

**WASTEWATER REGULATION AND  
SHELLFISH AQUACULTURE:  
A COMPARATIVE STUDY**

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## EXECUTIVE SUMMARY

A key uncertainty facing the British Columbia shellfish industry, and arguably one of the main impediments to its expansion, is wastewater pollution. Since the mid-1970's shellfish sanitary closures have increased steadily. Currently, over 100,000 hectares along the B.C. coastline are under federal closure orders, more than double the area closed less than fifteen years ago. Well over half of these closed areas are in prime growing locations in the Georgia Basin.

The vast majority of these closures are due to fecal contamination of marine waters that, in turn, render the consumption of shellfish harvested in such waters dangerous to human health. Much of this contamination is attributable to point source discharges from local sewer and stormwater outfalls. Non-point source discharges -- including effluent associated with private septic systems, agricultural activities, vessels and various shoreline and floating installations -- also contribute substantially to this growing problem. With the population of the Georgia Basin projected to double by the middle of 21<sup>st</sup> century, the need for concerted, coordinated action on wastewater pollution is becoming urgent.

The purpose of this study is threefold: to evaluate how effectively we, in British Columbia, have addressed the problem of wastewater pollution in the marine environment; to consider the experience of comparable shellfish-growing jurisdictions on this front; and, finally, based on the foregoing, to identify potential avenues for legal and policy reform.

Our study focuses on five jurisdictions: British Columbia, the Maritime provinces of New Brunswick and Prince Edward Island; New Zealand; and the State of Washington. All of these jurisdictions have significant shellfish industries and, to varying extents, have also been beset by closures due to wastewater pollution. As we shall see, however, there are significant and, in our view, instructive differences in how these various jurisdictions have approached the challenge of reducing wastewater pollution in coastal areas.

We devote a chapter to each of the jurisdictions in our study. Each chapter commences with an overview of the applicable legal and constitutional framework as it relates to shellfish aquaculture, water pollution and coastal zone management. This is followed by a review of the various governmental departments and agencies charged with regulatory responsibility in these areas, and an analysis of the laws, regulations and policies they administer. We also consider intergovernmental initiatives, funding mechanisms, and the role of industry and community organizations. Finally, each chapter concludes with an assessment of emerging trends and challenges.

In our final chapter, we offer a series of recommendations that, in our view, would create a more effective legal and policy framework for combating marine wastewater pollution and enhancing the shellfish aquaculture in British Columbia. These recommendations include:

1. ***Legally-mandated coastal zone management:*** In our view, protection of the coastal zone can only be achieved under a framework that mandates specific, legally enforceable planning and permitting mechanisms. To date, we have relied far too heavily on vague intergovernmental commitments to pool resources and pursue

cooperative opportunities. As development pressures on the coastal zone increase, the need to establish bottom-line environmental protection requirements is becoming ever-more apparent. In our view, this is an issue that requires leadership from the federal government. As such, we would recommend that a national, legally-mandated integrated coastal zone management law be developed that would create incentives for subnational (provincial and territorial) governments to enact implementing legislation through the provision of funding, scientific and technical support, and delegated regulatory authority.

- 2. *Renewing the commitment to, and enhancing the resources necessary to support, a provincial non-point source water pollution strategy:*** Achieving meaningful and durable progress on non-point source pollution requires federal leadership in the form of legally-mandated coastal zone management, as discussed above. However, the Province of B.C. also has an important leadership role to play in supporting the development of non-point source action plans at the local level. While work on this front is ongoing, in our view, the Province should redouble its efforts and consider making the development of such plans, and their integration into related local planning processes, mandatory.
- 3. *Taking a new approach to the permitting of discharges into the marine environment:*** Currently, the B.C. government is considering major changes to the *Waste Management Act* (the “WMA”) the principal statute governing the discharge of waste into the environment. The time is right for the Province to rethink its approach to the managing waste, making a strong commitment principle of continuous environmental improvement. Dischargers should be legally obliged to employ the best available pollution control technology or demonstrate how they will achieve the same result using alternative technology. Urgent priority should be given to identifying degraded water bodies. Upon identification, a designated provincial government department or agency should be given a time-limited responsibility for tabling in the Legislature a remedial action plan.
- 4. *Rethinking compliance and enforcement:*** A key weakness of the prevailing Canadian approach to discharge regulation is the broad and virtually unreviewable discretion it vests in regulators in terms of compliance and enforcement. Currently, compliance information is often difficult to access; government enforcement action is rare; and in many Canadian jurisdictions, including B.C., private (or “citizen”) prosecutions are invariably stayed by the Crown. As a result, the incentives for permit holders to comply with the law have been seriously diminished, and respect for the rule of law has been undermined. We recommend that the B.C. and federal governments publically commit to pursuing enforcement action against repeat offenders and abandon their current practice of routinely staying private prosecutions. We also recommend that the Province commissions an independent study that explores the potential for incorporating citizen suits into an amended WMA, of the type that have proven so effective in enforcing the requirements of the U.S. *Clean Water Act*.
- 5. *Funding for Change:*** Combatting wastewater pollution will require a substantial investment in local wastewater treatment infrastructure. A key reason why U.S. *Clean*

*Water Act* has been so successful in reducing local sewage discharges is federal support for state and local wastewater enhancement initiatives. Federal funding has also played a key role in P.E.I.'s enviable record in reducing harmful municipal point source discharges. In our view a national funding program specifically targeted at dramatically enhancing local wastewater treatment and disposal capacity is urgently needed. To this end, we recommend that the development of such an initiative be the subject of a special joint meeting that would bring together federal, provincial and territorial Ministers of Finance and of Environment, along with representatives from the Federation of Canadian Municipalities as well as other key stakeholders including shellfish growers.

6. ***Supporting Integrated Solutions:*** A key and overarching final recommendation arises out of the need to commit to identifying opportunities for solutions that integrate the skills and energies of disparate organizations and institutions. Tackling marine pollution is a challenge with the potential for bringing together a rich, diverse and formidable array of interests and talent. Marine pollution is not a problem that government action alone can solve. As such, a key role for government is to facilitate and harness private action in support of the public good. Our review has suggested that a multitude of benefits can be derived from initiatives in which government collaborates with industry, NGO and First Nations to protect manage and protect coastal resources. Building on this foundation, we recommend that further collaborative opportunities of this kind be identified, funded and pursued.

# INTRODUCTION

## Wastewater Regulation and Shellfish Aquaculture: A Comparative Study

### 1.1 The Concern

The coastal waters of British Columbia are often said to be among the most productive shellfish growing areas in North America. While our shellfish aquaculture industry is young and relatively small by global standards, shellfish harvesting in the province has a long and storied history. Indeed, shellfish have been a staple in the diet of coastal B.C. First Nations for centuries. Today, with seafood consumption on the rise globally, the B.C. shellfish is poised to embark on a period of sustained growth.

One of the main impediments to realizing this potential is marine water pollution. Sanitary closures of shellfish growing areas due to wastewater contamination have increased steadily since the 1970's. As of January 2000, over 100,000 hectares of the shellfish growing areas on the B.C. coast were closed, more than double the area closed less than fifteen years earlier.<sup>1</sup> Well over half of these closures are in prime growing areas in the Georgia Basin.

Shellfish are filter feeders: they uptake food and oxygen from the marine environment by pumping large quantities of water across their gills. As a result, shellfish function as biofilters, playing an important role in maintaining water quality in the marine environment through the uptake of nutrients. This filtration process also makes shellfish highly sensitive to water contaminants. During feeding, shellfish indiscriminately take up bacteria, viruses, and chemical pollutants. Due to the large quantity of water each animal filters, these contaminants can accumulate in the shellfish at concentrations over 100 times that found in the surrounding water column.<sup>2</sup> While this bioaccumulation does not usually pose a threat to the animal's health, it does present a serious public health risk, particularly if the shellfish are consumed raw or in a partially cooked state.

From a food safety perspective, the most common and serious threat arises from shellfish raised in waters contaminated by sewage.<sup>3</sup> Shellfish grown under these conditions frequently carry bacteria and viruses that pose serious public health risks. These pathogens can cause a variety of illnesses, including gastroenteritis, typhoid fever and infectious hepatitis.

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<sup>1</sup> "Shellfish Closures as an indicator of contamination in marine ecosystems in BC" (Environment Canada: 23/03/23) [http://www.ecoinfo.org/env\\_ind/region/shellfish/shellfish-e.cfm](http://www.ecoinfo.org/env_ind/region/shellfish/shellfish-e.cfm)

<sup>2</sup> [www.floridaaquaculture.com](http://www.floridaaquaculture.com)

<sup>3</sup> The positive relationship between sewage pollution of shellfish growing areas and enteric disease is well established and accepted by the National Shellfish Sanitation Program (NSSP) and the Canadian Shellfish Sanitation Program (CSSP).

## 1.2 Point and Non-Point Source Pollution

Pollution sources are typically classified into two broad categories: point sources and non-point sources. Point source pollution is that which enters the environment from a discrete location. Non-point source pollution refers to pollution sources that are diffuse, entering the environment from dispersed locations.

Municipal and local government sewage and stormwater outfalls pose the most serious point source threat to the B.C. shellfish industry. In the United States, as will be discussed in Chapter 5, the point source sewage pollution has been substantially reduced through remedial measures undertaken to comply with the federal *Clean Water Act*. In B.C., however, many cities and towns continue to discharge sewage into the marine waters with little or no treatment.

Non-point sources of pollution that contribute to shellfish sanitary closures in B.C. include failed private septic systems, unmanaged agricultural runoff, stormwater and urban runoff, sewage from pleasure and non-pleasure craft, and defective shoreline and floating installations such as logging camps and harbour operations.<sup>4</sup> The diverse causes of non-point source pollution, and the diffuse pathways through which such pollution travels, present serious challenges from a remedial, regulatory perspective.

## 1.3 Testing Protocols

Most regulatory agencies responsible for shellfish water testing use the presence of fecal coliforms as an indicator of sewage pollution.<sup>5</sup> Fecal coliforms, principally *Escherichia coli*, are bacteria that live in the digestive tracts of warm-blooded animals and are therefore present in the faeces of humans, domestic and farm animals, and land and marine mammals. As fecal coliforms are not normally detected in sea-water in significant concentrations, their presence is an indication of sewage pollution. Although not generally dangerous to humans in themselves, the presence of fecal coliforms indicates that other sewage-related pathogens may be present and that the safety of a shellfish growing area has been compromised.

Shoreline surveys and water quality testing for fecal coliforms are the primary regulatory means of ensuring shellfish food safety. The classification of shellfish growing areas as open, conditional, closed, and prohibited (with slight variations across jurisdictions), is conducted based on an understanding of the biofiltration role of shellfish in their environment: if there is pollution in the water it will be concentrated in the animal.

Flesh samples from shellfish are also tested for naturally occurring marine biotoxins (such as paralytic shellfish poisoning (PSP), and amnesic shellfish poisoning (ASP)). Detection of

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<sup>4</sup> *How Does Sewage Affect the Marine Environment?* Ministry of Water, Land, and Air Protection, and *Non-Point Source Pollution*, <http://wlapwww.gov.B.C..ca/wat/wq/brochures/nps.html>

<sup>5</sup> Current research suggests that testing for fecal coliforms may not be sufficient to ensure safety because under certain environmental conditions pathogens can survive longer in the marine environment than the bacterial indicator organisms, the fecal coliforms (Burkhardt III *et al.* 2000. Inactivation of Indicator Microorganisms in Estuarine Waters. *Water Research*, v.34, pp.2207-2214). These findings serve to underline our contention that preventative measures, such as wastewater treatment and addressing non-point source pollution, are required rather than end-of-the-pipe monitoring and shellfish closures.

these toxins in a shellfish sample triggers a closure of the growing area from which it originated.

#### **1.4 International Standards and Monitoring Responsibilities**

In 1924-1925, an outbreak of shellfish-borne typhoid fever on the eastern seaboard of the United States catapulted the issue of shellfish contamination to international attention. When 1500 cases of typhoid fever and 150 fatalities were traced back to contaminated oysters, the U.S. Government created the National Shellfish Certification Program (NSSP). Soon after, Canada passed regulations requiring shellfish to be a “safe food product” under the *Fish Inspection Act* and later, following the American example, established the Canadian Shellfish Sanitation Program (CSSP) in 1961. Both countries signed the *Canada – United States Bilateral Agreement on Shellfish* in 1948, an agreement that remains in effect today. In the jurisdictions that are the subject of this study, standards for shellfish food safety are consistent and largely modeled after the NSSP.

Where responsibility rests for monitoring shellfish sanitary standards varies by jurisdiction. In Canada, under federal inter-agency agreement, lead responsibility is vested with Environment Canada. In the U.S., in contrast, the task of monitoring sanitary standards is usually delegated to state health departments, as is the case in the State of Washington. A third variation is New Zealand where industry is increasingly assuming a lead role in sanitary assurance.

#### **1.5 Research Methodology**

The purpose of this study is to evaluate how we can better protect our marine waters from wastewater contamination and, in the process, reduce the adverse impacts of sanitary closures on the B.C. shellfish industry. To this end, we propose to adopt a comparative approach that evaluates how governments in a variety of selected jurisdictions have sought to protect and enhance marine water quality. We also intend, where possible, to assess how effectively the legal regimes and institutions in place in these jurisdictions have achieved this goal. Finally, we will offer some conclusions and recommendations that we hope will stimulate discussion and debate with respect to future action.

We embark on this study mindful of the scope and complexity of its subject matter. To our knowledge, this is the first comparative study of the intersection between wastewater regulation and shellfish aquaculture. Comparative work poses many challenges, not only in terms of accessing reliable and relevant information, but also in ensuring that appropriate attention is given to the context in which the comparison is being attempted. In this regard, our principal concern, given time and space limitations, has been to ascertain and describe the legal and, to a lesser extent, the political context of the jurisdictions in our study. Moreover, while we have sought to accurately portray the legal landscape in each of jurisdictions in our study, we are also mindful that there is frequently a disjunction between the “law on the books” and the “law on the ground”. Accordingly, we have been cautious about advancing conclusions about the efficacy of specific laws and governmental institutions, particularly in non-Canadian jurisdictions. Only where the secondary literature that we have examined justifies evaluative conclusions have these been offered.

The research for this study took place over a period of almost a year, from May 2002 to mid-April 2003. Initial research was done during the summer of 2002 by Rumon Carter. Subsequent research was done by Nathaniel Amann-Blake and the author during the Spring of 2003. This research consisted of interviews, legal and social science literature reviews, and analysis of documentation available from a wide variety of governmental, private sector and non-governmental websites. In the final stages of preparing this manuscript, Alyne Mochan provided invaluable editorial assistance. I authored chapters 2, 4, 5 and 6. Mr. Amann-Blake is the author of chapter 3.

Our study focuses on five jurisdictions: British Columbia, the Maritime provinces of New Brunswick and Prince Edward Island; New Zealand; and the State of Washington. All of these jurisdictions have significant shellfish industries and, to a varying extent, been beset by closures due to wastewater pollution. As we shall see, however, there are significant and, in our view, instructive differences in how these various jurisdictions have approached the challenge of reducing wastewater pollution in coastal areas.

We devote a chapter to each of the jurisdictions in our study. Each chapter commences with an overview of the applicable legal and constitutional framework as it relates to shellfish aquaculture, water pollution and coastal zone management. This is followed by a review of the various governmental departments and agencies charged with regulatory responsibility in these areas, and an analysis of the laws, regulations and policies they administer. We also consider intergovernmental initiatives, funding mechanisms, and the role of industry and community organizations. Finally, each chapter concludes with an assessment of emerging trends and challenges.

In the final chapter of our study, we set out our research findings with respect to siting and permitting processes, shellfish monitoring and certification protocols, coastal zone management and wastewater regulation. We conclude with a series of recommendations that we hope will help to prompt further discussion and action.

Chris Tollefson  
Victoria, B.C.  
April 15, 2003

## CHAPTER TWO

### Wastewater Regulation and Shellfish Aquaculture in British Columbia

#### 2.1 An Overview of the B.C. Context

The British Columbia coastline, spanning a distance of some 26,000 kilometres, includes some of the best shellfish growing areas in North America. Whether measured in terms of output or value, B.C.'s contribution to the Canadian shellfish industry is significant. In the year 2000, this contribution amounted to 21% by weight and 25% of farmgate values of the national shellfish total.<sup>1</sup> The only Canadian jurisdiction consistently to outpace B.C. on these measures is the province of Prince Edward Island.

The shellfish industry in B.C. is dominated by small, independent producers. Currently, there are 417 provincially-licensed commercial shellfish operations, half on beaches and half in deep water locations, occupying an area of 2,357 hectares. Nearly one-half of these operations (covering an area of some 1300 hectares) are located in the Georgia Basin which includes some of the most productive intertidal shellfish growing areas on the Canadian coast. The highest concentration of farms is in the northern reaches of the Georgia Basin in the areas of Baynes Sound, Cortes Island and Okeover Inlet. A key priority for industry expansion is the North Coast.<sup>2</sup>

Shellfish closures affect the B.C. shellfish industry in two quite distinct ways. On the North Coast, many potential commercial growing areas are closed not due to fecal contamination but because federal regulators have lacked the resources necessary to survey and monitor them.<sup>3</sup> The North Coast shellfish industry has been working with Environment Canada to address this problem by, among other things, supporting the operations of a community-based, non-profit water quality monitoring agency located in the northern city of Prince Rupert.<sup>4</sup>

In contrast, virtually all of B.C.'s South Coast (from the northern tip of Vancouver Island southward) has now been surveyed for commercial shellfish operations. Here, unlike the North Coast, fecal contamination is a serious and growing problem. Currently 25% of surveyed shellfish growing areas on the South Coast are closed due to fecal contamination.<sup>5</sup> Close to 75% of these closures are in the Georgia Basin. A major contributing factor to these closure statistics is the discharge of municipal sewage into marine waters. Unlike in

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<sup>1</sup> DFO Canada: <http://www.bcfisheries.gov.bc.ca/stats/shellfish-aqua.htm>

<sup>2</sup> B. Kingzett et.al., *First Nations Shellfish Aquaculture Regional Business Strategy*. (November 2002)  
<http://www.kingzett.bc.ca/ncoast/FN%20North%20Coast%20Strategy%20-%20Complete%20Pub.pdf>

<sup>3</sup> *Ibid.* To date, only approximately 300,000 ha of BC's northern coast has been surveyed to date. In the area surveyed to date, fecal contamination is a relatively minor problem: only 2% of such areas are currently closed for sanitary reasons. However, many areas are subject to closure due to recurrent PSP problems.

<sup>4</sup> See section 2.4.1 *infra*.

<sup>5</sup> *National Program of Action for the Protection of the Marine Environment from Land-Based Activities* (NPA) chapter 4 at 29 (November, 2001). See <http://www.ec.gc.ca/marine/>.

Washington State and many other jurisdictions, most sewage effluent discharged into the ocean by B.C. communities receives only primary treatment.<sup>6</sup> Non-point source discharges (eg. urban runoff including septic seepage, agricultural drainage and boat sewage discharges) are also a serious problem.

Closure rates in the Georgia Basin have been on the rise since the 1970s, when regular sanitary water quality monitoring commenced. This phenomena is a direct function of human settlement and development pressures in the Georgia Basin area. Over the last 25 years, population in the Georgia Basin has more than doubled, leading to serious environmental stress and a marked deterioration in marine water quality. With rapid population growth projected to continue until the middle of this century, opportunities to reverse these environmental trends may be dwindling.

The research literature on the status of and threats to B.C. marine water quality is growing. Illustrative is a recent report addressing the loading of toxic substances into the Georgia Basin through wastewater discharges. This study analyzed provincially permitted “point source” effluent discharges into the Georgia Basin with respect to 38 designated chemicals. It found that the most significant wastewater sources of toxic substances were stormwater outfalls, municipal wastewater treatment facilities and pulp and paper facilities.<sup>7</sup> There is also a growing body of research with respect to pathogenic pollution – the focus of the CSSP – in B.C. marine waters both in Georgia Basin and beyond.

## **2.2 Constitutional Arrangements**

Constitutionally, the legal regime governing Canadian aquaculture is a complex matrix of overlapping federal and provincial jurisdictions. This picture is further complicated by the fact that although the Constitution formally recognizes only these two levels of governments, both local governments and First Nations are increasingly playing important governance roles. The purpose of this initial section is to review the allocation of jurisdiction over the *coastal zone land use, shellfish aquaculture siting and operations, and marine water quality protection*. Subsequent sections will then consider how various levels and agencies of governments administer their respective jurisdictions in these areas.

### **2.2.1 Coastal Zone Land Use**

Constitutional jurisdiction over coastal zone activities is shared between the federal and provincial governments. In British Columbia, well over 90% of the landbase is provincial Crown land. As owner of these lands, the province plays a lead role in regulating land use activities in the coastal zone. The provincial Crown also owns the foreshore of tidal waters; the area between the high and low water line which is exposed at high tide. Even where the lands above the high tide line are privately owned (as is often the case in the Georgia Basin),

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<sup>6</sup> *Ibid* at 30. In some cases, even primary treatment is not yet in place. This is the case with respect to the municipalities that comprise the Capital Regional District which currently discharge screened raw sewage into the Strait of Juan de Fuca.

<sup>7</sup> It should be noted that this study did not consider non-point source loading pathways including agricultural runoff and atmospheric deposition: see 1-2 of “Loading Estimates of Selected Toxic Substances in Wastewaters Discharged into the Georgia Basin” by Enkon Environmental Limited prepared for Environment Canada (Feb 2002)

provinces maintain broad regulatory powers under their jurisdiction to legislate with respect to property and civil rights within provincial boundaries. Finally, the Canadian provinces own the beds of bodies of water “within the jaws of the land”. In B.C., this includes important shellfish growing areas such as the Strait of Georgia, as well as the Strait of Juan de Fuca and Johnstone Strait.

For its part, the federal government has ownership-based jurisdiction in the coastal zone with respect to the territorial sea (marine waters outside the jaws of the land) as well as national harbours and parks, military lands and “Indians and Indian lands”. The federal government also has the power to legislate with respect to various subject-matters that are directly relevant to coastal zone management. These include: the power to enter into and implement treaties; protection of fish and fish habitat; migratory birds; navigable waters; environmental assessment; marine pollution; and public health.

Finally, of growing importance both in British Columbia and in other Canadian provinces, are governance powers that increasingly are being exercised by First Nations and municipalities. First Nations’ jurisdiction in the coastal zone can arise either from treaties or by virtue of their constitutionally protected aboriginal rights to engage in traditional practices or to use and occupy traditional lands. Local governments exercise authority delegated to them by provinces and can have a significant impact on coastal zone land use through zoning and development approval powers.

### ***2.2.2 Shellfish Aquaculture***

Regulatory authority over the shellfish industry is also characterized by significant concurrency in terms of federal and provincial jurisdiction.<sup>8</sup> While allocating tenures on Crown lands is a provincial responsibility, such decisions often give rise to federal involvement. This can occur, for example, where the decision triggers federal legislative requirements (with respect to protection to fish or fish habitat, navigable waters, or environmental assessment) or raises concerns with respect to First Nations’ rights or shellfish food safety.

The operation of shellfish growing areas is also subject to significant jurisdictional concurrency. As such, both the federal and provincial governments have authority to regulate aquaculture practices, as well as product inspection and processing. The same is true with respect to fish habitat protection. Land use requirements imposed on shellfish operators fall primarily under provincial jurisdiction although in many populated areas, actual responsibility for defining these obligations is delegated to local governments.

### ***2.2.3 Marine Water Quality Protection***

Again in this area, the applicable constitutional principles allocate authority to both levels of government. Federal heads of power allow broad regulatory authority to protect fish and fish habitat, to guard against marine pollution (both within and beyond the jaws of the land), to regulate the impacts of shipping, to control the release of toxics into the environment, to protect endangered species, to create marine protected areas and to enter into and

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<sup>8</sup> B. Kingzett et.al. *supra* note 2 at 9-3 *et seq*

implement international treaties and agreements. Provincial jurisdiction is also broad. Many of these powers duplicate or overlap with those found at the federal level. These include: the regulatory powers to protect fish habitat, to regulate with respect to the release of effluents into the marine environment, to protect species and to create marine and coastal protected areas. Provinces also regularly delegate authority to local government to address some of these subject matters. Municipalities have bylaw making powers relating to wastewater management and water conservation requirements, zoning powers aimed at protecting ecologically sensitive areas through setbacks and watercourse protection obligations, and development approval powers that can be used to promote water quality goals.

## **2.3 Institutions, Regulations and Policies Relevant to Shellfish Aquaculture and Water Quality Protection**

### ***2.3.1 The Federal Scene***

At least seventeen different federal departments and agencies deliver programs and services to the aquaculture industry.<sup>9</sup> The list of federal departments and agencies that regularly interact with the aquaculture industry is almost double this number.<sup>10</sup> In recognition of the need to coordinate and harmonize the work of these various agencies and departments, and to facilitate the development of “an environmentally sustainable aquaculture industry”, the federal government created the Office of the Commissioner for Aquaculture Development (OCAD).

OCAD reports to the Minister of Fisheries and Oceans, a reporting relationship that reflects the leadership role the Department of Fisheries and Oceans (DFO) has and is likely to continue to play on aquaculture issues. The primary legal basis for this role is the federal *Fisheries Act* and regulations. Under this legal authority the DFO works together with Environment Canada and Canada Food Inspection Agency to implement the CSSP. In this context, DFO’s primary role is to make closure orders with respect to contaminated fisheries.<sup>11</sup> It performs this role largely on the basis of recommendations by Environment Canada field staff. DFO’s legal mandate also includes:

- the development and implementation of management plans pursuant to the *Oceans Act*;<sup>12</sup>
- conservation of fish habitat [through enforcement of the prohibition on the harmful alteration, disruption or destruction of such habitat] under section 35 of the *Fisheries Act*; and

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<sup>9</sup> D. VanderZwaag, G. Chao and M. Covan, *Canadian Aquaculture and the Principles of Sustainable Development: Gauging the Law and Policy Tides and Charting a Course*, (unpublished: August, 2002) at 23

<sup>10</sup> Kingzett et.al. *supra* note 2.

<sup>11</sup> Closure orders are made done under the *Management of Contaminated Fisheries Regulation* enacted pursuant to the *Fisheries Act*.

<sup>12</sup> Under the *Oceans Act*, DFO is designated as the lead agency. Its responsibilities in this regard are to promote cooperation and coordination amongst various governmental and non-governmental stakeholders with respect to the development of integrated coastal management plans.

- enforcing the prohibition against the release of substances deleterious to fish under section 36 of the *Fisheries Act* and by enacting sector specific regulations to the same end [including the *Pulp and Paper Effluent Regulations*].

Under an interdepartmental agreement, DFO delegates its responsibility to enforce section 36 to Environment Canada.<sup>13</sup> Environment Canada is also vested with compliance and enforcement responsibility with respect to the *Canadian Environmental Protection Act (CEPA)* and the *Canada Shipping Act*. Under CEPA, the federal government can regulate the use and disposition of various toxic substances once those substances have been added to the federal Toxic Substances List. To date there are 56 substances on the List.<sup>14</sup> These include various metals and chemicals but do not include, as yet, pathogens. Regulations under the *Canada Shipping Act* do however contain provisions relating to the discharge of sewage from both pleasure and non-pleasure crafts.<sup>15</sup> Although Environment Canada claims that compliance with section 36 of the *Fisheries Act* and applicable *CEPA* provisions is high,<sup>16</sup> there has been continuing controversy as to the adequacy of its monitoring efforts. Environment Canada has also been criticized for the relative infrequency with which it prosecutes offenders.

Enhancing protection of the marine environment has significant funding implications, particularly for local governments. The primary vehicle through which the federal government provides assistance to local and regional governments to upgrade wastewater treatment capacity is the Infrastructure Canada Program (ICP).<sup>17</sup> Created in 2000, the ICP is a six-year national program that provides “catalyst” funding to support green municipal infrastructure development. Water and wastewater systems are one of a wide variety of eligible project areas. In the western provinces, the ICP is the responsibility of the Western Economic Diversification Fund. The total amount of funding available under the duration of the ICP is \$2.05 billion; provincial allocations under the ICP are determined by a formula that takes into account a province’s population and its unemployment rate.

Federal infrastructure funding for local wastewater projects is also available through the Green Municipal Funds program. This program has two funding envelopes: one dedicated to funding feasibility studies, the other a permanent revolving fund that supports project implementation.<sup>18</sup> A final source of federal funding for local infrastructure upgrades is the Strategic Infrastructure Fund (SIF). This \$2 billion fund was created in 2001 to complement the ICP by facilitating the funding of large, regionally or nationally significant infrastructure projects. Like the ICP, it makes funding decisions on a competitive basis. To date, while some maritime provinces, most notably P.E.I., have accessed funding for wastewater treatment under the SIF (see chapter 3) this has yet to happen in British Columbia.<sup>19</sup>

<sup>13</sup> DFO-Environment Canada MOU (1985).

<sup>14</sup> *Toxic Substances List* (January 2003). See [http://www.ec.gc.ca/CEPARRegistry/subs\\_list/Toxicupdate.cfm](http://www.ec.gc.ca/CEPARRegistry/subs_list/Toxicupdate.cfm)

<sup>15</sup> See *Non-Pleasure Craft Sewage Pollution Prevention Regulations* and *Pleasure Craft Sewage Pollution Prevention Regulations* noted in L. Nowlan, *Preserving British Columbia’s Coast: A Regulatory Review* (West Coast Environmental Law: 2001) at 18: see <http://www.wcel.org>. See also the WCELA report, *Cruise Control: Regulating Cruise Ship Pollution on the Pacific Coast of Canada*. See <http://www.wcel.org/wcelpub/2001/13536.pdf>

<sup>16</sup> See *1998 Annual Compliance Report Summary Highlights: EC Pacific and Yukon Region*: see <http://pyr.ec.gc.ca/EN/Enforcement/98sum.shtml>

<sup>17</sup> *About the ICP – Goals* at [http://www.infrastructurecanada.gc.ca/icp/aboutus/goals\\_e.shtml](http://www.infrastructurecanada.gc.ca/icp/aboutus/goals_e.shtml) (3/19/2003)

<sup>18</sup> NPA supra note 5 at A-5

<sup>19</sup> See generally [http://www.infrastructurecanada.gc.ca/csif/projects/index\\_e.shtml?menu54](http://www.infrastructurecanada.gc.ca/csif/projects/index_e.shtml?menu54)

### 2.3.2 *The Provincial Scene*

Under a federal-provincial Memorandum of Understanding the Province of B.C. administers the leasing process for all near-shore activities. This MOU, concluded in 1988, designates the B.C. Ministry of Agriculture, Food and Fisheries (MAFF) as the lead agency on aquaculture issues. The federal government has entered into similar MOUs with most coastal provinces, with the notable exception of PEI (as will be discussed in Chapter 3).

As set out in the B.C. *Fisheries Act*, MAFF has a dual mandate: promoting and developing the industry; and regulating aquaculture operations through assessment, licencing and product monitoring protocols. Currently, MAFF is developing a provincial Code of Practice (COP) for shellfish operations in the province. Initially the COP will outline voluntary standards for shellfish aquaculture consistent with applicable provincial and federal law and policy. Ultimately, it is anticipated that compliance with the COP will be legally mandated through its incorporation into the terms and conditions of shellfish aquaculture licences.

Two other provincial government institutions play important roles in the siting and regulation of shellfish operations. Shellfish tenures are granted by Land and Water British Columbia Inc (LWBC), a Crown corporation. Established in 1998, it is responsible for allocating rights to use Crown land. At the policy level, LWBC works closely with the Ministry of Sustainable Resource Management (MSRM) which was created in 2001 to oversee provincial land use planning and management. Among other things, MSRM is intended to serve as a one-window access point for data about Crown land and resources, data that was formally dispersed among a variety of ministries and agencies.

With respect to marine water protection, primary responsibility rests with the Ministry of Water, Air and Land Protection (WALAP). Its key statutory authority in this area is the *Waste Management Act* (WMA). The WMA creates a general prohibition against introducing “waste” into the environment. Waste is defined as including liquid effluent that is discharged into water that, among other things, (1) “injures or is capable of injuring the health or safety...of a person...property or life form”; (2) “interferes with or is capable of interfering with the normal course of business” (3) “causes or is capable of causing material physical discomfort to a person” or (4) “damages or is capable of damaging the environment”.<sup>20</sup>

However, the prohibition is subject to various exceptions. Most notable of these is where the waste discharge is in compliance with the terms of a provincial government “permit, approval, order or regulation”.<sup>21</sup> Currently, there are approximately 3,500 waste disposal permits issued under the WMA with respect to various point sources. Of particular relevance in terms of shellfish water quality are those that permit the discharge of municipal sewage, pulp mill and agricultural wastewater. The typical WMA permit specifies that the holder may release into the environment a specified quantity or concentration of effluent over a specified time.<sup>22</sup>

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<sup>20</sup> See *Waste Management Act*, ss. 3(2)

<sup>21</sup> *Idid.*, section 3(5)

<sup>22</sup> The B.C. approach to permitting contrasts with the prevailing approach under the U.S. *Clean Water Act* that stipulates a “best available pollution control technology” (or BAT) requirement: see discussion in Chapter 5.

To date, in issuing permits, WALAP had done relatively little to determine the cumulative impacts of such discharges on the receiving medium whether in terms of assimilative capacity, geographic attributes or environmental sensitivities.<sup>23</sup> Thus, permit discharge standards are often set without reference to a desired target ambient (receiving medium) standard. To date there have been relatively few prosecutions of permit violators. As with Environment Canada, a key reason why WALAP has tended to eschew this option is fiscal. Over the last decade, WALAP has suffered crippling cutbacks. An important facet of its fiscal woes is its failure to recoup even a minimal portion of its administrative overhead expenses from permit fees. Because permitting fees are so low, permit holders lack the economic incentives necessary to move towards in-process innovations that would significantly reduce their discharges.

WALAP has also come under criticism for failing to allow citizens to pursue “private prosecutions” against companies and municipalities that are in breach of the WMA.<sup>24</sup> Under current Ministry of the Attorney General (AG) policy,<sup>25</sup> Crown lawyers are instructed to intervene in (assume conduct of) such cases. Once the AG has intervened, its lawyers then have discretion to decide whether to proceed or stay (terminate) the case based, among other things, on whether or not prosecution is “in the public interest”. To date, this discretion has always led to cases being stayed. While a similar policy exists in Alberta, quite a different approach to the enforcement of environmental laws prevails in Ontario. In that province, there have been several precedent-setting convictions in recent years arising out of private prosecutions against municipalities for unlawfully discharging effluent into lakes and rivers.<sup>26</sup>

In recognition of the need to enhance regulation of municipal point source sewage discharges, the province recently enacted the *Municipal Sewage Regulation* (MSR). The MSR was passed in 1999 under the authority of the WMA after extensive consultations with local governments. The purpose of the MSR is to develop a more coherent framework for regulating municipal wastewater discharges into the environment. Prior to the MSR, permitting requirements with respect to municipal facilities were left to the discretion of WALAP regional managers, contributing to significant province-wide variations in the applicable standards over time.

The MSR introduces a set of prescribed minimum standards for releases that are applicable across the province, while vesting in regional managers the discretion to require more stringent standards if they are justified by local circumstances. With respect to discharges into water, the MSR prescribes both dilution zone and effluent quality requirements.<sup>27</sup> It also specifically prohibits certain types of wastewater discharges in certain locales and circumstances, including a prohibition on discharges “within the boundary of a commercial shellfish lease or known native or recreational shellfish harvesting area”.<sup>28</sup>

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<sup>23</sup> Robin Junger, Waste Management Act Review “Authorization of Waste Discharge -- Discussion Paper #1” (WLAPP: September 2002). See

[http://wlapwww.gov.bc.ca/epd/waste\\_mgt\\_review/pdf\\_files/discussion\\_1.pdf](http://wlapwww.gov.bc.ca/epd/waste_mgt_review/pdf_files/discussion_1.pdf)

<sup>24</sup> See <http://www.sierralegal.org/issue/crown%5Fintervention.html>

<sup>25</sup> This practice is based on a policy adopted by the Ministry of the AG: citation forthcoming \_\_\_\_.

<sup>26</sup> *Supra* note 23.

<sup>27</sup> See *Municipal Sewage Regulation* ss. 5 and 9.

<sup>28</sup> *Ibid* MSR, Schedule 5, Table 3.

A key weakness of the MSR is that municipalities are entitled to rely indefinitely on permits issued prior to the MSR. Only when they seek the Ministry's permission to depart from the terms of these existing permits, by altering the quantity or quality of the effluent they discharge, will they fall under the MSR regime.

With respect to non-point source wastewater pollution, the WALAP's strategy has focussed on public education, partnerships and moral suasion, deliberately eschewing a more prescriptive regulatory approach. Addressing non-point source pollution has been a WALAP priority since 1999 when it released its Non-Point Source Action Plan.<sup>29</sup> A central feature of the plan is to encourage municipalities to develop municipal Liquid Waste Management Plans (LWMP).

LWMPs are prepared by municipalities in consultation with WALAP under the authority of the WMA. The purpose of a LWMP is to "chart a local government's proposed future course of action with respect to the management, collection, treatment and disposal of sewage, stormwater and other wastewater effluents".<sup>30</sup> Ordinarily, the decision of whether to develop a LWMP is up to the municipality.<sup>31</sup> From a municipal perspective, an advantage of undertaking an LWMP is that securing approval of such a plan can enhance its authority to regulate on wastewater issues. For example, discharges identified in a LWMP are exempt from the MSR;<sup>32</sup> moreover, the LWMP process can provide municipalities with jurisdiction to regulate septic systems, a jurisdiction that otherwise rests with the Ministry of Health.<sup>33</sup> An important drawback of committing to the LWMP approach, of particular relevance to smaller municipalities, is the ongoing cost of implementing and administering such a plan.

To date over forty municipalities have adopted or are in the process of developing LWMPs. Although the focus of many of these LWMPs is sanitary sewage regulation, the Ministry has sought to encourage municipalities to tackle non-point source issues under the auspices of these plans as well. To this end, the Ministry has recently published a comprehensive guidebook to "Stormwater Planning" that describes how development of an LWMP can occur in synergy with other local planning processes including the development and renewal of Official Community Plans (the preparation of which are legally mandated under Local Government Act).<sup>34</sup>

## 2.4 Integrative Approaches

To this point in our analysis, we have focussed on the legal authority of, and actions taken by, specific government agencies to tackle the intersecting problems of shellfish sanitary regulation and wastewater management. In this section, we propose to broaden the scope of our discussion to consider broader, more integrated solutions. In this examination, we

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<sup>29</sup> *Tackling Non-Point Source Pollution in British Columbia: An Action Plan* (B.C. Ministry of Environment: March 1999).

<sup>30</sup> *Stormwater Planning: A Guidebook for BC* at p. 4-1 (WALAP: May 2002).

<sup>31</sup> The preparation of an LWMP can, in exceptional circumstances, be ordered by the Minister Responsible.

<sup>32</sup> See backgrounder at <http://wlapwww.gov.bc.ca/epd/epdpa/mpp/sowotnbcmsr.html#proceedings>

<sup>33</sup> See further discussion of interface between the MOH Sewage Disposal Regulation and the MSR in *Tackling Non-Point Source Pollution*, *supra* note 28 under "Action 16".

<sup>34</sup> *Stormwater Planning supra* note 30, chapter 4.

propose to consider both inter-governmental initiatives as well as initiatives designed to harness the energies and resources of non-governmental players and organizations.

#### **2.4.1 Intergovernmental Initiatives**

Most of the initiatives falling under this heading have arisen out of a desire on the part of various levels of government to create formal opportunities for ongoing collaboration, research and action. Prominent among these is the National Program of Action for the Protection of the Marine Environment from Land-Based Activities (NPA).<sup>35</sup> The genesis of Canada's NPA is the United Nations Global Program of Action (GPA), an international agreement that Canada -- along with 108 maritime nations -- entered into in 1995. The GPA calls on subscribing countries to develop plans to address land-based threats to the marine environment. Canada's NPA was released in 2000.

Reflecting the shared nature of responsibility for environmental protection under Canadian federalism, NPA implementation is contemplated as occurring through a process of intergovernmental co-operation and co-ordination.<sup>36</sup> To this end, an NPA Advisory Committee has been created with federal, provincial and territorial government representation. Among the goals of the Advisory Committee are to "promote awareness and understanding of the NPA" and to "integrate the goals and objectives of the NPA into existing programs to improve marine pollution prevention and integrated management of coastal activities".<sup>37</sup> Encouragingly, the NPA identifies sewage pollution as a high priority issue in all coastal regions of Canada.<sup>38</sup> What is less clear is whether and to what extent the NPA will ultimately serve anything more than a venue for dialogue and information sharing.

There are also a variety of intergovernmental initiatives in which the B.C. government is involved at the regional level. A good example is the Georgia Basin Ecosystem Initiative (GBEI) launched in 1988 by Environment Canada and the then B.C. Ministry of Environment, Lands and Parks.<sup>39</sup> A variety of other federal and provincial agencies and departments have subsequently joined the GBEI. Like many such initiatives, the purpose of the GBEI is to enhance intergovernmental cooperation and coordination. A special focus of the GBEI is the need to identify sustainable options for growth in the Georgia Basin region: in its words, to manage "growth to achieve healthy, productive and sustainable ecosystems and communities".

Several years after the GBEI was founded, the Province of B.C. and Washington State entered into an environmental cooperation agreement "to promote the protection, preservation and enhancement of our shared environment for the benefit of current and future generations". The most important result of this agreement was the creation of the Puget Sound/Georgia Basin International Task Force.<sup>40</sup>

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<sup>35</sup> *Supra* note 5.

<sup>36</sup> *Ibid* at 7.

<sup>37</sup> *Ibid* at 8.

<sup>38</sup> *Ibid* at 9.

<sup>39</sup> See [http://www.pyr.ec.gc.ca/georgiabasin/gbeiIndex\\_e.htm](http://www.pyr.ec.gc.ca/georgiabasin/gbeiIndex_e.htm)

<sup>40</sup> See *Pathways to Our Optimal Future: A Five-Year Review of Activities of the Puget Sound-Georgia Basin International Task Force*: see [http://www.wa.gov/puget\\_sound/shared/pdfs/\\_December\\_1\\_f.al\\_in\\_sequenc.pdf](http://www.wa.gov/puget_sound/shared/pdfs/_December_1_f.al_in_sequenc.pdf)

In 1993 this Task Force mandated a Marine Science Panel to make recommendations for enhancing the management of our shared marine waters. The Science Panel made a series of recommendations in 1994 that the Task Force was later instructed to implement. In the year 2000, the Task Force published a five-year progress on the implementation of the recommendations. Several of the Science Panel's recommendations are highly relevant to the challenge of enhancing shellfish water quality growing conditions in the Georgia Basin. These include the need to adopt a joint management strategy in the protection of marine life; to address the loss of nearshore habitat as a priority concern; to reduce the loading of toxic chemicals particularly from non-point sources; and to better coordinate research and monitoring of transboundary water, sediment and biota.

Another important inter-government initiative is the Fraser River Estuary Management Program (FREMP).<sup>41</sup> Established in 1985, the FREMP partnership brings together a wide range of government agencies including Environment Canada, DFO, WALAP, the Greater Vancouver Regional District, the Fraser River Port Authority and the North Fraser Port Authority. The goal of the FREMP partnership is to coordinate planning and decision-making in the Fraser Estuary. Under FREMP, prior to developing or improving land in designated areas or securing subdivision approval, a proponent must first complete an environmental impact assessment. In addition, under the FREMP management plan, finalized in 1994, proposed development within designated habitat zones must secure prior approval of the FREMP Environment Review Committee.<sup>42</sup> Similar estuary management plans are in place for the Squamish and Cowichan estuaries, and are being developed in Courtenay and Campbell River.<sup>43</sup>

#### ***2.4.2 Government-facilitated planning processes***

Integration of new perspectives and knowledge can also arise through the planning process. During the 1990s, British Columbia experimented with a variety of different land use planning models that sought to achieve a higher level of engagement in, and “buy-in” by, various stakeholders. For the latter half of the 1990s, the central agency responsible for this planning function was the Land-Use Coordination Office (LUCO). Its function was to oversee, coordinate, and evaluate inter-ministerial strategic planning initiatives. Following the last provincial election, LUCO was disbanded and land use planning was largely delegated to the MSRM.

An area of current activity for the MSRM is coastal planning in “nearshore” and “intertidal” (foreshore) areas under provincial jurisdiction. The goal of these planning processes, however, is not to address marine resource management issues in a holistic fashion but rather to identify and consider “tenuring and conservation/protection opportunities in these areas”.<sup>44</sup> Nor is the MSRM embarking on the development of these plans in a systematic way. Rather it would appear that these planning processes “are developed on a flexible and

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<sup>41</sup> See <http://www.bieapfrempp.org/>

<sup>42</sup> See *Smart Growth Guide to Local Govt Law* (WCEL: 2001) chapter 9 at 139. See <http://wcel.org>

<sup>43</sup> The town of Squamish is located on the BC mainland at the northern end of Howe Sound. Cowichan, Courtenay and Campbell River are located on Vancouver Island.

<sup>44</sup> See VanderZwaag *supra* note 9 at 47 (citing a personal communication with a senior coastal planner in MSRM)

as-needed basis” upon the MSRM being informed of a ‘hot spot’ where their intervention might prove useful.<sup>45</sup> The methodology employed by the MSRM divides the area in question into planning units and develops a “compatibility matrix” that matches resource values and uses.<sup>46</sup>

The B.C. Government has also tried to use community-based planning processes to generate recommendations with respect to the siting of new shellfish operations. The first region where this was attempted was Baynes Sound. A Steering Committee was assembled and input from various stakeholders was sought. In the end, however, no consensus was reached due to upland owners’ opposition to the prospect of intensified shellfish aquaculture. As a result, the MRSM tasked an interagency working group to develop a new plan. The Baynes Sound Coastal Plan for Shellfish Aquaculture, which contemplates modest tenure expansion, was released in December 2002.<sup>47</sup>

### ***2.4.3 Government-Industry Collaborative Processes***

The principal area in which we have seen government-industry collaboration to date has been around the development of a provincial shellfish aquaculture Code of Practice (COP). Development of this Code has been an interactive process. The initial work on this front was done by the BC Shellfish Growers’ Association who developed a voluntary code of practice. This has since evolved into a government-led process that will ultimately culminate in legally binding standards of practice. As noted in section 2.3.2, responsibility for finalizing a provincial COP has been undertaken by MAFF. Initially the COP will outline voluntary standards for shellfish aquaculture consistent with applicable provincial and federal law and policy; over time, COP will acquire legal force as it is incorporated into the terms of specific shellfish aquaculture licences.

### ***2.4.4 Community-Based Management Initiatives***

Another notable trend is the growing number of community-based organizations that are partnering with government to manage aquatic resources.

As discussed earlier in this chapter, one of the main difficulties on the northern B.C. coast is access to government testing and monitoring resources. Consequently, one-third of B.C.’s northern coastline has remained permanently closed for most shellfish activity for almost 40 years. These closures have seriously curtailed recreational and First Nation traditional harvesting, and undermined the development of a northern shellfish industry. The North

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<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*

<sup>47</sup> Aquaculture development opportunities identified by this Plan, if fully realized, could represent an estimated expansion in area from the existing 573 ha to about 670 ha (approximately 18%). However, as some Management Areas in the Plan are not consistent with Local government zoning (e.g. Denman Island), it is unlikely that this goal will be reached. Additionally, the Plan recommends no application for new tenures for expansion or development until the interim results of a biological carrying capacity study are received, a Provincial Code of Practice comes into force, and compliance and enforcement measures have been put into effect. The full report is available on the MSRM website, [http://srmwww.gov.bc.ca/rmd/coastal/planning/south\\_island/baynes/index.htm](http://srmwww.gov.bc.ca/rmd/coastal/planning/south_island/baynes/index.htm)

Coast Water Quality & Biotoxin Program Society (the Society) is an attempt to respond to this situation.<sup>48</sup>

The main purpose of the Society is to coordinate biotoxin and water quality monitoring and testing services for shellfish harvesting and growing interests on the North Coast mainland and Queen Charlotte Islands. A non-governmental organization, the Society consists of representatives from local First Nations and non-First Nations communities, shellfish farmers, scientists, economic development groups, and local, provincial and federal governments. A key goal of the Society was to develop local laboratory capacity. To this end, a private laboratory based in Prince Rupert has recently become the only non-government lab in Canada approved to process both Paralytic Shellfish Poisoning (PSP) and Amnesiac Shellfish Poisoning (ASP) extracts for the Canadian Food Inspection Agency (CFIA), and fecal coliform tests for Environment Canada.<sup>49</sup>

Another noteworthy development was the launching in 2002 of the West Coast Vancouver Island Aquatic Management Board.<sup>50</sup> This organization is a collaborative enterprise spearheaded by the Nuu-chah-nulth Tribal Council (NTC) and supported by DFO and the Province of BC. Its objective is to develop and implement a strategy for the integrated management of aquatic ecosystems within traditional NTC territory (spanning much of the West Coast of Vancouver Island) with an emphasis on protection and management of aquatic resources based on a precautionary approach, a holistic picture of the ecosystem health, and First Nations expertise and knowledge. The governing board is designed to provide balanced representation of federal, provincial, local and First Nation interests.

A final community-based initiative that deserves mention is the Baynes Sound Round Table. Formed in 1994 to enhance water quality in Baynes Sound, the Roundtable has subsequently played a leadership role in a series of collaborative community stewardship projects that address threats to environmental and economic health in the area. Hundreds of citizen volunteers have participated in recent stewardship programs.<sup>51</sup> The Baynes Sound Stewardship Initiative is one such project, which has successfully used community partnerships to monitor and improve water quality in the Comox region. For example, since 1995, volunteers have found dozens of incorrectly hooked-up connector pipes allowing sewage to flow into storm drains. Remediation of this problem resulted in a dramatic improvement in the fecal coliform count in Comox Harbour, from 1000 ppm to under 50 ppm.<sup>52</sup> An important tool evolving from the Round Table Process is the 'State of the Sound' Program. This long term monitoring, reporting and planning process measures and reports the health of Baynes Sound using a geographic information system (GIS) to gather and analyse data for water quality and other indicators. Results are used to plan actions, and are communicated to the community to help increase public awareness and involvement.<sup>53</sup>

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<sup>48</sup> See [www.predc.com/north/coast/main\\_title.htm](http://www.predc.com/north/coast/main_title.htm)

<sup>49</sup> See Kingzett et.al. *supra* note 2.

<sup>50</sup> See <http://www.westcoastaquatic.ca/Habitat.htm>

<sup>51</sup> See <http://www.sfu.ca/coastalstudies/linking/capacity/abstracts/BaSo.htm>

<sup>52</sup> Comments made by Bill Heath, Shellfish Production Specialist, Aquaculture Development branch (MAFF, Courtenay, B.C.) in his presentation to the Comox Indian Band, June 6, 2002.

<sup>53</sup> *Ibid.*

## 2.5 Challenges and Trends

The challenge for British Columbia that we have been asked to address is in some ways deceptively simple: to chart a path that will move us towards a more responsible and effective approach in dealing with wastewater discharges into the marine environment.

This is a policy problem with respect to which, as we noted in Part I, the interests of public health, environmental sustainability, and economic development are closely aligned. If a substantial reduction in pathogenic contamination of the marine environment in British Columbia could be achieved, it would result in fewer shellfish closures helping to promote the maintenance and growth of an ecologically sustainable, infant industry with enormous potential.

This being the case, why has progress towards this goal been so slow? In large measure, the answer lies in the nature of the policy challenge that confronts us. This is not a policy challenge that can readily be tackled by decisive, targeted action by a single level or arm of government. In the short to medium-term, implementing a solution will require comprehensive, coordinated action at the local level. It will also require the deployment of considerable new resources: to fund the construction of up-to-date municipal wastewater treatment facilities; to support community based stewardship programs that can effectively tackle the challenge of non-point source pollution; and to establish, where viable and appropriate, legally binding ambient water quality enhancement targets.

However, in the medium to long-term, even if these initiatives are successfully implemented they are unlikely to be adequate to the task of maintaining - let alone expanding - shellfish operations, particularly in the Georgia Basin region. Population projections for the Georgia Basin suggest that growth pressures will continue unabated for at least another two generations. In the face of these pressures, sustainability of the coastal zone will only be assured if an effective regulatory framework that clearly defines, measures and enforces bottom line environmental outcomes is developed and implemented.

The current regulatory regime, discussed in this chapter, cannot meet this challenge. Even if governments committed to properly resourcing the agencies responsible for protecting environmental values, the legal framework within which these agencies operate is inadequate in many key respects for a number of reasons. Environmental planning processes tend to be reactive and *ad hoc* rather than proactive and integrated. Cumulative impact assessment of individual developments or discharges is sporadic and incomplete. There are remarkably few binding requirements to protect coastal zone values. For the most part, governmental initiatives that fall into this category rely almost exclusively on enhancing intergovernmental co-operation, coordination and are ultimately backed up by little more than moral suasion (e.g. the NPA initiative and the management planning under the *Oceans Act*). Where legally enforceable requirements do exist, for example under the federal *Fisheries Act* and the *WMA*, their effectiveness is undermined by a lack of resources and a low rate of prosecutions. Opportunities for ongoing, structured public participation in monitoring and enforcement

are limited; to the extent that citizens have tried to engage by means of launching private prosecutions of polluters their efforts have been thwarted by government policy.<sup>54</sup>

As a result, in addition to allocating new resources to local wastewater quality enhancement initiatives and establishing science-based attainment targets for these initiatives, substantial reforms to the current legal framework are required. To secure durable protection for the B.C. coastal resources, many have argued for the establishment of a legally-mandated management planning process for B.C.'s coastal zone.

Legally-mandated, integrated coastal zone management has been advocated by a variety of B.C. government-sponsored studies dating back to the late 1980s and has proven to be a highly effective vehicle for near-shore protection in variety of other jurisdictions including California and Washington State (as will be discussed in Chapter 5). In 1998, the B.C. Government released a coastal management position paper. This paper advocated an approach to coastal planning modelled on consensus-based land use planning processes in use at that time. Coastal zone management advocates were critical of the approach set out in the paper, contending that it relied too heavily on voluntary measures and lacked the public appeal mechanisms that were a crucial component of coastal management initiatives regimes in other jurisdictions. While supporters of a strong provincial coastal zone management law have continued to lobby on this front, the current B.C. Government, elected in 2001, has been unreceptive.

Mindful of the challenges that confront us, let us now take stock of current trends. To what extent do the trends identified in the preceding analysis reassure us that we are on track toward the goal of a developing a more responsible and effective approach in dealing with wastewater discharges into the marine environment?

On the positive side of the ledger, there appears to be at least a nascent recognition within government circles of the need to promote the interests of shellfish industry in a more effective and coherent fashion. Similarly, there is evidence that governments are growing more aware of the multifaceted nature of human growth pressures on marine ecosystems and the need to embark on innovative, collaborative responses that transcend the jurisdictional boundaries that in the past have frequently impeded collective action. Finally, it would appear that B.C. regulators have awoken to the need to address wastewater discharges, from both point and non-point sources, as an environmental and public health priority.

At the same time, our research has also revealed some discouraging trends. While governments have recognized the need to listen and respond to shellfish industry interests, for the most part they have focussed on reforms aimed at expediting tenure expansion and rationalizing operational requirements. As a result, concerns with respect to water quality and the environmental implications of development pressures on the medium to long-term sustainability of the shellfish industry have been neglected. Moreover, while governments have been prepared to embark on collaborative efforts aimed at promoting ecosystem goals on an *ad hoc* basis, to date there has been a marked reluctance to consider let alone develop a

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<sup>54</sup> *A Strategy to Prevent Coastal Habitat Loss and Degradation in the Georgia Basin* (The B.C. Nearshore Habitat Loss Work Group: June 2001) at 28: see [http://www.pyr.ec.gc.ca/georgiabasin/gbeiIndex\\_e.htm](http://www.pyr.ec.gc.ca/georgiabasin/gbeiIndex_e.htm)

legally mandated province-wide strategy. Finally, while the provincial government has adopted new measures aimed at reducing harmful municipal wastewater discharges and pathogenic non-source pollution, these measures have relied almost exclusively on education and moral suasion. Without enforceable timetables and targets backed up by the infusion of substantial new resources, it is unlikely that these measures will succeed.

## CHAPTER THREE

### Wastewater Regulation and Shellfish Aquaculture in New Brunswick and Prince Edward Island

#### 3.1 An Overview of the Atlantic Context

Prince Edward Island (P.E.I.), Canada's smallest province, boasts the country's largest shellfish aquaculture industry. Sited in estuaries along the east end of the island and lagoons on the north coast, whether measured in tonnage or dollar value, P.E.I. accounted for approximately half of Canadian shellfish aquaculture production in 2001.<sup>1</sup> Much of the growth in P.E.I.'s shellfish aquaculture industry occurred during the 1990s, reaching a farmgate value of nearly 30 million dollars in 2001.

By contrast, in 2001, New Brunswick's shellfish aquaculture industry represented only 4.3% of the national total by weight and 4.9% of farmgate value.<sup>2</sup> Shellfish harvesting has traditionally been a significant activity throughout the Maritime Provinces; however, the development of a strong shellfish aquaculture industry in New Brunswick has been significantly restricted by contamination of the Bay of Fundy. The Bay of Fundy, the province's most productive marine environment and site of 95% of aquaculture in the province, is unfit for shellfish aquaculture.<sup>3</sup> Due to the prevalence of both fecal contamination and Paralytic Shellfish Poison outbreaks, clam flat closures are a common occurrence in the Bay of Fundy and mussel harvesting is permanently closed. As a result, New Brunswick mussels and oysters are largely produced in the Gulf of Saint Lawrence.

Sewage contamination was identified as "one of the most prevalent problems facing the Atlantic Region with the exception of Prince Edward Island" in Canada's National Programme of Action for the Protection of the Marine Environment from Land-Based Activities.<sup>4</sup> With nearly half of the municipal population of the Maritimes discharging untreated sewage into coastal waters, P.E.I. stands out by treating 100% of its municipal sewage.<sup>5</sup> Although it has a significantly better record than other Maritime provinces, untreated municipal waste from New Brunswick is still discharged into the Bay of Fundy.<sup>6</sup>

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<sup>1</sup> Statistics Canada. "Canadian Aquaculture Production Statistics." 16 Dec 2002  
<http://www.dfo-mpo.gc.ca/communic/statistics/aquacult/AQUA01.htm> (23 Feb 2003).

<sup>2</sup> *Ibid*

<sup>3</sup> Due to pollution, New Brunswick's Department of Agriculture, Fisheries and Aquaculture currently accepts applications for shellfish aquaculture in the Bay of Fundy on a research and development basis only. See N.B. Dept of Agriculture, Fisheries and Aquaculture. *Bay of Fundy Marine Aquaculture Site Allocation Policy*. <http://www.gnb.ca/0177/e-fundy.html#intro> (3 Feb 2003).

<sup>4</sup> Environment Canada. *NPA*. p101. In 1999, 206,500 hectares, over one third of potential shellfish harvesting areas in the Maritimes, were closed due to fecal contamination. Environment Canada, *The State of Municipal Wastewater Effluents in Canada*, 2001. <http://www.ec.gc.ca/soer-ree/English/soer/MWWE.pdf> (4 Feb 2003).

<sup>5</sup> Environment Canada. *The State of Municipal Wastewater Effluents in Canada*.

<sup>6</sup> Half of municipal waste from St. John's is not treated and sewage from Moncton receives only primary treatment before both are discharged into the Bay of Fundy. "Wastewater Treatment and water quality protection." Email from G. Lindsay (E.P.B., Environment Canada - Fredericton) to N. Blake (11 Apr 2003).

The challenge of protecting marine water quality remains significant in both P.E.I. and New Brunswick. To date, pollution of the marine environment has restricted the shellfish industry in New Brunswick. The province has taken the initial steps toward coastal zone management, but has yet to universally treat its municipal sewage. By contrast, P.E.I. has supported a thriving shellfish aquaculture industry by successfully managing its municipal effluent. P.E.I. must now focus attention on agricultural run-off – the largest contributor of non-point source pollution affecting shellfish growing areas in the province.<sup>7</sup> Furthermore, both P.E.I. and New Brunswick face the challenge of leakage from individual septic systems (common in rural areas) contributing to non-point source pollution.

### **3.2 Provincial Institutions, Regulations and Policies Relevant to Shellfish Aquaculture and Water Quality Protection**

#### ***3.2.1 Aquaculture Regulation in New Brunswick and Prince Edward Island***

Jurisdictional responsibility for aquaculture in New Brunswick follows the common Canadian model of provincial leadership, whereas in P.E.I. the federal government has long held responsibility for aquaculture.

The *Canada – New Brunswick Memorandum of Understanding on Aquaculture Development* of 1989 sets out the roles of the federal and provincial government with respect to shellfish aquaculture in New Brunswick. Under the MOU licensing and leasing of aquaculture sites are a provincial responsibility to be conducted in accordance with provincial and applicable federal legislation. The federal role is limited to the requirement that new applications be referred to Canada for comment.

Under New Brunswick's *Aquaculture Act*, the Aquaculture Registrar of the Department of Agriculture, Fisheries and Aquaculture is responsible for the licensing and leasing of aquaculture in the province. This responsibility includes the administration of commercial, private, and institutional licenses, as well as occupation permits and leases for aquaculture sites situated on Crown Land.

In contrast, P.E.I. is unique as the only province in Canada where the federal government is responsible for issuing leases for the cultivation and development of shellfish. The 1928 agreement between the federal and provincial governments gave Canada jurisdiction over, and responsibility for, the control, administration, development and improvement of the mollusk industry, as well as for conducting surveys and issuing leases.<sup>8</sup>

The roles of P.E.I. and Canada in aquaculture development were further defined in the 1987 *Agreement for Commercial Aquaculture Development*. Under this agreement, the federal government continues to be responsible for issuing leases for mollusks and for scientific research. Responsibility for issuing licences and leases for specified finfish also rests with Canada. The parties further agreed to work co-operatively on programs toward aquaculture

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<sup>7</sup> Menon, A. *Shellfish Water Quality Protection Program*. [http://www.mar.dfo-mpo.gc.ca/science/review/1996/AmarMenon/Menon\\_e.html](http://www.mar.dfo-mpo.gc.ca/science/review/1996/AmarMenon/Menon_e.html) (4 Feb 2003).

<sup>8</sup> Standing Committee on Fisheries and Oceans. *Prince Edward Island Report*. Dec 1998. <http://www.parl.gc.ca/InfoComDoc/36/1/FISH/Studies/Reports/fishrp08/08-rap-e.htm> (14 Mar 2003).

development. With respect to aquaculture, the P.E.I. *Fisheries Act* largely acts as a vehicle through which the province enters into agreements for co-management or cedes authority to the federal government.

### ***3.2.2 Wastewater Regulation in New Brunswick and Prince Edward Island***

In New Brunswick, primary responsibility for regulating discharges into receiving waters rests with the Department of Environment and Local Government with authority under the *Water Quality Regulation* of the *Clean Environment Act*. The definition of “water pollution” under the regulation is broad and includes anything that is likely to make the water harmful to public health and welfare. The definition also includes anything making the water harmful or less useful for domestic, industrial, agricultural, recreational, or other lawful uses, including use by animals, birds and aquatic life. The regulation specifically identifies sewage as a contaminant, and any discharge thereof that may, directly or indirectly, cause water pollution requires approval by the Minister. Approvals stipulate the quantity and quality of contaminants that can be discharged and are subject to annual audits.<sup>9</sup>

Regulatory authority for public sewage and wastewater works in P.E.I. rests with the Island Regulatory and Appeals Commission under the *Water and Sewerage Act*. However, the City of Charlottetown, the City of Summerside, the Town of Charlottetown South, and the Town of Charlottetown West, are exempt from the Commission’s jurisdiction and in these areas responsibility for sewerage lies with municipal councils. Where the *Water and Sewerage Act* does not apply, regulatory authority rests with the Department of Fisheries, Aquaculture and the Environment that administers the *Wastewater Treatment and Water Supply Systems* section of P.E.I.’s *Environmental Protection Act*.

Due to the significance of the shellfish industry and P.E.I.’s reliance on groundwater as a source of potable water, wastewater treatment is a significant concern of the provincial government. With February 2003 announcement of upgrades to the treatment facilities of Summerside and Charlottetown, all municipalities in P.E.I. will be in compliance with the current provincial standards of secondary wastewater treatment.<sup>10</sup>

Both New Brunswick and P.E.I. have been successful in harnessing federal support for upgrading municipal wastewater treatment facilities. In the Maritime Provinces the Infrastructure Canada Program (ICP) is administered by the Atlantic Canada Opportunities Agency. Over the six-year period, the ICP will entail over \$160 million in infrastructure improvements for New Brunswick and over \$38 million for P.E.I., with costs shared equally among Canada, the provinces, and municipal or local government.<sup>11</sup> As discussed in Chapter 2, a priority for the program is “green municipal infrastructure” which includes water and wastewater systems, water management, and solid waste management.

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<sup>9</sup> New Brunswick Dept of Environment and Local Government. “Overview of Legislation” <http://www.gnb.ca/0009/0355/0005/0029-e.html> (22 Feb 2002).

<sup>10</sup> Infrastructure Canada. “Charlottetown Wastewater Treatment Upgrade Approved.” 21 Feb 2003. [http://www.infrastructurecanada.gc.ca/csif/projects/project5/20030221\\_e.shtml](http://www.infrastructurecanada.gc.ca/csif/projects/project5/20030221_e.shtml) (19 Mar 2003).

<sup>11</sup> Infrastructure Canada Program. Partners Territories and First Nations. (9 April 2003). [http://www.infrastructurecanada.gc.ca/icp/partners/provinces\\_e.shtml](http://www.infrastructurecanada.gc.ca/icp/partners/provinces_e.shtml)

P.E.I. has also been successful in harnessing federal resources for sewage treatment from the federal Strategic Infrastructure Fund (SIF) for the upgrades to the treatment facilities of both Summerside and Charlottetown. The \$2 billion Strategic Infrastructure Fund was created in 2001 for large-scale infrastructure projects that were not being addressed through the ICP. Water and sewage infrastructure is one of five categories of projects competing for funding through the SIF.<sup>12</sup>

### ***3.2.3 Coastal Zone Management***

While both New Brunswick and P.E.I. are dependent on a healthy coastal environment for the success of key industries such as fisheries, aquaculture, and tourism, only New Brunswick has taken steps towards implementing integrated coastal zone management.

In 2002 the New Brunswick Department of Environment and Local Government initiated discussion on a Coastal Areas Protection Policy (the Policy) designed to establish province-wide standards for the management and development of coastal areas. In the proposed Policy, New Brunswick would adopt a zoning system used by UNESCO for the protection of Biosphere Reserves that identifies core, buffer, and transition zones. Coastal management in accord with the Policy would classify the coastal area into sensitivity zones that are associated with specified acceptable and prohibited activities.

In implementing the policy's universal standards, the provincial government intends to provide a coordinated approach to environmental assessment and approval procedures between provincial, municipal and regional development agencies. The Coastal Areas Protection Policy is still under discussion and it remains to be seen what new legislation will be required for the implementation and enforcement of the policy.

## **3.3 Integrative Approaches**

### ***3.3.1 Community-Based Management Initiatives: The Atlantic Coastal Action Program***

The Atlantic Coastal Action Program (ACAP) was initiated by Environment Canada in 1991 with the intention of assisting local communities to restore damaged coastal environments while also addressing local development challenges. From its inception, the ACAP has been a community-based program whose success is dependent on local involvement and support. In 2002-2003 the ACAP is supporting two projects in P.E.I and five in New Brunswick. Each site has an incorporated non-profit organization with a Board of Directors, and maintains a full-time paid Coordinator and an office. The contribution to project funding provided by Environment Canada is a small portion of the overall costs; community stakeholders contribute most of the resources through volunteer labour, in-kind contributions, and financial support.

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<sup>12</sup> To date the SIF has only been used for sewage projects in the Maritime Provinces. This may be due to project minimum cost thresholds that are based on provincial population – this system results in high minimum costs for the medium and larger provinces. See: Canada Strategic Infrastructure Fund [http://www.infrastructurecanada.gc.ca/csif/index\\_e.shtml?menu5](http://www.infrastructurecanada.gc.ca/csif/index_e.shtml?menu5) (04/04/2003).

In New Brunswick, a successful example of an ACAP supported project is the Eastern Charlotte Waterway Incorporated (ECW), founded in 1993. In 1996, faced with fecal contamination of 60% of New Brunswick inshore coastal waters and federal cutbacks to water quality testing that threatened further closures, a group of soft shell clam harvesters approached the ECW for assistance. With consensus from the Board of Directors, the ECW agreed to assist the harvesters in monitoring and remediation efforts to prevent the loss of further shellfish areas and to clean up areas that had already become contaminated.

ECW efforts began by facilitating a Resource Committee comprised of representatives from federal and provincial fisheries, environment and health agencies, as well as local government and industry. Recognizing common interests among those involved, the Resource Committee established the Cooperative Bacterial Monitoring Program (CBMP) in 1997. With contributions from the federal government (laboratory and boat access), provincial departments of fisheries and environment (field and laboratory assistance), health agencies (follow-up in residential areas), and industry (levy collected from processors) the CBMP was successful in addressing the following three points: 1) ensuring that local industry complied with existing pollution regulations, 2) removing temporary living structures lacking adequate septic treatment, and 3) targeting out-dated residential septic systems.

In its first year, the CBMP resulted in the re-opening approximately 60 km of shoreline to shellfish harvesting. Continued water sampling, shoreline surveys, and dialogue with local residents through 2001 resulted in the opening of the L'Etang Estuary, a 174-acre estuarine area that had been closed for forty years. The CBMP continues to be successful; however, financial sustainability remains an ongoing issue and the ECW is currently looking for additional industry funding and community volunteers.

The ACAP is also currently active in P.E.I. where it is supporting the Southeast Environmental Association's Cardigan River Bacteria Project. Started in 2002, this project aims to identify and remedy non-point sources of fecal coliform contamination in the Cardigan River Estuary for the purpose of reducing the prevalence of shellfish closures.

### ***3.3.2 International Cooperation in Marine Management***

Like many environmental concerns, water quality issues do not fall neatly within any one jurisdiction. Water quality in the Bay of Fundy is tied to the larger context of the Gulf of Maine – an area that suffers from widespread beach and shellfish closures and some of the highest levels of mercury in marine animals in North America.<sup>13</sup> Recognizing the international scope of pollution issues in the Gulf of Maine, the Gulf of Maine Council on the Marine Environment (the Council) was founded in 1989 by the Governors and Premiers of the five jurisdictions bordering the Gulf: Maine, Massachusetts, New Brunswick, New Hampshire, and Nova Scotia. In 1992 membership expanded to include federal representatives and one non-governmental organization from each jurisdiction. Participating state, provincial and federal agencies contribute both annual and in-kind support.<sup>14</sup>

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<sup>13</sup> Gulf of Main Council on the Marine Environment. *2001-2006 Action Plan*. 2002. [http://www.gulfofmaine.org/action\\_plan2001-06.pdf](http://www.gulfofmaine.org/action_plan2001-06.pdf) (15 Mar 2003).

<sup>14</sup> *Ibid.*

Like most initiatives of this scope, the Council is largely aimed at intergovernmental coordination and cooperation rather than establishing enforceable commitments. In its 2001-2006 Action Plan, the Council identified sewage, nitrogen, and mercury as priority areas for coordinated action. The Council intends to address these challenges through formulating regional plans and reduction strategies. This is done in consultation with relevant agencies with the aim of coordinating implementation. The Council also engages in public education and established the Canada/U.S. Gulfwatch Monitoring Committee in 1991 to coordinate scientific research.

### **3.4 Trends and Challenges**

As significant expansion of shellfish leases in P.E.I. is unlikely, the main challenge for the industry is to maintain and improve water quality at existing sites.<sup>15</sup> There has been progress in this respect. With all municipalities soon to provide secondary treatment, P.E.I. has been successful in addressing the issue of municipal sewage treatment and its shellfish industry has prospered as a result. However, to secure water quality protection P.E.I. must now focus its efforts on addressing agricultural run-off in a manner that accounts for cumulative impacts. Along with such targeted action, as Canada's most densely populated province, P.E.I. must also meet the challenge of developing integrated and enforceable coastal zone management.

In order for New Brunswick to foster a successful shellfish aquaculture industry contamination of the Bay of Fundy must be addressed. Although our research suggests that this challenge will not likely be met in the near future, several priority areas for action are evident: further upgrading of municipal sewage treatment and encouragement for Nova Scotia to do the same; continued action by the province in implementing an effective and enforceable Coastal Areas Protection Policy; and the development of regional reduction strategies through cross-jurisdictional avenues like the Gulf of Maine Council on the Marine Environment. Effective action in this last front would likely require a significant break with the norm of such agreements by developing binding targets across these jurisdictions.

Although the above-mentioned actions are necessary, perhaps the most immediately effective examples of work to mitigate pollution impacts and re-open shellfish areas have been borne out through the mobilization of community action. The Eastern Charlotte Waterway and the Southeast Environmental Association have created unique venues to bring together industry, shellfish growers, government and residents to address common concerns. Government support for initiatives like these, through the ACAP and Agency in-kind support, point us in a promising direction for the future. The federal government is currently reviewing the ACAP program with a view to increasing sources of funding and promoting linkages to larger ecosystem initiatives while maintaining a community focus.

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<sup>15</sup> Most of the aquaculture leases in P.E.I. were granted in the 1980s and early 1990s with little public interest or involvement. However, the extent to which the industry has developed has given rise to a shift in public perception and were government to attempt to significantly add to existing leases, public outcry could be expected. Gallant, R. (Manager of Aquaculture, P.E.I. Dept of Fisheries, Aquaculture and Environment) "Inquiry re: Shellfish Aquaculture." E-mail to N. Blake (10 Mar 2003).

## CHAPTER FOUR

### Wastewater Regulation and Shellfish Aquaculture in New Zealand

#### 4.1 An Overview of the New Zealand Context

New Zealand provides an illuminating point of comparison for a variety of reasons. For one thing, it is a jurisdiction where marine farming has expanded very dramatically in recent years. As a result, N.Z. has become something of a poster-child for aquaculture proponents worldwide. As we shall see, government policy has played a key role in this success story.

Currently, the industry generates \$260 Million (all references are to NZ \$) in gross sales, close to 80% of which is in exports.<sup>1</sup> Mussel farming accounts for over ninety percent of aquaculture production with salmon and oyster production accounting for seven and three percent of the remaining total respectively. Growth in mussel farming over the last twenty years has been particularly impressive. Since 1981, gross revenues from mussel farming have increased almost one hundred-fold. The goal of the New Zealand Marine Farming Association is to maintain this growth trajectory by achieving annual sales of \$2 billion within the next twenty years. Increasingly, however, the industry is being forced to contend with critics who argue that the “industry is out of control and that the current ‘gold rush’ for coastal sites threatens the coastline”.<sup>2</sup>

A second reason why the New Zealand experience is instructive is that it is a Commonwealth country with which we share many legal traditions and institutions. Like Canada, New Zealand is a constitutional monarchy, heavily influenced by English common law. Another similarity is the emerging legal and political importance of aboriginal rights and title. Over the last twenty years, New Zealand has taken significant steps towards recognizing and protecting the rights of the Maori people. Under New Zealand law, Maori enjoy rights both under the 1840 Treaty of Waitangi, and under customary and common law.

Despite these similarities, there are also important differences between our two countries. One key distinction lies in New Zealand’s system of government. As a unitary state, New Zealand does not have to contend with many of the jurisdictional uncertainties and coordination issues that face federal states such as Canada and the United States. Moreover, New Zealand is a unicameral jurisdiction with a single elected House of Representatives that, since 1996, has been elected under electoral system based on the principle of proportional representation. As well, unlike its North American counterparts, New Zealand does not have a written, entrenched constitution.

In part perhaps due to its relatively uncluttered political arrangements, New Zealand has earned a reputation for legal and political innovation. The best-known illustration of this proclivity for reform was undoubtedly its decision less than ten years ago to move to a

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<sup>1</sup> Scott Grieve, *The Marine Farming Provisions of the Resource Management Act, 1991* (unpublished LLM thesis: 2002) at 5 (on file with author)

<sup>2</sup> *Ibid* at 4 citing criticisms put forward by the New Zealand Royal Forest and Bird Protection Society.

system of proportional representation. However, as we shall see, New Zealand has also embarked on ambitious legal and political reforms in the realms of indigenous rights<sup>3</sup> and in environmental and natural resource management.<sup>4</sup>

## 4.2 Constitutional and Legal Arrangements

Constitutionally, since New Zealand is a unitary state, all legal powers vest with the central government unless otherwise delegated. However, because the legal sovereignty of the New Zealand state arises out of the Treaty of Waitangi into which the Britain entered with the Maori people in 1840, the Government of New Zealand is legally bound to honour the terms of that treaty. As such, in exercising its constitutional powers, the Government is duty-bound to ensure that Maori interests are recognized and respected. This imperative is particularly relevant with respect to government law and policy in the areas of environmental and resource management<sup>5</sup>

There are two levels of local government in New Zealand: Regional Councils (RCs) and Territorial Authorities (TAs). New Zealand's ten Regional Councils each exercises a wide variety of legal and regulatory powers in relation to environmental protection and resource management and public transport. There are currently 76 TAs including 15 cities and some sixty rural districts. TAs are primarily responsible for the provision of local services including building inspection and permitting, water source protection and wastewater management.

Prior to passage of the *Resource Management Act* (RMA) of 1991, primary responsibility for environmental protection and resource management rested with the central government. By enacting the RMA, the central government sought to rationalize and enhance the management of the country's "natural and physical resources".<sup>6</sup> In the process, a number of significant laws were repealed and over fifty were amended. In addition, an Environment Court was created to adjudicate disputes arising under the RMA.

A central goal of the RMA is to move away from a prescriptive, directive approach to resource management towards a more permissive one that is aimed primarily at controlling the adverse effects of development and land use activities on the environment.<sup>7</sup> To this end, the RMA reduces the role of central government in the management of natural and physical resources and correspondingly increases the autonomy of Regional Councils to decide and implement policy.<sup>8</sup>

There are two central government agencies that play key roles under the RMA: the Ministry of Conservation (MOC) and the Ministry of Environment (MOE). The MOC's primary role is to exercise regulatory oversight over the coastal zone. This legislative mandate includes

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<sup>3</sup> As reflected in recent steps to implement the Treaty of Waitangi. See <http://starfish.govt.nz./social/facts/fact-maori-fisheries.htm>

<sup>4</sup> Through, among other things, implementation of an innovative quota-based fisheries management strategy in the early 1980s and by enactment of the far-reaching and comprehensive *Resource Management Act* in 1991.

<sup>5</sup> See generally DAR Williams et.al. *Environmental and Resource Management Law in New Zealand* (2<sup>nd</sup> ed.) (Butterworths: 1997) at 33-42.

<sup>6</sup> *Ibid* at 21.

<sup>7</sup> *Ibid* at 68.

<sup>8</sup> *Ibid* at 103.

developing national coastal zone policy, approving coastal zone management plans prepared by Regional Councils, and decision-making power with respect to the permitting of restricted coastal zone activities. The role of the MOE is to set national environmental standards by regulation and to promulgate nationally binding policy statements. The MOE is also empowered, where a proposed development or activity to be permitted is of “national significance”, to “call in” resource consent-granting authority that would otherwise vest with a Regional Council.

As such, the RMA devolves broad planning and permitting authority to the local level, particularly to Regional Councils. In terms of planning, RCs are tasked with responsibility for establishing and implementing policies to achieve the integrated management of the resources of the region, and for developing special policies to address adverse environmental effects arising from the use of lands that are of “regional significance”. They are also given broad permitting and regulatory powers, to be exercised in conjunction with the MOC, with respect to the coastal marine area. These include issuing coastal permits with respect to use and occupation of the foreshore or seabed, enacting regulations with respect to the taking, use, damming, and diversion of water, and issuing permits for the discharge of contaminants into marine waters. Territorial Authorities also possess a variety of other resource management and environmental protection responsibilities including oversight of local land use planning issues including subdivision approval, protection of freshwater resources including drinking water sources, and wastewater collection, treatment and disposal.

Three other central governments are also vested with regulatory jurisdiction over shellfish aquaculture. As discussed below, the Ministry of Agriculture and the Ministry of Health share jurisdiction over shellfish sanitary standards. In addition, shellfish aquaculture is subject to regulation by the Ministry of Fisheries (MOF). MOF has broad regulatory jurisdiction over both wild fish stocks<sup>9</sup> and marine farming.

With respect to marine farming operations, the Ministry of Fisheries shares regulatory responsibilities with the Regional Council for the region in which the farm is to be sited. Before a farm can commence operations, it must secure a marine farming permit from the Ministry. Under the *Fisheries Act*, the Ministry is directed to issue such a permit only where it is satisfied that “the activities contemplated by the application would not have an undue adverse effect on fishing or the sustainability of any fisheries resource”.<sup>10</sup>

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<sup>9</sup> *Supra* note 3. Since 1983, the commercial wild fishery has been governed under a quota management system that allocates a portion of the total allowable annual catch of each wild fish stock to commercial fishing operators. Forty percent of the fishing quota is allocated to Maori interests. The quota system appears to be working well, and has generally been well received by the fishing sector.

<sup>10</sup> Grieve *supra* note 1 at 27

### 4.3 Institutions, Regulations and Policies Relevant to Shellfish Aquaculture and Water Quality Protection

#### 4.3.1 Shellfish Sanitary Regulation<sup>11</sup>

As in Canada, shellfish production in New Zealand takes place in accordance with the generic requirements of the U.S. NSSP.<sup>12</sup> However, New Zealand departs from Canadian (and traditional U.S. practice) in the way that shellfish quality assurance programs are delivered.

New Zealand's Ministry of Agriculture and Forestry (MAF) policy is to seek out partnerships with industry "to the maximum extent possible" in developing and implementing seafood safety standards, protocols and delivery.<sup>13</sup> As a result of this policy, the N.Z. shellfish industry has taken on significant responsibilities with respect to shellfish sanitary monitoring. Under New Zealand law, Shellfish Quality Assurance Program Delivery Centres (SQAPDC) may be established where shellfish are grown and harvested.<sup>14</sup> SQAPDC are established at the request of the shellfish industry and are comprised of representatives from the industry, the MAF and the appropriate crown health enterprise. Typically, growers fund SQAPDC operations, sometimes with support from Regional Councils.

Each SQAPDC has an Authorized Health Officer who is responsible for conducting sanitary surveys; supervising water and flesh sampling programs performed by Independent Sampling Officers; and developing and managing the local marine biotoxin program. MAF performs regular audits of the Authorized Health Officer, approves the recommended classification and harvesting criteria for growing areas, and provides health certification of shellfish exports.

#### 4.3.2 Shellfish Aquaculture and Coastal Zone Management

As noted in the introduction to this chapter, the period following enactment of the RMA in 1991 saw a dramatic expansion of marine aquaculture, and in particular, shellfish aquaculture in New Zealand. Regional Councils were flooded with siting applications. Few had developed policy or guidelines to deal with such requests and, as such, tended to grant approvals on an *ad hoc*, "first come-first served" basis.<sup>15</sup>

The new RMA regime has also created significant jurisdictional uncertainties.<sup>16</sup> One such area is the allocation of authority over siting and regulation as between Regional Councils (as provided for under the RMA) and the Ministry of Fisheries (as provided for under the

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<sup>11</sup> See generally, *Guidelines for the Management of Shellfish Quality Assurance Programme Delivery Centres* (1997); MAF Food Assurance Authority. (2001) and the New Zealand Seafood Standards Council at <http://www.nzfsa.govt.nz/standards/seafood/biotoxins.htm>

<sup>12</sup> Through the IAIS 005.1 (Fishing Industry Agreed Implementation Standard) the *Food Act*, the *Food Regulations*, and an MOU with the U.S. Food and Drug Administration

<sup>13</sup> New Zealand Seafood Standards Council MAF Food Assurance Authority, June 2001, (p1.4) <http://www.nzfsa.govt.nz/standards/seafood/guidelines/generalfiicc/fiaguidelinesall.pdf>

<sup>14</sup> See IAIS 005.1 *supra* note 12

<sup>15</sup> Grieve *supra* note 1 at 4

<sup>16</sup> Grieve *supra* note 1 at 27 *et. seq.*

*Fisheries Act*). As noted in section 4.2, currently a marine farming operation must secure permits from both the relevant RC and from the MOF. The factors that each of these permitting authorities may properly consider in granting such permits is somewhat unclear. Recent judicial authority suggests that when asked to grant an RMA *coastal permit* an RC must consider the potential impacts of the operation on biodiversity, the appropriateness of the proposed site in terms of water quality, and the suitability of the proposed operation in terms of zoning and other local considerations. For its part, in granting a *marine farming permit* under the *Fisheries Act* the MOF must consider among other things the impact of the proposed site in terms of other users, other fisheries and marine resources, and nutrient availability.<sup>17</sup>

Another area of uncertainty has been the relationship between the permitting authority of the RCs and that of the Ministry of Conservation.<sup>18</sup> As noted above, *coastal permits* are ordinarily granted by Regional Councils. However, where such an application is being made with respect to an area in which marine farming has been designated as a “restricted coastal activity” under an RC’s coastal plan, the RC has no jurisdiction to issue the permit. Instead, the permitting decision must be made by the Ministry of Conservation. The impact of this proviso is quite widespread. Each RC is legally required to prepare and submit such plans to the Ministry of Conservation and, in many instances, such plans do in fact designate marine farming as a “restricted activity” leading to the direct involvement of the Ministry of Conservation in site specific permitting decisions.

As a result of public concern expressed about the rate of expansion of the marine farming, and marine farmers concerns about the jurisdictional uncertainties inherent in the permitting process, the Government of New Zealand committed to undertake a comprehensive re-examination of aquaculture regulation. Shortly after announcement of this review, the Government took the further step of ordering a moratorium on new marine farming approvals effective March 2002.<sup>19</sup> An Aquaculture Reform bill is currently being developed for introduction to Parliament likely sometime in 2003.

The proposed Bill will significantly streamline the regulatory approvals process by providing Regional Councils with “more direction, tools and responsibilities for managing aquaculture”. Regional Councils will become the sole permitting authority for new marine farming operations. It will be the sole responsibility of RCs to identify areas within the coastal zone that are appropriate for such operations: these will be known as Aquaculture Management Areas (AMAs). The Ministry of Fisheries will review AMA designations to ensure that they do not interfere with the commercial wild fishery but will have no direct role in permitting specific farming operations. Similarly, under the proposed law, regulation of the environmental effects of aquaculture will be primarily governed by the RMA. As such, it will be the duty of RCs to assess whether proposed or existing operations have any adverse effects on the marine environment.

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<sup>17</sup> Most RMA permits are for a period of about 15 years and, in any event, shall be for no more than 35 years. Marine farming permits are for a term of 14 years. Neither form of permit is automatically renewable. See “A Fair Deal for Marine Farmers” (28 Jan 03) see [www.beehive.govt.nz](http://www.beehive.govt.nz)

<sup>18</sup> Grieve *supra* note 1 at 35 *et seq*

<sup>19</sup> See *Aquaculture Reform*, (NZ Ministry of Environment: November 2002). See <http://www.mfe.govt.nz>.

While there has been a great deal of attention on the need for a more integrated planning and permitting framework to deal with the siting and regulation of marine farming operations, relatively little attention appears to have focussed on the question of whether the RMA framework is adequate to protecting the marine environment from land based pollution including wastewater and non-point source pollution.

RCs are legally obligated to develop regional coastal plans that are consistent with the central government's Coastal Policy Statement (the NZCPS) of 1994.<sup>20</sup> To date, little work appears to have been done to determine whether and to what extent these regional coastal plans have succeeded in advancing the goals of the NZCPS. Moreover, questions have been raised as to whether the agency responsible for monitoring implementation of the NZCPS -- the Ministry of Conservation -- has powers that are adequate to the task of ensuring compliance with NZCPS objectives.

### 4.3.3 Shellfish Aquaculture and Wastewater Management

Responsibility for wastewater management was significantly affected by enactment of the RMA. Predictably, the general thrust of these changes has been towards a more decentralized governance model. Under the RMA, the role of central government in this area, as it is with respect to resource management issues generally, is limited to defining national objectives, standards, and policy. For the most part, all residual authority is vested in Regional Councils including broad powers over discharge permitting, and waste management planning and policy.

The RMA prohibits any person from discharging a contaminant into fresh or marine water unless that discharge is "expressly allowed by a rule in a regional plan...a resource consent, or regulations".<sup>21</sup> Most wastewater discharges are dealt with by resource consents issued by Regional Councils. In issuing such consents, an RC must have regard to the nature of the water body into which the discharge is being made. As such, the RMA requires RCs to classify the receiving water body in accordance with purposes for which the water is to be managed. Thus under the RMA (Schedule III) there are different ambient standards for fisheries, fish spawning, shellfish aquaculture, recreation, water supply, irrigation, industrial abstraction, aesthetic and cultural uses, and water being managed in its natural state. An RC may issue a permit that specifies a standard that is more stringent or specific than that set out in Schedule III. It may also include a condition that the permit-holder adopt the "best practicable option to prevent or minimize any actual or likely adverse effect on the environment of the discharge".

What the RMA has left unchanged is the traditional responsibility of the Territorial Authorities to fund and manage wastewater treatment and disposal systems. In New Zealand, about 85% of the population receives wastewater services from local authorities.<sup>22</sup> As RMA implementation proceeds, many TAs are being required to obtain/renew permits to allow for them to discharge wastewater into the marine environment. Bringing locally

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<sup>20</sup> Williams *supra* note 5 at Chapter 3 Pt 7

<sup>21</sup> *Ibid* at 294

<sup>22</sup> Office of the Parliamentary Commissioner for the Environment, *Ageing Pipes and Murky Waters: Urban Water System Issues for the 21st Century* (June 2000) at 8

managed wastewater treatment and disposal facilities into compliance with standards prescribed in the RMA presents a variety of challenges.

A key challenge is that N.Z.'s wastewater infrastructure is old and in serious need of upgrading.<sup>23</sup> In 1998, in recognition of this fact, the New Zealand Government committed to undertaking "a comprehensive review of the delivery of water, wastewater (sewerage and trade waste) and stormwater services".<sup>24</sup> From this review it became evident that there were significant discrepancies in the way various TAs and RCs were approaching the challenge of planning for and implementing wastewater infrastructure renewal.

These differences are, in part, a function of demographics.<sup>25</sup> In some parts of the country that are experiencing rapid population growth, the capacity of existing infrastructure to handle demand is already a pressing concern. In these areas (for example, Auckland, Tauranga and the Kapiti Coast) the key task for local government is to plan for and fund infrastructure expansion. Conversely, in areas with low or negative population growth (e.g. Dunedin and Invercargill) the task is to enhance environmental protection with a declining tax base. Finally, in coastal areas that experience significant tourism for certain peak periods each year (e.g. Thames-Coromandel and the Bay of Plenty) local authorities are grappling with how to finance wastewater management systems from a permanent-resident tax base that is relatively modest.

A complicating factor is that TAs are not legally allowed to levy wastewater charges on a volumetric as opposed a household basis. Although volume-based levies are common in Canada and other jurisdictions, in New Zealand legislation precludes such charges unless the TA creates a Local Authority Trading Enterprise to manage wastewater services.<sup>26</sup>

New Zealand's decentralized system of wastewater management has also been criticized for allowing some TAs to put a low priority on infrastructure enhancement. Thus while some cities have made a strong commitment to infrastructure investment (e.g. Auckland and Christchurch), there is evidence that other TAs regard heightened environmental and health standards as creating economic barriers to attracting new businesses to their region.<sup>27</sup> Similar inconsistencies in the response of different RCs to the challenge of enhancing stormwater management have also been observed. Once again, Auckland RC has led the way on this front, while progress by other RCs has been slow.<sup>28</sup>

As in Canada and United States, local citizens groups have been formed to press for protection of shellfish and other foreshore resources. For example, since the early 1990s a group of local residents on Auckland's north shore known as the Cheltenham Beach

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<sup>23</sup> *Ibid* at page v. Local authority water and wastewater infrastructure is currently valued at \$7.5 billion with around \$600 million being spent annually on operational costs. Over the next twenty years, it is estimated that \$5 billion of investment will be required to upgrade water, wastewater and stormwater infrastructure.

<sup>24</sup> *Ibid*

<sup>25</sup> *Ibid* at 20-22.

<sup>26</sup> Joel Cayford (North Shore City Councillor), *New Water & Wastewater legislation for New Zealand - the trick is balancing economic efficiency, social equity, and ecological sustainability*, an unpublished paper presented at the New Zealand Waste and Water Association Water 2000 Conference (Auckland: March 2000) at para 3.6

<sup>27</sup> Ageing Pipes *supra* note 22 at 23

<sup>28</sup> *Ibid* at 33

Caretakers have worked with local governments, Maori peoples and the Ministry of Agriculture and Fisheries to develop a comprehensive protection regime for the area that includes an ongoing water quality monitoring program.<sup>29</sup> A similar program has been initiated by a citizen group on Auckland's west coast in response to shellfish closures.<sup>30</sup>

#### 4.4 Challenges and Trends

For over a decade now, New Zealand has been grappling with the implications of its decision to devolve to the regional level key resource and environmental management responsibilities. This decision has presented a range of opportunities and challenges. On the one hand, it has afforded the marine farming industry, and the shellfish growers in particular, unprecedented opportunities for business expansion. But this, in turn, has created a new challenge: how to consolidate the future of a vastly expanded industry in the face of growing concerns expressed by a variety of stakeholders (including the environmentalists, tourism operators and commercial fishers) that the industry has grown too quickly. The response of the current central government has been to further rationalize the planning and permitting process by vesting single-window approval and regulatory jurisdiction in Regional Councils. Whether this approach will satisfactorily address concerns about industry activities and expansion that have increasingly been heard remains to be seen.

The last decade has also presented a range of implementation challenges relating to protection of the coastal marine areas and, more specifically, the need to protect these areas from degradation due to wastewater pollution. Here again the RMA has delegated to the local authorities significant stewardship obligations. Although the central government has retained the right to promulgate national standards and to approve regional coastal plans, conventional wisdom is that the success of this delegation experiment has been, at best, mixed. A key challenge at the local and regional levels is how to finance environmental enhancement, particularly in light of the high cost of infrastructure improvement. However, there are a variety of other reasons why progress at the local level has been slow. Not all RCs and TAs will, in the absence of binding legal requirements, choose to make environmental protection a priority, particularly if lax standards are regarded as a form of regional or local "competitive advantage".<sup>31</sup> Moreover, the current model seems to have serious deficits in terms of consistency, accountability and enforcement. As it is succinctly but bluntly expressed in a recent paper presented at an Auckland regional planning forum:

The way the RMA has been implemented in New Zealand, each district and city council, and each regional council is pretty much regarded as an island. Laws unto themselves. There is minimal oversight at the national level into what is happening to this country as a whole. The RMA imposes few monitoring and reporting duties, and there is little if any accountability in respect of any plans that might exist.<sup>32</sup>

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<sup>29</sup> Office of the Parliamentary Commissioner for the Environment, *Setting Course for a Sustainable Future: The Management of New Zealand's Marine Environment*, (December 1999) at 40-41.

<sup>30</sup> *Idid.*

<sup>31</sup> Ageing Pipes *supra* note 22 at 23.

<sup>32</sup> Cayford *supra* note 25 at para 3.3.

Despite these sentiments it would likely be wrong to dismiss the New Zealand approach to resource and environmental management entirely as a means of identifying and implementing sustainable outcomes. Delegation of planning and permitting powers to local authorities does not always mean that the environment will suffer. But this outcome is made much more likely if this delegation is not accompanied by funding mechanisms that create the incentives to make environmental protection a priority. Moreover, regardless of local priorities, it is imperative that bottom-line national standards are protected with respect to key environmental amenities. This is particularly true in highly sensitive coastal zone areas and in situations where local development choices have profound impacts on third party interests such as, for example, shellfish growers. To date, however, it is not clear whether the New Zealand government is prepared to revisit the logic and structure of the RMA in order to address these funding and enforcement concerns.

## CHAPTER FIVE

### Wastewater Regulation and Shellfish Aquaculture in Washington State

#### 5.1 An Overview of the Washington State Context

Washington State is the largest producer of farmed shellfish in the United States.<sup>1</sup> Approximately 87 million pounds of shellfish, worth U.S. \$75 million, are harvested in the state each year.<sup>2</sup> Most of this production takes place in Puget Sound, one of the most productive shellfish growing locales in North America. In 1998, the Puget Sound shellfish industry produced nearly 50 million pounds of shellfish with a wholesale value of close to U.S. \$50 million.<sup>3</sup>

The marine waters of Washington State include Puget Sound proper as well as a portion of the Strait of Juan de Fuca, and the southern portion of the Strait of Georgia. These marine waters are often considered as comprising the southern part of a larger, single ecosystem that to the north includes the whole of the B.C. portion of the Strait of Georgia.<sup>4</sup>

Like B.C.'s Georgia Basin, Puget Sound has undergone a population boom that is projected to continue at a comparable rate for the next fifty years. By the middle of this century, the state's current population of around six million is expected to double. Most of the growth will continue to be centred in the Seattle-Tacoma area.<sup>5</sup>

Shellfish closures due to fecal contamination have been a pressing issue in Washington State since the early 1980s. Over the last decade, significant progress has been made towards reducing the proportion of closures attributable to point source pollution. In large measure, this headway has been made due to wastewater infrastructure improvements undertaken in order to comply with the federal *Clean Water Act*. But while point source pollution has declined, non-point source pollution has not. Currently, 30% of the shellfish growing areas in Washington are closed due to pollution from runoff, livestock grazing along streams and drainages and leaky septic systems.<sup>6</sup> Washington's situation is consistent with national trends. According to recent EPA data, 3.5 billion acres of the American coastline is closed to shellfish harvesting; 85% of these closures are attributable to non-point source pollution.<sup>7</sup>

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<sup>1</sup> See: [http://www.pcsqa.org/USCOP\\_Testimony.html](http://www.pcsqa.org/USCOP_Testimony.html)

<sup>2</sup> See [http://seattlepi.nwsourc.com/local/111832\\_stormwater10.shtml](http://seattlepi.nwsourc.com/local/111832_stormwater10.shtml)

<sup>3</sup> See [http://www.wa.gov/puget\\_sound/Publications/pshealth2000/Shellfish.htm](http://www.wa.gov/puget_sound/Publications/pshealth2000/Shellfish.htm)

<sup>4</sup> See, for example, Puget Sound Water Quality Action Team, *Puget Sound Update 2002: 8<sup>th</sup> Report of the Puget Sound Ambient Monitoring Program* at 9

<sup>5</sup> Washington Department of Environment, *Annual Report*, at 23

<sup>6</sup> *Cleaning up stormwater for shellfish reasons*, (Seattle Post-Intelligencer: March 10, 2003)

<sup>7</sup> Andrew Solomon, *Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990: Is There Any Point?* 31 Environmental Law 151 at 152

## 5.2 Constitutional Arrangements

Like Canada, the United States is a federal state. A key constitutional difference, however, is that while in Canada federal jurisdiction arises out of a variety of heads of legal power, under the U.S. Constitution federal jurisdiction is generally regarded as flowing from a single source: the so-called Commerce Clause.

Under the Commerce Clause, states are deemed to have irrevocably delegated to the federal government all powers necessary “to regulate Commerce with foreign Nations, and amongst the several States...”. The scope of the Commerce Clause has been described as being “virtually without limit”.<sup>8</sup> In practical terms, the existence of this power means that the federal government has presumptive authority to regulate all subjects that “...are, in or affect interstate commerce”.<sup>9</sup> As we will discuss shortly, it is this power that justifies federal regulation in a broad range of areas including those with which we are concerned (such as shellfish sanitary issues, water quality and coastal zone management).

The main counterbalancing constitutional power possessed by states derives from the Tenth Amendment. Under this Amendment, states reserve to themselves all authority not otherwise delegated to Congress. It is under this head of power that states typically seek to justify laws and regulations as being within the reserved “police power”: a power that enables states to take action for the protection of the health and general welfare of their citizens. Under U.S. constitutional law, federal legislation enacted under the Commerce Clause is normally considered to take precedence over laws passed by states under the police power. The principle under which federal laws take precedence in these circumstances is known as the “doctrine of preemption”.<sup>10</sup>

In practice, the federal government rarely exercises its Commerce Clause powers to their full potential. As such, only in a few areas (e.g. atomic energy) does the federal government explicitly seek to oust state jurisdiction. More commonly, Congress adopts a so-called “cooperative federalism” approach under which it endeavours to share jurisdiction with the states.

In the resource management and environmental protection contexts,<sup>11</sup> this means that Congress usually adopts leadership role by enacting an overarching federal law that sets out national standards. It is then the responsibility of states to develop programs to meet these standards. If the federal government is satisfied that a state program meets this test, it will then usually fund some portion of the cost of program development and offer the further inducement of operating funding so long as the program continues to meet those standards. Under this “approved program” approach, enforcement responsibilities may be undertaken either by the federal or state authorities. In the areas of water, air and species protection, federal laws also authorize private enforcement actions, known as “citizen suits”. These citizen suit provisions allow private individuals or groups to sue governments or firms that

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<sup>8</sup> F. Skillern, *Environmental Protection Deskbook* (2<sup>nd</sup> ed) (McGraw Hill: 1995) at 802

<sup>9</sup> *Ibid*

<sup>10</sup> *Ibid* at 825

<sup>11</sup> An analogous approach is realm of energy regulation.

have failed to comply with federal law for damages and other remedies, including injunctive relief.

### **5.3 Institutions, Regulations and Policies Relevant to Shellfish Aquaculture and Water Quality Protection**

#### **5.3.1 Shellfish Sanitary Regulation**

There are two federal jurisdictional “cornerstones” in this area, both of which are founded on the Commerce Clause. The first is a grant of power to the federal Food and Drug Administration (FDA) to prohibit “adulteration”, “misbranding” or dealing in any manner with unsafe shellfish.<sup>12</sup> The second grants power to the Secretary of Health to take action where there are grounds to believe that a public health emergency, broadly defined, might exist.<sup>13</sup>

The primary regulatory instrument in this area is the National Shellfish Sanitation Program (NSSP). The NSSP is a voluntary program, with federal, state and industry participation, that relies primarily on state shellfish authorities to ensure shellfish safety. Under the program, each participating state is required to adopt adequate laws and regulations for sanitary control of the molluscan shellfish industry, including measures to classify shellfish growing areas, control harvesting from restricted areas, conduct laboratory investigations, and implement measures to ensure molluscan shellfish are harvested and processed under sanitary conditions. The agency vested with lead responsibility for the NSSP is the FDA. The FDA conducts an annual review of each state’s shellfish control program to ensure conformity with the NSSP. It also publishes a Manual of Operations that serves as a guide for the elaboration of state shellfish sanitation laws and regulations.

Implementation of the NSSP is largely the responsibility of the Interstate Shellfish Sanitation Conference (ISSC). Members of the ISSC represent a broad range of government bodies including the FDA, the Environmental Protection Agency (EPA), the National Marine Fisheries Service of the U.S. Department of Commerce and various other state and federal agencies with interests in shellfish health and safety. The ISSC was created in 1982 to coordinate and harmonize differing federal, state and local shellfish sanitary regulations.<sup>14</sup>

Foreign countries may export molluscan shellfish to the U.S. by agreeing to abide by the NSSP. This agreement takes the form of a bilateral agreement or Memorandum of Understanding between the FDA and the foreign country.

In Washington State, the lead agency for food safety and shellfish programs is the Department of Health. It is responsible for a variety of programs falling under this umbrella, including: the Growing Area Classification Program, the Commercial Shellfish Licensing & Certification Program, and the Biotoxin Program. While in Washington State, these programs continue to be run in-house, in other states (notably Maine and California) some of these functions have been taken on by industry.

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<sup>12</sup> H. D. McCoy, *American and International Aquaculture Law* (Supranational Pub: 2000) at 183

<sup>13</sup> This occurs under the federal *Public Health Service Act*: *ibid* at 199

<sup>14</sup> *Ibid* at 198

### 5.3.2 Site Approval for Shellfish Aquaculture

In the United States, as is the case in Canada and New Zealand, the role of the national government in siting decisions is relatively modest.

In the State of Washington, responsibility for siting decisions is shared by state and local government authorities. Prior to commencing operations, shellfish growers must secure three separate siting approvals. Most developments in or on the water or shoreline require a Shoreline Substantial Development Permit. As further discussed in section 5.3.3.2, under the *Shoreline Management Act*, local government takes the lead in the environmental review for such a permit.<sup>15</sup> The Washington Department of Ecology (DOE) has jurisdiction to review such decisions by way of an appeal to the Shorelines Hearing Board.

A proponent must also receive a Statement of Site Consistency with the *Coastal Zone Management Act* from the DOE. In order to certify a project the DOE reviews the local Shoreline Master Programs for the Area (as developed under the Shoreline Management Act) and must be satisfied that the project is “consistent with the maximum extent practical” with the federal *Coastal Zone Management Act*.<sup>16</sup>

Finally, an Aquatic Land Lease issued by the Washington Department of Natural Resources is required for any use of publicly owned aquatic lands – this includes tidelands, beds of navigable waters, and shorelands.<sup>17</sup>

### 5.3.3 Federal Water Quality Protection and Coastal Zone Management

The regulatory model in these areas is illustrative of the “cooperative federalism” approach introduced earlier in this Chapter. In both areas, the federal government has undertaken a leadership role, enacting a comprehensive federal law and then partnering with states on implementation and enforcement. In this section we will consider the legal regimes that have developed around these federal laws – the *Clean Water Act* and the *Coastal Zone Management Act* – both of which were originally enacted by Congress in 1972.

#### 5.3.3.1 The Clean Water Act

The purpose of the *Clean Water Act* (CWA) is to limit the discharge of pollutants into U.S. waters<sup>18</sup> through a system of technology-based controls with the ultimate goal of achieving zero pollutant discharge.<sup>19</sup> To this end, the CWA creates a pollutant discharge permitting system known as NPEDS: the National Pollution Discharge Elimination System. The

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<sup>15</sup> See [http://www.pcsqa.org/\\_members/WAregsum.htm](http://www.pcsqa.org/_members/WAregsum.htm)

<sup>16</sup> See <http://aquanic.org/publicat/state/md/perm50.pdf>

<sup>17</sup> *Ibid.*

<sup>18</sup> The definition of “U.S. waters” encompassing essentially all fresh and marine waters within the territory of the United States whether navigable or not: see Skillern *supra* note 8 at 217.

<sup>19</sup> The ambit of the CWA is extremely broad by virtue of the expansiveness of the definitions of both “pollution” (which includes almost anything added to water including heat) and “U.S. waters”: see generally, M.P. Healy, *Still Dirty after all these Years: Water Quality Enforcement and the Availability of Citizen Suits* 24 Ecology Law Quarterly 393.

central focus of the CWA is point source pollution. Under the CWA, before pollution can be discharged from a point source<sup>20</sup> into U.S. waters, an NPEDS permit must be obtained. NPEDS permits limit the amount of pollution that may be discharged into the receiving waters. These discharge limits are technology-based and are intended to reflect the capacity of the discharger to control pollution using the best available pollution control technology.

Congress's decision to adopt a technology-based permitting model arose out of concern that a regime that relied exclusively on ambient water quality objectives would ultimately prove ineffective. This conclusion was, in large measure, based on experience under the CWA's predecessor legislation, a law that was premised on state-defined water quality standards. In enacting the CWA, Congress concluded that it would be prudent to continue to utilize water quality based controls as a "supplementary means" of combating pollution. Thus, the CWA seeks to control pollution by reference to the source's technological capacity to control pollution *and* the environmental impact of the discharged pollutant.

The lead federal agency responsible for the CWA is the Environmental Protection Agency (EPA). Most states (forty-four to date) have entered into agreements with the EPA to administer and enforce the CWA regime and, in particular, to issue NPEDS permits.<sup>21</sup> Whether or not a state takes on this obligation, however, the CWA requires that states establish water quality standards (WQSs). These WQSs must include "use designations" for waters subject to the CWA, "water quality criteria sufficient to protect the designated uses" and an acceptable "antidegradation policy".<sup>22</sup>

Once a state has completed the WQS process, it must prepare a list of waters that fail to meet the applicable water quality standards they have established. Waters on this list are known as "water quality-limited" areas. States are then required to determine an applicable total maximum daily load (TMDL) for each area on the list. A TMDL prescribes the maximum amount of a pollutant that a listed water body can receive from all point and non-point sources each day without violating the applicable state WQS. Based on the applicable TMDL, it is then possible to determine the waste load allocation (WLA) for each of the point sources discharging into listed water body. The final step in the process involves the permit-writer (usually the states) incorporating the WLA into the NPEDS permit.

The CWA is broadly regarded as having proven highly effective in reducing point source pollution.<sup>23</sup> It has garnered special praise with respect to bringing about significant reductions in deleterious municipal sewage and stormwater discharges. As shall be discussed

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<sup>20</sup> "Point source" is defined as any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or any vessel or other floating craft, from which pollutants are or may be discharged: see Skillern *supra* note 8 at 219.

<sup>21</sup> States write over 90% of all federal permits and handle 75% of all enforcement actions: EPA Memo *State Enforcement of Clean Water Act Dischargers can be more Effective* (August 2001) at 6. See <http://news.findlaw.com/hdocs/docs/epa/epaigcwarpt82201.pdf>

<sup>22</sup> Healy *supra* note 19 at 399

<sup>23</sup> See sources cited in Healy *ibid* at endnote 3 including W. H. Rodgers *Environmental Law* 264 (2<sup>nd</sup> ed., 1994) (suggesting that a "regulatory accomplishment" of the CWA is that the permits have been issued to more than 64,000 industrial facilities generally requiring more than 90% removal of uncontrolled discharges) and R.V. Percival et.al. *Environmental Regulation: Law, Science and Policy* 874 (2<sup>nd</sup> ed., 1996) (stating that the CWA has "produced dramatic reductions in discharges of water pollutants from point sources")

shortly, however, commentators have been less sanguine about the implementation record with respect to WQS requirements.

The success of CWA technology-based requirements are in large part due to the efficiency with which such requirements are capable of being enforced. NPEDS permit holders are required by law to monitor and report on whether they are complying with the discharge standards set out in their permit. Where they exceed the prescribed limit they can be prosecuted. EPA policy is to take enforcement action whenever there are significant permit violations in two successive quarters.<sup>24</sup> Adjudication of such cases is relatively straightforward. In most cases, the only issue is whether the permit was violated; the defence of due diligence is not available.

Moreover, where government regulators are reluctant or unwilling to prosecute, individuals<sup>25</sup> may pursue citizen suit enforcement proceedings. To bring such an action, a citizen must provide the EPA and the relevant state regulator with 60 days notice to allow them to take remedial action. On expiry of this notice period, the citizen may take enforcement action in their own name as a “private attorney general”. Like many other federal environmental statutes, the CWA contains provisions to compensate citizens for the legal and other costs of bringing such actions, if successful. On conviction, the polluter is required to pay these costs, as well as a fine. In addition, they will frequently be required to pay damages to disgorge any economic benefits arising out of having violated the CWA.

Another feature of the NPEDS permitting system that has contributed to its effectiveness is that such permits automatically expire every five years. This expiry provision forces the EPA and state agencies to revisit source specific permits on a regular basis and determine whether the technology-based standards on which they are premised remain valid or require updating.<sup>26</sup>

A final feature of federal CWA policy that has contributed to the effectiveness of NPEDS, particularly in relation to reducing the adverse impacts of municipal wastewater, has been the availability of federal funding to support infrastructure projects. Over the last thirty years over a trillion dollars has been spent building, upgrading and expanding wastewater treatment facilities.<sup>27</sup> Much of this spending was authorized and paid for under the CWA’s POTW (the Publicly-Owned Treatment Works) program. Prior to 1984, under this program the federal government picked up 75% of the construction costs for eligible projects; since 1984 it has covered 55%.<sup>28</sup> While federal contributions have, over time, been declining, available funding remains significant. For the fiscal year 2001, the CWA-related funding to states, territories and Indian tribes for administering water pollution control programs was \$170 million.<sup>29</sup>

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<sup>24</sup> EPA Memo *supra* note 21

<sup>25</sup> The CWA allows “any citizen to commence a civil action on his own behalf...against any person...who is alleged to be in violation of (A) an effluent standard or limitation under this chapter or (B) an order issued by the (EPA) Administrator or a State with respect to such a standard or limitation...”

<sup>26</sup> EPA Memo *supra* note 21

<sup>27</sup> *Ibid* at 1

<sup>28</sup> Skillern *supra* note 8 at 223

<sup>29</sup> EPA Memo *supra* note at 11

In contrast, assessments of the compliance and enforcement record with respect to NPEDS permitting requirements derived from state WQSs are much more mixed. According to recent data, approximately 40% of the nation's waters are not meeting state water quality standards.<sup>30</sup> A variety of factors have been posited to explain this phenomenon. These include: implementation delays and bottlenecks at the EPA; the inherent scientific and legal challenges in translating ambient data (including TDMLs and WLAs) into discharge limits; and the failure of many states to do TDMLs in the first place.<sup>31</sup> It also appears that many states do not place a high priority on TDML implementation, regarding this obligation as an unfunded mandate.

### 5.3.3.2 The Coastal Zone Management Act

For our purposes, two key differences between the CWA and the *Coastal Zone Management Act* (CZMA) deserve highlighting. The first is that while the CWA imposes on states mandatory obligations, state participation in the CZMA regime is entirely voluntary. In other words, the CZMA places no requirements on states or individuals unless a state develops a federally-approved coastal management program under its auspices.<sup>32</sup> A second key difference concerns legislative objectives. As we have discussed, the main focus of the CWA is point source pollution. In contrast, as we shall see, in terms of protecting marine water quality, the CZMA's main focus is non-point source pollution.

When Congress enacted the CZMA in 1972 its stated goal was to “preserve, protect, develop, and where possible to restore and enhance, the resources of the Nation's coastal zone for this and succeeding generations...”<sup>33</sup> While recognizing that land use activities were increasingly posing a threat to the U.S. coastline, Congress decided to eschew the prescriptive regulatory approach it had adopted when passing the CWA. Instead it elected to adopt an approach that sought to build on existing state-based land use planning and management processes by creating incentives for states to develop their own coastal management plans consistent with the broad parameters of the federal law.

The incentives offered to states under the CZMA are twofold. The first is federal funding. Under the CZMA, federal grants are available both for the development and administration of state coastal zone management plans. Currently, grants to states with operational coastal zone management programs range between three quarters of a million to 2.75 million dollars. A second incentive is that states with approved coastal zone management plans gain the right to object to federal actions if those actions are inconsistent with enforceable provisions of the state's coastal management program. States have used this power to object to a variety of federal permitting decisions, including the granting of offshore oil and gas leases, and dredging and filling approvals.

The federal agencies responsible for administering the CZMA are the National Oceanic and Atmospheric Administration (NOAA) and the EPA. To qualify for federal funding and secure federal “consistency authority”, a state must secure NOAA approval for its coastal

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<sup>30</sup> Ibid at 5; Healy *supra* note 19 proposes a lower number: between 25 to 35%.

<sup>31</sup> See generally Healy *ibid* for an extended discussion.

<sup>32</sup> Solomon *supra* note 7 at 154

<sup>33</sup> *Ibid*.

management program. To secure approval, the program must, among other things, identify coastal zone management area boundaries, describe permissible land and water uses within the coastal zone, locate areas of particular concern, and describe how the state will regulate land and water uses within the zone. Thirty-three of thirty-five coastal states currently have approved coastal zone management plans.<sup>34</sup>

In 1990, Congress significantly reformed the CZMA. It took this step due to a perception that the CZMA was not making progress towards the goal of controlling land use activities, particularly non-point source pollution, that were having a “direct and significant impact on...coastal waters”. A key feature of these reforms was the creation of a new program to facilitate coordination between federal and state agencies, and within state governments, on issues relating to water quality protection and coastal zone management. This initiative has become known as the section “6217 Program”.

The 6217 Program requires states with programs approved under the CZMA to develop and submit a Coastal Nonpoint Pollution Control Program (CNPCP) to the NOAA and the EPA. It further requires states to identify policies and mechanisms they propose to rely on to implement CNPCP “management measures”. These management measures are to be defined by the EPA. Within thirty months of the EPA defining these management measures, states are required to submit a CNPCP for review by NOAA and the EPA. Upon approval, states are given three years to implement the management measures.

From the beginning, the 6217 Program has been controversial. Relatively few states have tried to comply with its requirements. Many have deliberately dragged their feet, and almost all have actively lobbied for the program to be shelved or substantially rewritten. The key problem from the states’ perspective is one of money. When it initiated the 6217 Program, Congress allocated less than \$2 million dollars to support development of CNPCPs and no funds to offset ongoing operational and compliance costs associated with the Program, even though the yearly cost of compliance has been estimated at between \$390 and \$590 million. As of 1999, only the State of Maryland had secured federal approval of its CNPCP program, nine years after the introduction of the 6217 Program.<sup>35</sup>

However, developing an alternative way to achieve the laudable goals of the 6217 Program is not straightforward. From a fiscal perspective, apart from dramatically increasing the federal allocation of funding to support the program, the only obvious alternative is to punish states that fail to comply with the 6217 Program by withdrawing federal coastal management zone funding. This alternative, which the federal government has so far resisted adopting, raises the unappealing spectre of exacerbating damage to the coastal environment by potentially giving rise to a direct, “flow-through” reduction of state expenditures on coastal zone management. As a result, critics argue that the best approach for the federal government may be to “target budgets and programs promoting activities that contribute to non-point source pollution”.<sup>36</sup> In this regard, it is argued that the federal government should create disincentives for non-compliance with the 6217 Program by threatening to reduce National

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<sup>34</sup> *Ibid* at 156

<sup>35</sup> *Ibid*

<sup>36</sup> *Ibid* at 179

Forest timber sales, cutting agricultural subsidies, and withdrawing federal funding for coastal zone highways.

### 5.3.4 Implementation of the CWA and the CZMA by the State of Washington

In Washington State, the lead agency charged with responsibility for implementing mandates under the CWA, the CZMA and a variety of other federal and state laws environmental laws is the Department of Ecology (DOE).<sup>37</sup> The DOE has an annual operating budget of approximately \$330 million and employs a full-time staff of 1485. Water quality and coastal zone management are discrete program areas, each with roughly comparable annual budgets of about \$40 million. In the water quality area, about 30% of program costs are covered by the federal government; compared to 25% with respect to coastal zone management.

#### 5.3.4.1 The Washington State Water Quality Program

A key focus of the DOE's Water Quality Program is *point source pollution prevention*. In this area, the DOE is responsible for writing NPEDS wastewater discharge permits for sewage treatment plants, stormwater and industrial discharges. Currently there are some 4,000 outstanding permits, an increase of some 75% over the last ten years. The DOE is also responsible for permit compliance and enforcement. To this end, it conducts site visits every two years of approximately 25% of NPEDS permit-holders. A key priority area of late has been implementation of a second phase of NPEDS rules with respect to municipal stormwater systems. In the late 1980s, Congress imposed an NPEDS permitting requirement on municipal stormwater systems. Under Phase 1 of this new program, the permitting requirement only applied to cities with populations of over 100,000. Under Phase 2 of the program, operators of systems serving less than 100,000 will require an NPEDS permit by March 2003.<sup>38</sup>

A second program area is *non-point source pollution prevention*. According to the DOE: "...non-point source pollution (polluted runoff) is now the leading cause of water pollution in Washington...sources include poorly managed dairy farms, failing septic systems and pet waste; elevated water temperature from lack of natural riparian zones; and pesticides from agricultural and gardening activities."<sup>39</sup> Much of the DOE's work in this area is educational including raising public awareness, encouraging community-based initiatives and serving as a resource to local decision makers. It also provides technical assistance on forest and agricultural practice issues to other government departments and to permit private operators. The DOE has recently drafted a state-wide, non-point source management plan.<sup>40</sup>

The third DOE program area that is relevant arises out of the requirement under the CWA for states to identify "water quality-limited" areas. Here the main focus of the DOE's work is on developing water cleanup plans. This normally entails a public comment process following which the DOE will incorporate appropriate conditions into the relevant NPEDS

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<sup>37</sup> The Department of Ecology homepage is: <http://www.ecy.wa.gov/pubs/0101005.pdf>. Statistics are drawn from the DOE's Budget and Program Overview for 2001-2003 cited in note 39.

<sup>38</sup> Recent accounts suggest that this March 2003 deadline has not been met due to ongoing funding and logistical issues that have arisen: see Seattle P-I article *supra* note 7

<sup>39</sup> *DOE Budget and Program Overview 2001-2003* at p. 46: See <http://www.ecy.wa.gov/pubs/0101005.pdf>

<sup>40</sup> *Ibid* at 48

permits and develop non-point source management plans, along with a monitoring plan to evaluate the effectiveness of the cleanup effort.

Under the DOE water quality program, financial and technical assistance is available to local governments, state agencies and tribes to support infrastructure projects aimed at reducing point source pollution prevention; similar assistance is also available to support planning and operational costs associated with non-point source control projects. The water quality program has two external advisory committees. The first, which provides policy advice, is known as the Water Quality Partnership and includes private, public, conservation sector and Native American tribe representatives. The second committee – the Financial Assistance Advisory Committee – addresses how water quality grants and loans are administered. This program also funds the work of the Puget Sound Water Quality Action Team. This organization is responsible for developing and implementing an action plan for management of the Sound. In addition, every two years it prepares a comprehensive technical report on the state of the Sound that contains recommendations for action on a variety of topics including repair and prevention of stormwater and sewage system problems, reopening closed shellfish areas, and coordination with the province of British Columbia.<sup>41</sup>

#### ***5.3.4.2 The Washington State Shorelands and Environmental Assistance (SEA) Program***

It is under the auspices of the SEA program that the DOE coordinates and delivers on obligations the State has undertaken under the federal *Coastal Zone Management Act*. Washington has long played a national leadership role on coastal management issues. Indeed, in 1971 it was one of the first U.S. states to enact its own coastal management law. This law – the *Shoreline Management Act* - predates the federal CZMA by a year and is still on the books.

As described earlier in this chapter, the CZMA is a voluntary program that creates financial and regulatory incentives for states to seek federal approval of state-developed coastal zone management regimes. Because it already had a coastal management law in place when the CZMA came into force, the State of Washington chose to meet the federal CZMA approval requirements by submitting a “networked program” linking a variety of “enforceable” state laws into a single coordinated coastal zone management framework. The center piece of this network is the *Shoreline Management Act*; other components include state clean air, water and environmental assessment legislation. All of these laws fall within the statutory mandate of the DOE.

In meeting its commitments under the CZMA, the DOE is also in charge of liaising and coordinating with programs and policies under other state legislation that are complementary to the state’s coastal zone management strategy. Key laws and programs that fall into this “complementary” category include the *Growth Management Act*, the *Hydraulic Code*, the *Puget Sound Water Quality Work Plan*, the *Watershed Planning Act* and the *Salmon Recovery Planning Act*.<sup>42</sup>

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<sup>41</sup> Department of Ecology, *Managing Washington’s Coast: Washington’s Coastal Zone Management Program* (February 2001) at 105. See <http://ecy.wa.gov/pubs/00069.pdf>

<sup>42</sup> *Idid* at 103-107

The *Shoreline Management Act* (SMA) is both a land use and an environmental protection statute. It creates a planning process and a regulatory permitting system established and implemented at the local level, with oversight by the DOE. Its geographic scope is broad. It applies to all marine and freshwater shorelines in the state including 791 lakes, 965 rivers, 2,761 miles of marine shoreline and over 3000 square miles of marine waters.<sup>43</sup>

The planning component of the SMA occurs at the local level through “shoreline master programs” (SMPs). Each plan must set out basic goals and objectives, identify environmental characteristics, and set out regulations to advance the plan. On approval by the DOE, such plans acquire legal force. For the last five years, the DOE has been working on updating guidelines that prescribe minimum statewide requirements for SMPs. Local governments also have a permitting authority with respect to substantial shoreline developments. Permitting decisions are reviewable by the Shoreline Hearings Board.

Another land use zoning tool available to local governments is the power to create Shellfish Protection Districts, a power they acquired under a state law of the same name enacted in 1992.<sup>44</sup> In enacting the law, the Legislature issued the following statement that appears as an annotation in the legislative text:

- ...the problem of shellfish closures demands public policy solutions... state, local governments and individuals must each take strong and swift action or this precious resource will be lost
- ...the goal of [this law] is to prevent further closures of recreational and commercial shellfish beds, to restore water quality in saltwater tidelands to allow the reopening of at least one restricted or closed shellfish bed each year, and to ensure Washington state's commanding international position in shellfish production.
- ...failing on-site sewage systems and animal waste are the two most significant causes of shellfish bed closures over the past decade. Remedial actions at the local level are required to effectively address these problems.
- ...[we] hereby encourage all counties having saltwater tidelands within their boundaries to establish shellfish protection districts and programs designed to prevent any further degradation and contamination and to allow for restoration and reopening of closed shellfish growing areas.

A shellfish protection district is a geographic service area designated by a county to protect water quality and tideland resources. Creating a district provides the county with a broad authority to raise money, through various means to finance local efforts to combat nonpoint source pollution by levying taxes. Such a designation also allows the county to apply, and be given preference, for public funding. Supporters of the law also emphasize the educational value of designation decisions in terms of drawing attention to a pressing problem.

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<sup>43</sup> *Ibid* at 98.

<sup>44</sup> RCW 90.72. See also Puget Sound Water Quality Action Team, *Shellfish Protection Districts* at [http://www.wa.gov/puget\\_sound](http://www.wa.gov/puget_sound)

Ordinarily, the designation decision is expected to occur by means of a council vote or citizen referendum. However, where a shellfish area is downgraded due to pollution problems the local county is legally required to create a shellfish protection district and develop a remediation strategy.

#### **5.4 Challenges and Trends**

A recurring theme in recent American environmental law and policy scholarship is the need for new approaches. Some critics contend that the battle to bring point source pollution under control has been won. As such, it is claimed that the challenge ahead -- achieving similar progress on non-point source pollution -- necessitates a shift away from highly prescriptive, enforceable legal requirements towards a model that relies much more heavily on economic incentives.<sup>45</sup>

Of course, not all American scholars concur that the battle to bring point source pollution under control has been won.<sup>46</sup> Moreover, it is important to bear in mind the context in which the debate has arisen. For those of us hailing from jurisdictions where the battle to bring point source pollution under control has not only not been won but scarcely commenced, it is critical to bear in mind of just how effectively the *Clean Water Act* has succeeded in bringing point source water pollution under control.

A number of factors have combined to achieve this result: strong agency leadership on the part of the EPA; standardized, technology-based permitting requirements that are subject to regular agency oversight and renewal requirements; legally enforceable obligations on states to identify degraded water bodies and to develop TMDLs; federal funding to support wastewater infrastructure enhancement; and the ever-present potential for citizens to spur enforcement efforts through private enforcement actions.

This said, the challenge of grappling with the much more diffuse and intractable problem of non-point source pollution looms large. It is in this context that some critics have argued that prescriptive, enforcement-focussed approaches may be less effective. In part, this contention appears to rest on assumptions about the difficulties associated with linking non-point source pollution to particular polluters. This particular concern may increasingly be neutralized by technological advances that make it possible to trace pollutants in an ambient environment back to their source.<sup>47</sup>

The CZMA has been the primary vehicle through which the federal government has sought to combat non-point source water pollution. In contrast to the CWA, the CZMA operates on a more voluntarist model. As a result, some states have opted to pursue the regulatory opportunities it provides while others have not. The State of Washington, a pioneer in coastal zone management, falls squarely into the former camp. Spurred on by the incentive of securing federal “consistency authority” and CZMA funding, to its credit it has developed

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<sup>45</sup> A selection of articles on this theme is contained in a national symposium on “second generation environmental policy and law” published in the 29 *Capital University Law Review* (2001).

<sup>46</sup> For example, Rena Steinzor, “Myths of the Reinvented State” in 29 *Capital Univ. L.R.* (2001).

<sup>47</sup> See “A Review of Shellfish Sanitation, Water Quality Monitoring and New Scientific Advances” D. Tillapaugh and E. Sedlack (Centre for Shellfish Research: 2003).

and implemented a sophisticated legal framework for assessing and regulating coastal zone activities.

Washington State's multifaceted strategy for tackling non-point source pollution is instructive. It is one that is founded upon legally enforceable permitting and assessment requirements; but is also one that commits significant resources to community outreach and education, community-based monitoring activities, and intergovernmental coordination and liaison. Within the confines of our current study, we cannot offer any evaluative conclusions about the State of Washington's approach in terms of outcomes. However, given the diversity and complexity of the phenomenon of non-point source pollution, the State's multifaceted regulatory approach to the problem is one that other jurisdictions would be well advised to study closely.

## CHAPTER SIX

### Summary and Conclusions

#### 6.1 Overview

The future of the shellfish industry globally is inextricably connected to the broader challenge of tackling wastewater pollution of our marine environment. The purpose of this study has been threefold: to evaluate how effectively we, in British Columbia, have addressed the problem of wastewater pollution in the marine environment; to consider the experience of comparable shellfish-growing jurisdictions on this front; and, finally, based on the foregoing, to identify potential avenues for legal and policy reform.

Our research has revealed that, in all of the jurisdictions we have studied, there is promising work underway aimed at enhancing marine water protection. In some jurisdictions, leadership on this issue has come from industry; in others from citizen and community groups; and, in others, from various arms and levels of government.

Clean water is a public good. Its protection depends on the efforts of a broad array of private and public sector players and institutions. In the final analysis, however, as is the case with all public goods, responsibility for ensuring that desired standards of protection are met ultimately rests with government. But for government to effectively play its role two key prerequisites must be present. First, agency responsibility for implementing and enforcing the desired standards must be clearly demarcated. Second, funding and other resources that are necessary to carry out these responsibilities must be in place.

These prerequisites are highly interdependent. There is little merit in clarifying agency responsibility for enhancing water quality outcomes without designating how this responsibility is to be funded. Equally, in our view, there is little merit in allocating funding to promote marine water protection without a clearly defining which governmental authorities are, at the end of the day, accountable for achieving the desired policy outcomes.

Often, of course, responsibility for enforcing standards lies with a different agency (indeed often a different level of government) than does responsibility for actually complying with the designated standard. Such is the case with respect to the local sewage discharges that are typically governed by state or provincial regulation. In this context, both the enforcing agency and the agency responsible for complying with the standard must have resources adequate to fulfill their respective roles. Moreover, it is important to be mindful that the term “resources” should not be taken to refer invariably to a budgetary allocation. As we have seen, budgetary inadequacies are a key reason why greater headway has not been made toward improving marine water quality protection. However, it would be a mistake to think of the “resources problem” simply in terms of the need to commit more general government revenues to address the problem. While undoubtedly this is part of the solution, the resource question can also be tackled by measures aimed at making polluters, as opposed to government at large, pay for the costs of remediation through carefully targeted taxation and development charges. Moreover, as the U.S. experience strongly suggests, significant new

resources can be harnessed by the simple expedient of giving citizens standing to sue polluters that are consistently out of compliance with applicable standards.

The balance of this Chapter is devoted to summarizing our research findings and suggesting lessons that emerge for law and policy reform in British Columbia.

## 6.2 Summary of Research Findings

Several contextual observations and caveats about the research we have done deserve to be made. In this study we compare British Columbia with four other jurisdictions: the maritime provinces of New Brunswick and Prince Edward Island; Washington State; and New Zealand. In our view, useful lessons can be learned from all of these jurisdictions. It is important, however, to be mindful of constitutional/jurisdictional differences that may limit B.C.'s potential to emulate initiatives or approaches adopted elsewhere. This caveat is particularly salient in terms of regulatory models that have been adopted in Washington State and New Zealand.

### 6.2.1 Constitutional Caveats

Although Canada and the U.S. are both federal states, the manner in which constitutional authority is allocated in these two countries differs. As we have discussed in Chapter 5, the Commerce Clause of the U.S. Constitution vests in the federal government extremely broad legislative and regulatory powers. There is no single, analogous federal head of power in Canadian constitutional law. Moreover, traditionally Ottawa has tended to adopt a much more deferential approach in its dealings with the provinces than has Washington D.C. in its dealings with American states. As such, politically and legally it is unlikely that a comprehensive and compulsory federal water protection law (akin to the *Clean Water Act*) will, in the foreseeable future, be enacted in Canada.

This said, the scope for federal regulatory involvement in protecting the marine environment from pollution could be significantly enhanced without violating the Constitution. In this regard, it is worth noting that the Supreme Court of Canada has held that “marine pollution” is a national concern and, as such, is subject matter in respect of which the federal government has constitutional authority.<sup>1</sup> It is also worth bearing in mind that there is no constitutional barrier to the federal government enacting a law modeled on the U.S. *Coastal Zone Management Act*. This is because the CZMA does not compel state involvement but rather creates financial incentives to secure state participation in the program. Voluntary federal-sponsored, provincial opt-in programs and initiatives of this kind are quite common in Canada and are generally considered to be constitutionally valid under the so-called federal “spending power”.

Constitutional differences need also be borne in mind when considering the New Zealand experience. As noted in Chapter 4, New Zealand has been able to embark on various far-reaching political and legal reforms because it is a unitary state. This, together with the fact that it has no written constitution, has meant that in New Zealand, unlike many other western liberal democracies, the central government has been able to proceed with reform

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<sup>1</sup> R v Crown Zellerbach [1988] 1 S.C.R. 401

initiatives largely unconstrained by constitutional requirements. As a result, recent New Zealand governments have pursued a rather dramatic policy of decentralization, vesting in Regional Councils (RCs) powers that, in many federal states, are constitutionally assigned to state or provincial governments. As a result, RCs now possess authority in relation to resource management and environmental protection rivaling those possessed by state and provincial governments under decentralized federal governance models. Some might argue that the relevance of recent NZ initiatives is somewhat diminished due to its status as a unitary state. However, because of the decentralized nature of Canadian federalism it can also be argued that the NZ experience may actually be quite instructive.

### ***6.2.2 Siting and Permitting Processes***

In all of the jurisdictions we have studied, a key threshold challenge is developing an effective, efficient and socially acceptable means to make siting decisions. Both in B.C. and New Zealand, this challenge is complicated by the need to take account of the legal rights and interests of aboriginal peoples. Siting decisions in B.C. are further complicated by the constitutional division of powers and by the multitude of agencies and governmental bodies (federal, provincial, local and First Nations) that are recognized stakeholders in the decision making process.

To some extent, of course, the question of reforming agency responsibility and public processes relating to siting and permitting (as pressing a concern as this is in B.C.) is one that is beyond the scope of our study. Nonetheless, the protocol by which siting decisions are made does relate to our study in at least one key respect. This is because in licencing new sites, and in re-permitting existing ones, government must, in our view, consider the appropriateness of the site in terms of water quality. Indeed, as the notional landlord for such sites, government must be taken to assume some responsibility for ensuring that key operational pre-requisites for operating at the site in question (including adequate water quality) are present.

Both in B.C. and New Zealand, there is an increasing appreciation within government of the need to rationalize government involvement and oversight of siting and permitting decisions. In other jurisdictions, by contrast, the siting issue appears to be less contentious and problematic.

In Canada, while significant resources and energy have been invested in negotiating reform on this front, progress has been slow. In New Zealand, in contrast, sweeping reforms to agency responsibility and legal authority in this area have already been implemented. The first round of reforms led to extremely rapid industry expansion, attributable at least in part to the fact that, on receiving these new powers, many Regional Councils proceeded to grant siting approvals on a largely *ad hoc* basis with little or no public process. This reform initiative was also plagued by a failure to clearly demarcate the respective authority of the Ministry of Fisheries, the Ministry of Conservation and Regional Councils. The second round of reforms appears to be more addressed to the latter problem than the former, giving rise to concerns that further controversy with respect to sitings may be on the horizon.

### **6.2.3 Shellfish Sanitary Monitoring**

Shellfish sanitary standards are uniform across Canada, the U.S. and New Zealand and are largely modeled after the U.S. National Shellfish Sanitation Program. As one of the world's major shellfish markets, the U.S. requires that exporting nations abide by the NSSP in order to certify the safety of shellfish. This agreement takes the form of a bilateral agreement or Memorandum of Understanding between the Food and Drug Administration and the foreign country. Both Canada and New Zealand have such agreements with the United States.

Although very similar sanitary standards are embedded in Canada's CSSP, the United States' NSSP, and New Zealand's IAIS, our study has revealed some emerging differences in terms of the way sanitary monitoring is undertaken. As discussed in Chapter Four, New Zealand has adopted an approach aimed at maximizing industry participation in sanitary regulation. As a result, the NZ shellfish industry has taken on much of the cost of, and responsibility for, shellfish sanitary monitoring under the auspices of the Shellfish Quality Assurance Program.

American practices in this realm vary. In Washington State, responsibility for food safety and shellfish monitoring programs continues to rest with state Departments of Health. However, other important shellfish-growing states, including Maine and California, appear to be moving towards the New Zealand model.<sup>2</sup>

In Canada, responsibility for shellfish water quality monitoring and growing area classification remains at the federal level with Environment Canada under a joint DFO-EC-CFIA agreement. There are some indications, however, that this may change. One factor is the increasing number of community-based water quality monitoring and remediation initiatives. Another is the apparent interest of industry to participate in, and be a fiscal sponsor for, new approaches to water quality monitoring. Future governmental action in this area will no doubt be influenced by the outcome of a series of pilot projects currently being spearheaded by OCAD. In partnership with national and provincial industry associations, the OCAD is sponsoring a "Shellfish Monitoring Project" that explores the potential for industry involvement in monitoring programs and farm-based quality assurance programs. There is currently one farm in B.C and one in Nova Scotia involved in the project.

### **6.2.4 Coastal Zone Management**

Protecting and enhancing marine water quality is one of the quintessential challenges of coastal zone management. The concept of coastal zone management emerges from a recognition that traditional legal jurisdictions and agency mandates have failed, often quite miserably, to protect the special values and attributes we associate with the coastal zone. As such, it is a concept that challenges us to think in creative cross-disciplinary and cross-jurisdictional ways about how responsibility for protection of the coastal zone can be achieved.

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<sup>2</sup> Shellfish Monitoring Project Newsletter, May 2001. <http://www.shellfishquality.ca/documents/SMP-Newsletter-may.pdf>

The prerequisites for effective coastal zone management include integrating coastal zone planning into permitting decisions that are likely to affect the coastal zone (discharges, development, land and marine-based resource activity), generating scientific information to support coastal zone planning, and the elaboration of a legal framework that allocates resources and mandates to agencies to ensure that coastal zone obligations are implemented and enforced.

Progress towards legally mandated coastal zone management in Canada has been slow. At the federal level, while the National Program of Action for the protection of the marine environment from land-based activities identifies pollution prevention and integrated coastal management as key strategic priorities, there is little evidence that this initiative has yielded more than enhanced intergovernmental dialogue on issues of mutual concern. Similarly, while the DFO is charged with responsibility for spearheading the development of coastal management plans, once again the emphasis of this process appears to be on intergovernmental co-operation and coordination as opposed to establishing legally binding targets and outcomes. Of the provinces examined in our study, only New Brunswick is currently contemplating enacting coastal zone legislation; whether it will actually do so is uncertain.

In contrast, legally-mandated coastal zone planning plays a key role under both New Zealand and American law. In the U.S., the federal framework seeks to encourage states to develop coastal zone management laws by extending scientific support and funding. The result is that in many states, particularly those on the Pacific Coast, strong coastal zone protection legislation is now in place. Just how effective this legislation has been in achieving one of its key goals – reduction of non-point source pollution – is somewhat difficult to assess. Some states, notably the State of Washington, are strongly committed to grappling with non-point source pollution; other states have been less proactive, dissatisfied with the level of federal funding available under the CZMA's 6217 Program.

The New Zealand coastal zone planning regime is still in its infancy. While the *Resource Management Act* (RMA) mandates RCs to prepare coastal management plans for review by the Ministry of Conservation, the legal status and enforceability of these plans are uncertain. Moreover, our research suggests that serious questions can be raised about the viability of the New Zealand approach in terms of ensuring that such plans have scientific integrity and are adequately funded.

### **6.2.5 Wastewater Regulation**

Our study also reveals significant opportunities for enhancing the way that we regulate wastewater discharges that are harmful to shellfish aquaculture. In many ways, our approach in British Columbia to wastewater management to date has reflected a frontier-mentality. As with many of our other natural resources, we have tended to have a rather cavalier view about the need to protect the marine environment. This attitude has, in turn, been premised on often quite questionable assumptions about the nature and resilience of this resource.

Deficiencies in our current approach are evident on a variety of fronts. One striking deficiency is attitudinal. Neither government nor, arguably, the public at large seem to have identified protecting the marine environment from wastewater degradation as a priority. To

the extent that water quality concerns figure on our collective radar screen the current priority is an anthropocentric one: namely, drinking water protection. Our current system for permitting wastewater discharges is one that takes remarkably little account of the cumulative impact of multiple discharges on the marine environment. In some ways, this regulatory failure is not surprising. To a large extent, a similar failure to generate reliable ambient carrying capacity data and derive discharges from this data also plagues the air emission permitting process.

A key reason that progress towards developing and enforcing adequate marine discharge standards has been so slow is the fiscal reality of local government. Unless municipalities and regional districts can fund infrastructure capable of meeting better standards, there is little reason to be optimistic that more rigorous discharge standards will be complied with. As our wastewater infrastructure ages, the problems we are currently experiencing will only become more pressing and serious. Unlike in the U.S., in Canada there are no federal funding programs exclusively dedicated to supporting wastewater infrastructure enhancement at the local level. While federal funds for green infrastructure are available, to access these funds proponents of local wastewater infrastructure initiatives must compete against a wide array of other infrastructure projects that are also eligible for funding.

Our study suggests some interesting lessons in this context can be learned from both New Zealand and the United States. While New Zealand's legal framework with respect to discharge control may only be marginally better than Canada's, public recognition of the importance of the issue appears to be higher. In New Zealand, the need to embark on a comprehensive program of infrastructure enhancement is broadly accepted. This has, in turn, sparked a lively debate about how this program should be funded; a debate that has yet to occur in Canada.

In contrast, in the United States, the federal government has invested heavily in wastewater treatment infrastructure since the early 1970s. These investments were part of a commitment, made when the *Clean Water Act* was initially enacted, to achieve the long-term goal of eliminating all pollutant discharges into U.S. waters. While this goal has not been achieved, setting this ambitious target helped to ensure that ongoing federal funding for public waste treatment projects was made available. As a result, in most states, including Washington, municipal wastewater discharges no longer pose a serious threat to the marine environment. This has allowed regulators to turn their attention to other challenges, most notably non-point source pollution.

But federal funding is only part of the reason that, relative to Canada and New Zealand, the U.S. has succeeded in bringing point source wastewater problem under control. The other key factor is the legal framework created by the *Clean Water Act*. Four integral features of this framework deserve special mention.

The first is federal leadership. In enacting the CWA in 1972, Congress took the important step of creating a clear national framework and strategy for protecting the nation's water resources. While this framework allowed for some flexibility in terms of implementation at the state level, by elaborating nationally applicable standards and requirements important lines of both legal and political accountability were created. In contrast, in many other

jurisdictions, progress on this front has been hampered by interjurisdictional wrangling and policy slippage.

A second distinctive feature of the CWA regime is its approach to discharge permitting. Unlike many other pollution permitting regimes, the CWA is designed to promote continuous environmental improvement. As we have discussed, it seeks to achieve this goal by, among other things, requiring permit holders to employ the best available pollution control technology, and by ensuring that permits are regularly reviewed and updated every five-years.

A third key feature of the CWA is the legal obligation it imposes on states to address the issue of cumulative impact on degraded water bodies and their carrying capacity by developing Total Maximum Daily Load (TMDLs). The TMDL requirement has served as a vehicle for focussing public and regulatory attention on degraded water bodies and on ways that they can be restored. While some states have been slow to comply with the TMDL requirement, others have made significant headway. Now, some thirty years after the CWA was first introduced, a key priority for many states is to implement their TMDL plans. Moreover, both in terms of developing TMDLs and in terms of implementation, states are obliged to factor into the equation point and non-point source pollution.

A final feature of the CWA that has been critical to its success are its citizen suit provisions. At the outset of this Chapter, we underscored the importance of thinking creatively about how to bring new “resources” to the fore in terms of tackling the challenge of enhancing marine water quality. In our view, one of the most underutilized resources in this regard are ordinary citizens. Both the Canadian and New Zealand experiences suggest that there is a rich potential to engage community groups in water quality monitoring and foreshore protection activities. Moreover, the American experience reveals just how profound an impact such citizens and citizen groups can have in ensuring that duly enacted standards and legal requirements are enforced. Vesting in citizens the right to take enforcement proceedings against recalcitrant polluters, and providing them with the prospect of recovering the costs of bringing such proceedings from polluters, is generally regarded as being fundamental to securing the environmental gains that have been achieved under the *Clean Water Act*.<sup>3</sup>

It is instructive, at this point, to reflect on the merits of the CWA from a Canadian perspective. A strong case can be made that virtually none of the features or attributes that have combined to make the CWA regime effective currently form part of Canadian water protection law. To date, our governments have displayed a notable lack of leadership on water protection issues. The exception has been with respect to drinking water, where governmental action has been almost exclusively driven by the perceived need to respond to public anxieties created by the Walkerton saga.

This lack of leadership is manifested in a variety of ways. For one, we have devoted remarkably little attention to tackling the challenge of developing permitting systems that

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<sup>3</sup> See, for example, B. Thompson, *The Continuing Innovation of Citizen Enforcement*, University of Illinois Law Review, (2000) 185-236.

spur continuous environmental improvement. Indeed, under the current B.C. permitting model not only are dischargers under no obligation to employ best available pollution control technology, they are not even charged permitting fees that cover the cost of administering the permitting system. Nor have we undertaken the critical task of identifying in any systematic fashion the ecological carrying capacity of our water bodies. Without this baseline information, developing effective restorative strategies is next to impossible. Moreover, despite declining budgets for environmental protection these governments have shown little appetite to allow citizens to take up the slack by revisiting current policies that effectively negate their common law right to pursue private prosecutions.

The American record with respect to combating non-point source marine water pollution is more mixed. Here the main regulatory vehicle has been coastal zone management laws enacted by states and approved by the federal government under the federal *Coastal Zone Management Act*. As we have discussed, some states (for example, Washington) appear to be making headway towards implementing these laws while the record of others is not so enviable. What does seem clear, however, nationwide is that there is an emerging sense of the need to grapple with non-point source pollution as an urgent priority.

In B.C., non-point source pollution has been recognized as a priority concern since the late 1990s. Since then, the Province's strategy has been to encourage municipalities to take action under the auspices of locally-developed Liquid Waste Management Plans (LWMPs). But while there has been a relatively high level of interest in and support for LWMPs at the local government level, a key ongoing constraint has been the cost and logistics of developing and implementing such plans.

### 6.3 Recommendations

In this final section, we offer some thoughts on the path that lies ahead. These recommendations focus on law and policy reforms that, in our view, would help to create a more effective legal and policy framework for marine water quality protection.

1. ***Legally-mandated coastal zone management.*** In our view, protection of the coastal zone can only be achieved under a framework that mandates specific, legally enforceable planning and permitting mechanisms. To date, in this area we have relied exclusively on often vague intergovernmental commitments to pool resources and pursue cooperative opportunities. As development pressures on the coastal zone increase, the need to establish bottom-line environmental protection requirements is becoming ever more apparent. In our view, this is an issue that requires leadership from the federal government. As such, we would recommend that a national, legally-mandated integrated coastal zone management law be developed. This federal law would, like the U.S. CZMA, be designed to create incentives for sub-national (provincial and territorial) governments to enact implementing legislation through the provision of funding, scientific and technical support, and delegated regulatory authority.
2. ***Renewing the commitment to, and enhancing the resources necessary to support, a provincial non-point source water pollution strategy.*** Non-point source pollution is a multifaceted problem: to combat it requires a multifaceted

strategy. Achieving meaningful and durable progress on non-point source pollution requires federal leadership in the form of legally-mandated coastal zone management, as discussed above. However, the province also has an important leadership role to play. Efforts to encourage local governments to participate in the municipal Liquid Waste Management Planning process need to be expanded; and further work needs to be done to integrate this LWMP planning with other local planning processes. Serious consideration should be given to making the development of LWMPs, containing non-point source pollution plans, mandatory. Special funding should be made available to support community participation in the development and implementation of such plans.

- 3. *Taking a new approach to the permitting of discharges into the marine environment:*** Renovation of federal and provincial law and policy governing the discharge of pollutants into the marine environment is long overdue. As a starting point, the federal government must become more actively engaged in this issue, a role it is constitutionally capable of undertaking but has to date has been reluctant to adopt. At the provincial level, a new approach to discharge regulation is needed. This new approach should proceed from the principle of continuous environmental improvement. Dischargers should be legally obliged to employ the best available pollution control technology or demonstrate how they will achieve the same result using alternative technology. Urgent priority should be given to identifying degraded water bodies; upon identification, a provincial government department or agency should be given a time-limited responsibility for tabling in the Legislature a remedial action plan.
- 4. *Rethinking compliance and enforcement:*** A key weakness of the prevailing Canadian approach to discharge regulation is the broad and virtually unreviewable discretion it vests in regulators in terms of compliance and enforcement. Currently, compliance information is often difficult to access; government enforcement action is rare; and in many Canadian jurisdictions, including B.C., private prosecutions are invariably stayed by the Crown. As a result, the incentives for permit holders to comply with the law have been seriously diminished, and respect for the rule of law has been undermined. Failure to enforce the law against repeat offenders also serves to seriously disadvantage permit-holders that take seriously their permit obligations seriously. Consequently, as a matter of policy, the B.C. and federal governments should commit to pursue enforcement action against repeat offenders, as does the U.S. EPA. In addition, the B.C. Government should immediately abandon its policy of invariably intervening in private prosecutions. Its new policy should be modelled on the approach adopted by the Province of Ontario in this area. Finally, as part of the current review of the *Waste Management Act*, the B.C. Government should commission an independent study that explores the potential for incorporating citizen suits into the WMA.
- 5. *Funding for Change:*** When Congress enacted the *Clean Water Act*, it was mindful that the ultimate success of the law depended heavily on the extent to which federal support was provided to states and other public authorities to enable them to fulfill their new legal obligations. In the realm of wastewater management, the need to coordinate the implementation of new regulatory requirements with funding to

support infrastructure development is particularly critical. While the Canadian Government initiated a green infrastructure program several years ago, if we are to make significant headway towards combating marine pollution (and, in particular, point source fecal contamination) a national funding program specifically targeted at dramatically enhancing local wastewater treatment and disposal capacity must be introduced. To this end, we recommend that the development of such an initiative be the subject of a special joint meeting that would bring together federal, provincial and territorial Ministers of Finance and of Environment, along with representatives from the Federation of Canadian Municipalities.

6. ***Supporting Integrated Solutions:*** A key and overarching final recommendation arises out of the need to commit to more vigorously exploring opportunities for solutions that integrate the skills and energies of disparate organizations and institutions. Tackling marine pollution is a challenge with the potential for bringing together a rich, diverse and formidable array of interests and talent. Marine pollution is not a problem that government action alone can solve. As such, a key role for government is to facilitate and harness private action in support of the public good. Our review has suggested that a multitude of benefits can be derived from initiatives in which government collaborates with industry, NGO and First Nations to protect manage and protect coastal resources. Building on this foundation, we recommend that further collaborative opportunities of this kind be pursued and supported.