A Biased History
of the

Clean Annapolis River Project

1988 to 2010

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Acknowledgments

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Any errors are the responsibility of this author.

Introduction

The Clean Annapolis River Project (CARP) is a charitable, non-governmental organization incorporated in 1990, “to enhance the ecological health of the Annapolis River watershed through science, leadership and community engagement.” (CARP 2023 website)

The Annapolis River drains the western segment of the Annapolis Valley in western Nova Scotia. According to the CARP website, “the Annapolis River watershed is the third largest watershed in the province of Nova Scotia, covering an area of 2,000 square kilometers. It spans from Caribou Bog near Berwick to Digby, and is characterized by a variety of land uses, including agriculture and forestry.” In a larger geographic context the Annapolis watershed drains into the Bay of Fundy and is part of the Gulf of Maine watershed that drains parts of three American states and two Canadian provinces. Due to the influences of the Bay of Fundy, the twice daily tidal range in the Annapolis Basin and River is five to nine meters.

The Annapolis watershed is part of Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq people who have occupied and taken care of these lands since the glaciers first started to retreat.

The title, *“A Biased History of the Clean Annapolis River Project 1988 to 2010,”* underscores two important considerations. The history has been researched and written by the group’s founding executive director and, by definition, cannot be, or be seen to be, unbiased. While this may compromise perceived or real objectivity, it does offer unique insight into the critical junctures in CARP’s evolution. This history is largely based upon independent sources such as meeting minutes recorded at the time, published articles, project reports and related documents. Every effort has been made to depend upon these independent sources.

This author is one of four individuals involved in the founding of CARP. Shea Griffith, Middleton, was CARP’s founding chair. Graham Daborn, at the time

director of the Acadia Centre of Estuarine Research, provided scientific support. The initial link to Environment Canada was facilitated by the late Geoff Howell, a scientist with the Inland Waters Division, Environment Canada, Atlantic. CARP could not have become what it is without the early support and leadership of Shae Griffith, Graham Daborn and Geoff Howell. Other than this brief reference, no individual names will appear in this history unless used as recorded reference.

This author has only been a casual observer of CARP and its activities since 2010, and has little substantive knowledge of the organization. That phase of CARP's evolution needs to be written by someone more familiar with this latter time frame. While the first 25 years established a corporate cultural base that built the organization, the evolution has been an ongoing process. The early years contributed to a strong base that has enabled CARP to pivot to take advantage of changing circumstances and emerging opportunities. CARP, in March 2024, will celebrate its 34th birthday, a testimony to the adaptability of the organization.

This history is divided into several chapters that will trace the creation and evolution of CARP from 1988 to 2013. The circumstances that brought a group of citizens together to create CARP arose from three seemingly unrelated events. An atmosphere of growing societal awareness of emerging environmental issues at least twenty years before the founding of CARP set the stage. The failed nomination of the Annapolis River under the national Canadian Heritage Rivers System woke local residents to the reality that their historic and treasured river was suffering ecological decline. Regional environmental scientists and policy makers were seeking community-based pilot projects to address the declining ecological health of estuaries in Atlantic Canada. While the road was bumpy, it ended with the incorporation of the Clean Annapolis River Project. The first three chapters will explore these aspects.

The section, "Growing Up Fast," describes the rapid growth of CARP, from a small volunteer group in the backwaters of rural Nova Scotia to provincial, national and international recognition. It was a fast trip from humble beginnings in Annapolis

Royal in 1990 to participation in the Sino-Canadian Symposium on River Basin management in Shenyang, Peoples' Republic of China in October 1992.

Chapter five deals with the sometimes testy relationship between CARP and early managers of the Atlantic Coastal Action Program. It was resolved as each partner accepted the opportunities and limitations that collaboration offered. A professional and mutually respectful working partnership allowed both partners to accomplish things that individually would have been almost impossible.

The next section focuses on the legacy of CARP. As sustainability is sometimes seen as a three-legged stool - environmental, economic and social - that section will document the tripartite legacies of the three legs. Rather than being individually in separate chapters, they are combined into a single chapter composed of the three elements. It is hoped that this configuration will show the three parts as separate but dynamically intertwined.

The last section focuses on the lessons learned during the first quarter century of CARP's existence. Appendices will list the members of the organization's founding board of directors and the various awards and special recognition afforded CARP and those associated with the organization.

Chapter 1 The Roots

The soils that built the modern environmental movement were accumulating in the 1960s and 1970s in many parts of the world. As documented by Mark Leeming (Dalhousie University, 2013) environmental activism was also energized in Nova Scotia by emerging environmental concerns, including in the more rural portions of the province. These concerns varied from hydro development on the South Shore to the Scott paper mill in northern Nova Scotia. For his historical perspective, Leeming focused on three issues - pesticide spraying, nuclear power and uranium exploration - but recognized that more localized issues sometimes dominated in other parts of the province.

In the late 1970s into the 1980s, this author was a community journalist/editor for a regional weekly newspaper in the western Annapolis Valley and was uniquely positioned as these issues unfolded in that region. While these may have been somewhat localized, they followed the patterns discussed by Leeming.

In the late 1960s to the early 1980s the western Annapolis Valley experienced a marked change in demographics, That period may have been the first time since the early 1900s that the population increased in this region. Previously the population was in decline, especially among those of working age.

The first waves of the postwar generation were spreading across North America. The hippies, back-to-the-landers, US draft dodgers, and disenchanted urban residents were on the move and local graduates were returning home. Nova Scotia was one of their many destinations, especially rural parts of the province. In the western Annapolis Valley, popular destinations included Bear River, the Bayshore and North Mountain and dozens of other small rural communities that offered cheap land and friendly neighbours. These new and returning citizens often embraced wider community concerns and became opinion leaders in their communities. That activism was reflected in many ways.

In describing urban communities, Jane Jacobs (1969) introduced the concept of "unslumming." She asserted that when people chose to live somewhere, either

by consciously staying or by immigration, the nature of the neighbour changes. The vitality and sense of community are enhanced creating new vigor and energy. While she recognized the concept from her urban experience, the same sense of place can be also transferred to rural communities when people chose to migrate in or to stay on their home turf. The film, "Rural Renaissance" records this concept in real time in Annapolis Royal. The film is available at https://www.youtube.com/watch?v=OrABIJhdMck

The alignment of Highway 101 in Annapolis County was among the first hot button issues. Provincial highway engineers and some local business people favoured a route that was easier and more quickly built on the Valley floor north of the Annapolis River to the Annapolis Causeway. Westwardly, the route would have severed the Town of Annapolis Royal at what is now the Annapolis Royal Historic Gardens and crisscrossed Highway 1 two or three times before connecting with the existing Bear River Bridge. Opposition arose among farmers, citizens and local governments resulting in a citizens' plan for an alternative route along the face of the South Mountain well away from agricultural lands. The issues were hotly debated in the mid-1970's. The current location is the end result in which Highway 101 was built on the valley floor from Coldbrook to Bridgetown. From Bridgetown to the Bear River Bridge the South Mountain route was constructed.

In 1969, there was an incident involving the aerial application of the herbicides on the portions of Belleisle Marsh owned by the province. That was an intensively farmed Acadian dyked marshland midway between Annapolis Royal and Bridgetown. According to Leeming the use of the herbicides 2,4-D and 2,4,5-T along roadsides and on agricultural lands expanded quickly in the early 1960's. The common name for 2,4,5-T is Agent Orange, used as a defoliant in the Vietnam War.

On June 3 & 4 in 1969, both "windy days," a "plane was contracted by the province to spray the herbicides 2,4-D, 2,45-T and Dicamba," on the government lands on Belleisle. Over the next few years, dairy farms were plagued by abnormally high still births, many of which were twins. Horticultural crops failed or were disfigured and fruit trees died. Human health may also suffered as one young farmer died of a cancer often associated with

herbicide exposure.(Leeming, 2013) The province did not accept responsibility and steadfastly refused to conduct testing for herbicide residuals.

Notwithstanding this hard line, the province paid, “about $30,000 to the 13 farmers.” (Leeming, 2013) The very serious public health and ecological implications were the kindling for a spirited public awareness campaign to eliminate roadside spraying first in Annapolis County and eventually in the entire province.

In the late 1970's, uranium exploration in Annapolis County attracted considerable concern. The municipality allowed the exploration company to dig trenches at the Graywood incinerator site south of Annapolis Royal. When it was discovered that radiation levels in the dust at that exploration site exceeded background levels, exploration was stopped and the site capped with concrete. This became one of the first steps leading to the province-wide moratorium on uranium exploration that is still in effect.

In the 1980's the Annapolis Royal Tidal Power plant was built by inserting a low-head turbine in the existing Annapolis Causeway. The project attracted citizen protests due to fish kills and water levels in the estuarine portion of the river upstream from the causeway. The station was shut down in April 2019, after the Canadian Science Advisory Secretariate found substantial fish mortality caused by the turbine, and a crucial component failed within the generating system. Nova Scotia Power is currently seeking to decommission the plant.

Chapter 2 Seeking Heritage River Status

The next step in the development of CARP was the failed application, in the late 1980s, to the Canada Heritage Rivers program for the registration of the Annapolis River. Interestingly, Jennifer Welchman (2015) suggests that the formation and development of an organization like CARP would not have been possible had this nomination succeeded

Launched in the 1980s, the goal of the Canada Heritage River System (CHRS) is to provide national recognition to important heritage rivers. "The program aims to protect the rivers of (i) outstanding heritage value, human or natural, or (ii) outstanding recreational value, by providing incentives for community-based management initiatives" (Welchman, 2015).

To be considered, local communities need to organize and prepare a detailed plan for submission to the province. Provincial approval is required before any nomination can be officially submitted to the CHRS board for consideration. The rewards of recognition were potentially significant including the prestige of national recognition and federal assistance in development of management plans for the waterway.

"No community responded to the announcement of the program in 1984 with greater alacrity," (Welchman 2015) than did the Annapolis Valley Affiliated Boards of Trade (AVABT), representing community boards of trade in communities stretching from Windsor to Digby. The applicants were buoyed by the rich cultural history of the Annapolis River. For thousands of years, the region was part of Mi'kma'gi, the ancestral homeland of the Mi'kmaq people. French explorers founded one of the first permanent European settlements in 1605 in Port Royal at the mouth of the Annapolis River. Today, in tourist promotions, the region has been referred at as the "Cradle of Canada" in recognition of the pivotal role it played in the early history of Canada.

On the ecological front, the picture was not as rosy in the 1980s. After more than four centuries of European settlement, the Annapolis River system had undergone significant changes. Most of the larger tributaries were dammed for electrical generation. The numerous salt marshes were dyked and drained. The

Annapolis Causeway, a transportation link built in the 1960s, also controls water flows for non-dyked areas upstream from Annapolis Royal. Untreated or poorly treated municipal wastewater, agricultural run-off and pesticide use caused further decline in water quality.

In October 1987, Ken Stretch, the Minister of Lands and Forests at the time informed the AVABT that, "unfortunately the Annapolis River did not qualify as a viable heritage river." (AVABT minutes November 19, 1987) As described by Welchman, the nomination of the Annapolis River was up against "two insurmountable obstacles":

> "The first was Parks Canada's conflation of natural heritage and ecological values. As far as Parks Canada was concerned, these were one and the same thing. Rivers lacking one necessarily lacked the other. The second was that as Parks Canada and other federal agencies of the day understood national heritage, the historical associations of the Annapolis River did not entail that it possessed national heritage value." (Welchman, 2015)

In essence, Welchman is saying that under the very narrow Parks Canada focus, the Annapolis River, by their definition, could not be a heritage river.

At this point, the AVABT began to look for other options of which very few existed. Federal agencies had yet to respond to the growing societal concern around environmental issues. As witnessed by the spray misadventures in Belleisle, roadside spraying and other related issues, environmental concerns were of little or no interest to the province.

Support within the AVABT was also thin. One member asserted that a broader management plan, "would not be a practicable venture now or in the immediate future." (AVABT Minutes, June, 1988). It was recommended that the Annapolis River Task Force (ARTF), the group spearheading the CHRS application be dissolved as an AVABT committee. That recommendation was rejected by AVABT directors in a July meeting.

The resulting public awareness of the declining environmental health of the Annapolis River came to the attention of the Atlantic Estuaries Cooperative Venture, an somewhat informal group of environmental scientists and policy makers who were seeking demonstration sites to spark community-based environmental management. Early in 1989, the Annapolis River Task Force was introduced to the AECV and offered a new path forward.

Chapter 3 The AECV Challenge

The Atlantic Estuaries Cooperative Venture (AECV) has had profound, mostly positive, impacts on the ecological, social and economic health of the numerous watersheds in Atlantic Canada. The Annapolis River watershed was an early test bed for this new way of seeing and doing environmental management. While the name may have changed from time to time, the underlying principles were steadfast.

The concept for AECV was initially developed in a meeting that included senior environmental scientists from government, academia and the non-governmental agencies in the Atlantic region. The objective of the initiative was simply, "to ensure the long-term health of estuaries in Atlantic Canada, especially those of ecological and economic significance, through rehabilitation and sound management." (Daborn, 1995) Estuaries are at the mouth of rivers where upland fresh waters meet the sea creating unique and dynamic ecosystems.

AECV philosophy included, "the concept of the ecosystem as a single unit, . . . sustainable multiple uses of the estuarine resources, . . . extensive community involvement," (Daborn 1995) With the basic principles agreed upon, the next task was to find a suitable demonstration project.

> "We quickly settled on the Annapolis Estuary as an obvious candidate for Nova Scotia. This was an estuary with recognized environmental quality problems, with rising use conflicts (e.g., between agriculture, forestry, power generation and tourism), and a community that had already become sensitised to the question of water quality." (Daborn, 1995)

The initial concept of a community driven partnership was first presented to the Annapolis River Task Force (ARTF) in March 1989. The AECV representatives proposed a joint project, involving governmental, business, academic and community interests, aimed at the rehabilitation, enhancement and sustainable use of estuarine resources. The ARTF's response was immediate, 'great, what do we do next?'

As the ARTF was a committee within the corporate structure of the well-established AVABT, their directors agreed that the ARTF should investigate this option. Early in July, the ARTF presented an action plan. At a meeting, the AVABT board of directors had agreed that, "the Annapolis Valley Estuaries Cooperative Venture (AVECV) could be registered under the AVABT name." Energized, the ARTF members agreed that the initial focus would be on the Annapolis River. They began to make ambitious plans to investigate and start addressing issues. These included budgeting for a project manager who would report to the newly created AVECV steering committee. Preliminary information indicated that the newly created federal Environmental Partners Fund might be a possible funding supporter.

The first wrinkles appeared in the early fall of 1989. The registrar of joint stock companies indicated that they were, "reluctant to register a business name on behalf of a nonprofit society" (AVABT minutes 1989). They also noted that the word "cooperative" was restricted to organizations incorporated under the appropriate provincial legislation. That name was unacceptable under the Societies Act. After negotiation, the group was registered as the Annapolis Valley Estuaries Venture (AVEV).

Another, more serious issue, emerged in the early December meeting of the AVEV. Senior AVABT management pointed out that all documents and letters could only be issued and signed by the executive manager of the AVABT unless authorized otherwise by the AVABT board of directors. It was agreed that a meeting with directors was required to resolve this issue. A meeting a few days later only hardened the disagreements.

The issue came to a decisive head in early January 1990. The AVABT president reported that, "actions taken by the AVEV (was) often contrary to AVABT bylaws." After discussion, the directors, "approved in principle the creation of a separate (new) organization to deal with," the Annapolis Valley estuaries and that the AVEV subcommittee would be disbanded. After several weeks developing a constitution and bylaws, the Clean Annapolis River Project was incorporated under the Societies Act on March 19, 1990. CARP was born.

Many years later, the former executive manager of the AVABT remarked to Jennifer Welchman:

> " they found that the rejection (of the Heritage Rivers designation) had a "silver lining"of an unexpected kind: it crystallized for many local residents what the scientific community and public health officials already knew—the Annapolis River needed help … This realization has led to a wide spectrum of the community becoming concerned and involved."

Welchman also concluded that many, if not most, of the community-based environmental initiatives pioneered by CARP would likely have been impossible had the Canadian Heritage River been awarded in the 1980's.

Welchman (2015) offers the following comparison: On one side she offered:

> "it is instructive to consider the difference it would have made to CARP's activities and initiatives had they chosen otherwise. A number of ecologically important projects that CARP has pursued in its quest to protect and enhance the river's ecological systems might never have been undertaken, . . . because of its effectiveness as a grassroots organization, CARP has served as an influential model for community capacity building around the province. Headway against the Annapolis River's ecological problems is being made."

On the other side she suggested:

> "instead of developing projects such as these, an organization dedicated to stewarding the watershed's natural heritage values would presumably have concentrated its efforts on the removal of visible impairments, starting with the causeway and tidal power generating station. Such efforts would almost certainly have been wasted. Due to natural coastal subsidence and rising sea levels, the causeway cannot be removed without potentially catastrophic consequences to the human infrastructure, including heritage sites, along the lower third of the river's course. "

Chapter 4 Growing Up Fast

Within two years after its incorporation in 1990, CARP went from an idealized concept to a community organization with a regional, national and international presence. In these initial years, CARP spearheaded water and energy conservation projects, stream bank reforestation including controlled livestock access, water quality monitoring, litter collection and several other initiatives in the Annapolis River watershed. Community outreach included a local newsletter and the Annapolis River Issues fact sheets. CARP was invited to speak at national workshops on water conservation, participate in the Sino-Canadian Symposium on River Basin Management in Shenyang, China, and in the activities of the Gulf of Maine Council on the Marine Environment. The group was awarded the 1992 Nova Scotia Environment Award, the 1992 Gulf of Maine Visionary Award and the 1992 Environmental Achievement Award from Environment Canada.

When CARP was founded in 1990, there was barely enough cash on hand to open a bank account at the Bridgetown branch of Valley Credit Union. The VCU, unlike charter banks at the time, was very welcoming to the not-for-profit sector, and offered free banking services to registered societies even if they did not have charitable status with the federal government. The only cost was the $5 fee to buy a share in the cooperative. It is worth noting that during the first 25 years, CARP only paid for purchasing cheques. The group was able to save thousands of dollars in banking fees. In addition, CARP received annual dividends that made membership an excellent investment.

In the later years when the organization was annually managing resources of several hundreds of thousands of dollars, cash not immediately needed for operations was invested in short term bonds with VCU. This ensured that VCU had the resources to reinvest in the local community according to their local lending policies.

When charitable status was awarded a few months after incorporation, telephone and electrical services became available at residential rates, somewhat less than those charged to businesses. As CARP grew and became more complex, these savings multiplied significantly.

In many ways, CARP was geographically challenged, headquartered a two and half hour car trip from the provincial capital. The nearest large university, Acadia University, is 100 km. away. The internet and e-mail were not locally available until late in 1992.

Despite its geographic isolation, CARP was afforded other avenues to expand its presence. As the organization was spawned from the Atlantic Estuaries Cooperative Venture, mentorships from senior scientists and policy makers in academia and within the federal and provincial agencies were available. These mentors opened doors to other environmental specialists and communications and technology professionals throughout Atlantic Canada.

These mentoring opportunities were enhanced by the way in which CARP was organized and operated. The group was governed by a 12-person volunteer board of directors. While the majority on the board was composed of residents of the watershed, its membership included AECV's federal and academic founders. These direct connections to the Acadia Centre for Estuarine Research and the Inlands Water Directorate of Environment Canada gave the fledgling organization direct and ready access to a wide array of scientific and public policy tools. These relationships were cornerstones in the early and subsequent evolution of CARP.

Every effort was made to ensure the local diversity of interests were represented on the board of directors including agriculture, tourism, fishing, forestry, all orders of government, manufacturing & service sectors, citizens and local educational institutions. While these individuals were not official representatives of the various sectors, their presence ensured that the perspectives of the sectors were heard. To enhance community participation, each of the various projects had a project team to provide advice and support for that particular endeavour. This group was sometimes composed of the various project cash and in-kind contributors, and always included the user group at the centre of each project. The group provided both technical and community input into the operations of the particular project.

Early in 1990, CARP received a one-time contribution of $5,000 from the office of the Atlantic Regional Director General for Environment Canada. This

cash helped pay the costs for summer students to gather background information for the Middleton Water and Energy Conservation Project. Funding for that and related initiatives came in the fall of 1990 from the Environmental Partners Fund (EPF), a new federal Green Plan initiative. With these resources, CARP was able to hire a project leader who also fulfilled the role of executive director. The position was filled through an open, independent competition that included three or four, well-qualified candidates.

Because that funding needed to be equally matched with cash and in-kind contributions, CARP quickly learned the art of attracting project partners and developing standardized methods to record in-kind donations. The American Water Works Association, NS Department of Mines and Energy (as it was then known) NS Power and student employment programs financially contributed to the project. In -kind contributions were made by another two-dozen public and private sector agencies and individuals. The cash and in-kind contributions were three to four times greater than the funds from the Environmental Partners Fund

As evidenced by the many environmental controversies that had arisen in the region prior to the formation of CARP, the path that the group was following was likely to attract a few detractors. The early directors adopted the mantra - “one must not only be clean, they must be seen to be clean” - an adaption of remarks made by Lord Chief Justice Gordon Hewart in 1931.

The early directors worked with staff to devise a financial reporting system that promoted transparency. Project budgets with detailed anticipated expenses and income were set prior the beginning of any project. Monthly projections were compared to actual expenditures to measure performance. Year-end financial statements were prepared by an independent auditor who recommended improvements as needed. An annual report, including consolidated financial statements, was produced and publically available. As CARP had only one employee in the early years, it was critical that the Board’s president review all invoices and cheques before signing. When accounting staff was retained, it was possible to separate the various accounting functions with the president retaining signing authority.

The lack of financial resources meant that CARP often had to take a strong entrepreneurial approach. For example, the Annapolis River Guardians was a citizen-science water quality monitoring program, likely one of the earliest in Canada. When it became apparent that federal agencies were not interested in funding any type of monitoring, the program was reconfigured as a public awareness initiative to educate local residents about water quality issues in the Annapolis River. The most efficient way to do that was for the volunteer Annapolis River guardians to collect water samples as they taught themselves about environmental quality and the links to human activities.

When it was possible to establish a public CARP office, the very limited financial resources required an unusual approach. Up until that time, the CARP office was located in the private residence of the executive director. For the new public office, CARP leased a former dental office in a building owned by the Annapolis Royal Historic Gardens. The leasing terms were similar to a typical shopping center lease in which the retailer pays a base rent topped up by a percentage of gross sales. CARP paid a base rent and a top up based on gross income over a certain amount. CARP had an affordable base rent and the Gardens had an income stream for unused space. Throughout the lease terms over the next few years, the Gardens always received somewhat more than the base rent.

CARP was an early adopter of emerging technologies. In 1990, CARP's first computer was a "portable" made available as a loan through the local member of the Legislative Assembly. This "portable" weighed 10 to 12 kg and with a tiny screen and a flip-down keyboard. Printing required begging printer time at a local government office.

Beginning in late 1992, CARP had what was likely the first e-mail service west of Acadia University. It was dial-up, very slow and available by connecting to Acadia University. In those days, it was possible to have a Wolfville telephone number assigned to a phone physically located in Annapolis Royal without attracting long distance charges. Using this link, CARP was able to link into the Acadia University e-mail system. Not really convenient but it was possible to pass information more efficiently than by letter or a long telephone call.

By the time CARP was invited to participate in the Atlantic Coastal Action Program (ACAP), the Atlantic version of Canada's Green Plan, the group was a thriving community organization. In the early days of ACAP, that almost turned out to be a liability for CARP.

Chapter 5 "I'm From the Community, . . . "

The origins of what was to become the Atlantic Coastal Action Program (ACAP), "were laid out at an April 1988 meeting convened by the Atlantic Director of the Canadian Wildlife Service," (Daborn 1995). Those in attendance included representatives of federal and provincial agencies, non-governmental organizations and academia. After several meetings, the Atlantic Estuaries Cooperative Venture (AECV) was created with the objective to ensure, "the long term health of estuaries in Atlantic Canada, especially those of ecological and economic significance, through rehabilitation and sound management." Daborn (1995) outlined the six underlying principles that were identified.

First, as "estuaries are inextricably linked," to the surrounding watershed and nearby coastal zone, "sound management must be based on a holistic perspective of the watershed - estuary and near shore system." Second, all users must be, "responsible for the estuarine attributes in order to permit multiple use and compatible development." Third, individual users, "must respect the other legitimate users of the estuary." The principles also asserted, "ecological degradation must be reversed," and the, "natural features, critical habitats and endangered species," must be protected. Finally, the sixth principle proclaimed that to attain the social and economic benefits of estuaries, management, "recognizes the aesthetic, environmental and economic values of the natural feature of estuaries."

These comprehensive principles were reflected in the AECV philosophy including, "the concept of the ecosystem as a single unit, . . . sustainable multiple uses of the estuarine resources, (and) extensive community involvement," (Daborn 1995). As discussed earlier, the AECV cast about for a pilot project and "quickly settled on the Annapolis Estuary as an obvious candidate for Nova Scotia. This was an estuary with recognized environmental quality problems, with rising use conflicts (e.g., between agriculture, forestry, power generation and tourism), and a community that had already become sensitised to the question of water quality." (Daborn, 1995)

At the same time, plans were being made for the national Green Plan that was launched by the federal government on December 11, 1990. It was composed of several elements each geared to the responsibilities of the various federal departments. Within Environment Canada, the initiative created action plans for each of the Environment Canada regions. In eastern Canada, ACAP aimed at supporting community-based, multistakeholder processes to address water quality issues in designated watersheds. Environment Canada Atlantic, "had adopted the same general approach outlined in the AECV, and when the Green Plan was announced in 1990, it included the Atlantic Coastal Action Program. ACAP was launched in early 1991 and CARP became one of the first group to be included." (Daborn 1995)

As the AECV principles were one of the foundations of ACAP, and CARP was the first pilot project built on the AECV principles, one could not have anticipated the rough seas ahead. About 18 months after its formation, CARP signed a formal letter of agreement to become part of ACAP. The first couple of years were bumpy as new working relationships were built.

Unlike the other national Green Plan initiatives, ACAP was announced as a community initiative based primarily on the decentralized principles of the AECV. The other regional Green Plan programs focused on working with well established organizations closely linked to the respective provincial and municipal governments as well as with binational links with the US dealing with trans-border issues. As these structures were long-standing relationships, the opportunities for unpleasant surprises, which public servants always dread, were virtually nonexistent. ACAP was a different beast and Environment Canada and participating communities had to learn to manage the variables. The tried and true method for central bureaucracies was to create a secretariat that could help citizens to understand their community concerns and to direct them in their considerations.

Environment Canada formed an ACAP office to direct their community-based operations. Manuals were produced to instruct communities on the essence of community-based stakeholder processes. Initially, it was envisaged that only new organizations that met these preconceived definitions should be included. The inclusion of CARP in this initiative was viewed with some discomfort by a

few public servants partly because CARP was an existing organization developing its own structures and links

From the earliest days of the AECV and throughout CARP's early formation and growth, the Environment Canada representatives, known as "windows," played an active role. They were an integral part of most projects offering their expertise, connections and interpersonal skills. Participation in CARP was in addition to their regular responsibilities. In their role as windows, they participated as ex-officio were members of CARP's Board of Directors.

The new ACAP central office was sufficiently staffed so their personnel often became "professional windows" assigned, as an official part of their job, to guide one or more sites in accordance with the policies and manuals being centrally created. The professional window assigned to CARP seldom engaged in the board discussions unless they directly involved ACAP, in particular, or Environment Canada, in general. That individual carefully made notes without offering any explanation as to why and what was their purpose. (Daborn, Griffith, & Hawboldt. personal comments) As fairly detailed board minutes were the official records of the meeting and usually available within days of a board meeting, these separate "unknown" notes did not foster the cooperative and collaborative approach envisaged in AECV and espoused ACAP.

A consultant's report on the lessons learned from the ACAP process noted that the priorities of the site and Environment Canada did not always coincide, putting Environment Canada staff, "in a difficult position." The report noted that, "the governance model for the program is not clearly defined." (Moir. 1997)

In a 1993 paper, Barchard and Hilderbrand asserted that the intent of ACAP is, "to support community-based participatory planning and management as the most effective means," toward ensuring that ecological resources are sustained for future generations. This philosophy suggested a number of principles: "cooperative management, . . . development of true and active partnerships, . . . Environment Canada cannot be perceived as the sole owner, . . . solutions must be comprehensive, innovative and home grown, . . . (and) visible action in areas where further study was unnecessary." (Barchard and Hilderbrand 1993).

Internally within Environment Canada, opinions on ACAP and CARP were divided. The academic and public service scientists involved in the early development of the AECV/ACAP concepts were concerned with the direction being taken as evidenced by Daborn's paper in 1995.

When ACAP was announced in 1991, it was envisaged as a $10 million initiative ending in March 1997. Circumstances changed over the first two years and ACAP was "re-profiled" to $6.4 million. The choices became very stark for Environment Canada Atlantic Region senior management. The number of sites or the blooming ACAP bureaucracies would need to be reduced. Reducing the number of community ACAP sites was bound to have political repercussions since the newly elected Liberal government won all but one of the seats in Atlantic Canada. The other risk for public servants was the fallout if the ACAP process or a designated site became a political embarrassment to the government.

Atlantic Region senior management returned to the founding principles of the AECV and the related ideas that were built from this different way of looking at things. The ACAP central office became more flexible and returned to the original "EC window" approach first utilized by the AECV in which the windows were volunteers from Environment Canada's professional staff who wished to act as the interface with particular ACAP sites. As Parks Canada was still part of Environment Canada at that time, senior staff from the western region accepted that role with CARP.

These early tentative changes sparked a developing mutual trust and respect between the ACAP sites and Environment Canada. As discussions for the second phase of ACAP opened, the sites were invited to write a "Dear RDG Letter" to the Atlantic Region Director General to outline their thoughts on how the next stages could unfold.

The ACAP sites and Environment Canada Atlantic Region had come to the conclusion that collaboration and cooperation was to their mutual benefit. Spoken at one of these planning sessions, the phrase, "I'm from the community and I'm here to help you," underscored this mutual trust and respect that had developed between Environment Canada Atlantic Region and the communities involved in each of the ACAP sites.

The ACAP process initially involved nine watersheds across Atlantic Canada which expanded to include 14 sites. In NS, these involved the Clean Annapolis River Project, Bluenose Coastal Foundation, Pictou Harbour Environmental Association and ACAP Cape Breton. In PEI, the sites included Bedeque Bay Environmental Management Association and Southeast Environmental Association in Montague. ACAP sites in NB included Société d'aménagement de la rivière Madawaska et du lac Temiscouata inc, Eastern Charlotte Waterways, Saint John ACAP, St. Croix Estuary Project and Miramichi River Environmental Assessment Committee. The NL sites included Humber Arm Environmental Association and St. John's Harbour ACAP. In the later years, Sable Island and Goose Bay were added.

As recorded later in this document, the ACAP process, from a public finance point of view, was high on the list of the most efficient programs operated by a federal agency. The ACAP process cost Canadian taxpayers 10% of the traditional government delivered model and inspired community responses far beyond what any federal agency could even have imagined.(Gardiner. 2008)

In a 2006 paper, C. McNeil, et al, used examples, "to demonstrate that the effectiveness of ACAP in influencing some of the policies, programs and attitudes of the various levels of governments and industry in the region, as well as to describe how the community based model has been exported internationally." (C.McNeil, et.al., 2006)

ACAP was a successful program that essentially went on for 20+ years with consistent funding, which is unheard of for government funded programs. With changes in management, government directions, etc. the funding eventually evolved to include other groups and a name change (Atlantic Ecosystems Initiative), and finally became an open and competitive funding program, essentially ending ACAP in 2015. The longevity of the program speaks to its success and the recognition of the importance of governments doing things differently. There have been numerous evaluations, critiques, papers, thesis etc, and many examples of how the ACAP community-based model was exported to other areas/issues. (McNeil, personal comments)

Chapter 6: CARP 1988 to 2010 - The Legacy

The concept of sustainability embodies a trilogy that involves economic, environmental and societal considerations. For a society, these three elements need to be in balance. The concept is often visualized as a three legged stool. Unless the legs are very close to the same length, the stool will fall over. It is in the context of the three legged stool that the legacy of CARP will be discussed in the three segments of this chapter.

When these three elements are taken together, CARP can be viewed as a community development process using the environment platform to address wider issues. If the notions of sustainability are to be fully addressed, it is not surprising that CARP evolved to address this broader focus of sustainability.

Part 1 Environmental Legacy

CARP's environmental legacy after the first 25 years could be a long statistical summary of the numbers of water samples collected, digger logs installed and countless other variables. Besides being very boring reading, it would be a nearly impossible task as it would entail going through every annual project report for every activity that was undertaken since 1990. The more illuminating and interesting tack is to pick a few projects that have had lasting impact, and explain the processes involved in their creation, development, execution and legacy.

Annapolis River Guardians

The Annapolis River Guardians was likely the most successful community engagement project CARP has undertaken. It was certainly the first citizen science program in Atlantic Canada, and among the first in Canada. As similar programs were fairly common in the US, strong transnational cooperative links were quickly formed.

The concept, pioneered by scientists at the Acadia Centre for Estuarine Research, was very simple - to train community members to systematically and fortnightly collect water samples from designated sites and evaluate them for eight or ten standard parameters for water quality. While the techniques were relatively simple, strict quality control and assurance protocols were essential.

The scientific and technical staff and laboratory facilities at the Acadia Centre for Estuarine Research were essential to launching this program. A training manual was prepared and equipment designed and built (Brylinsky 1992) The volunteers, working in teams of two for safety considerations, attended training programs and started collecting and analyzing water samples from early spring to late fall at 10 or more designated sites along the main river and significant tributaries. Over the next decades, successive generations of River Guardians collected thousands of water samples creating a long history of water quality data in the Annapolis Rver and some of its tributaries.

While the data set is impressive, the sense of community stewardship and ownership of the problems facing the Annapolis River was even more powerful. Because the volunteer River Guardians were monitoring sites close to their residences, friends and neighbours would see them collecting water samples on a Sunday morning. Very quickly, the friends routinely started asking their local River Guardian, “how is *our* river doing this week?” Data was published in the local community newspapers. At each of the monitoring sites, large billboards were erected to display the most recent water quality data. Everyone passing by could check on the status of that particular monitoring site.

The links to other citizen science water quality monitoring programs were being developed especially with University of Maine Cooperative Extension and State of Maine environment agencies. Representatives of these Maine programs provided additional training and local volunteers attended training sessions in the US. These international links strengthened over time leading to the formation of the informal Gulf of Maine Coastal Network (CNet). Unfortunately, the group was never able to attract long term funding so it was forced to cease operations.

While the citizen scientist-based, Annapolis River Guardians was highly successful, it was extremely hard to find the ongoing financial resources. Very few public and private sector agencies are interested in funding decades-long ongoing monitoring programs. CARP staff was highly creative in frequently reconfiguring the program to attract the necessary financial resources.

Eventually, that became impossible. While water quality data collection continues in 2023 but on a more limited scale, it is mostly managed by paid staff as they go about their other jobs.

Annapolis Royal Marsh

The creation of the Annapolis Royal Marsh was an undertaking where the role for CARP was to bring the several pieces together and to manage shifting variables for its successful completion.

Today, the French Basin Trail and the Harvest Moon Trail surrounding the engineered wetland, is one of the premium recreation attractions in the community.

The creation of the wetland was a classic example of serendipity. An Annapolis Royal Town councillor requested CARP to ask Ducks Unlimited Canada if they might consider development of a constructed wetland in the community. When the Annapolis Royal Historic Gardens was built, it included a large wetland on the Allains Creek salt marsh. Due to unique ecological circumstances having to do with salinity, a huge population of midges (family Chironomidae) thrived. While they were not biting flies, their huge numbers became a serious nuisance to abutting homes. The problem could only be corrected by removing the wetland, which was done. However, a town councillor was still interested in a wetland that would avoid the midge problem.

A few days later, CARP was asked to call a senior executive with the Canadian Wildlife Service, a division within Environment Canada. This individual was the chairperson for the Eastern Habitat Joint Venture (EHJV), the eastern Canada branch of the North American Waterfowl Management Program (NAWMP), a binational body charged with addressing declining waterfowl populations across North America. The NAWMP was a very well funded partnership that included Canadian and American governments and numerous international corporations and foundations. The EHJV had been financing the construction of wetlands in eastern Canada to improve waterfowl habitats.

There was a growing interest in engineered wetlands that could be used to provide third level treatment of municipal sewage. Wetlands are Mother Nature's kidneys as cleaning water is one of their many positive ecological

functions The Annapolis Royal waste water treatment plant is composed of two lagoons. The raw waste enters the first lagoon where initial decomposition begins with grinding and aeration. This is primary treatment. The partially treated slurry goes to the second lagoon where it is further treated using aeration and natural organisms. The relatively clean wastewater, assuming the treatment plant was operating as intended, was disinfected with chlorine before being discharged directly into the Annapolis River. Even if the treatment system is working properly, nutrient rich waste water with a chlorine residual was being released into the environment.

The first such wetland in Atlantic Canada was a pilot project constructed in the village of River Hebert in Cumberland County near Amherst. Their waste water treatment system with twin lagoons was similar to Annapolis Royal. After going through the lagoons, the disinfected waste is discharged to a constructed wetland engineered so that native plants, bacteria, algae, and small zooplankton filter nutrients and small particles from the water. Extensive scientific studies showed that nutrients were substantially reduced and waterfowl was thriving. The EHJV managers wanted CARP to see if the town might be interested in exploring this treatment option.

After town councillors and staff were given a detailed tour of the facility in River Hebert, council began to discuss the concept. Public meetings were held and detailed plans were created by Ducks Unlimited Canada. Once built, the wetland could not begin to receive treated waste water until the flooded area became a fully functioning wetland which took almost two years. The province required the town to change their chloride disinfection to an ultraviolet light system. This was combined with the new linkage from the treatment plant to the wetland. Funding became available for Ducks Unlimited Canada to create a walking trail along the dike top. Annapolis Royal received an environmentally friendly way to treat waste water from the town and surrounding communities and an important recreational facility at little or no direct cost to them. CARP and other partners have created wildlife signs, nest boxes and bird viewing platforms.

CARP's role was to bring the various parties together and assist them in solving the several problems and issues that always seem to arise in any complex project The French Basin Trail has become one of the most popular walking

and birding and wildlife viewing areas in the region. The success of this trail has encouraged the town to develop several other walking trails in the community. These combined facilities are now a major attraction for residents and visitors.

The wetland also eliminated the discharge of partially treated waste water directly into the Annapolis River, just upstream of the Annapolis Causeway. It provides habitats for both aquatic and terrestrial plants and animal and wonderful recreational opportunities.

Fish Habitat Restoration

For thousands of years, fishing in the salt, estuarine and fresh waters was a critical component of the culture of the Mi'kmaq people. After colonization, angling has for decades been a mainstay of rural life for Nova Scotians. The Tent Dwellers (Payne 1908) documents a June fishing trip in the early 1900's by American “sports” from Milford House in South Milford into what is now known as Kejimkujik National Park and National Historic Site. Angling for trout, Atlantic salmon, striped bass and several other species has always been part of our shared rural experience.

In the 1980's Environment Canada studies revealed that acidic rain, the result of pollution discharges from industrial sources in northeastern North America was resulting in the acidification of freshwater resources in Maritime Canada. As Maritime aquatic and terrestrial environments tend to be naturally acidic, the impact of acid enriched pollution is to amplify this natural acidification in many, but not all waterways in western Nova Scotia.

Within the Annapolis River watershed, several tributaries were identified as having unique geochemical features that offered enhanced buffering from the impacts of acidification. These were principally waterways that were fueled by groundwater from drumlins or water sources that flowed through certain other sedimentary rock formations. This vastly simplified explanation does not do justice to the very complex geochemical issues involved, but it does outline the relevant geology.

Over the first decades of CARP, fish habitat restoration activities centered of the waterways in which geochemical conditions offered some, but limited,

respite from industrial acidic pollution mostly from the northeastern North America. Testing confirmed that the several rivers merited habitat restoration. These included the South Annapolis in Aylesford, the Fales River in Greenwood, the Black River in Torbrook, the Round Hill River in Round Hill, and the West Branch Bear River in Bear River. The Nictaux River, possibly other waterways, also benefitted from this acidic buffering but it had been dammed decades ago to generate hydro electricity. All of these rivers rise in the South Mountain and wind their way to the Annapolis River.

Each of these waterways has been degraded by human activity. Where the waterway was overly wide, the water was often not deep enough for fish movement and without deeper pools for fish to survive low water conditions and elevated water temperatures. In some streams, the banks are so seriously impacted by human activities that silting and surface runoff further compromises aquatic habitats. While restoration activities tend to focus on recreational angling, healthy streams also promote a huge array of other vertebrates and invertebrates essential for healthy aquatic ecosystems. Healthy streams are also better equipped to manage flood events.

By harnessing the natural stream dynamics, it is possible to make interventions that enhance aquatic habitats. Streams tend to flow in long "S" curve patterns that are influenced by topography and other factors. Aquatic specialists are able to "read" and determine the most advantageous locations to place digger logs that create deep water pools and triangular deflectors that narrow streams. These same techniques can identify the most serious shore line erosion issues. Stream bank reforestation can reduce overland erosion while increasing stream shading and cooling the water. Stream bank buffer zones combined with controlled livestock access and improved agricultural, forestry and development practices can further protect aquatic habitats. Protecting existing wetlands and creating new wetland systems will sharply reduce flooding risk in high water conditions and provide water during droughts.

Working with Fisheries and Oceans Canada and private sector agencies, CARP staff and volunteers installed digger logs, stream bank deflectors and enhanced shore line stabilization and reforestation. Where appropriate, CARP worked with farmers to restrict animal access to waterways and provide alternative sources of livestock drinking water. CARP took a leadership role in the

installation of "water gardens" to better manage storm and melt water runoff. CARP, in cooperation with the NS Department of Highways and Infrastructure Renewal to improve fish passage through highway culverts. In its first 25 years, CARP was actively involved in initiatives to improve aquatic habitats in the Annapolis River watershed. This tradition continues to the present.

Not only have these activities positively impacted aquatic habitats, they have improved opportunities for human activities. Restricting livestock from waterways and providing fresh, clean drinking water, improves livestock health and productivity. Communities fronting on healthy streams offer enhanced living, recreational, cultural and investment opportunities. Stream enhancement benefits aquatic and terrestrial habitats for all living creatures, including humans.

Coastal Flooding

Hundreds of thousands of people live around the shore of the Bay of Fundy, famous for what are believed to be the highest tides in the world. High tides at Burntcoat Head, Nova Scotia, are impressively between 14.5 meters and 16.4 meters. Tidal range in the Annapolis Basin is between six and nine meters.

Most people along the Bay of Fundy may not know that we, for the past several thousand years, we have been playing "Russian roulette" with our tides. There are four, very complicated tidal cycles in the Bay of Fundy. First, we have the two tides daily. There are also the monthly tides at Full Moon and New Moon. Seasonal tides, usually occurring in the spring and fall, are related have to the alignment of the Sun and Moon and the 18.6-year tidal cycle is due to the relative positioning and tilting of the Earth, Sun and Moon.

Air pressure also influences tidal amplitude. Low pressure will allow the tide to be slightly higher than the predicted tide. As low pressure systems usually cause stormy weather, depending on intensity and direction, winds can dramatically increase the predicted tide. That is why the storm surge generated by a major hurricane likely presents the greatest hazards to coastal communities in its path.

While statistically the chances are very low over long time frames, it is possible for two, three or all four of these cycles to coincide. If two or more of the cycles

were to occur on a high tide during a major storm, moderate to serious coastal erosion could result.

This did occur overnight on October 4 -5, 1869 and has become known as the Saxby Gale. It has been speculated that a tropical hurricane, or its subtropical remnants, combined with a westerly cold front, energizing the storm. At Burntcoat Head, the high tide was at 21.6 meters, more than 5 meters higher than high tide records today, 150 years later. The destruction was immense for coastal communities and farmland throughout the region with deaths likely much greater than the 35 recorded.

It was against this historical background that CARP joined forces with senior scientists in the Canadian Meteorological Service, Canadian Hydrographic Service and the Geological Survey of Canada. The challenge was very simple - predict water levels in the Annapolis Basin if it were to experience, in the late 1990s, a storm like the Saxby Gale. The actual task turned out to be much more difficult than initially thought.

The first task was to determine the surge levels caused by the Saxby Gale at various locations around the Bay of Fundy. Using known tide gauges, the next issue was to predict the likely Annapolis Basin tide level had the Saxby Gale occurred in the 1990s. The exercise was further complicated to account for geological subsidence of the land resulting in sea level rise in Nova Scotia - 10mm to 20mm per decade. Researchers also had to account for the oceanographic induced increase in the tidal amplitude, the difference between high and low tides, in the Bay of Fundy.

With that data, the challenge became how to translate it to terrestrial mapping. In the decade before advanced ground penetrating radar and the associated geographic information tools, paper mapping was the only option. The original plan was to include the entire Annapolis Basin. This proved impossible because the available paper maps did not have the detailed information required.

The project leader, a recently retired head of cartography at the College of Geography Sciences (now NSCC), recalled that in the 1970s, the Nova Scotia government had commissioned very detailed maps for a few communities in the province. The mapping featured one meter contour lines and spot

elevations to a tenth of a meter. While suitable for the intended analysis, the mapping only included the immediate town of Anapolis Royal. The risk assessment was thus restricted to the town. While the mapping was 25 years old, it was considered safe to assume that the elevations were still applicable. Within these limitations, the project showed that properties four to six meters above sea level were at risk of coastal flooding should a storm similar to the Saxby Gale occur in the 1990s..

The project results were used by municipal planners to assist the Annapolis County Emergency Officer to stage a simulated emergency exercise based on a storm created coastal flooding scenario.

Subsequent research by the scientists at the Centre for Applied Geomatics, within the Nova Scotia community college system, confirmed these 1998 results. These simulations also show the impact of climate change induced sea level rise at various levels (Webster, 2010). They are much improved on the work that CARP did prior to this new technology that utilized air born radar that could map the terrestrial and the near-shore to create a seamless shoreline interface. Computer simulations could slowly flood the landscape showing the impacts of various sea elevations.

The CARP project, in spite of its technical simplicity, was among the first steps to show the potential danger of storm surges and sea level rise for one of the earliest European settlements in North America. Follow-up work with newly available technology underlined the risk. Twenty-five years later, the Town of Annapolis Royal Environmental Advisory Committee produced a report that brought this and subsequent information into a report that highlighted the risks facing Annapolis Royal (Bottomley, 2022).

Today, the town is working with the Atlantic Infrastructure Management Network (AIM) to evaluate and recommend possible solutions. Early in 2023, a preliminary report was presented for public discussion. It is recommending the development of a natural and created buffers from Fort Ann National Historic Site to the Annapolis Causeway be developed (AIM, 2023). AIM is further refining these early plans and the Town of Annapolis Royal is exploring funding options.

Part 2 Economic Legacy

This review will start at the Atlantic Canada level and move downward to the localized economic legacy of CARP. From a public finance point of view, ACAP was high on the list of the most efficient programs operated by a federal agency. The ACAP process cost Canadian taxpayers 10% of the traditional government delivered model and inspired community responses far beyond what any federal agency could even have imagined.(Gardiner. 2008)

There were 14 community organizations participating in the Atlantic Coastal Action Program. To assist Environment Canada in assessing the economic impact of the ACAP organizations, Gardiner Pinfold Consulting Economists Limited were commissioned to do two reviews of the program.

The second report (Gardiner, 2008) reviewed fiscal years 2001/02 to 2006/07. During that period, the 14 ACAP sites spent $21.7 million on projects, salaries and related expenses. The four Nova Scotia sites contributed slightly less than half of that total. During that period, total employment was 700 person-years of which about half from the four NS sites. Together the 14 ACAP sites paid about $13 million in federal and provincial taxes of which slightly more than half was generated by the NS sites.

More telling of the rapidly expanding maturity of the 14 ACAP sites is reflected in the comparisons with the previous study period, fiscal years 1996/97 - 2000/2001. Total expenditures in the earlier 5-year period were $13.5M compared to $21.7 in the next 5-years. Person years of employment rose from 482 to 700 and federal and provincial tax contributions jumped from $8M to $13M. During the fiscal year periods reviewed by Gardiner Pinfold, the ACAP sites were significant economic and employment generators to the local, provincial and Canadian economy.

Taking these Atlantic-wide economic estimates to a single ACAP site, like CARP, is somewhat more challenging. The type of detailed economic analysis demonstrated in the Gardiner Pinfold study is impossible. It is possible,

however, to do some rough calculations on the likely economic impact of CARP on the economy of the Annapolis River watershed with possible implications to the wider economy.

While simple annual budgetary data are helpful there are some severe limitations. Because CARP was built on multi-partnerships, annual, independently audited financial statements may not always reflect the local economic impact of the organization. A case in point is the development of the Annapolis Royal Marsh, French Basin Trail and related infrastructure. CARP spent a few thousand dollars in staff time to facilitate this initiative which resulted in tens of thousands of dollars being spent by other partners to design and build this facility. It does not, and should not show up in the CARP financial statements or in the Gardiner Pinfold study. That study derived approximately 85% of its information on audited financial statements (Gardiner, 2008).

Another consideration is the value of in-kind contributions. These included donations of time and expertise made by various CARP partners. For example, the contributions of staff time by Environment Canada and numerous other federal agencies are not recorded. Other federal and provincial agencies, private businesses, universities and non governmental organizations contributed hundreds of hours of staff time to almost every project in which CARP played a role. The Annapolis River Guardians and their associated scientific advisors, key to the development of CARP, contributed tens of thousands of in-kind dollars.

In the first 25 years of CARP's existence, the annual cash income likely averaged between $250,000 and $400,000. Some years, especially in the early ones, it would have been less but in the latter years was somewhat more. For simplicity, assume a 25-year average of $300,000 annually.

Virtually all of these funds were derived from outside the Annapolis watershed and, as such, were new sources of income to the region. Accepting these assumptions, based on informed estimates that could be challenged, CARP

imported $300,000 annually to the local economy. While CARP preferred local spending for goods and services, local suppliers often could only offer imported products diminishing the local economic impact of this imported income.

Based on the Gardiner Pinfold review of all 14 ACAP sites, an average of 65 per cent of the income would have been spent on salaries. Since CARP preferred to do many projects in-house, it is quite likely that salaries took up a greater percentage of budgets. This means that in most years, CARP was contributing $200,000 annually in local salaries. Many, likely most, were young citizens living in the Annapolis watershed, seeking their first job and a future career.

The overwhelming majority of CARP staff lived in or relocated to the area meaning that most of these salaries were spent on local goods and services. Unfortunately, since many of the local suppliers often could only offer products imported to the region, the local economic impact was diminished. Nevertheless, the employment benefits would have been felt locally.

From its inception, CARP was a member of the Valley Credit Union (VCU) that serves the Annapolis Valley. Unlike the charter banks, credit unions focus on their service area, in this case the Annapolis Valley. Any deposits made to a charter bank are added to the bank's assets and used to support the bank nationally and globally. Credit union deposits are mostly used to support activities in their service area.

Credit unions also require members to buy a share and have only one vote regardless of the number of shares. At VCU, a share costs $5. CARP became a member at the urging of our founding president. While still not a registered charity, VCU waived all banking service charges as CARP was a registered not-for-profit society, something few, if any, charter banks had any inclination to offer at that time. From the very beginning CARP has only paid the cost of having blank cheques printed, saving tens of thousands of dollars in routine banking fees. On the other side of the coin, any cash flow or annual surpluses were deposited to VCU investment instruments. These, in turn, gave VCU an enhanced capacity to meet the needs of their other members.

Credit unions also pay an annual dividend, assuming they turn a profit, based on the activity of members in using their services, not on the number of shares owned. CARP often received an annual dividend based on their level of activity with VCU. While not a lot of money, considering the $5 cost for the membership share, it was a good rate of return.

Many forms of pollution are byproducts of inefficient activities. CARP's joint energy conservation project with a local dairy farm illustrates this point. Pollution prevention was a cornerstone in the CARP foundation. It is much more efficient to prevent pollution than to bear the expense of later cleanups.

Conventional lighting in a dairy barn was changed to long-life, high-efficiency electronic lights on the natural sunlight spectrum. Prior to the change over, the conventional bulbs required changing monthly. Due to the high ceilings, this required the use of a tractor with a front end loader to lift a person so they could change all the bulbs. This process took a couple of hour per month and tied up two staff and an expensive-to-operate tractor. After the change over, the farmer avoided these monthly costs while enjoying a reduced electric bill for lighting the barn. Because the lighting was on the natural sunlight spectrum and of the intensity preferred by dairy cows, milk production rose within days. Noting that contented cows produce more milk, the farmer commented that because production rose, the cows must like the new lighting. This farmer saved on electrical costs and related costs while enjoying increased milk production.

The annual economic benefit of pollution prevention is almost impossible to estimate. But like compound interest, it keeps giving at an increasing rate. For example, a $100 saving annually at 5 percent interest, creates a saving of almost $1,500 in ten years and more than $5,000 in 25 years. If the saving was $100 monthly, the saving in 10 years would be an astonishing $16,000. That is the power of compound interest with savings created by pollution prevention.

While traditionally economists have considered pollution to be an "externality" to the market economy, Hazel Henderson in *Creating Alternative Futures* (1978) proposed that pollution was, in reality, a redistribution of wealth. This concept can be explained by an Annapolis watershed example:

Farmer A raises livestock upstream of Farmer B who grows strawberries and other horticultural crops that need to be irrigated. If Farmer A allows animal waste or livestock to enter the waterway, there is a high risk that the water will become polluted so that Farmer B cannot safely use the water to irrigate his food crops. Farmer B has three options: stop irrigation, install water treatment or find an alterative water source. All the options cost will him more money and/or cause lost production. Because Farmer A polluted the stream, he passed his waste disposal costs to down-stream users and expropriated some of Farmer B's income. If the act was intentional, it could be argued that Farmer A stole from Farmer B.

Even this simplistic example emphasizes that pollution is, in reality, about redistribution of wealth and power. Any contribution CARP would have had on this equation is less than a nano particle. While lost in the global economic modeling, there were nano contributions, but like "The Butterfly Effect," one does not know where it will lead.

While many of the economic contributions made by CARP and the other ACAP sites can be quantified, there are many results that are impossible to measure. It is safe to assume that the Gardiner Pinfold results significantly under estimate the actual economic impact that was created by the ACAP process.

Part 3 Social Legacy

The social legacy of the Clean Annapolis River Project is more challenging to articulate because it was often not recorded and when it was, it was not in the same detail as the economic and environmental outcomes. In many ways, CARP was really about community development using environmental issues as a launch pad.

Partnership building is often seen in an economic context, but it is much more than that. While partnership building can be used to expand economic reach, it also enhances social spheres. When groups with diverse interests meet in a "safe space" that is respectful and nonjudgmental, new avenues of communication become possible. An important by-product is that people with diverse interests to begin to understand and trust each other on a personal level. Social polarization is diminished and discouraged. This is the essence of AECV/ACAP/CARP approach - people working together to define a problem

and jointly seek ways to improve outcomes. If there is not complete agreement, efforts are directed to addressing the parts where there is agreement. Building on the parts where there is agreement leads to enhanced trust so that other, more challenging issues, can enter into the discussion. By working together, resolution of other friction points may become evident.

The capacity to build bridges among diverse interests is among the most important legacies of the ACAP process. Some participants may have seen ACAP as a program but, in reality, it was a process to address and resolve environmental challenges.

Another of the important social outcomes was the work experience CARP offered to dozens of recent graduates just starting their professional careers. During CARP's first quarter century, federal and provincial human resource programming focused on youth initiatives. These included recent high school graduates as well as those with post secondary education. Some of these youth career initiatives were from non-traditional human resource agencies such as Environment Canada and Fisheries and Oceans Canada. For example, ACAP supported a science horizons program designed to give young scientists work experience in their chosen field. The program funded salaries for emerging scientists within Environment Canada as well as in the ACAP sites.

Because CARP was part of a wide multi-stakeholder network, involving numerous universities, federal and provincial governments and international agencies, the organization was well positioned to offer these young people diverse and rich career development opportunities. Often, agencies might have project funding but have limited staffing resources. Because of the diverse sources of project and staff funding, CARP was often able to build multiple partnerships around a single project. The challenge was to find the points at which these diverse interests intersected providing unique solutions to the issue at hand.

From these partnerships, CARP was afforded access to highly motivated, bright and well-educated young people anxious to build their future professions. While the salaries were not high, the participants were given the opportunity to develop their career credentials while forming a network of future career development opportunities. Because these young people almost always found

employment in a diversity of public and private sector agencies, CARP was able to widen its networks. This symbiotic relationship was useful to both participants in both the short and longer terms.

While these young scientists and technicians were often destined to succeed in their respective fields, it is hoped that their CARP experience played some small role Without using names, here are some examples:

> A current senior staffer first joined CARP in the early 90's as a recent high school graduate, unsure of what he wanted to do. While labouring in an early fish habitat project, he discovered his future. He completed a three-year wildlife management program and rejoined CARP to lead the habitat restoration programs followed by increasing responsibilities in different roles.
>
> An early manager of habitat restorations programs subsequently took a senior leadership position with another ACAP site, eventually founding his own very successful environmental consultancy. Several private environmental consulting firms now employ former CARP staffers.
>
> A former manager of the Annapolis River Guardians is now a senior lawyer with Nova Scotia Legal Aid. Another is now a senior manager with Parks Canada and a third is a senior manager in solid waste management.
>
> Several co-op science students are respected scientists and senior managers with federal and provincial governments, academia and the private sector.

Typically, CARP employed between three and five young graduates annually in a variety of career development programs. Over its first 20 to 25 years, CARP was able to offer more than 100 individuals an opportunity to build their professional careers. An overwhelming number are occupying senior positions in their chosen careers.

CARP was also afforded the opportunity to work with Bear River First Nations as they developed their own habitat restoration programs. The West Branch

River, a tributary of the Bear River, is one of those unique waterways offering some buffering from the impacts of acid precipitation. Over the next several years, members of the Band worked on habitat restoration of this and other waterways in the Annapolis watershed. Their efforts made a significant contribution to fish habitat restoration in the entire watershed.

Many of CARP's activities revolved around active and passive public awareness programing. The Annapolis River Guardians is one of the most comprehensive programs in this regard. The individual River Guardians learned how to collect reliable scientific information. While learning about scientific methods, they were teaching themselves the connection between water quality problems they were discovering and human activities. They became community educators on the health of "their river" and were very committed to improving the environment in their respective communities.

Many of the activities undertaken by CARP were built around community participation offering opportunities for citizens to teach themselves about the local environment, the issues being faced and why. Armed with this knowledge, citizens were better equipped to evaluate options for their community.

CARP was also involved in several passive public educational programs. On the print front, "The Annapolis River Issues" introduced the various aspects of the ecosystem of the Annapolis River and its watershed. To ensure accuracy, these were vetted by scientists associated with the Acadia Centre for Estuarine Research. The series contained upwards of 50 two and four page fact sheets. In 1992, CARP produced the "Enviro-Fun Series," a calendar with fun activities for elementary school aged children. Various project reports were published and available to anyone,

As the Internet spread, CARP developed its own web site. This site featured CARP activities and project reports were available. This also had the advantage of avoiding the considerable expense of printing hard copies of project reports. CARP's geographic reach expanded exponentially, as one was able to easily and quickly communicate around the world. In addition, e-mail expanded communications while avoiding the necessity of telephone conversations. By 2010, CARP had a considerable social media presence.

While nearly impossible to quantify, the contributions that CARP made to the social sustainability of the region were significant. One measure might simply be that CARP continues to thrive, 34 years after it was incorporated in 1990.

Part 4 Sustainability Metric

The underlying philosophy of the Atlantic Estuaries Cooperative Venture (AVEC) reflected the earlier notions of sustainability - a balance of ecological, economic and social variables where each enforces the other to create a stronger whole. The AECV philosophy included, "the concept of the ecosystem as a single unit, . . . sustainable multiple uses of the estuarine resources, (and) extensive community involvement," (Daborn 1995). Against these demanding criteria, how has CARP faired in its first 25 years?

On the environmental front, CARP has been involved in numerous activities that have enhanced local ecological conditions. Habitat enhancement is a case in point. It has improved habitat and/or reduced negative human impacts through controlled livestock access, stream bank stabilization and reforestation and enhanced aquatic habits. The same initiatives were supported by societal achievements as dozens of individuals expanded their local knowledge and improved their future options. Because these projects were mostly financed by outside public and private sector agencies, new dollars were imported to the Annapolis watershed economy. The donors also saw their dollars offer experiential learning opportunities for the participants, the local community and themselves.

The Annapolis Royal Marsh is another good example. It is likely seen by most people walking the French Basin Trail as a wondrous opportunity to watch wildlife while getting physical exercise in nature. The social impact of that site was translated into economic value for the community. People come to Annapolis Royal on birding trips. Travelers are amazed that this natural park exists in the middle of this tiny town. Most would be surprised, some might be stunned, to learn that this marsh is an integral part of a nature-based wastewater management for the town and surrounding communities. It was built with minimal financial contribution from the town. In the sustainability platform, the Annapolis Royal Marsh addresses the environmental, social and economic components.

These are but two examples. The previous parts of this chapter have presented details on similar experiences. CARP has and continues to meets, and likely exceed, the philology envisaged in the mid 1980s by the AVEC.

Chapter 7 Lessons Learned

There are several ways to view the lessons learned from the first quarter century of CARP's life. The broader context of the ACAP process provides one set of lessons learned that is applicable to all the ACAP sites. This is an essential perspective that fits CARP into the macro context that evolved as part of ACAP. At a micro level, CARP also provides some useful instructions about the mechanics of multi-stakeholder, community-based processes to address environmental concerns.

The ACAP Experience

In 1997, consultants were retained to assess the lessons learned from ACAP. In the opening paragraphs, it was concluded that, "ACAP has successfully demonstrated a community-based approach to environmental management." (Moir. 1997) The report articulated numerous comments on the lessons learned in the first phases of ACAP. Summarized below are some observations that reflect the origins and early years of CARP. The report concluded that:

- watershed boundaries provide, ***"an appropriate definition of community";***

- ***"the multi-stakeholder approach is effective, although obtaining full representation of all interests is difficult";***

- ***"activities contribute to greater awareness and to changes in public attitudes toward environmental issues";***

- ***"community-based initiatives can encourage changes in industrial, commercial and household practices";***

- ***"sites are able to heighten public awareness of environmental issues and promote environmental citizenship within the limitation of their resources";***

- the, ***"factors that contribute to the success of community-based initiatives, like ACAP, were included in the program design –***

multi-stakeholder approach, core-funding for professional staff, consultative/consensual approach to decision-making": and,

- ***"a sustainable development approach requiring consideration of social, economic and environmental factors came later in the program."***

The Moir report pointed out that the ACAP governance model, "is not clearly defined," and that created some "difficult situations" for those involved. While it may have resulted in some stressful conversations, operationally it also allowed, maybe even encouraged, organizational innovation. Each site, in conjunction with their primary Environment Canada contacts, informally developed unique relationships that worked for both partners. Over time, it also encouraged a high level of trust allowing each partner to appreciate and understand the limitations that their differing positions imposed on each other. That trust promoted negotiated resolution of difficulties and celebration of successes. These somewhat fluid, and sometimes thorny relations, were one of the cornerstones of the successful partnership between Environment Canada and CARP.

The CARP Experience

Moir, writing in a broad ACAP context, said that the program, "successfully demonstrated a community-based approach to environmental management." It is useful to reassert this very basic principle based on the CARP experience. Community based environmental management envisaged by the AECV, enshrined in the ACAP process and implemented by CAR has directly and indirectly created and enhanced environmental sustainability in the Annapolis watershed This assertion has been documented in previous sections of this partisan history.

Lessons learned: community-based environmental management has created and enhanced ecological, economic and social sustainability in the Annapolis watershed.

While embodied in the observations made in the Moir report, it might be useful to amplify some of these lessons based on the CARP experiences. Partnership building tools, while not unique to CARP, were key to the success of the organization.

As documented in previous chapters, CARP was able to show that community economic development could be enhanced by environmental activism. There are dozens of examples of how businesses and homeowners were able to reduce their environmental footprint while increasing their disposable and/or investment incomes. CARP and its partners invested hundreds of thousands of dollars of imported resources to improve environmental, economic and social sustainability in the Annapolis watershed. CARP offered dozens of young scientists the opportunity to explore their career options and envisage a career path to achieve the future they sought. In many ways, CARP successfully used an environmental platform to enhance community economic and social development.

As discussed in detail in a Chapter 7, Part 2, the CARP experience showed how non-traditional financial institutions, like credit unions, are many times more flexible and affordable in meeting the banking needs of fledgling not-for-profit organizations. In its first quarter century of banking with Valley Credit Union, CARP paid an initial membership share of $5 and the cost of printing blank cheques. In many fiscal years, CARP was annually handling resources in the six-figure columns, without paying service charges.

The lesson learned: in the Annapolis watershed, community development was enhanced by CARP and this was further amplified by its corporate relationships with Valley Credit Union.

Beginning in its pioneer years, public engagement and awareness of environmental concerns in the Annapolis watershed was the cornerstone of CARP's development. The original philosophy of the Atlantic Estuaries Cooperative Venture included, "the concept of the ecosystem as a single unit, . . . sustainable, multiple uses of the estuarine resources, . . . extensive community involvement," (Daborn 1995) These basic principles became, and still are in 2023, CARP's focal point.

As discussed in Chapter 4, the Middleton Water and Energy Conservation was CARP's first project. The success of this endeavour required comprehensive community engagement, including town administers, local service clubs, the schools and many others, like the local girl guides. Elementary students produced posters that were later reprinted by Nova Scotia Power. While

achieving its conservation targets, community engagement the most successful aspect of this first CARP project.

The Annapolis River Guardians project taught local residents the scientific skills to evaluate simple measures of water quality in the Annapolis River and some of its tributaries. While collecting their weekly water samples, the citizen scientists learned about scientific methods while teaching themselves the connection between water quality and human activities.

These are but two examples. Virtually every project undertaken by CARP required community engagement, which, "inspired community responses very far beyond what any federal agency could even have imagined." (Gardiner. 2008)

Many years ago at a national stewardship conference in Victoria, BC, a southern Saskatchewan rancher in a white Stetson put it very simply, "the government hasn't got enough people or money to make me do what I do not want to." That rancher, motivated about community sustainability, had donated several sections of ecologically important prairie to conservation.

The lesson learned: community engagement is a powerful tool for conservation that can't always be achieved through government agencies.

Partnership building is finding and enhancing the "intersections of interests" in a potential relationship. Every business operation needs to reduce costs and/or improve productivity/sales to increase profits. Change the terminologies and the same concepts apply to individuals and households. The intersections of interest are those points at which conservation and self-interest converge.

Since pollution is often a byproduct of inefficient production, an intersection of interest is the point where the implementation of a pollution prevention initiative can improve the economic efficiency and profitability of the enterprise. Reiterating the example of the dairy farmer discussed earlier (Chapter 7, Part 2) who, by installing high-efficiency long-life lighting in the dairy barn, was able to reduce energy and maintenance costs and, almost

immediately, milk production rose. Reductions in energy consumption for lighting and maintenance had both positive economic and environmental outcomes. Everyone was a winner.

Because the outcomes were positive both economically and environmentally, that particular farm business was interested in further innovations and became a demonstration site for other farmers. The pool of farm businesses receptive to environmental interests expanded and continued to grow with each successive project.

The intersection of interests concept can also be applied to attracting project funding and in-kind contributions. CARP received support from a wide diversity of public and private sector agencies and individuals. The contributions were made because the donor was confident CARP could help the donor achieve their corporate or agency goals. Corporate donors like to have the publicity of being associated with successful and positive activities.

The removal of an unused dam on the Moose River in Clementsport is one example. The US National Oceanography and Atmospheric Administration (NOAA) was the principal contributor to this project because they wanted to encourage dam removals in the Canadian portion of the Gulf of Maine watershed. The American experience had clearly demonstrated the ecological gains but Canadian and Nova Scotian agencies were reluctant to support these projects.

Environment Canada and numerous other international, national, regional and provincial agencies invested in CARP because the organization helped them achieve their respective mandates. As detailed in the Gardiner Pinfold report (2008), the ACAP process cost Canadian taxpayers 10% of the traditional, government-based delivery model and inspired community responses very far beyond what any federal agency could even have imagined.

Successful partnerships are built on a solid foundation of trust and mutual respect that recognizes the unique benefits, limitation and risks that each partner assumes.

The lesson learned: successful partnership building must be mutually beneficial to all the participants. The process is always evolving and requires the participants to be open and agile to adopt to emerging realities.

Diversity is one of the essential elements of any healthy ecosystem. By extension, diversity is crucial to any board of directors overseeing the activities of groups like CARP. Each year one third of CARP's board of directors was elected or reelected for a three-year term. The time commitment to serve on the board required attending most of the 11 monthly board meetings, reviewing many pages of material respecting the upcoming meeting and attending special functions that occurred two or three times a year. Frequently, after serving a couple of 3-year terms, directors chose not to re-offer. Board members were volunteers receiving no compensation, including travel expenses, to attend board meetings. A nominating committee, drawn from the board membership, sought out replacements trying to maintain broad geographic, occupational, gender, socioeconomic and ethnic diversity. This last goal was not consistently fulfilled, but it remained an actively pursued target.

Because funds were most often project related, this often resulted in high staff turnover. While this presented some challenges to creating corporate continuity, it also had some advantages. Most staff members were young people anxious to discover their career path. Often this created a positive mixing bowl of ideas, education, backgrounds and ethnicity. As well, CARP developed alumni in many public and private sector agencies. Most of the time, this worked to CARP's advantage, although there were one or two stressful situations. To promote harmony, CARP adopted a code of conduct that applied to board members, paid staff and volunteers.

The lesson learned: organizations like CARP need to pro-actively promote diversity among volunteers, board member and staff and this may be best achieved by having anti-discrimination policies.

Chapter 8 Concluding Observations

On March 19, 2024, the Clean Annapolis River Project celebrated its 34th birthday. The organization is approaching middle age. It all started in March 1988 when representatives of the Atlantic Estuaries Cooperative Venture met with Annapolis River Task Force, a committee under the umbrella of the Annapolis Valley Affiliated Boards of Trade. On that day, a pebble was dropped into a quiet pool of water and its ripples have been, and are still being felt far and wide.

The energy driving these ripples is the evolving collection of dedicated people who believe that by working together they can create a better world for themselves and future generations. People are the secret ingredient that has made CARP successful from its humble beginning in 1990.

While paid staff is often the public face of the organization, in many ways they are the lubrication that keeps the machinery working. Anyone who has been involved in volunteer programs knows that it takes some specialized skills to make these programs rewarding to the volunteer while achieving the organization's goals.

Volunteers are the heart and soul of many of the CARP initiatives. Policy development and implementation are the prerogatives of the volunteer Board of Directors. While senior staff has significant input, the final decision on any initiative must be endorsed by the directors. The longer term stability of any organization requires that there is a general consensus among the directors on the goals and how to get there. Whether the decision is major or minor, a simple majority can be very divisive and undermine the integrity of CARP. It is the duty of staff to accurately present all relevant information so that directors can make informed and independent decisions.

Virtually every program in which CARP has been involved requires a high level of citizen and partnership participation. CARP's first initiative, the Middleton Water and Energy Conservation Project, was built around people of all ages and backgrounds becoming active participants. This included not only

the residents of Middleton but the dozens of project partners that contributed their professional expertise, technical and financial resources and moral support. Active community and partnership engagement is key to the successes that CARP enjoys.

Every time someone becomes engaged in any CARP initiative, another wave from that pebble first dropped in 1988 radiates outward. Sometimes the ripples are slight while other endeavours have significant positive economic, social and environmental consequences in the immediate and longer terms.

Drop a pebble in the water: just a splash, and it is gone;
But there's half-a-hundred ripples circling on and on and on,
Spreading, spreading from the center, flowing on out to the sea.
And there is no way of telling where the end is going to be.

James W. Foley. 1911

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Appendix A
List of First Directors
Clean Annapolis River Project

The following are to serve as the first directors from the date of incorporation until the First General Meeting of the Society. Dated at Middleton, Annapolis County, Nova Scotia this the 13th day of March 1990 AD.

(Full names, address and occupations to be printed or typed)

Shae Griffith, Middleton, Annapolis County, Nova Scotia - Business woman
Graham Daborn, Wolfville, Kings County, Nova Scotia - Professor
John Starr, Wolfville, Kings County, Nova Scotia - Manager
Eric Hundret, Middleton, Annapolis County, Nova Scotia - Business manager
Stephen Hawboldt, Annapolis Royal, Annapolis County, Nova Scotia - Business man

_____

John Starr
Secretary

Note:
This is a reproduction from the original document;
Shae Griffith was Founding President
Graham Daborn was Founding Vice-President
John Starr was Founding Secretary
Eric Hundret was Founding Treasurer
Stephen Hawboldt was Founding Executive Member-at-Large