



Hancock County Soil & Water Conservation District

474 Bucksport Road (US Route 1A)

Ellsworth, ME, 04605

207-667-8663

www.hancockcountyswcd.org

Meagan Sims

Maine Department of Environmental Protection

17 State House Station

Augusta, ME 04333-0017

Dear Ms. Sims:

We (the Board of Supervisors of Hancock County Soil & Water Conservation District) and the undersigned individuals and organizations (see petition) propose that the DEP and the Board of Environmental Protection agree to upgrade the water quality classification of the upper Union River watershed (West Branch, East Branch, and Middle Branch) from Class A to Class AA.

Water Body Name: West Branch, Middle Branch, and East Branch of the Union River and associated tributaries

Locations:

West Branch of the Union River: Mariaville, Amherst, Aurora, Great Pond, T39 MD

Middle Branch of the Union River: Osborne, Aurora

East Branch of the Union River: Mariaville, Osborne, T22 MD

Legal Citation: 38 MRS Article 4A §464, 4(F) states that outstanding national resource waters must be protected.

2) Where high quality waters of the State constitute an outstanding national resource, that water quality must be maintained and protected. For purposes of this paragraph, the following waters are considered outstanding national resources: those water bodies in national and state parks and wildlife refuges; public reserved lands; and those water bodies classified as Class AA

And 38 MRS Article 4A §465 States the classification standards for Class AA

<i>Standards for classification of fresh surface waters for complete text.</i>	Designated Uses*	Dissolved Oxygen Numeric Criteria	Bacteria (<i>E. coli</i>) Numeric Criteria	Habitat Narrative Criteria	Aquatic Life (Biological) Narrative Criteria**
Class Class AA	Habitat for fish and other aquatic life Drinking water after disinfection Fishing* Agriculture Recreation in/on the water Navigation	As naturally occurs	As naturally occurs but may not exceed geometric mean of 64/100 ml over 90-day interval or 236/100 ml in more than 10% of samples in any 90-day interval	Free flowing and natural	No direct discharge of pollutants***; as naturally occurs**

Wildlife and Designated Uses: The Union River used to support Atlantic salmon and still supports other endangered species. The West Branch of the Union River was listed in the **Maine Rivers Study** (1982) by Maine Dept of Conservation and the National Park Service as a Tier B water, as one of the 38 most significant river segments in the state of Maine (Figure 1-2). It is currently listed by the **Beginning with Habitat (BWH)** website as a Focus Area of Statewide Ecological Significance. The listing is because: “The undammed and largely unimpaired waters of the West Branch of the Union River, beginning at Great Pond and extending downstream approximately 13 miles to Graham Lake, support habitat for several rare animal species that depend on clean and free flowing waters. This stretch of the West Branch of the Union River is a popular recreation destination for anglers and boaters as well.” (The loss of Atlantic salmon and other anadromous species from the system is due to dams in Ellsworth.)

The **BWH** rare species and habitats values are listed as:

Rare Animals

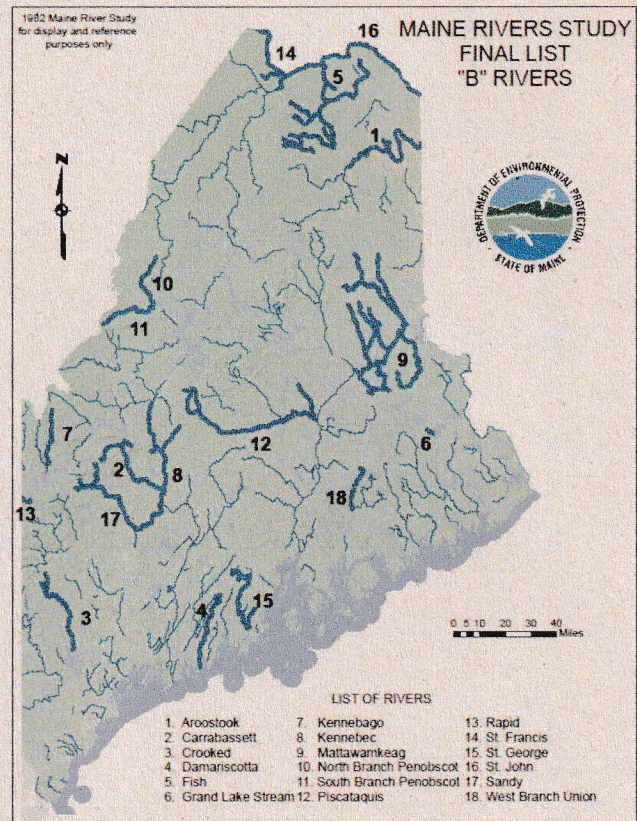
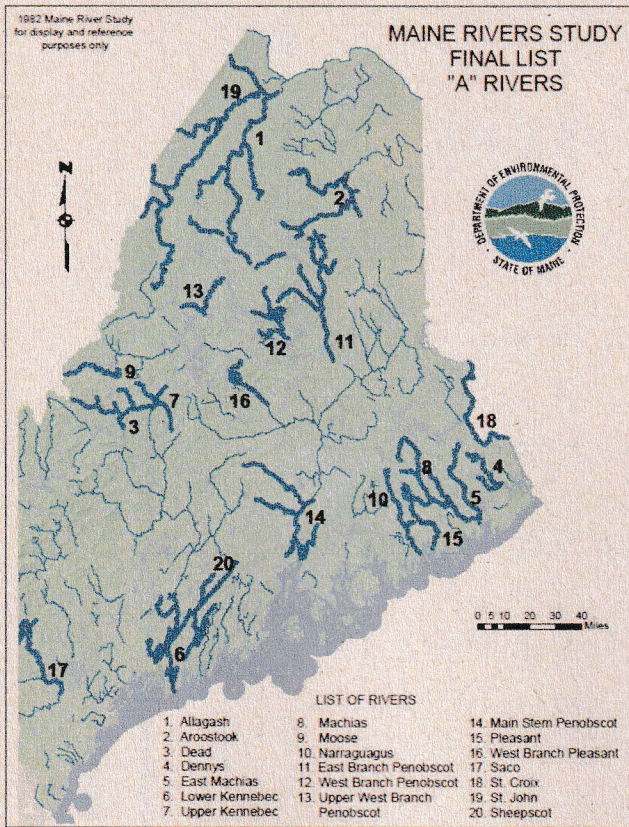
Atlantic Salmon, Brook Floater, Wood Turtle, Ribbon Snake, Upland Sandpiper

Rare Plants

Pale Green Orchis

Significant Wildlife Habitats

Inland Wading Bird and Waterfowl Habitat, Deer Wintering Areas



Figures 1-2 are copied from the **Maine Rivers Study** (1982) by Maine Dept of Conservation and the National Park Service. The West Branch of the Union River is Tier B, number 18 (and is thus in the upper 38 most significant river segments in the state).

Most of the Atlantic salmon habitat (67 %) in the Union River is located in the West Branch according to habitat surveys conducted in the late 1950's (Havey 1961; Baum 1982) and 2001 (DMR/USFWS).

The Middle Branch and East Branch are also remote, mainly in small towns and unorganized territories. largely forested (with some blueberry land), free flowing, and largely natural watersheds. They have much the same wildlife value and recreational functions as the West Branch. Access is largely from Route 9 and on timber management roads. The Union River is a Priority Water for Trout Unlimited.

Purpose of Upgrade: An upgrade from Class A to AA will acknowledge the good water quality and wild nature of the upper river, with its wildlife and recreational values, and will help generate support for the restoration and protection of the lower river. The contrast between the quality of the upper river and muddy mess of the lower river just does not seem right. Ellsworth's comprehensive plan proposes, in part, to make the Union River a focal point for the community. Waterfront upgrades in Bucksport, Bangor, and Old Town have been extremely successful and popular. Naturally, other communities want this too.

The Union River is part of the Downeast SHRU (Species Habitat Recovery Unit) for Atlantic salmon. The Union River could play an important role in eventual salmon recovery in Maine. The Union used to have its own fish hatchery operated by the Union Salmon Association. The hatchery was abandoned due to the lack of fish passage at the dams and due to poor water quality at the hatchery.

Water Quality Data: I did a survey of the water quality of some of the major river systems in Maine (Whiting 2015) and found that the three upper Union River branches met the minimum water quality criteria for pH, alkalinity, and calcium to sustain Atlantic salmon, aquatic life, and to protect treaty fishing rights for indigenous people. In 2005, the Union River Watershed Coalition (2005) completed 2 years of a volunteer-based water quality survey. Conditions were good, except for urban Cards Brook where temperatures in the summer were high and DO was low, and bacteria could be high. Flowing sections of the upper Union had good DO, while deadwaters (especially common in the Middle and East Branches) were warm in the summer and had DO in surface waters that were often below 7 mg/L (we used LaMotte titration kits and could only dip water from the surface from the shore). A DO meter with a long cable probably would have found good cool water and good DO at the bottom of these reaches. This is normal for deadwaters, especially for darkly colored waters like Downeast Maine.

Bacteria: Bacteria were examined in the Union River Watershed water quality survey. The E. coli levels were generally low (swimmable) except for some urban samples (Card

Brook). We did not take enough samples to determine a geometric mean over a 90-day interval.

Habitat: The upper Union River is free flowing (except for some small water level control dams at the outlets of some of the lakes). The habitat is natural.

Aquatic Life: Aquatic habitat is good and has no licensed discharges. Aquatic life is mainly assessed by DIFW e-fishing surveys and DEP biomonitoring. Aquatic life is good for this region; but is not "as naturally occurs" due to the loss of anadromous fish species due to the downstream dam (Leonard's Lake and Graham Lake) and for invasive species (mainly bass). This is also true for the extremely important reaches of the upper Kennebec, Aroostook, St John, and Penobscot Rivers.

Table 1. DEP Biomonitoring results for the upper and lower Union River.

Macroinvertebrate species are used as water quality indicators to create a predictive model of what water quality appears to be, given the macroinvertebrate community. Model results are A, B, or C (in this case, AA is the same as A) which are the statutory classes for Maine waters. NA is "not attaining" (the macroinvertebrate assemblage is too poor to achieve even Class C). I is "Indeterminate," there are simply too few macroinvertebrates to trust the model (so this is the worst outcome).

Up Union	Site No.	Date	Stat Class	Model	Attains?
Collar Br	S-1037	8/27/2014	A	B	No
Leighton Br	S-1056	9/29/2014	A	A	Yes
John's Br	S-1054	9/29/2014	A	A	Yes
John's Br trib	S-1055	9/29/2014	A	I	No
Unnamed	S-1048	9/29/2014	A	A	Yes
Low Union					
Reeds Br	S-1190	9/24/2020	B	B	Yes
Reeds Br	S-1198	9/24/2020	B	C	No
Union R	S-1051	8/22/2014	B	C	No
Union R	S-1051	8/9/2019	B	C	No
Union R	S-1080	8/11/2015	B	C	No
Union R	S-1081	8/11/2015	B	C	No
Card's Br	W-292	6/23/2016	B	A	Yes
Card's Br	S-814	8/8/2006	B	NA	No
Card's Br	S-814	8/10/2011	B	NA	No
Card's Br	S-815	7/128/8/20	B	NA	No
Card's Br	S-815	8/10/2011	B	C	No
Card's Br	S-815	8/15/2016	B	I	No
Card's Br	S-815	8/25/2020	B	A	Yes

The upper river has overall good macroinvertebrate outcomes. Collar Brook failed to attain class due to an overwhelming dominance of *Hydropsyche* caddisflies and several midge species, few good water indicators, and poor species diversity. This was judged to be due to the "lake effect" of Rift Pond and is common for samples near lake outlets. John's Brook (also called John Brown's Brook) un-named tributary also had a bad outcome with few invertebrates of any kind. There is no written report for this site, so we cannot tell why the outcome was poor (but small sand-silt bottom streams often have poor outcomes as the model is based on rocky riffle habitat, so that could be the case here).

In contrast, the lower Union River has major problems. Cards Brook is an urban stream and has the usual urban stream issues, flashy hydrology, trash, salt sand, high summer temperature, bacterial contamination, and seasonal low DO. Reeds Brook is the outlet for Green Lake and has good water quality (the lower site failed to meet class because the Green Lake Hydropower tailrace discharges, where the rock bags were deployed, are in an area that is flooded from the Graham Lake dam). So, the lower site has habitat that is neither a stream nor a lake. The Union River mainstem typically fails to meet class due to dam restrictions on fish migration, warm summer temperatures, sometimes low seasonal DO, high seasonal turbidity, and substrate embeddedness. All of these are symptoms of

dam impoundment impacts and urban development. This is what Green Ellsworth and other partners want to clean up.

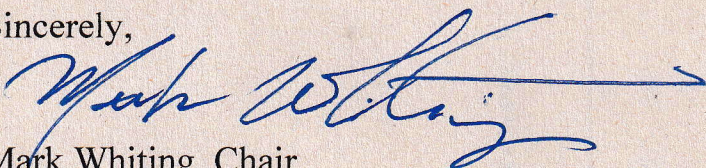
We recommend that the water classification upgrade include the tributaries to the West Branch, Middle Branch, and East Branch of the Union River (Class A to Class AA). Protecting tributaries will help preserve the mainstems (so we recommend that they also be reclassified as Class AA).

Current Land Uses: Timberlands, blueberry fields, some residential development along roads, recreation.

Financial Impact: The upper Union River is already Class A, a change to AA would simply mean that no dams would be allowed. There are no known land uses or discharge licenses that would be impacted. We anticipate no impacts to current riparian landowners and users.

Maps: I do not have access to GIS other than through state websites. I have included maps copied from Maine's **Beginning with Habitat** website. I expect that our partner, Frenchman Bay Conservancy will provide better maps with their supporting filing.

Sincerely,



Mark Whiting, Chair
Board of Supervisors, HCSWCD

Attachments: Petition, **Maine Rivers Study** 1982, Union R Watershed Coalition 2005, Johnson & Kahl 2005, Whiting 2015, and **Beginning with Habitat**, Focus Area of Statewide Ecological Significance, Upper Union River