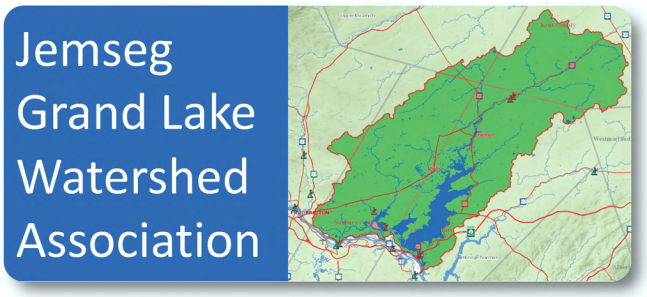
Jemseg Grand Lake Watershed Association
2022 Annual Report
by
Brad Nickerson and Peter Davidson
January 11, 2022

Jemseg Grand Lake Watershed Association Report 23-01



www.jemseggrandlakewatershed.ca

New Nouveau Brunswick
Your Environmental Trust Fund at Work

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2022 Annual Report of the Directors
Jemseg Grand Lake Watershed Association

New Nouveau Brunswick
Your Environmental Trust Fund at Work

Current Board of Directors:
Peter Davidson, Treasurer
Greg Gillis
Hazen Hughes
Dieter Kromm
Brad Longard
Jennifer McPhail
Neil Orchard
Joy Thomas, Secretary
John Yauss

Executive Summary

Our Association is a group of committed volunteers, with an overarching goal of a healthy watershed ecosystem for all. The Jemseg Grand Lake Watershed Association has grown to 186 paid members, up from 144 in December, 2021. We continued with monthly meetings (with minutes), monthly newsletters and a bank account. Our primary accomplishments in 2022 include holding one Zoom webinar, completing a significant water quality monitoring program, holding an Invasive Plant Patrol event that discovered Eurasian Watermilfoil in Grand Lake and carrying out a red-tip willow shoreline tree planting program. The shoreline tree planting program saw a total of 1,014 red-tip willows (as live stakes or rooted cuttings in six inch pots) picked up by or delivered to 28 members of the Jemseg Grand Lake Watershed Association for planting on their properties.

Organization

After our initial formation in 2020, we continued to hold monthly meetings, all with recorded minutes, which are available to members at
https://jemseggrandlakewatershed.ca/members/
Our bylaws (available at https://jemseggrandlakewatershed.ca/about-us/about-the-association/) are in the form of a registered N.B. Cooperative Ltd., under the 2019 Province of N.B. Cooperatives Act. With an established set of bylaws, voted on by members in attendance at the Feb. 2020 monthly meeting (and updated at our Dec. 2021 annual general meeting, we were able to establish a bank account at the Progressive Credit Union in Fredericton, and to join the N.B. Alliance of Lake Associations (NBALA). We also joined the N.B. Environmental Network (NBEN) and participate as an Associate member of their watershed caucus.

As of our Dec. 5 annual general meeting, we plan to move forward with Province of New Brunswick registration of our Association as a not-for-profit company, followed by registration as a registered charity with the Province of New Brunswick. We are being assisted in this process with pro bono help from the Fredericton office of the law firm Stewart McKelvey. Brad Nickerson stepped down as President of the Association following the Dec. 5, 2022 annual general meeting. Brad N. is a member of the Association and will help where possible, but is no longer a Director.

With the hard work of our members to encourage their friends, neighbours and family members to join, our membership has expanded to 186 paid members as of Dec. 5, 2022. Our membership form is available online at
https://jemseggrandlakewatershed.ca/about-us/membership/
Each application form asks for "Topics of Interest". Table 1 below shows the top five categories (out of 14) answers received since our initial seven members joined in the Dec. 9, 2019 meeting.

Table 1. List of top eight topics of Interest on the Membership Forms since 2019. Blue and green shaded rows indicate similar topics of interest.

TOPICS OF INTEREST	TOTALS FOR EACH TOPIC	COMMENTS
Water Quality & Testing	36	Healthy waterways, lake water quality, a clean lake, lake/water preservation, protection of water
Flood Mitigation	29	Flood proofing, high water problems, Grand Lake flood control, recent flooding, flooding, water levels
Environmental	28	Lake health and safety, improve watershed health & ecosystem, managing blue-green algae, water swimmability, environmental sustainability, conservation, watershed management, pollution, algae, environment, all environmental issues, native plants, shoreline plants, fracking
Erosion Control	20	preventing shore erosion, erosion, preserving waterfront, shoreline erosion, plants for salt water erosion protection, soil erosion, shoreline protection
Ecological	15	Lake and estuarine ecology, wildlife, all ecosystem + pertaining info, improve waterfront ecosystem, climate adaptation, wild edibles, permaculture, ecology, aquatic ecology, wetlands, native plants, wetland preservation, biodiversity, conservation
Property Improvements	14	
Education	11	What's around the lake, lake living
Shoreline Protection	11	shoreline preservation

Our Association continued as a member of the N.B. Alliance of Lake Associations (NBALA) in 2022. The NBALA provides insurance for volunteers participating in voluntary water quality monitoring activities, director's insurance, as well as a YSI Pro Plus instrument to measure pH, temperature, conductivity and dissolved oxygen at depths up to 30 m. The NBALA annual membership fee of $150 also provides an annual calibration of the YSI instrument.

Three letters of offer from the Assistant Deputy Minister of the N.B. Dept. of Environment and Local Government to our Association on June 6, 2022 informed us that our funding applications for three NBETF projects submitted on Nov. 30, 2021 were supported, as follows:
(a) Water Quality Observation for the Jemseg Grand Lake Watershed, Award Amount: $18,000
(b) Ecosystem Education and Outreach in the Jemseg Grand Lake Watershed, Award Amount: $20,000
(c) Riparian Zone Tree Planting in the Jemseg Grand Lake Watershed, Award Amount: $11,200
The total awarded amount of $49,200 increased by $14,900 our NBETF funding of $34,300 awarded in 2021.

In October, 2022, our Association renewed our Associate membership in the New Brunswick Environmental Network (NBEN). The NBEN is the largest environmental network in N.B., comprised of approximately 110 other organizations. The NBEN collects and distributes valuable notifications of upcoming funding opportunities and events related to the environment. We continue to use the NBEN events calendar to advertise our webinars.

Education

Support from the NBETF allowed us to renew our Zoom Pro with Webinar 500 license. This enabled the holding of one online webinars in 2022 entitled “Jemseg Grand Lake Watershed Aquatic Ecosystem: What We Know and Don’t Know After Two Years", was given by Eric Luiker on March 17, 2022. Eric is an aquatic ecologist working for Environment and Climate Change Canada, and has been the leader of our volunteer water quality monitoring program since it began in 2020.

Both webinars were well-received, with a lively question and answer session following each presentation. All our webinars are on our YouTube channel at https://www.youtube.com/channel/UCi_8ZOVc3XR9e42qCnT4g7w .

Monthly newsletters were sent (beginning in February, 2020) to all members using MailChimp. Links to the newsletters are available at
https://jemseggrandlakewatershed.ca/resources/newsletters/
Our mailings of paper versions of our newsletters to members without email access was cancelled in October due to lack of interest and the cost of colour printing and mailing.

This year we were able to attend four face-to-face outreach events; one at the Jemseg Lions Club Saturday morning breakfast gathering on May 21, 2022, the second on June 25, 2022 at the Douglas Harbour Community Centre breakfast, the third time at the Life at the Lakes event in Cambridge Narrows on Aug. 6, and the fourth a 2nd time at the Douglas Harbour Community Centre breakfast on August 20.









Transplanted red-tip willows were available at all events, and were very helpful in attracting new members. New members who joined at our booth received a six-pack of red-tip willows to plant on their property.

On Sept. 8, 2022, John Welsman hosted an Invasive Plant Patrol workshop led by Kristin Elton from his summer residence on Robertson Point. Four members of our Association participated, along with four others from Kennebecasis River, Hammond River and Harvey Lake.







Kristin Elton, program director with the N.B. Invasive Species Council, definitively identified Eurasian Watermilfoil found in the waters of Dykeman Cove, adjacent to Robertson Point. As a result of this finding, two special newsletters (on Sept. 19 and Sept. 22) were sent to members asking for their help in identifying Eurasian Watermilfoil in other parts of our watershed. A six page report entitled "Finding and Reporting Eurasian Watermilfoil" was written, and is available on our website. A subsequent survey by John Welsman found 101 Eurasian Watermilfoil plants in the Dykeman Cove area as illustrated to the left. Subsequent surveys by others found Eurasian Watermilfoil in Whites Cove, Wiggins Cove and Douglas Harbour.

Water Quality Observation

(a) Led by Mary Murdoch and Eric Luiker, our water quality observation teams sampled surface water at seven profile sites (JGLP04 to JGLP10) and three river sites (JGLR01 to JGLR03) in the Jemseg Grand Lake Watershed during July, August and September. Counting Eric, four volunteers accomplished this feat. The volunteers included one volunteer boat captain with his own 20 foot boat. The surface water samples were all analysed by the Research and Productivity Council for 59 analytes including 27 organic measures (e.g. nitrogen, phosphorous, pH, Langelier index), 31 trace metals from aluminum to zinc, and chlorophyll a. Chlorophyl a is an important factor in determining the trophic state index of water. Figure 1 shows the site locations.

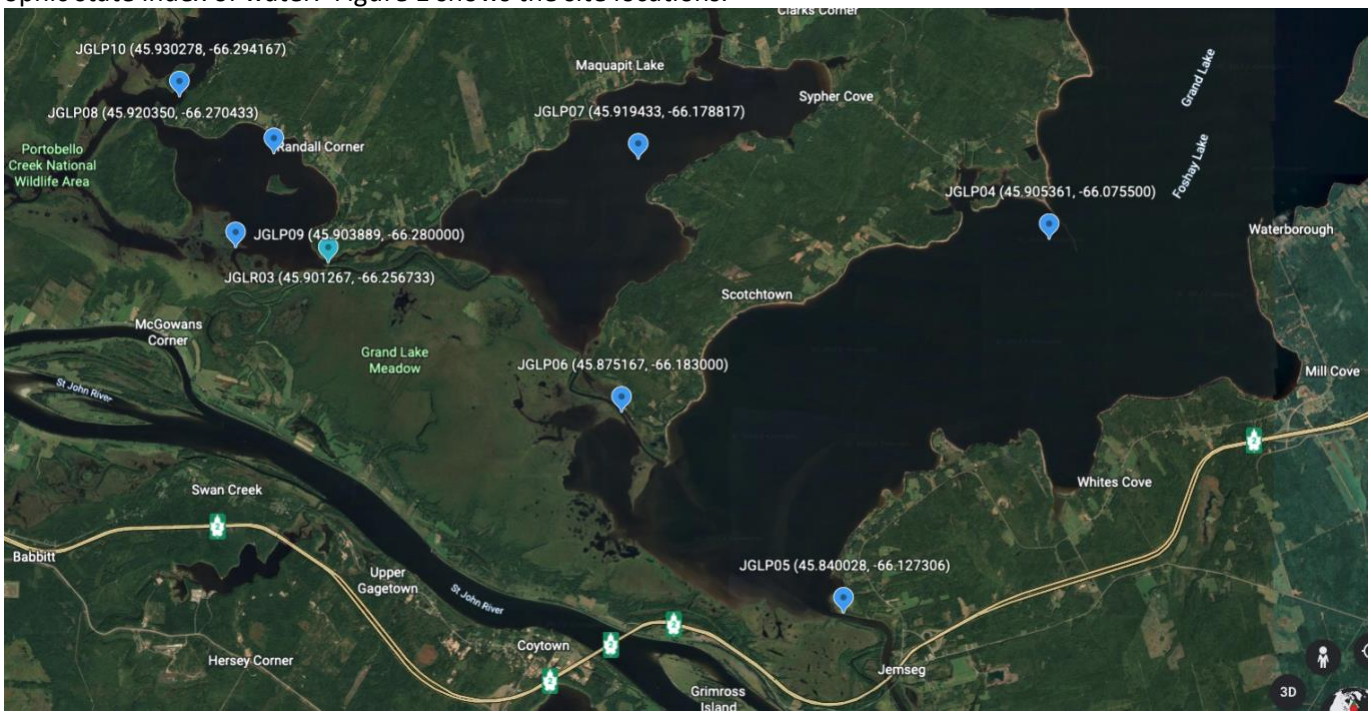


Figure 1. Seven profile sites and one river site JGLP03 with surface water sampling and analysis in 2022. River sites JGLR01 Salmon River at Camp Wegesegum and JGLR02 Newcastle Creek at Newcastle Centre are not shown.

Profile sites JGLP01, JGLP02 and JGLP03 were not sampled this year due to the lack of a suitable volunteer boat with captain in the north part of Grand Lake, and the goal to better understand where the relatively high phosphorus readings are coming from in the Maquapit Exit site JGLP06 and Lakeville Corner site JGLR03. Preliminary analysis from the late August sampling shows the following:

Late August 2022, Total Phosphorus mg/L (**CCME limit of concern 0.030 mg/L**)

0.042 JGLR01 Salmon River at Camp Wegesegum 17/22/19008
0.043 JGLR02 Newcastle Creek at Newcastle Centre 17/22/19009
0.043 JGLR03 Main Thoroughfare Lakeville Corner 17/22/190014
0.037 JGLP06 Maquapit Exit 17/22/19012
0.013 JGLP05 Jemseg River 17/22/19013

0.044 JGLP07 Maquapit Lake 17/22/19015
0.045 JGLP08 French Lake 17/22/19016
0.045 JGLP09 French Lake (outlet) 17/22/19017
0.042 JGLP10 Indian Lake (outlet) 17/22/19018



(b) As in 2021, we hired (under contract) Aaron Fraser (Willowbrook Watershed Services, picture on the right), an experienced field specialist with a degree in biology. He has helped numerous watershed and lake association groups in New Brunswick, including the N.B. Alliance of Lake Associations, deliver water quality field programs for many years. Aaron has his own jon boat and trailer, and his help was very important to the success of our water quality observation program. His smaller boat was able to successfully sample water in the shallow sites of Maquapit Lake, French Lake and Indian Lake.

(c) Using the YSI Pro Plus instrument provided by the N.B. Alliance of Lake Associations, we measured and recorded water temperature, salinity, pH and conductivity at the surface and at each even meter depth to the bottom at the seven profile sites JGLP04 to JGLP10. These observations, along with a Secchi depth reading, were made at the same time as sampling operations described in (a) above. Our YSI instrument was out for repair at Valox Ltd. in Maugerville for the first sampling outing in July. A YSI Pro Plus instrument was borrowed from the ACAP Saint John equipment pool, but its four sensor cable was only 8 m long and unweighted, so we could not obtain even meter samples at our deeper sites. Our Association's YSI Pro Plus with a 30 m cable was available for the August and September field sampling, but the pH sensor was not working.

(d) At site JGLP04D, our volunteer boat with captain John Pugh and Aaron Fraser used a niskin sampler to obtain water samples at a depth of 20 m in August. The RPC sample analysis described in (a) was also done on this deep water site. The purpose is to determine any differences between surface and deep water quality.

(e) In August, surface water was sampled at 21 sites JGLE01 to JGLE21 in near shore areas likely to be used for swimming. The water was analysed by RPC for E. coli content. Figure 2 shows the additional sites JGLE15 to JGLE21 in the Douglas Harbour area that were added in 2022 to the 14 sites (JGLE01 to JGLE14) sampled and analysed for E. coli in 2021.

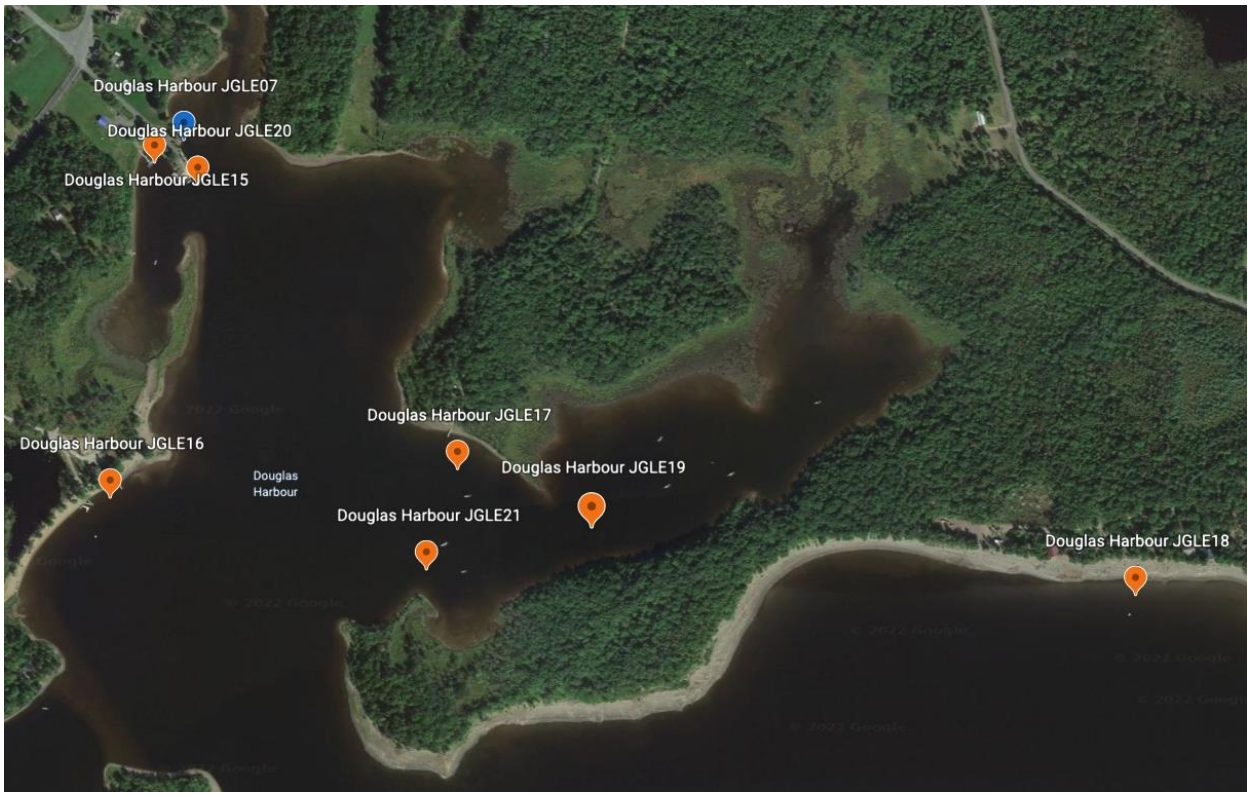


Figure 2. Seven additional sites JGLE15 to JGLE21 with surface water sampling for E. coli analysis in 2022.

These sites were added to find out where the relatively high E. coli count observed at site JGLE07 in Douglas Harbour was coming from. Preliminary results show that none of the 2022 E. coli results are exceeding the **400 MPN/100 mL (most probable number per 100 millilitres) CCME guideline for recreational water**, with the maximum of 140 MPN/100 mL observed at Douglas Harbour in 2021, and 108 MPN/100 mL at the JGLE12 Salmon River, Chipman Waterfront Campground site in 2022. The eight sites JGLE07 + JGLE15 to JGLE21 in and around Douglas Harbour in 2022 have a maximum reading of 9.8 MPN/100 mL at site JGLE07 Douglas Harbour.

(f) Aaron Fraser deployed a string of three data loggers to measure water temperature continuously at site JGLP04 on June 9, 2022. The loggers were at depths of 2 and 13 m below the surface, and 2 m above the bottom. Aaron Fraser noticed on July 17, 2022 that the buoy marking the data logger string location was missing. Aaron checked again on Oct. 3, with clear water and little wind (Secchi disk depth 3.25 m) with no sign of the buoy or rope. We assume the data logger string was lost or stolen. Eric Luiker deployed a HOBO temperature data logger from a buoy at his summer residence at a depth of 1 to 1.5 m on July 8, 2022, and retrieved it on Sept. 10, 2022. Analysis of the continuous temperature record from this temperature logger is planned to form part of our 2022 water quality report.

(g) Mary Murdoch and Eric Luiker obtained cyanobacteria test kits from Roxanne MacKinnon (ACAP Saint John), and used them to test for microcystin and anatoxin-a at seven locations in the Jemseg Grand Lake Watershed. These tests were done in September and early October following the 10 page "Collaborative Cyanotoxin Monitoring Using Test Strips Procedure and Testing Overview Manual" written by Roxanne MacKinnon. Test results were uploaded to the Cyanotoxin Data Google sheet designed for this purpose at
https://docs.google.com/spreadsheets/d/1KW5un2WfOwqap7EhVxzer0JC5oXyr1CU3UcW_n6Q6CA/edit#gid=0
(see rows 48 through 54).

Riparian Zone Tree Planting

- In January, February, March, April and May 2022, our Association newsletters announced the availability of bags of 50 red-tip willow live stakes for planting on member's properties for erosion protection.

- February 2022
Mike Thorne harvested 2,000 red-tip willow stakes, and stored them in his refrigerator in plastic zip-lock bags to keep them dormant.

- April 22, 2022
Our Association submitted a WAWA permit application covering all members of our Association receiving red-tip willows to plant on their properties.

- May 12, 2022
Received WAWA permit 63190'22 permitting Association members to plant red-tip willows on their properties with hand tools.

- May 7 to June 7, 2022
Mike Thorne and Brad Nickerson distributed live-stake willows to members for planting on their properties, along with a bag of potting soil, a bag of manure and a few purple topped stakes to mark the planting location.

- May 15, 2022 – Jemseg Lions Club
Mike Kelly and Brad Nickerson gave out three bags of 50 live stakes at our outreach event at the Jemseg Lions Club morning breakfast. All recipients of the live stakes received a copy of the WAWA permit 63190'22, along with planting instructions for the live stakes.



- June 17, 2022
Brad picked up 3 bags of red-tip willows from Mike Thorne, trimmed the ends of all 150 live stakes, and added water to three bags of 50 live stakes.

- June 19, 2022
Patrick Oke, Adidi Kadam, Kim Reeder and Brad Nickerson planted 150 red-tip willow live stakes at Robertson Point with local advice from Elizabeth Kwiecien, owner of the leased properties at Robertson Point.





- June 24, 2022
Brad Nickerson picked up about 17 six-pack trays of live stakes at Mike Thorne's property in Wiggins Point for distribution to a new member at Fanjoys Point and to new members at the June 25, 2022 Douglas Harbour Community Centre breakfast.

- June 25, 2022 – Douglas Harbour Community Centre
Aditi Kadam, Patrick Oke, Mike Kelly and Brad Nickerson attended this event, and gave out six six-packs of red-tip willow rooted cuttings during our outreach event at the morning breakfast. All recipients of the red-tip willows received a copy of the WAWA permit 63190'22, along with planting instructions for the rooted cuttings.

- August 6, 2022 – Life at the Lakes, Cambridge Narrows
Aditi Kadam, Patrick Oke, Mike Kelly, Tom McAvity, Joy Thomas, Jennifer McPhail, Kim Reeder and Brad Nickerson attended this outreach event, and engaged dozens of visitors. Two of them joined our Association and took a six-pack of red-tip willow cuttings to plant on their properties, a copy of the WAWA permit 63190'22, along with planting instructions for the rooted cuttings.

- August 20, 2022 – Douglas Harbour Community Centre
Aditi Kadam, Patrick Oke and Brad Nickerson attended this event, and gave out three six-packs of red-tip willow rooted cuttings during our outreach event at the morning breakfast. All recipients of the red-tip willows received a copy of the WAWA permit 63190'22, along with planting instructions for the rooted cuttings.

- October 3, 5 and 8, 2022 – site visits
Patrick Oke, Aditi Kadam and Kim Reeder visited 28 sites where red-tip willows were planted by Association members in 2021 or 2022. Initially, 64 Association members with red-tip willows obtained from our Association were contacted to arrange these site visits. Of these 64, 15 didn't respond, 12 didn't want a site visit or to provide any information about the willows, and 9 gave responses such as not available on those dates, site information was already sent by email or all the willows had died so no point in having a site visit. The sites visited are located on both the east and west side of Grand Lake, Maquapit and Indian Lakes, Youngs Cove and Cumberland Bay. Preliminary findings show that of the willows planted in 2021, there is a 40% survival rate, and of the willows planted in 2022, there is a 74% survival rate.

- By early October, a total of 1,014 red-tip willows (as live stakes or rooted cuttings in six inch pots) had been picked up by or delivered to 28 members of the Jemseg Grand Lake Watershed Association for planting on their properties.

Looking Ahead

On Nov. 30, 2022, our Association submitted an application for N.B. ETF funding entitled "Water Quality Monitoring, Education and Climate Change Adaptation in the Jemseg Grand Lake Watershed". The primary changes in 2022's submission is that there is one integrated proposal (instead of three as in 2021's submission), and that it proposes hiring a full-time, experienced project manager and a 4 month senior biology summer student. Besides writing reports describing our 2021 water quality testing results, and for our 2021-2022 N.B. ETF funding awards, our Association's committed volunteers will be working to improve our website and to find the best way forward as an Association. We need everyone's help in obtaining additional members to help us achieve our mission. As stated in our bylaws

> The *Mission* of the Association is to engage the attention, enthusiasm and support of the people, communities, businesses and organizations in the Jemseg Grand Lake Watershed to provide a healthy watershed for all. We undertake ecosystem education, improvement and protection activities that benefit the Jemseg Grand Lake Watershed community.

Jemseg Grand Lake Watershed Association

Financial Statement

December 31, 2022

	Combined	General	New Horizons for Seniors Project	Education 2022 Project	Water Quality 2022 Project	Willow Planting 2022 Project
Project Number				220364	220286	220363
Project Budget				20,000	18,000	11,200
Revenue						
Membership Fees 2022 Deposits	995.00	995.00				
2021 Projects - Final claims received	7,086.69			4,126.69	1,875.00	1,085.00
ACAP Contribution for 2021:	1,000.00	1,000.00				

Financial Statement

January 1, 2023

	Combined	General	Horizons for	4,053.89	12,881.09	5,854.22
Project Budget				45.00		
Financial Statement				8,225.58	14,756.09	6,939.22
	Combined	General	New			
Project Budget				4,126.69	1,875.00	1,085.00
Revenue						
Membership Fees 2022 Deposits	995.00	995.00				
2022 Projects - Final claims received	304.61			304.61		
ACAP Contribution for 2021:	1,000.00	1,000.00		129.72		
Jemseg Grand Lake Watershed Association				100.00		
Financial Statement				897.50		
January 2, 2023				156.50		
	Combined	General	Horizons for	617.35		
Project Number				640.45		
Project Budget				1,207.76		
NB Environmental Network membership	45.00			45.00		
WAWA Permit	25.00					25.00
Mike Thorne - red tipped willows	632.50					632.50
Flexiway products - shipping	33.80					33.80
Fredericton Home Hardware - supples	146.28					146.28
Travel & Copying	382.75					382.75
Aditi Kadam	1,103.40					1,103.40
Patrick Oke	1,373.35					1,373.35
Kim Reeder	2,157.14					2,157.14
NBLakes Assoc Membership	150.00				150.00	
Research and Productivity Council	6,944.28				6,944.28	
Willowbrook Watershed Services	5,786.81				5,786.81	
	21,079.92	1,995.00	-	8,225.58	14,756.09	6,939.22
Surplus (deficit)	(21,079.92)	(1,995.00)	-	-	-	-
Opening Bank Balance Jan 1, 2022	7,045.74					
Book Balance	**(14,034.18)**					
Outstanding Cheques						
Claims in progress	0.00					
Actual Bank Balance Dec 31, 2022	**(14,034.18)**					
2022 Environment Trust Fund Projects						
2022 Project Budgets	49,200			20,000	18,000	11,200
Expenditure Claims in 2022	29,921			8,226	14,756	6,939
Project Balance not used	19,279			11,774	3,244	4,261