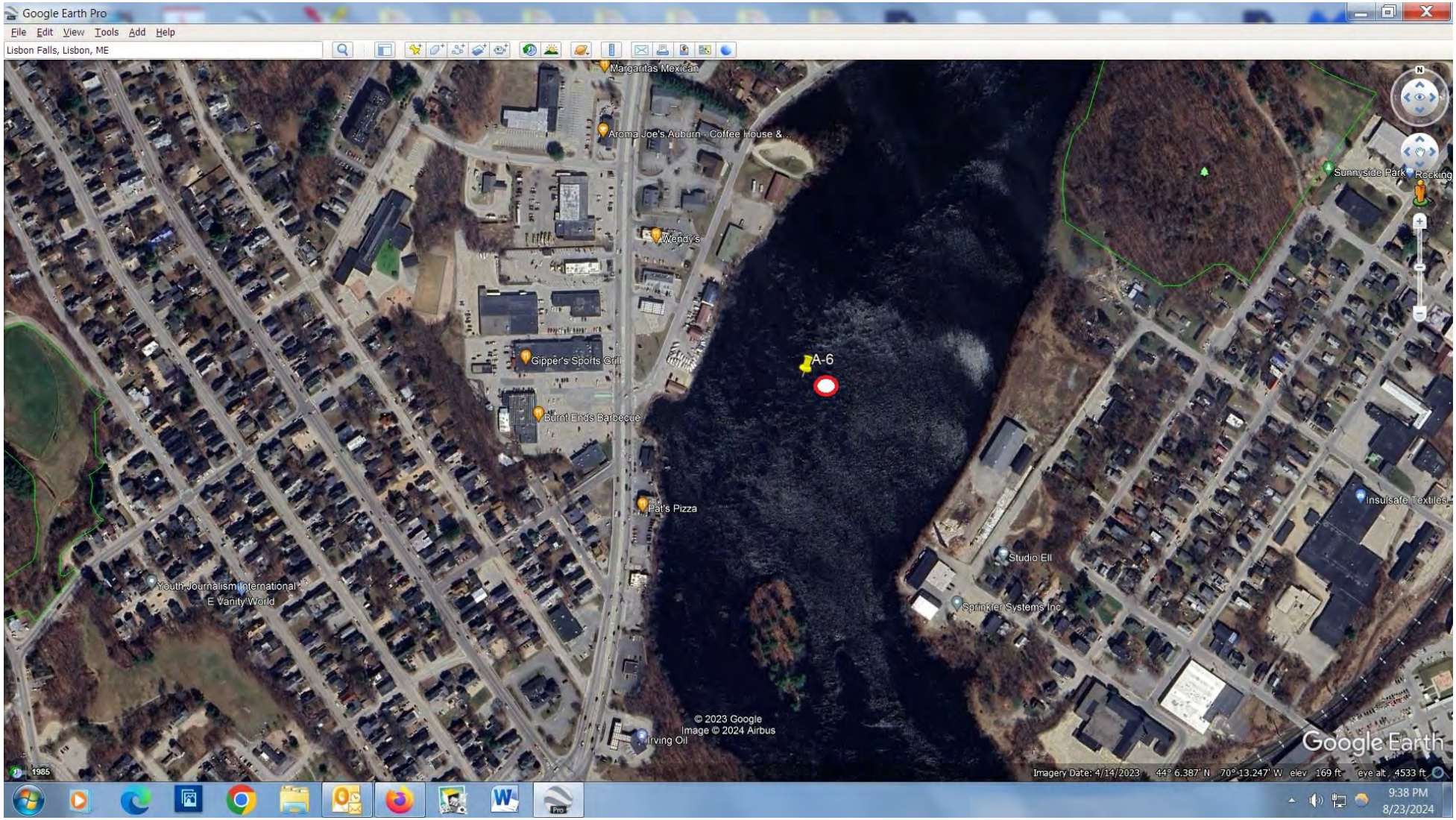
FOMB Helicopter Sampling Sites A1, A2, A3



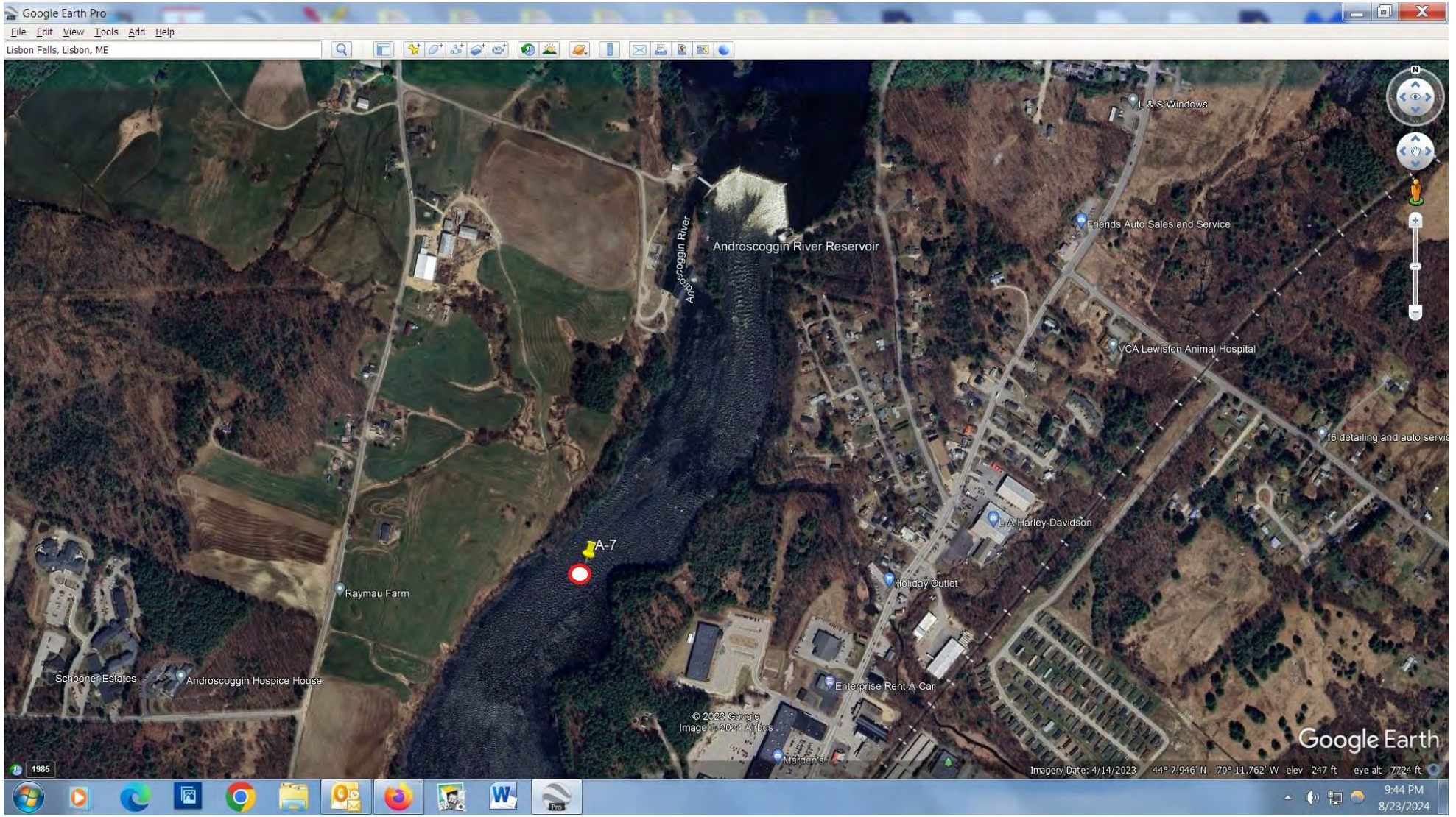
FOMB Helicopter Sampling Sites A4, BR, A5



FOMB Helicopter Sampling Site A6



FOMB Helicopter Sampling Site A7



FOMB Helicopter Sampling Sites A8, A9

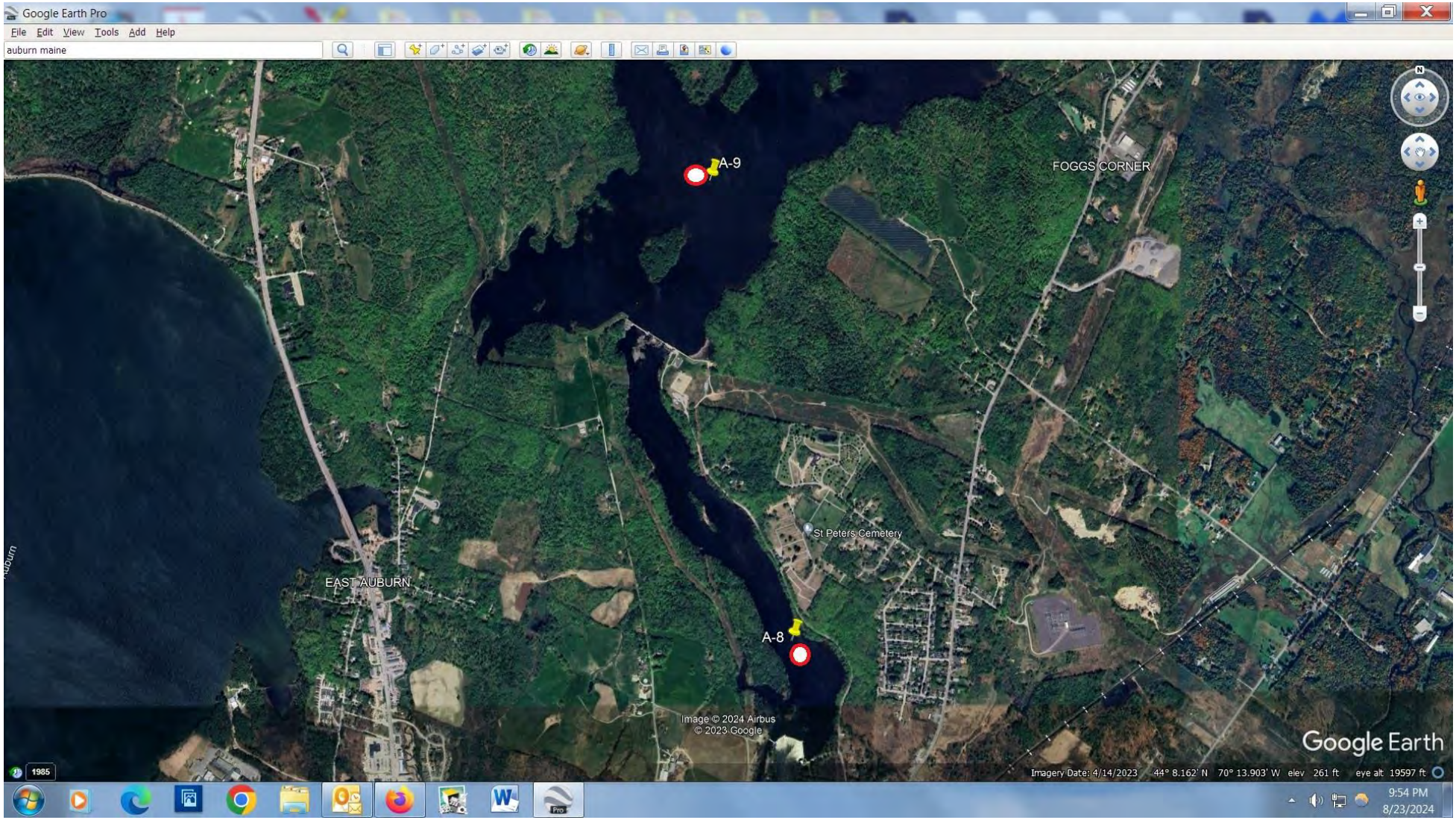


Exhibit 6

FOMB Water Quality Monitoring Data.
http://cybrary.friendsofmerrymeetingbay.org/WaterQualityProgram.cfm

- • 1999_chartdata (XLS File 13 KB)
- 1999_data_ss (XLS File 17 KB)
- 1999_WQ_Complete (XLS File 17 KB)
- 1999_WQData (XLS File 13 KB)
- 1999_WQMFullData (XLS File 17 KB)
- 2000_Chartdata (XLS File 16 KB)
- 2000_MMBDO (XLS File 17 KB)
- 2000_WQ_Complete (XLS File 40 KB)
- 2001_chartdata (XLS File 17 KB)
- 2001_WQ (XLS File 42 KB)
- 2001_WQ_Abbrev (XLS File 36 KB)
- 2002_Complete (XLS File 42 KB)
- 2002_DO (XLS File 18 KB)
- 2002_WQ_Summary (XLS File 22 KB)
- 2003_WQ_data (XLS File 55 KB)
- 2004_WQ_data (XLS File 47 KB)
- 2005_fecal_coliform_rain_events (XLS File 20 KB)
- 2005_WQ_Data (XLS File 142 KB)
- 2006_DO_Data (XLS File 59 KB)
- 2006_Fecal_Data(complete_set) (XLS File 40 KB)
- 2007_ColiformData (XLS File 24 KB)
- 2007_DO_Data (XLS File 46 KB)
- 2008_DO_Data (XLS File 50 KB)
- 2008_Fecal_Data (XLS File 38 KB)
- 2008_Fecal_replicates (XLS File 28 KB)
- 2008_Fecal_YTDApril-June (XLS File 25 KB)
- 2008_LowerAndroDO_dataThrough June (XLS File 15 KB)
- 2009 Dissolved O2 Data (XLS File 37 KB)
- 2009 Ordered Andro data _Geomeans (XLS File 178 KB)
- 2009-Coliscan_Bacteria (XLS File 28 KB)
- 2010 Andro data with E coli & DO Geomeans (XLS File 36 KB)
- 2010 Dissolved O2 Data La Motte(version 1) (XLS File 44 KB)
- 20100000-Coliform-Final (XLS File 58 KB)
- 2011-FOMB_Ecoli (XLS File 16 KB)
- 2011_Dissolved_O2_Data_(version_1) (XLS File 53 KB)
- 2012_Dissolved_O2_Data_(version_1) (XLS File 47 KB)
- 2013_Dissolved_O2_Data_(version_1) (XLS File 42 KB)
- 20140000-Coliform-Final (XLS File 34 KB)
- 20140000-Dissolved_O2_Data_(version_1) (XLS File 44 KB)
- 20150000_Coliform_Final (XLS File 36 KB)
- 20160414_Update_Dissolved_O2_Data_HW_Data_Sheets (XLS File 47 KB)
- 20161231_Coliform_Data (XLS File 37 KB)
- 20161231_Coliform_Final (XLS File 37 KB)
- 20161231_Dissolved_O2_Data (XLS File 47 KB)
- 20171231_Androscoggin_and_Misc_Coliform_Data (XLS File 54 KB)
- 20171231_Dissolved_O2_Data (XLS File 48 KB)

- 20181201_FOMB_Coliform_and_DO_Data (XLS File 56 KB)
- 20191230-Coliform DO Final (XLS File 59 KB)
- 2020_WQ_Data_Complete (XLS File 62 KB)
- 2021 Colliform and Dissolved O2 Data (XLS File 60 KB)
- 2022 Colliform and Dissolved O2 Data (XLS File 62 KB)
- 2023 Colliform and Dissolved O2 Data (XLS File 63 KB)
- 2024 Coliform and Dissolved O2 Data (XLS File 61 KB)
- DataSheet (DOC File 46 KB)
- DMRDataSheet (DOC File 34 KB)
- FOMBFecalColiformFieldDataSheet2008 (DOC File 27 KB)
- Water Quality 03-05 (DOC File 1.72 MB)
- WQ.htm (HTM-OLD File 2 KB)
- WS_FTP (LOG File 12 KB)

Exhibit 7

2021

Aquatic Life Determination

Macroinvertebrate Sampling Study

of the

Androscoggin River,

Lewiston to Brunswick

Submitted by:

Paul C. Leeper
Moody Mountain Environmental
137 Diamond Str
Searsmont Maine 04973

Submitted to:

Friends of Merrymeeting Bay
P.O. Box 233
Richmond, Maine 04357
Date: May 4 2022

Introduction

This macroinvertebrate sampling study was conducted to determine what Maine Aquatic Life Water Quality Standards the lower Androscoggin River currently attains, between Lewiston and Brunswick. Rock bags/baskets were deployed at six sites during August and September, 2021 providing standardized substrates for macroinvertebrate colonization. Samples were retrieved, and the organisms were identified and enumerated. These data were submitted to the DEP for classification modeling and decisions on water quality class attainment in terms of Aquatic Life. The project was funded by Friends of Merrymeeting Bay (FOMB).

Study Objectives

The goal of the macroinvertebrate sampling study was to generate data on the aquatic macroinvertebrate communities in the Androscoggin River between Lewiston and Brunswick and assess these communities in terms of Maine's Aquatic Life Standards. The study was undertaken to better inform current reclassification efforts.

Study Area

In 2021 we placed samples at six (6) sites in the Androscoggin River to study aquatic macroinvertebrates (Figure 1). Table 1 shows the locations of the sample sites.

Figure 1. Location of aquatic macroinvertebrate sampling sites between Lewiston and Brunswick on the Androscoggin River, August, September 2021.

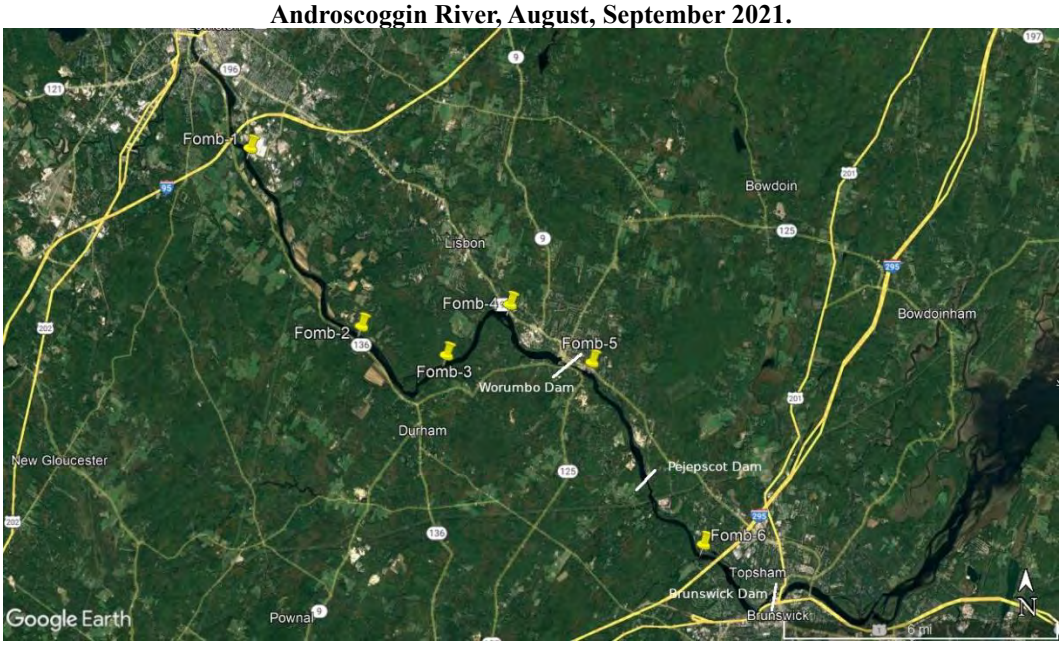


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Table 1. Location of six (6) macroinvertebrate sample sites on the Androscoggin River in 2021 with notes.

Site	Town	Latitude	Longitude	Notes
1	Lewiston	44.058082	70.20023	
2	Durham	44.001923	70.15123	
3	Lisbon	43.992786	70.11391	
4	Lisbon	44.008722	70.08600	Worumbo Impoundment
5	Lisbon Falls	43.990480	70.04998	Pejepscot Impoundment
6	Brunswick	43.932984	70.00109	possibly impounded by Brunswick Dam at times

Water Classification

The Androscoggin River between Lewiston and Brunswick, during the time of the study, was classified Class C ((38 M.R.S.A § 467(1)(B)(1)(b))). With respect to designated uses, the Maine Water Quality Law requires that "Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as habitat for fish and other aquatic life." (38 M.R.S.A. § 465(4)(A)). In addition, for Class C waters, "Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community..." (38 M.R.S.A. § 465(4)(C). The term "community function" means mechanisms of uptake, storage and transfer of life-sustaining materials available to a biological community which determines the efficiency of use and the amount of export of the materials from the community" ((38 M.R.S.A. § 466(3)). The term "community structure" means the organization of a biological community based on numbers of individuals within different taxonomic groups and the proportion each taxonomic group represents of the total community" ((38 M.R.S.A. § 466(4)). The term "resident biological community" is defined as "aquatic life expected to exist in a habitat which is free from the influence of the discharge of any pollutant" ((38 M.R.S.A. § 466(10)).

Study Methods

The objective of the macroinvertebrate sampling study was to determine if the aquatic life, in this case the macroinvertebrate community, attained these Class C standards or; was the aquatic

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life attaining a higher class? The Maine Department of Environmental Protection (DEP) "Methods for Biological Sampling and Analysis of Maine's Inland Waters" (Davies and Tsomides Revised 2014) were used as the basis of the field and laboratory procedures in the macroinvertebrate sampling study. A summary of these methods is given below.

The DEP standard rock bag/basket samplers were used for this study. These samplers hold approximately 16 lbs. of clean, washed, bank-run cobble, graded to uniform diameter range of 1.5 to 3 inches. Three (3) samplers were placed at each sample site; samplers are left in the river for approximately 28 days (± 4 days) to allow for invertebrate colonization. Retrieval of the samplers was done using an aquatic D-net at sites 1, 2, and 3. The net was placed directly downstream of a sampler; the sampler was then picked up and placed in the net. The contents of each sampler and the net were washed through a sieve bucket and preserved in labeled jars. Samplers at Sites 4, 5, and 6 were deployed and retrieved by certified SCUBA diver. At these deeper, non-wadeable, sites a diver is required in order to observe the conditions on the bottom and ensure proper placement and retrieval of the samplers. The diver retrieved the samplers using fine mesh collection bags. After enclosing the samplers, the samplers were brought to the surface.

Habitat measurements including substrate type, depth, current velocity and temperature were collected at sampler collection and retrieval.

The samplers were collected, preserved, and transported to the Moody Mountain Environmental laboratory. The three (3) samplers (replicates) were sorted, identified, and enumerated.

The Maine DEP, Division of Environmental Assessment (DEA) uses a linear discriminant water quality model (LDM) and professional judgment to determine water quality class attainment of aquatic macroinvertebrate communities. The LDM results are percentages indicating the probability of a site attaining water quality classes A, and AA (the biocriteria requirements are the same), B, or C. The LDM numeric criteria results can be supplanted by professional judgment if conditions are such that the data sets are unsuitable for LDM analysis.

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The Method outlines a number of conditions that can trigger the use of professional judgment to analyze data. Among these are:

1. Minimum Provisions - if the sample Mean Total Abundance is less than 50 individuals or Generic Richness is less than 15 genera.
2. Atypical Conditions - where atypical conditions could result in uncharacteristic findings, professional judgment can be used to make adjustments. Examples of these atypical conditions are:

    a. - Habitat Factors

        Lake Outlets
        Impounded Waters
        Substrate Characteristics
        Tidal Waters

    b. - Sampling Factors

        Disturbed Samples
        Unusual Taxa Assemblages
        Human Error in Sampling

    c. - Analytical Factors

        Subsample versus Whole Sample analysis
        Human Error in Processing

In cases where professional judgment is used the Method outlines a process by which adjustments should occur. These are:

a. **Resample** the site if specific sampling factors may have influenced the results

b. **Raise the Finding** of the LDM from non-attainment to indeterminate or attainment of Class C;

c. **Raise the Finding** of the LDM from one class to the next higher class;

d. **Lower the Finding** of the LDM to indeterminate or the next lower class. This would be based on evidence that the narrative aquatic life criteria for the assigned class are not met;

e. **Determination of Non-Attainment**: Minimum Provisions not met by samples for which no evidence exists of atypical conditions.

f. **Determination of Attainment**: Minimum Provisions not met by samples for which there is evidence of factors that could result in minimum provisions not being met, professional judgment may be used to make a professional finding of attainment of the aquatic life criteria for any class. Such decisions will be provisional until appropriate resampling is carried out.

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Results

The samplers were placed in the river on August 4 and 5, 2022. Samplers were retrieved on August 31 (Sites 1-4) and September 3 (Site 5-6). At Site 5 it was found that the samplers had been disturbed so 3 new samplers were deployed and retrieved on September 29, 2022. Habitat measurements are shown in Table 2. Underwater photos of the substrate and sampler placement are included below.

Table 2. Site Information and habitat measurements at six (6) sites in the Androscoggin River between Lewiston and Brunswick for aquatic macroinvertebrate sampling. August, September 2021

Site	Town	Sample Method	Deployment Date	Deployment Time	Number Deployed	Deployed Depth (cm)	Retrieval Date	Retrieval Time	Number Retrieved
1	Lewiston	Rock Bag	8/4/2021	12:10 PM	3	55	8/31/2021	12:40 PM	3
2	Durham	Rock Bag	8/4/2021	1:50 PM	3	52	8/31/2021	10:30 AM	3
3	Lisbon	Rock Bag	8/4/2021	2:45 PM	3	30	8/31/2021	3:20 PM	3
4	Lisbon	RB-Rock Basket	8/4/2021	3:45 PM	3	314	8/31/2021	4:00 PM	3
5	Lisbon Falls	RB-Rock Basket	9/3/2021	11:00 AM	3	344	9/29/2021	9:45 AM	3
6	Brunswick	Rock Bag	8/5/2021	3:45 PM	3	317	9/3/2021	9:45 AM	3

	Physical Characteristics								
Site	Land Use 1	Land Use 2	Land Use 3	Terrain	Canopy Cover	Notes	Notes	Notes	Notes
1	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS		Below POTW	
2	Upland hardwood	Upland conifer		Flat	Open	Below Urban NPS		Below POTW	Below Agriculture NPS
3	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS		Below POTW	Below Agriculture NPS
4	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS	Above Dam	Below POTW	Below Agriculture NPS
5	Upland hardwood	Upland conifer	Urban	Rolling	Open	Below Urban NPS	Above Dam	Below POTW	Below Dam
6	Upland hardwood	Upland conifer		Rolling	Open	Above Dam			

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	Potential Stressor(s)			
Site	Stressor 1	Stressor 2	Stressor 3	Stressor 4
1	NPS Pollution	Urban Runoff		
2	NPS Pollution	Urban Runoff		
3	NPS Pollution	Urban Runoff		
4	NPS Pollution	Urban Runoff	Impounded	Nutrients
5	Impounded	NPS Pollution	Urban Runoff	
6				

	Physical Characteristics of Bottom (%)				
Site	Bedrock	Boulders (>10")	Rubble/Cobble (2.5" – 10")	Gravel (1/8" – 2.5")	Sand (<1/8")
1		10	55	25	10
2			5	15	80
3		80		10	10
4					100
5			50	40	10
6	50	10	40		

	Habitat Characteristics at Placement				
Site	Wetted Width (m)	Depth (cm)	Velocity (cm/sec)	DO (mg/l)	Temperature (°C)
1	152	55	59	9.5	23.3
2	252	52	21	11	24.8
3	139	30	27	10.6	24.3
4	396	314	8.5	9.4	23.6
5	185	344	18	7.9	22
6	176	317	30	8.3	23.5

	Habitat Characteristics at Retrieval				
Site	Wetted Width (m)	Depth (cm)	Velocity (cm/sec)	DO (mg/l)	Temperature (°C)
1	152	40	45	8.4	23.3
2	252	46	21	10	24.9
3	139	37	11	9.4	25.5
4	396	320	5	8.1	24.9
5	185	393	18	8.5	19.5
6	176	310	34	7.6	23.2

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Photo 1. Rock baskets and rock bag samplers before deployment. August, 2021

Photo 2. Deploying rock bags, Androscoggin River. August, 2021 (Site 1).

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Photo 3. Site 1 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

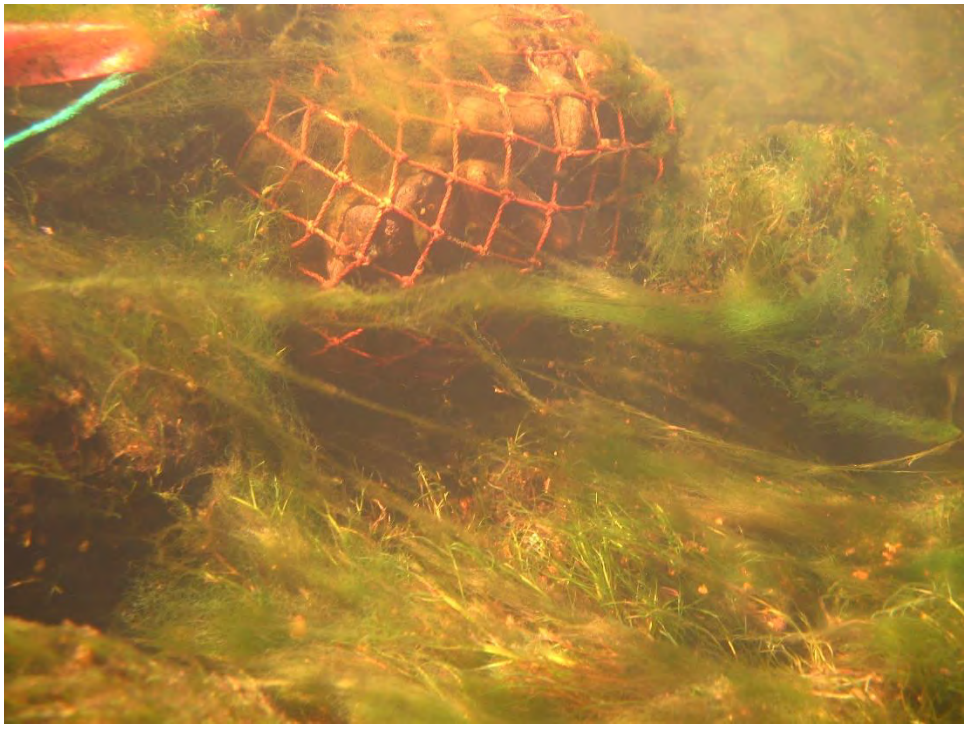

Photo 4. Site 2 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

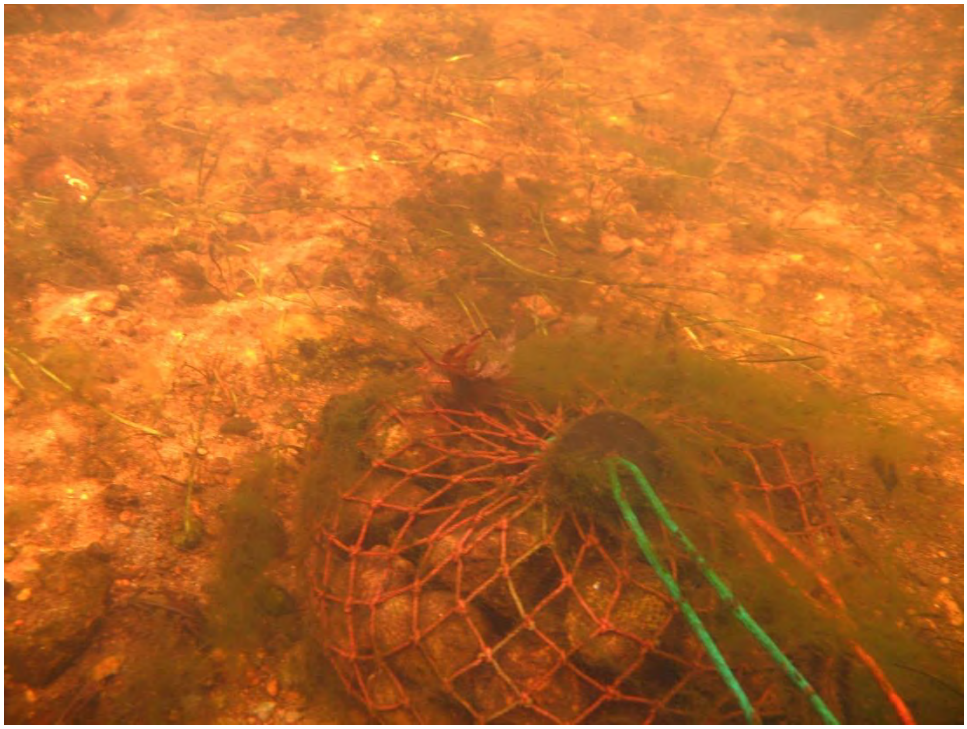

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Photo 5. Site 3 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

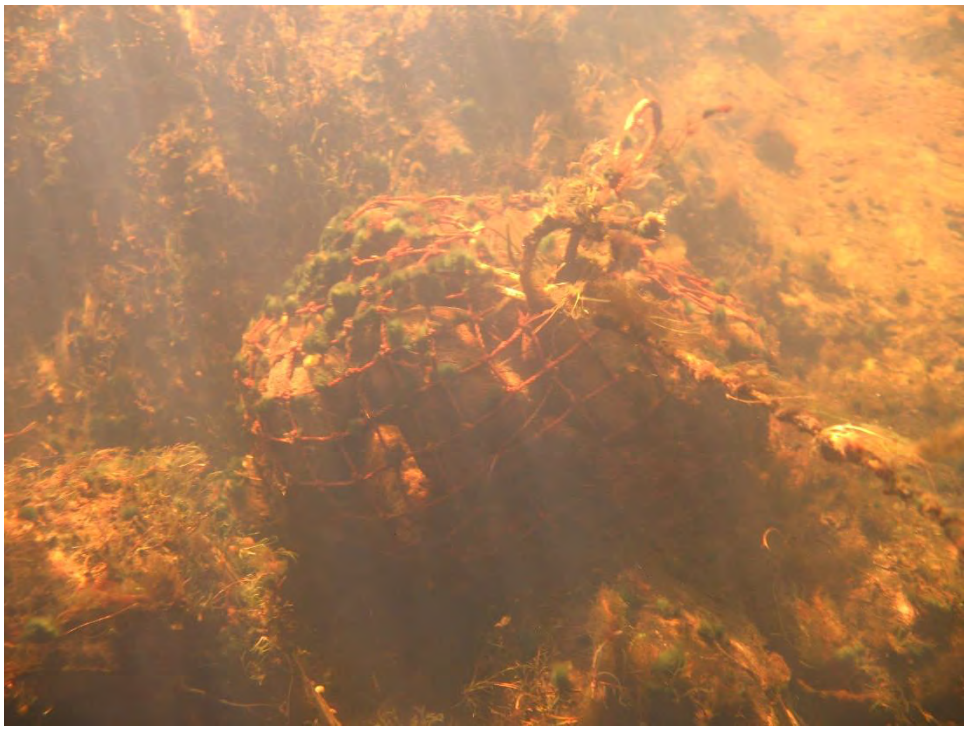

Photo 6. Site 4 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

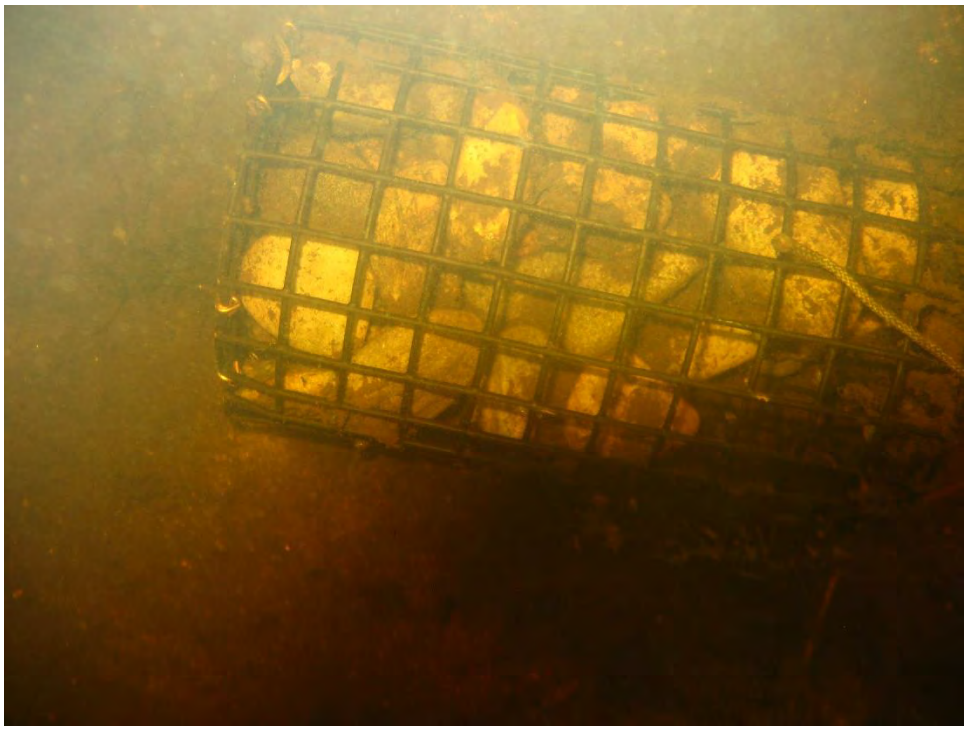

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Photo 7. Site 4 typical substrate. Androscoggin R. August, 2021.

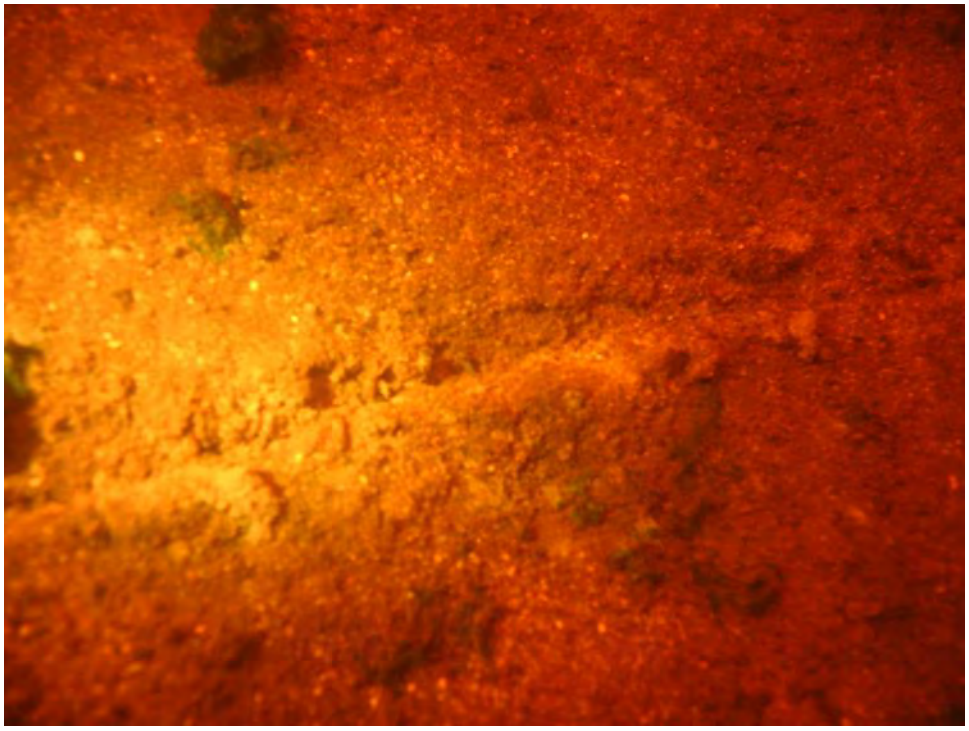

Photo 8. Site 5 substrate and typical sample placement and condition at retrieval. Androscoggin R. September, 2021.

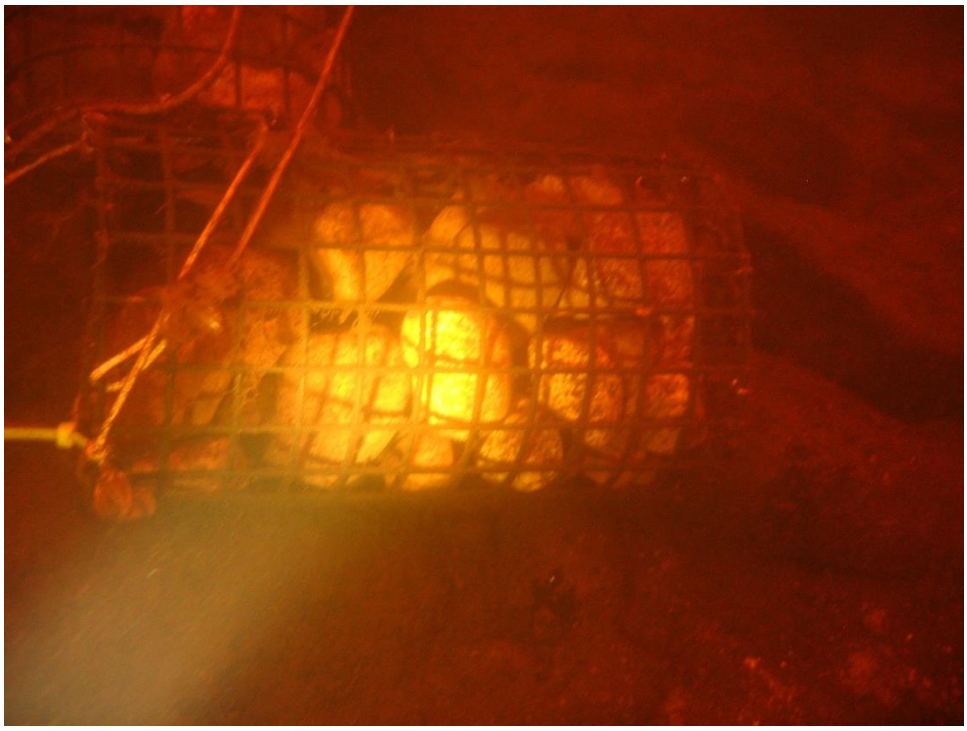

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Photo 9. Site 5 substrate. Androscoggin R. September, 2021.

Photo 10. Site 6 substrate and typical sample placement and condition at retrieval. Androscoggin R. September, 2021.

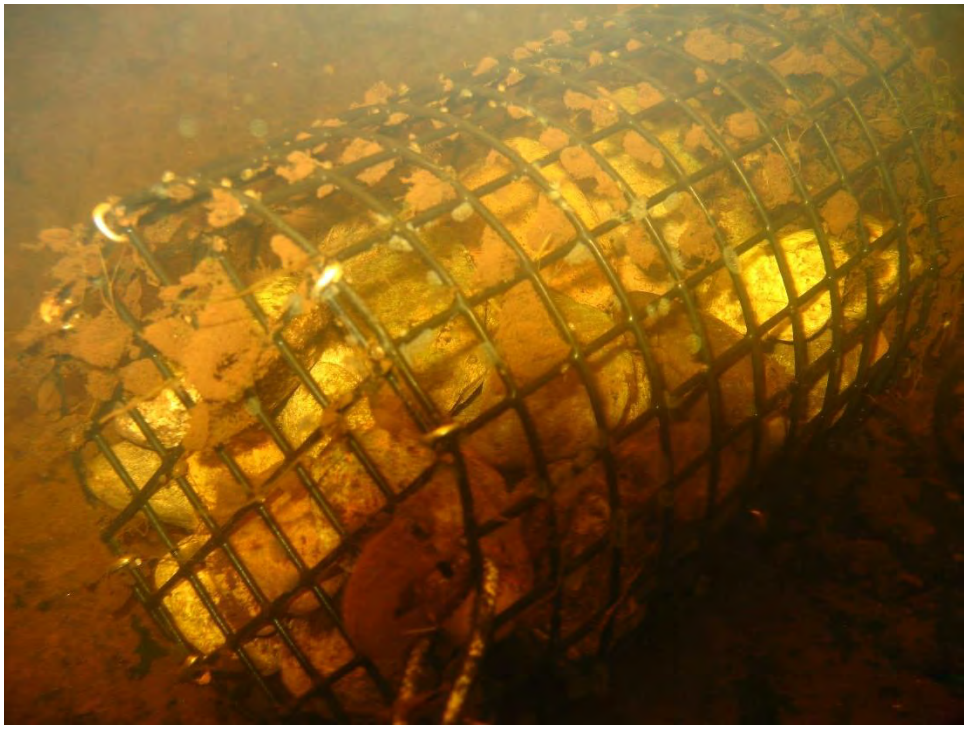

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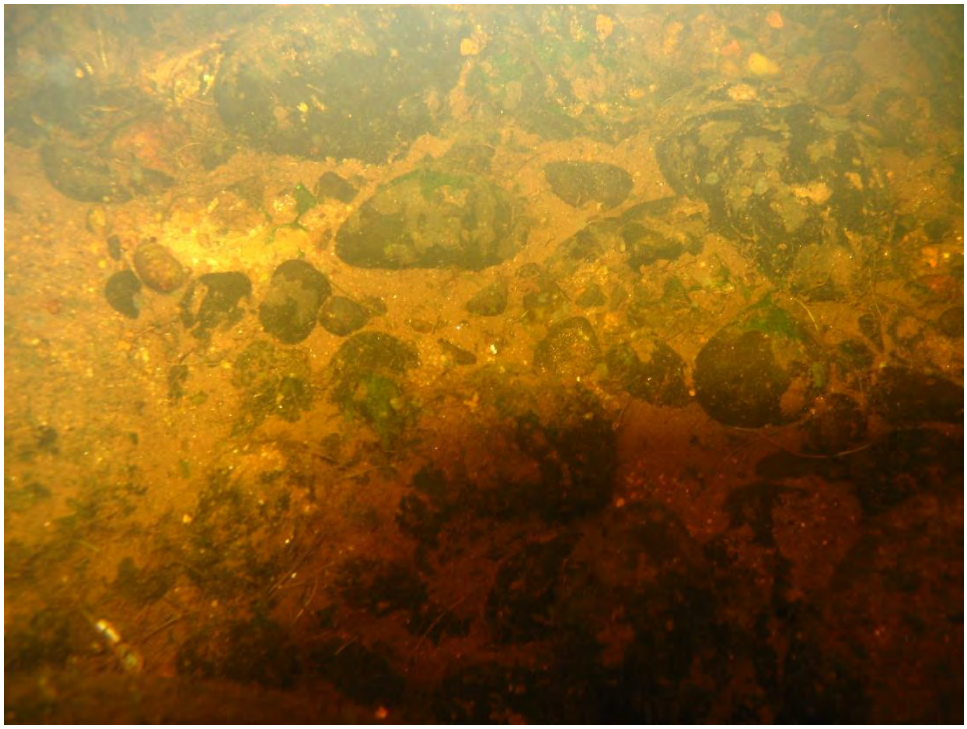
Photo 11. Site 6 substrate. Androscoggin R. September, 2021.



Community Analysis

Structural indices for the sampled communities are shown in Table 3. Dominant organisms (representing over 5% of the Total Abundance) in the communities are shown in Table 4 arranged from the most sensitive organisms to the organisms most tolerant of poor water quality conditions. The make-up of these communities and a discussion of the results are presented below.

Table 3. Indices of community structure for the aquatic invertebrate communities at six (6) sites in the Androscoggin River between Lewiston and Brunswick. August, September 2021.

Site	Tot. Abund.	Taxa Richness	S-W Div.	Hils. Biotic Index (HBN)	Water Quality indication from HBN	Mayfly, Stonefly, Caddisfly (EPT) Richness	Mayfly, Stonefly (EP)		Midge		Worms & Snails
							Rich	% Ab	Rich	% Ab	% Ab
1	2388.3	27	2.85	3.21	Excellent	13	4	7.2%	5	5.1%	26.9%
2	677.3	37	3.71	5.18	Good	16	5	20.6%	10	12.5%	19.9%
3	1359.0	30	3.68	4.06	V. Good	15	6	16.2%	8	12.8%	14.5%
4	295.0	40	3.71	6.4	Fair	16	5	10.5%	11	34.1%	12.5%
5	279.0	34	3.63	6.43	Fair	16	6	21.4%	8	16.2%	7.6%
6	312.7	33	3.55	5.6	Fair	13	4	7.8%	10	4.3%	25.6%

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Table 4. Dominant aquatic invertebrate organisms at six (6) sites in the Androscoggin River between Lewiston and Brunswick. August, September 2021. Organisms are ranked from most sensitive to most tolerant.

Sensitivity to Poor Water Quality		Site 1	2	3	4	5	6
Sensitive	Caddisfly *Chimarra*	42.0%		24.6%			
	Caddisfly *Ochrotrichia*		6.8%				
Intermediate	Caddisfly *Cheumatopsyche*	7.2%	27.4%	11.9%			
	Mayfly Acerpenna	6.7%	16.6%	11.6%			
	Midge *Pentaneura*						20.5%
	Midge *Polypedilum*		5.2%	7.0%			
	Midge *Microtendipes*			5.8%			
	Caddisfly *Polycentropus*				27.3%	6.7%	
Tolerant	Mayfly *Stenacron*				6.1%	13.1%	13.0%
	Caddisfly *Neureclipsis*				5.0%	35.2%	
	Amphipod *Hyalella*				12.5%		
	Caddisfly *Oecetis*				11.2%		
	Midge *Dicrotendipes*					6.0%	27.0%
	Flatworm Planariidae	16.4%	8.4%	13.5%	5.1%		
	Snail Hydrobiidae	10.3%	5.4%				6.2%
	Mussel Physidae				9.5%		

Site 1-

The Site 1 was located in riffle habitat with moderate current velocities and predominantly cobble and gravel substrates. It was just downstream of the Walmart distribution Center in Lewiston. Aquatic vegetation and attached filamentous algae were common. The invertebrate community was numerous and moderately rich and diverse. Indexes measuring the tolerance to poor water quality conditions revealed that sensitive organisms accounted for a large portion of the community. The EPT richness index showed that sensitive mayfly (**E**phemeroptera), stonefly (**P**lecoptera), and caddisfly (**T**richoptera) taxa were well represented. Of those 3 orders, the mayflies and stoneflies are generally more sensitive to environmental stressors. The number of taxa from these 2 orders (EP richness) however, represented 15% of the taxa richness and just 7% of the total abundance. Hilsenhoff's Biotic Index value, 3.2, indicated excellent water quality (Hilsenhoff 1987). The sensitive caddisfly *Chimarra* made up 42% of the community.

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Site-2

Site 2 to was located in a shallow run with predominantly sandy substrates. Attached filamentous algae was present. The invertebrate community was abundant, rich and diverse. EPT taxa were well represented and EP taxa represented 21% of the total abundance. Hilsenhoff's Biotic Index value, 5.2, indicated good water quality. The community was dominated by sensitive or intermediate organisms representing 56% of the community. This site was mid-river near FOMB's water monitoring site DBN.

Site-3

Site-3 was located in boulder strewn riffle midway between the Durham Carry-in Launch and the outlet of Sabbatus Stream. There was less attached filamentous algae at this site compared to the upstream sites. The invertebrate community was very abundant, moderately rich in taxa, and diverse. EPT taxa were well represented and EP taxa represented 16% of the total abundance. Hilsenhoff's Biotic Index value, 4.1, indicated very good water quality. The sensitive caddisfly *Chimarra* made up a quarter of the community and sensitive or intermediate organisms represented 61% of the community.

Site 4-

Site 4 was located approximately 1.75 miles upstream of the Worumbo Dam just downstream of the outlet of Sabbatus Stream. The site was within the impoundment and had a predominantly sandy substrate and low current. The invertebrate community had relatively low abundance compared to upstream, free-flowing communities but was rich in taxa and diverse. EPT taxa were well represented but EP taxa represented just 11% of the total abundance. Hilsenhoff's Biotic Index value, 6.4, indicated fair water quality. The caddisfly *Polycentropus*, an intermediately tolerant organism, represented 27% of the community. The remainder of the dominant organisms fell into the tolerant category and represented almost half of the community.

Site-5

Site 5 was located approximately a half mile downstream of the Worumbo Dam just upstream of the Pejepscot Boat Launch, FOMB's water monitoring site PBL. This site was impounded by the Pejepscot Dam located over 2 miles downstream. This invertebrate community was also less abundant than the upstream, free-flowing communities. The community was

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moderately rich in taxa and diverse. EPT taxa were well represented and EP taxa represented 21% of the total abundance. Hilsenhoff's Biotic Index value, 6.4, indicated fair water quality. The caddisfly *Polycentropus*, an intermediately tolerant organism, represented just 7% of the community. The remainder of the dominant organisms fell into the tolerant category and represented over half of the community.

Site-6

Site 6, at the time of deployment and retrieval, was free-flowing run habitat approximately 2.4 mile upstream of the Brunswick Dam. There is some question whether this location is within the impoundment at higher head pond levels. It is outboard of the ledges marking FOMB monitoring site BIL. The substrates were a combination of ledge, boulders and cobble. Similar to sites 4 and 5 the invertebrate community was less abundant than the upstream, free-flowing communities at site 1, 2, and 3. The community was moderately rich in taxa and diverse. EPT taxa were well represented but EP taxa represented just 8% of the total abundance. Hilsenhoff's Biotic Index value, 5.6, indicated fair water quality. The midge *Pentaneura*, an intermediately tolerant organism, represented over 20% of the community. The remainder of the dominant organisms fell into the tolerant category and represented 46% of the community.

LDM Results

The LDM biocriteria results and DEP determinations are shown in Table 5 and Appendix 1. As mentioned previously, to attain a particular class a site must have a 60% or greater score in the test for that class and Professional Judgement can be used to raise or lower a finding. DEP determined that Sites 1 through 3 attained Class B standards and the downstream site (4-6) attained Class C standards. DEP used professional judgement to raise the finding at Site 2 to Class B based on the community structure. In addition, as mentioned above, Sites 4 and 5 are impounded and it is unclear if Site 6 is impounded at certain head pond water levels. DEP methodology allows for extended sampler exposure periods of 56 days ± 4 days to allow for adequate colonization in the case of assessments of low velocity or impounded. If Sites 4 and 5 are sampled again it is the authors recommendation that samplers remain in the water for the extended exposure period. In addition, if the community in the vicinity of Site 6 is sampled again the location should be changed

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to a documented free flowing area or a documented impounded area. If the new location is in a documented impounded area then the extended exposure period should be used.

Table 5. Results of the DEP linear discriminant model (LDM) and DEP determinations for six (6) sites on the Androscoggin River between Lewiston and Brunswick.

Site	Probability of Class A	Probability of Class B	Probability of Class C	Probability of Non-Attainment	DEP Final Determination
1	16%	**99%**	100%	0%	**B**
2	1%	**51%**	100%	0%	**B***
3	6%	**97%**	100%	0%	**B**
4	0%	0%	**100%**	0%	**C**
5	2%	4%	**100%**	0%	**C**
6	1%	31%	**100%**	0%	**C**

*** DEP used Best Professional Judgement: Indeterminate for Class B (p = 0.51), Raised to Class B based on community structure.**

Summary

1. The objective of the macroinvertebrate sampling study was to generate data on the aquatic macroinvertebrate community in the Androscoggin River between Lewiston and Brunswick and assess this community in terms of Maine's Aquatic Life Standards. The river downstream of Lewiston's Great Falls dam at the time of the study was classified Class C. Six (6) sites were sampled on the river.
2. The Maine Department of Environmental Protection (DEP) "Methods for Biological Sampling and Analysis of Maine's Inland Waters" (Davies and Tsomides 2014) were used as the basis of the field and laboratory procedures in this study.
3. Samplers were retrieved on August 31 (Sites 1-4) and September 3 (Site 6). At Site 5 it was found that the samplers had been disturbed so 3 new samplers were deployed and retrieved on September 29, 2022.
4. Sites 1-3 were located in free-flowing habitat. Sites 4 and 5 were located in impoundments. Site 6 appeared free-flowing during deployment and retrieval but may be impounded when the Brunswick head pond is at higher water levels.
5. The macroinvertebrate communities sampled between Lewiston and Brunswick were rich in taxa. The communities at Site 1, 2, 3 were more numerous than downstream communities and populated with more organisms that are intolerant of poor water quality.

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6. Maine DEP found the sites 1, 2, and 3 attained Class B Aquatic Life Standards and sites 4, 5, and 6 attained class C standards.

7. On March 31, 2022 Governor Mills signed into law LD 1964, the DEP triennial water reclassification bill. LD 1964 included an upgrade of the lower Androscoggin River from Worumbo dam in Lisbon Falls to Merrymeeting Bay from Class C to B, encompassing Sites 5 and 6. While DEP found these sites attained Class C, the river as a whole was found to meet Class B conditions including dissolved oxygen and *E. coli* bacteria levels.

   Because of their unique characteristics, hydropower impoundments are granted certain exemptions by the legislature under §464 (See Appendix 2). In summary the statute says that recognizing the aquatic life differences of impoundments, if a river with impoundments is classified as A or B, the impoundment shall also be considered to meet that standard provided it at least meets C criteria; unless:

   > (1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and
   >
   > (2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

   If the conditions described in (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. According to statute, a determination should be made whether above conditions 1 or 2 apply to river sections encompassing Sites 4, 5 & 6 and if so, improvements must be implemented (to meet Class B conditions). If 1 and 2 do not apply, Class B conditions are deemed to have been met in these impoundments.

References

Davies, S.P. and L. Tsomides. 2014. Methods for biological sampling and analysis of Maine's rivers and streams. ME Dept. of Env. Prot. Augusta, ME. 31p.

Hilsenhoff, W.L. 1987. An improved biotic index of organic stream pollution. The Great Lake Entomologist. Pgs. 31-39.

Appendix 1 DEP Classification Attainment Reports

MDEP S-1204 = FOMB Site 1

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

Station Information

Station Number:	**S-1204**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1204	HUC8 Name:	
Town:	Lewiston	Latitude:	44 3 28.97 N
Directions:	FROM DURHAM BOAT LAUNCH GO UPSTREAM 300 YDS DWNSTRM OF OLD DEP SAMPLING SITE "HELO BEACH"	Longitude:	70 12 0.98 W
		Stream Order:	

Sample Information

Log Number:	**2938**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date:	3/29/2022
Model Result with P≥0.6:	B	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.32	Class C	0.04	Class A, B, or C	1.00
Class B	0.64	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.99	Class A	0.16
Class C or Non-Attainment	0.01	Class B or C or Non-Attainment	0.84

Model Variables

01 Total Mean Abundance	2388.33	18 Relative Abundance Ephemeroptera	0.07
02 Generic Richness	27.00	19 EPT Generic Richness	13.00
03 Plecoptera Mean Abundance	2.67	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	0.00
04 Ephemeroptera Mean Abundance	169.00		
05 Shannon-Wiener Generic Diversity	2.85	23 Relative Generic Richness- Plecoptera	0.04
06 Hilsenhoff Biotic Index	3.21	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	183.33
07 Relative Abundance - Chironomidae	0.05		
08 Relative Generic Richness Diptera	0.22	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	0.67
09 *Hydropsyche* Abundance	32.33		
11 *Cheumatopsyche* Abundance	172.67	28 EP Generic Richness/14	0.29
12 EPT Generic Richness/ Diptera Generic Richness	2.17	30 Presence of Class A Indicator Taxa/7	0.29
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	2.67		
16 Tanypodinae Mean Abundance (Family Functional Group)	10.67		
17 Chironomini Abundance (Family Functional Group)	72.00		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Chimarra*	41.95
2	Planariidae	16.43
3	Hydrobiidae	10.34
4	*Cheumatopsyche*	7.23
5	*Acerpenna*	6.73

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Appendix 1 continued MDEP S-1204 = FOMB Site 1

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

Station Number: S-1204 Town: Lewiston Date Deployed: 8/4/2021
Log Number: 2938 Waterbody: Androscoggin River - Station 1204 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: MOODY MOUNTAIN ENVIRONMENTAL
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.3 deg C	Temperature:	
Dissolved Oxygen:	9.5 mg/l	Dissolved Oxygen:	
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	59 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	152 m	Wetted Width:	152 m
Bankfull Width:		Bankfull Width:	
Depth:	55 cm	Depth:	55 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Nps Pollution	Below POTW	Boulder	10 %
Urban Runoff	Below Urban NPS	Gravel	25 %
		Rubble/Cobble	55 %
		Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

FILAMENTOUS ALGAE, AQ. PLANTS

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Appendix 1 continued MDEP S-1204 = FOMB Site 1

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1204 Waterbody: Androscoggin River - Station 1204 Town: Lewiston
Log Number: 2938 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	392.33	392.33		--	16.4	16.4
Annelida	08	2.67	2.67		--	0.1	0.1
Paragnetina	09020209049	2.67	2.67	1	PR	0.1	0.1
Boyeria	09020301004	0.33	0.33	2	PR	0.0	0.0
Acerpenna	09020401007	160.67	160.67	5	CG	6.7	6.7
Maccaffertium	09020402015	0.67	0.67	4	SC	0.0	0.0
Isonychia	09020404018	7.67	7.67	2	CF	0.3	0.3
Chimarra	09020601003	1002.00	1002.00	2	CF	42.0	42.0
Cheumatopsyche	09020604015	172.67	172.67	5	CF	7.2	7.2
Hydropsyche	09020604016	32.33	32.33	4	CF	1.4	1.4
Macrostemum	09020604018	55.67	55.67	3	CF	2.3	2.3
Ochrotrichia	09020607027	65.00	65.00	4	P	2.7	2.7
Oxyethira	09020607028	5.33	5.33	3	P	0.2	0.2
Brachycentrus	09020609043	3.00	3.00	0	CF	0.1	0.1
Nectopsyche	09020618074	9.00	9.00	3	SH	0.4	0.4
Oecetis	09020618078	20.00	20.00	8	PR	0.8	0.8
Pentaneura	09021011014	10.67	10.67	6	PR	0.4	0.4
Cricotopus	09021011037	2.67	2.67	7	SH	0.1	0.1
Eukiefferiella	09021011041	29.33	29.33	8	CG	1.2	1.2
Tanytarsus	09021011076	8.00	8.00	6	CF	0.3	0.3
Polypedilum	09021011102	72.00	72.00	6	SH	3.0	3.0
Simulium	09021012047	78.00	78.00	4	CF	3.3	3.3
Elmidae	09021113	2.67	2.67		--	0.1	0.1
Ancyronyx	09021113063	5.33	5.33	6	--	0.2	0.2
Hydrachna	09030103001	0.33	0.33		--	0.0	0.0
Hydrobiidae	10010104	247.00	247.00		--	10.3	10.3
Physidae	10010202	0.33	0.33		SC	0.0	0.0

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

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

Station Information

Station Number:	**S-1205**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1205	HUC8 Name:	
Town:	Durham	Latitude:	44° 00' 06.90221700" N
Directions:	FROM DURHAM BOAT LAUNCH GO DOWNSTREAM APPROX. 1 MILE UPSTREAMOFSAND BAR. CONSULTANT SITE NAME: ANDY 2	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2939**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date: 3/29/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Best Professional Judgement**	
Date Last Calculated:	3/23/2022	Comments:	Indeterminate for Class B (p = 0.51). Raised to Class B based on community structure.	

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.12	Class C	0.29	Class A, B, or C	1.00
Class B	0.59	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.51	Class A	0.01
Class C or Non-Attainment	0.49	Class B or C or Non-Attainment	0.99

Model Variables

01 Total Mean Abundance	677.33	18 Relative Abundance Ephemeroptera	0.20
02 Generic Richness	37.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	1.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	8.00
04 Ephemeroptera Mean Abundance	138.33		
05 Shannon-Wiener Generic Diversity	3.71	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	5.18	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	195.33
07 Relative Abundance - Chironomidae	0.13		
08 Relative Generic Richness Diptera	0.30	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	23.33
09 *Hydropsyche* Abundance	0.33		
11 *Cheumatopsyche* Abundance	185.67	28 EP Generic Richness/14	0.36
12 EPT Generic Richness/ Diptera Generic Richness	1.45	30 Presence of Class A Indicator Taxa/7	0.00
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	1.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	61.67		
17 Chironomini Abundance (Family Functional Group)	18.67		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Cheumatopsyche*	27.41
2	*Acerpenna*	16.58
3	Planariidae	8.42
4	*Pentaneura*	6.84
5	Hydrobiidae	5.36

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

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

Station Number: S-1205 Town: Durham Date Deployed: 8/4/2021
Log Number: 2939 Waterbody: Androscoggin River - Station 1205 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	24.8 deg C	Temperature:	24.9 deg C
Dissolved Oxygen:	11 mg/l	Dissolved Oxygen:	10 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	21 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	252 m	Wetted Width:	252 m
Bankfull Width:		Bankfull Width:	
Depth:	52 cm	Depth:	46 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Flat	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Nps Pollution	Below Agriculture NPS	Gravel	15 %
Urban Runoff	Below POTW	Rubble/Cobble	5 %
	Below Urban NPS	Sand	80 %

Landcover Summary - 2004 Data

Sample Comments

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1205 Waterbody: Androscoggin River - Station 1205 Town: Durham
Log Number: 2939 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	57.00	57.00		--	8.4	8.4
Annelida	08	0.33	0.33		--	0.0	0.0
Hyalella	09010203006	3.00	3.00	8	CG	0.4	0.4
Orconectes	09010301008		1.00		CG		0.1
Orconectes limosus	09010301008013	1.00			--	0.1	
Acroneuria	09020209042	1.00	1.00	0	PR	0.1	0.1
Amphiagrion	09020309046	11.00	11.00	9	PR	1.6	1.6
Chromagrion	09020309049	0.33	0.33	4	PR	0.0	0.0
Acerpenna	09020401007	112.33	112.33	5	CG	16.6	16.6
Maccaffertium	09020402015	22.33	22.33	4	SC	3.3	3.3
Isonychia	09020404018	0.33	0.33	2	CF	0.0	0.0
Tricorythodes	09020411038	3.33	3.33	4	CG	0.5	0.5
Chimarra	09020601003	7.33	7.33	2	CF	1.1	1.1
Neureclipsis	09020603008	0.33	0.33	7	CF	0.0	0.0
Polycentropus	09020603010	7.00	7.00	6	PR	1.0	1.0
Cheumatopsyche	09020604015	185.67	185.67	5	CF	27.4	27.4
Hydropsyche	09020604016	0.33	0.33	4	CF	0.0	0.0
Macrostemum	09020604018	1.33	1.33	3	CF	0.2	0.2
Ochrotrichia	09020607027	35.33	35.33	4	P	5.2	5.2
Oxyethira	09020607028	13.67	13.67	3	P	2.0	2.0
Ceraclea	09020618072	1.00	1.00	3	CG	0.1	0.1
Nectopsyche	09020618074	9.67	9.67	3	SH	1.4	1.4
Oecetis	09020618078	28.00	28.00	8	PR	4.1	4.1
Ablabesmyia	09021011001	8.33	8.33	8	PR	1.2	1.2
Pentaneura	09021011014	46.33	46.33	6	PR	6.8	6.8
Thienemannimyia	09021011020	7.00	7.00	3	PR	1.0	1.0
Nanocladius	09021011049	1.33	1.33	3	CG	0.2	0.2
Rheotanytarsus	09021011072	1.67	1.67	6	CF	0.2	0.2
Tanytarsus	09021011076	1.33	1.33	6	CF	0.2	0.2
Dicrotendipes	09021011085	8.00	8.00	8	CG	1.2	1.2
Microtendipes	09021011094	2.67	2.67	6	CF	0.4	0.4
Polypedilum	09021011102	7.67	7.67	6	SH	1.1	1.1
Robackia	09021011103	0.33	0.33		CG	0.0	0.0
Simuliidae	09021012	1.33	1.33		--	0.2	0.2
Hydrobiidae	10010104	36.33	36.33		--	5.4	5.4
Physidae	10010202	31.00	31.00		SC	4.6	4.6
Planorbidae	10010203	10.33	10.33		--	1.5	1.5

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1205 Waterbody: Androscoggin River - Station 1205 Town: Durham

Log Number: 2939 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Ancylidae	10010204	12.00	12.00		SC	1.8	1.8

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

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

Station Information

Station Number:	**S-1206**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1206	HUC8 Name:	
Town:	Lisbon	Latitude:	43° 59' 34.17243456" N
Directions:	FROM SABATTUS STREAM LAUNCH GO UPSTREAM APPROX. 2 MILE TO BOULDER FIELD. CONSULTANT SITE NAME: ANDY 3	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2940**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date:	3/29/2022
Model Result with P≥0.6:	B	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.29	Class C	0.05	Class A, B, or C	1.00
Class B	0.66	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.97	Class A	0.06
Class C or Non-Attainment	0.03	Class B or C or Non-Attainment	0.94

Model Variables

01 Total Mean Abundance	1359.00	18 Relative Abundance Ephemeroptera	0.16
02 Generic Richness	30.00	19 EPT Generic Richness	15.00
03 Plecoptera Mean Abundance	7.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	5.33
04 Ephemeroptera Mean Abundance	213.67		
05 Shannon-Wiener Generic Diversity	3.68	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	4.06	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	194.67
07 Relative Abundance - Chironomidae	0.13		
08 Relative Generic Richness Diptera	0.30	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	38.00
09 *Hydropsyche* Abundance	40.33		
11 *Cheumatopsyche* Abundance	161.33	28 EP Generic Richness/14	0.43
12 EPT Generic Richness/ Diptera Generic Richness	1.67	30 Presence of Class A Indicator Taxa/7	0.14
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	7.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	22.67		
17 Chironomini Abundance (Family Functional Group)	114.67		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Chimarra*	24.60
2	Planariidae	13.47
3	*Cheumatopsyche*	11.87
4	*Acerpenna*	11.63
5	*Ochrotrichia*	6.99

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

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

Station Number: S-1206 Town: Lisbon Date Deployed: 8/4/2021
Log Number: 2940 Waterbody: Androscoggin River - Station 1206 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	24.3 deg C	Temperature:	25.5 deg C
Dissolved Oxygen:	10.6 mg/l	Dissolved Oxygen:	9.4 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	27 cm/s	Velocity:	11 cm/s
pH:		pH:	
Wetted Width:	139 m	Wetted Width:	139 m
Bankfull Width:		Bankfull Width:	
Depth:	30 cm	Depth:	37 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Nps Pollution	Below Agriculture NPS	Boulder	80 %
Urban Runoff	Below POTW	Gravel	10 %
	Below Urban NPS	Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

BOULDER FIELD

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1206 Waterbody: Androscoggin River - Station 1206 Town: Lisbon
Log Number: 2940 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	183.00	183.00		--	13.5	13.5
Acroneuria	09020209042	7.00	7.00	0	PR	0.5	0.5
Acerpenna	09020401007	158.00	158.00	5	CG	11.6	11.6
Plauditus	09020401012	13.33	13.33		CG	1.0	1.0
Maccaffertium	09020402015	31.00	31.00	4	SC	2.3	2.3
Isonychia	09020404018	7.33	7.33	2	CF	0.5	0.5
Tricorythodes	09020411038	4.00	4.00	4	CG	0.3	0.3
Chimarra	09020601003	334.33	334.33	2	CF	24.6	24.6
Neureclipsis	09020603008	22.67	22.67	7	CF	1.7	1.7
Cheumatopsyche	09020604015	161.33	161.33	5	CF	11.9	11.9
Hydropsyche	09020604016	40.33	40.33	4	CF	3.0	3.0
Macrostemum	09020604018	46.00	46.00	3	CF	3.4	3.4
Ochrotrichia	09020607027	95.00	95.00	4	P	7.0	7.0
Brachycentrus	09020609043	2.67	2.67	0	CF	0.2	0.2
Nectopsyche	09020618074	9.33	9.33	3	SH	0.7	0.7
Oecetis	09020618078	25.33	25.33	8	PR	1.9	1.9
Petrophila	09020901004	1.00	1.00	5	SC	0.1	0.1
Pentaneura	09021011014	14.67	14.67	6	PR	1.1	1.1
Thienemannimyia	09021011020	8.00	8.00	3	PR	0.6	0.6
Cricotopus	09021011037	17.33	17.33	7	SH	1.3	1.3
Paratanytarsus	09021011071	2.67	2.67	6	--	0.2	0.2
Tanytarsus	09021011076	16.00	16.00	6	CF	1.2	1.2
Dicrotendipes	09021011085	5.33	5.33	8	CG	0.4	0.4
Microtendipes	09021011094	30.67	30.67	6	CF	2.3	2.3
Polypedilum	09021011102	78.67	78.67	6	SH	5.8	5.8
Simulium	09021012047	13.33	13.33	4	CF	1.0	1.0
Elmidae	09021113	4.00	4.00		--	0.3	0.3
Macronychus	09021113065	12.00	12.00	4	--	0.9	0.9
Hydrobiidae	10010104	12.33	12.33		--	0.9	0.9
Physidae	10010202	2.33	2.33		SC	0.2	0.2

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

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

Station Information

Station Number:	**S-1207**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1207	HUC8 Name:	
Town:	Lisbon	Latitude:	44° 00' 31.44009501" N
Directions:	FROM SABATTUS STREAM LAUNCH GO DOWNTREAM APPROX. 350 YDS. CONSULTANT SITE NAME: ANDY 4	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2941**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	3/29/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.00	Class C	0.94	Class A, B, or C	1.00
Class B	0.01	NA	0.05	Non-Attainment	0.00

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

Model Variables

01 Total Mean Abundance	295.00	18 Relative Abundance Ephemeroptera	0.11
02 Generic Richness	40.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	0.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	1.00
04 Ephemeroptera Mean Abundance	31.00	23 Relative Generic Richness- Plecoptera	0.00
05 Shannon-Wiener Generic Diversity	3.71	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	13.00
06 Hilsenhoff Biotic Index	6.40	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	11.67
07 Relative Abundance - Chironomidae	0.34	28 EP Generic Richness/14	0.36
08 Relative Generic Richness Diptera	0.28	30 Presence of Class A Indicator Taxa/7	0.00
09 *Hydropsyche* Abundance	0.67		
11 *Cheumatopsyche* Abundance	2.00		
12 EPT Generic Richness/ Diptera Generic Richness	1.45		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	0.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	11.33		
17 Chironomini Abundance (Family Functional Group)	85.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Microtendipes*	27.34
2	*Polycentropus*	12.54
3	*Hyalella*	11.19
4	*Oecetis*	9.49
5	Physidae	6.10

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

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

Station Number: S-1207 Town: Lisbon Date Deployed: 8/4/2021
Log Number: 2941 Waterbody: Androscoggin River - Station 1207 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.6 deg C	Temperature:	24.9 deg C
Dissolved Oxygen:	9.4 mg/l	Dissolved Oxygen:	8.1 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	8.5 cm/s	Velocity:	5 cm/s
pH:		pH:	
Wetted Width:	396 m	Wetted Width:	396 m
Bankfull Width:		Bankfull Width:	
Depth:	314 cm	Depth:	320 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Impounded	Below Agriculture NPS	Sand	100 %
Nps Pollution	Below POTW		
Nutrients	Below Urban NPS		
Urban Runoff			

Landcover Summary - 2004 Data

Sample Comments

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1207 Waterbody: Androscoggin River - Station 1207 Town: Lisbon
Log Number: 2941 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Planariidae	03010101	15.00	15.00		--	5.1	5.1
Annelida	08	0.33	0.33		--	0.1	0.1
Hirudinidae	08030201	1.67	1.67		--	0.6	0.6
Amphipoda	090102	0.33	0.33	8	--	0.1	0.1
Hyalella	09010203006	33.00	33.00	8	CG	11.2	11.2
Orconectes	09010301008		0.67		CG		0.2
Orconectes limosus	09010301008013	0.67			--	0.2	
Somatochlora	09020305027	0.33	0.33	1	PR	0.1	0.1
Argia	09020309048	1.00	1.00	7	PR	0.3	0.3
Coenagrion	09020309050	1.00	1.00	8	PR	0.3	0.3
Acerpenna	09020401007	1.00	1.00	5	CG	0.3	0.3
Plauditus	09020401012	0.33	0.33		CG	0.1	0.1
Stenacron	09020402014	14.67	14.67	7	SC	5.0	5.0
Maccaffertium	09020402015	11.67	11.67	4	SC	4.0	4.0
Caenis	09020412040	3.33	3.33	7	CG	1.1	1.1
Chimarra	09020601003	0.67	0.67	2	CF	0.2	0.2
Neureclipsis	09020603008	0.33	0.33	7	CF	0.1	0.1
Polycentropus	09020603010	37.00	37.00	6	PR	12.5	12.5
Cheumatopsyche	09020604015	2.00	2.00	5	CF	0.7	0.7
Hydropsyche	09020604016	0.67	0.67	4	CF	0.2	0.2
Ochrotrichia	09020607027	2.00	2.00	4	P	0.7	0.7
Oxyethira	09020607028	0.33	0.33	3	P	0.1	0.1
Brachycentridae	09020609	1.00	1.00		--	0.3	0.3
Nectopsyche	09020618074	8.33	8.33	3	SH	2.8	2.8
Triaenodes	09020618077	0.33	0.33	6	SH	0.1	0.1
Oecetis	09020618078	28.00	28.00	8	PR	9.5	9.5
Ablabesmyia	09021011001	9.00	9.00	8	PR	3.1	3.1
Nilotanypus	09021011012	0.33	0.33	6	PR	0.1	0.1
Pentaneura	09021011014	0.67	0.67	6	PR	0.2	0.2
Thienemannimyia	09021011020	1.33	1.33	3	PR	0.5	0.5
Cricotopus	09021011037	0.67	0.67	7	SH	0.2	0.2
Eukiefferiella	09021011041	0.67	0.67	8	CG	0.2	0.2
Rheotanytarsus	09021011072	1.33	1.33	6	CF	0.5	0.5
Tanytarsus	09021011076	1.33	1.33	6	CF	0.5	0.5
Dicrotendipes	09021011085	1.00	1.00	8	CG	0.3	0.3
Microtendipes	09021011094	80.67	80.67	6	CF	27.3	27.3
Polypedilum	09021011102	3.67	3.67	6	SH	1.2	1.2

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1207 Waterbody: Androscoggin River - Station 1207 Town: Lisbon

Log Number: 2941 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Elmidae	09021113	0.33	0.33		--	0.1	0.1
Ancyronyx	09021113063	0.33	0.33	6	--	0.1	0.1
Hydrobiidae	10010104	2.67	2.67		--	0.9	0.9
Physidae	10010202	18.00	18.00		SC	6.1	6.1
Planorbidae	10010203	1.00	1.00		--	0.3	0.3
Pisidium	10020201002	7.00	7.00		CF	2.4	2.4

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

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

Station Information

Station Number:	**S-1202**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1202	HUC8 Name:	Lower Androscoggin
Town:	Lisbon	Latitude:	43° 59' 25.812" N
Directions:	FROM PEJEPSCOT BOAT RAMP IN LISBON FALLS, UPSTREAM 100YDS, MID CHANNEL	Longitude:	70° 2' 59.882" W
		Stream Order:	

Sample Information

Log Number:	**2936**	Type of Sample:	ROCK BASKET	Date Deployed:	9/3/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	9/29/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	1/28/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	1/27/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.03	Class C	0.65	Class A, B, or C	1.00
Class B	0.32	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.04	Class A	0.02
Class C or Non-Attainment	0.96	Class B or C or Non-Attainment	0.98

Model Variables

01 Total Mean Abundance	279.00	18 Relative Abundance Ephemeroptera	0.21
02 Generic Richness	34.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	1.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	16.67
04 Ephemeroptera Mean Abundance	58.67		
05 Shannon-Wiener Generic Diversity	3.63	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	6.43	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	14.00
07 Relative Abundance - Chironomidae	0.16		
08 Relative Generic Richness Diptera	0.24	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	14.37
09 *Hydropsyche* Abundance	0.67		
11 *Cheumatopsyche* Abundance	8.33	28 EP Generic Richness/14	0.43
12 EPT Generic Richness/ Diptera Generic Richness	2.00	30 Presence of Class A Indicator Taxa/7	0.14
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	1.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	1.33		
17 Chironomini Abundance (Family Functional Group)	21.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Neureclipsis*	35.24
2	*Stenacron*	13.13
3	*Polycentropus*	6.69
4	*Dicrotendipes*	5.97
5	*Maccaffertium*	4.79

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

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

Station Number: S-1202 Town: Lisbon Date Deployed: 9/3/2021
Log Number: 2936 Waterbody: Androscoggin River - Station 1202 Date Retrieved: 9/29/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	22 deg C	Temperature:	19.5 deg C
Dissolved Oxygen:	7.9 mg/l	Dissolved Oxygen:	8.5 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	90 uS/cm
Velocity:	18 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	185 m	Wetted Width:	185 m
Bankfull Width:		Bankfull Width:	
Depth:	344 cm	Depth:	393 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Urban			
Potential Stressor	**Location**	**Substrate**	
Impounded	Below Dam	Gravel	40 %
Nps Pollution	Below POTW	Rubble/Cobble	50 %
Urban Runoff	Below Urban NPS	Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

MIDCHANNEL 100 YDS UPSTREAM OF PEJEPSCOT BOAT LAUNCH

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1202 Waterbody: Androscoggin River - Station 1202 Town: Lisbon
Log Number: 2936 Subsample Factor: X1 Replicates: 3 Calculated: 1/27/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Planariidae	03010101	8.00	8.00		--	2.9	2.9
Annelida	08	10.00	10.00		--	3.6	3.6
Hyalella	09010203006	0.67	0.67	8	CG	0.2	0.2
Orconectes	09010301008		0.33		CG		0.1
Orconectes limosus	090103010080l3	0.33			--	0.1	
Acroneuria	09020209042	1.00	1.00	0	PR	0.4	0.4
Chromagrion	09020309049	6.33	6.33	4	PR	2.3	2.3
Acerpenna	09020401007	7.33	7.33	5	CG	2.6	2.6
Heptageniidae	09020402	21.33			--	7.6	
Stenacron	09020402014	21.00	36.63	7	SC	7.5	13.1
Maccaffertium	09020402015	7.67	13.37	4	SC	2.7	4.8
Leptophlebiidae	09020406	0.67	0.67		--	0.2	0.2
Eurylophella	09020410036	0.67	0.67	3	CG	0.2	0.2
Chimarra	09020601003	0.67	0.67	2	CF	0.2	0.2
Neureclipsis	09020603008	98.33	98.33	7	CF	35.2	35.2
Polycentropus	09020603010	18.67	18.67	6	PR	6.7	6.7
Cheumatopsyche	09020604015	8.33	8.33	5	CF	3.0	3.0
Hydropsyche	09020604016	0.67	0.67	4	CF	0.2	0.2
Agraylea	09020607024	2.67	2.67	8	P	1.0	1.0
Hydroptila	09020607026	4.00	4.00	6	P	1.4	1.4
Oxyethira	09020607028	4.00	4.00	3	P	1.4	1.4
Mystacides	09020618075	0.67	0.67	4	CG	0.2	0.2
Oecetis	09020618078	5.33	5.33	8	PR	1.9	1.9
Thienemannimyia	09021011020	1.33	1.33	3	PR	0.5	0.5
Cricotopus	09021011037	5.67	5.67	7	SH	2.0	2.0
Eukiefferiella	09021011041	7.00	7.00	8	CG	2.5	2.5
Nanocladius	09021011049	5.33	5.33	3	CG	1.9	1.9
Psectrocladius	09021011056	2.00	2.00	8	CG	0.7	0.7
Paratanytarsus	09021011071	2.67	2.67	6	--	1.0	1.0
Dicrotendipes	09021011085	16.67	16.67	8	CG	6.0	6.0
Microtendipes	09021011094	4.67	4.67	6	CF	1.7	1.7
Hydrobiidae	10010104	1.33	1.33		--	0.5	0.5
Physidae	10010202	1.33	1.33		SC	0.5	0.5
Planorbidae	10010203	0.67	0.67		--	0.2	0.2
Elliptio	10020102009	0.33	0.33		CF	0.1	0.1
Sphaeriidae	10020201	1.67	1.67		CF	0.6	0.6

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

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

Station Information

Station Number:	**S-1203**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1203	HUC8 Name:	Lower Androscoggin
Town:	Brunswick	Latitude:	43° 55' 58.841" N
Directions:	FROM CARRY IN ACCESS IN BRUNSWICK, PROCEED UP RIVER, UNDER 295 TO LEDGE RIVER LEFT	Longitude:	70° 0' 3.895" W
		Stream Order:	

Sample Information

Log Number:	**2937**	Type of Sample:	ROCK BASKET	Date Deployed:	8/5/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	9/3/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	1/28/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	1/27/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.16	Class C	0.28	Class A, B, or C	1.00
Class B	0.56	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.31	Class A	0.01
Class C or Non-Attainment	0.69	Class B or C or Non-Attainment	0.99

Model Variables

01 Total Mean Abundance	312.67	18 Relative Abundance Ephemeroptera	0.07
02 Generic Richness	33.00	19 EPT Generic Richness	13.00
03 Plecoptera Mean Abundance	3.33	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	1.00
04 Ephemeroptera Mean Abundance	21.00	23 Relative Generic Richness- Plecoptera	0.03
05 Shannon-Wiener Generic Diversity	3.55	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	66.33
06 Hilsenhoff Biotic Index	5.60	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	8.68
07 Relative Abundance - Chironomidae	0.04	28 EP Generic Richness/14	0.29
08 Relative Generic Richness Diptera	0.36	30 Presence of Class A Indicator Taxa/7	0.00
09 *Hydropsyche* Abundance	11.33		
11 *Cheumatopsyche* Abundance	64.00		
12 EPT Generic Richness/ Diptera Generic Richness	1.08		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	3.33		
16 Tanypodinae Mean Abundance (Family Functional Group)	3.00		
17 Chironomini Abundance (Family Functional Group)	3.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Neureclipsis*	26.97
2	*Cheumatopsyche*	20.47
3	Physidae	13.01
4	Hydrobiidae	6.18
5	*Hydropsyche*	3.62

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

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

Station Number: S-1203 Town: Brunswick Date Deployed: 8/5/2021
Log Number: 2937 Waterbody: Androscoggin River - Station 1203 Date Retrieved: 9/3/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.5 deg C	Temperature:	23.2 deg C
Dissolved Oxygen:	8.3 mg/l	Dissolved Oxygen:	7.6 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	30 cm/s	Velocity:	34 cm/s
pH:		pH:	
Wetted Width:	176 m	Wetted Width:	176 m
Bankfull Width:		Bankfull Width:	
Depth:	317 cm	Depth:	310 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	Location	Substrate	
	Above Dam	Bedrock	50 %
		Boulder	10 %
		Rubble/Cobble	40 %

Landcover Summary - 2004 Data

Sample Comments

WATCH OUT FOR CRIPBS UNDERWATER

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1203 Waterbody: Androscoggin River - Station 1203 Town: Brunswick
Log Number: 2937 Subsample Factor: X1 Replicates: 3 Calculated: 1/27/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Planariidae	03010101	11.00	11.00		--	3.5	3.5
Annelida	08	9.00	9.00		--	2.9	2.9
Hyalella	09010203006	0.33	0.33	8	CG	0.1	0.1
Acroneuria	09020209042	3.33	3.33	0	PR	1.1	1.1
Somatochlora	09020305027	1.67	1.67	1	PR	0.5	0.5
Chromagrion	09020309049	10.67	10.67	4	PR	3.4	3.4
Acerpenna	09020401007	5.33	5.33	5	CG	1.7	1.7
Heptageniidae	09020402	2.00			--	0.6	
Stenacron	09020402014	9.00	10.32	7	SC	2.9	3.3
Maccaffertium	09020402015	4.67	5.35	4	SC	1.5	1.7
Chimarra	09020601003	5.33	5.33	2	CF	1.7	1.7
Neureclipsis	09020603008	84.33	84.33	7	CF	27.0	27.0
Polycentropus	09020603010	4.33	4.33	6	PR	1.4	1.4
Cheumatopsyche	09020604015	64.00	64.00	5	CF	20.5	20.5
Hydropsyche	09020604016	11.33	11.33	4	CF	3.6	3.6
Macrostemum	09020604018	0.67	0.67	3	CF	0.2	0.2
Ceraclea	09020618072	0.33	0.33	3	CG	0.1	0.1
Mystacides	09020618075	1.33	1.33	4	CG	0.4	0.4
Oecetis	09020618078	4.67	4.67	8	PR	1.5	1.5
Tipulidae	09021001	1.00	1.00		--	0.3	0.3
Ablabesmyia	09021011001	0.33	0.33	8	PR	0.1	0.1
Pentaneura	09021011014	2.00	2.00	6	PR	0.6	0.6
Thienemannimyia	09021011020	0.67	0.67	3	PR	0.2	0.2
Cricotopus	09021011037	1.67	1.67	7	SH	0.5	0.5
Eukiefferiella	09021011041	2.33	2.33	8	CG	0.7	0.7
Paratanytarsus	09021011071	2.67	2.67	6	--	0.9	0.9
Tanytarsus	09021011076	0.33	0.33	6	CF	0.1	0.1
Microtendipes	09021011094	1.33	1.33	6	CF	0.4	0.4
Parachironomus	09021011097	1.00	1.00	10	PR	0.3	0.3
Polypedilum	09021011102	1.00	1.00	6	SH	0.3	0.3
Cnephia	09021012046	4.33	4.33	0	CF	1.4	1.4
Elmidae	09021113	0.67	0.67		--	0.2	0.2
Hydrobiidae	10010104	19.33	19.33		--	6.2	6.2
Physidae	10010202	40.67	40.67		SC	13.0	13.0

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Appendix 2. Hydropower Impoundment Classification Exceptions for Aquatic Life Standards- Title 38 Sections 464 and 465

https://www.mainelegislature.org/legis/statutes/38/title38sec464.html

https://www.mainelegislature.org/legis/statutes/38/title38sec465.html

Summary: *The statute says that recognizing the aquatic life differences of impoundments, if a river with impoundments is classified as A or B, the impoundment shall also be considered to meet that standard provided it at least meets C criteria; unless, (1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and (2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters. If the conditions described in (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained.*

§464. Classification of Maine waters

10. Existing hydropower impoundments managed under riverine classifications; habitat and aquatic life criteria. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, section 401, as amended, and the licensing of modifications under section 636, hydropower projects in existence on the effective date of this subsection, the impoundments of which are classified under section 465, are subject to the provisions of this subsection in recognition of some changes to aquatic life and habitat that have occurred due to the existing impoundments of these projects.

A. Except as provided in paragraphs B and D, the habitat characteristics and aquatic life criteria of Classes A and B are deemed to be met in the existing impoundments classified A or B of those projects if:

(1) The impounded waters achieve the aquatic life criteria of section 465, subsection 4, paragraph C. [PL 1991, c. 813, Pt. B, §1 (NEW).] (author's note- underlined and boldfaced, see section 465, subsection 4, paragraph C below)

B. The habitat characteristics and aquatic life criteria of Classes A and B are not deemed to be met in the existing impoundments of those projects referred to in paragraph A if:

(1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and

(2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

If the conditions described in subparagraphs (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

C. If the conditions described in paragraph B, subparagraphs (1) and (2) occur at a project in existence on the effective date of this subsection, the impoundment of which is classified C, the changes described in paragraph B, subparagraphs (1) and (2) must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

D. When the actual water quality of waters affected by this subsection attains any more stringent characteristic or criteria of those waters' classification under sections 465, 467 and 468, that water quality must be maintained and protected. [PL 1991, c. 813, Pt. B, §1 (NEW).]
[PL 1991, c. 813, Pt. B, §1 (NEW).]
11. Downstream stretches affected by existing hydropower projects. Hydropower projects in existence on the effective date of this subsection that are located on water bodies referenced in section 467, subsection 4, paragraph A, subparagraphs (1) and (7), and section 467, subsection 12, paragraph A, subparagraphs (7) and (9) are subject to the provisions of this subsection.
For the purposes of water quality certification of hydropower projects under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications to these hydropower projects under section 636, the habitat characteristics and aquatic life criteria of Class A are deemed to be met in the waters immediately downstream of and measurably affected by the projects listed in this subsection if the criteria contained in section 465, subsection 4, paragraph C are met.
[RR 1993, c. 1, §114 (COR).]

Section 465, subsection 4, paragraph C

C. Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community. For the purpose of allowing the discharge of aquatic pesticides or chemicals approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency to restore biological communities affected by an invasive species, the department may find that the discharged effluent will not cause unacceptable changes to aquatic life as long as the materials and methods used will ensure the support of all species of indigenous fish and the structure and function of the resident biological community and will allow restoration of nontarget species. [PL 2017, c. 319, §9 (AMD).]

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