

# Georgia Basin Ecosystem Initiative

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PUBLIC REPORT

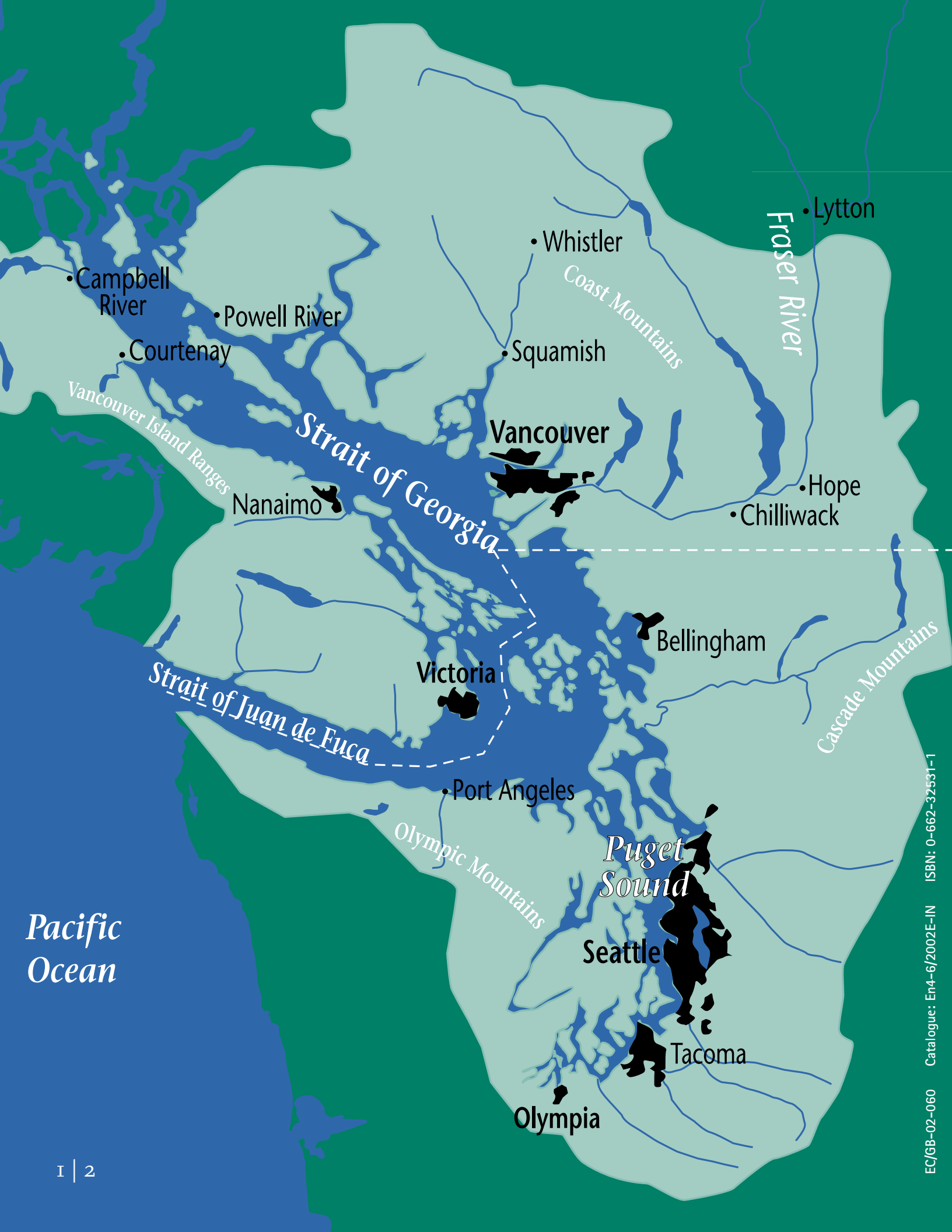


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# Message from the Steering Committee

We are pleased to present the **Georgia Basin Ecosystem Initiative (GBEI) 2001/02 Public Report**. Through partnerships with communities, First Nations, businesses, industries, and governments from both Canada and the United States, the GBEI continues to be innovative in its approaches to achieving clean air and clean water, protecting habitat and species and promoting sustainable communities.

In 2001, the GBEI officially welcomed Parks Canada and the BC Ministry of Sustainable Resource Management as members of the GBEI Steering Committee. With these two new partners, the GBEI now reflects the commitment of three federal (Environment Canada, Fisheries and Oceans Canada, Parks Canada) and three provincial (Ministry of Water, Land and Air Protection, Ministry of Community, Aboriginal and Women's Services, Ministry of Sustainable Resource Management) partners, working together to achieve ecosystem health in our region.

Key projects from the past year have focused on generating knowledge, helping build capacity and awareness, changing behaviour, and contributing to environmental, social and economic improvements. Projects like the *Georgia Basin-Puget Sound Ecosystems Indicators Report*; **Semiahmoo Bay-Drayton Harbour Shared Waters**; **Pacific 2001 Air Quality Study**; and, **Garry Oak Ecosystem Acquisition**, are examples of the success that can occur when we work collaboratively. Projects like these also serve as 'pilots' that can be emulated throughout the Basin to achieve even greater results.

The Georgia Basin is a transboundary ecosystem, which includes the Georgia Strait, the Strait of Juan de Fuca, the Puget Sound in Washington State and the surrounding heights of land and watersheds. With our US neighbours, we share a common airshed, watersheds, a flyway for migratory birds and urban growth pressures. Through the *Statement of Cooperation* these common goals and objectives are being met. In the upcoming year, the GBEI partners, with the Puget Sound Water Quality Action Team, will be co-hosting a **Georgia Basin-Puget Sound**

**Research Conference** on March 31 – April 3. This conference will be an opportunity for advancing the scientific understanding of our shared ecosystem and working toward ecosystem sustainability and recovery. This research conference is just one example of the transboundary partnerships that exist. Throughout the report you will find many more projects that demonstrate the commitment to working with all partners to maintain this shared ecosystem.

The GBEI partnership will continue to foster relationships with First Nations to facilitate the integration of traditional knowledge into decision making. For example, through the **Coast Salish Sea Initiative**, three inventories of environmental issues are being conducted for the Sto:lo Nation and bands in the Lower Mainland and Vancouver Island region.

As the partnership enters its fifth year, we are not only committed to report out on the progress we have made, but also on what efforts need to be continued. As part of this process, we are engaging partners and stakeholders through various mechanisms—for example, the May 15, 2002 Public Steering Committee Meeting and Workshop—to help develop and implement a second five-year plan for the ecosystem initiative in this region.

We look forward to an exciting year. If you have any ideas, comments or suggestions about the GBEI, we would like to hear from you. Contact information can be found on the back cover of this public report. We also encourage you to visit the GBEI Website at <http://www.pyr.ec.gc.ca/GeorgiaBasin> for a complete listing of all projects.

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# Reviving the Coastal Shellfish Industry

Shellfish harvesting has traditionally been integral to First Nations' culture, traditions and health. However, many areas in BC where First Nations used to harvest shellfish for food and traditional practices are now closed due to pollution. This has had a serious impact on the health and culture of coastal First Nations. Shellfish harvesting closures have also negatively affected numerous coastal communities, especially on Vancouver Island.

The Fifth International Conference on Shellfish Restoration, held in Nanaimo in the fall of 2001 was an example of ongoing efforts by Georgia Basin Ecosystem Initiative partners, including Environment Canada, Fisheries and Oceans Canada, BC Ministries of Water, Land and Air Protection and Health, Regional Districts, Municipalities, First Nations and many environmental organizations to restore shellfish harvesting areas on the coast of Vancouver Island.

These ongoing efforts have led to a partnership between government bodies, environmental organizations and the Snuneymuxw First Nation (SFN) to halt the damage to the Nanaimo River Estuary and return it to the beauty and productivity remembered by Snuneymuxw Elders.

In March, 2002, the SFN and the Province signed two agreements renewing the 20-year Nanaimo River Estuary head lease and establishing support for shellfish harvesting. Terms of the lease include a 20% reduction in log storage areas in the estuary and elimination of storage fronting the Snuneymuxw reserve within one year. The lease also calls for the development and implementation of a log storage monitoring program to determine the effects on the marine habitat from resource uses.



"No discharge zones" are the only sure way to protect public health when it comes to the issue of sewage discharges from boats and water quality protection in shellfish growing areas. Last year, GBEI partners collaborated with the Saanich Inlet Protection Society (SIPS) in conjunction with the SeaChange Conservation Society, to operate a discharge pump-out service vessel throughout Saanich Inlet as part of the **Pleasure Craft Sewage Pump Station Facilities** project. It is expected that the presence of the pump-out vessel will further raise public awareness of water quality issues within the Inlet and associated watersheds. These issues include concern by both First Nations and the public over shellfish bed closures.


# Clean



The goal of the **Semiahmoo Bay-Drayton Harbour Shared Waters Project** is to assess the potential for lifting the shellfish harvesting closure status in portions of Semiahmoo Bay. Over the past year, the Semiahmoo Bay-Drayton Harbor International Water Quality Round Table was formed to address concerns with water quality in shellfish growing areas. Round Table members are representatives from all levels of government, First Nations and local non-government organizations. The experiences of a joint working arrangement between the South Fraser Public Health Unit and Pacific and Yukon Region's Canadian Shellfish Sanitation Program were presented at the 67th Annual Public Health Inspectors Conference in Winnipeg and the 5th International Conference on Shellfish Restoration in Nanaimo. Other activities over the year included the recruitment and training of 20 local volunteers to act as water samplers for the sanitary surveys. Water sampling events and inland sanitary surveys were held once or twice a month from September 2001 to



February 2002. The first draft of a report entitled *Water Quality Sampling Efforts Along Semiahmoo Bay Waterfront* will be available by March 2003.

 BC municipalities are becoming increasingly committed to reducing the impacts of stormwater runoff on the health of watersheds in their jurisdictions. To assist municipalities with improving stormwater management, a *Stormwater Management Planning Guidebook* has been developed for use throughout the province. The *Guidebook* outlines the scope of a new approach to stormwater management and lays out some guiding principles. In order to demonstrate the application of the *Guidebook*, a Draft Stormwater Management Plan for the Regional District of Nanaimo has also been developed to ensure that the recommendations contained in the *Guidebook* are practical and

Short Course as part of the 2002 Pacific Agriculture Show. In addition, an English and Punjabi newsletter entitled *Raspberry Nutrient News* was distributed to raspberry producers in the fall of 2001 and spring 2002. In the third year of the Survey, a new component will be added to the project to demonstrate and promote the use of cover crops to trap nitrogen over the fall and winter period.

 **CleanPrint BC** is a joint industry-government partnership working to develop and provide printers with practical pollution prevention guidance and tools. CleanPrint BC has developed the following: Best Management Practices Posters and Lists; How-To Guides for Preparing an Environmental Management Plan; a list of environmental experts from within the

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## CLEAN WATER TO PROTECT AND IMPROVE AQUATIC ECOSYSTEM HEALTH AND HUMAN WELL-BEING IN THE GEORGIA BASIN.

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and ranked according to compounds of concern on human health and the environment. Consultations with the agricultural community on pesticide management issues on the Saanich Peninsula have also been completed.


# Water

achievable when applied to municipalities and Regional Districts. The *Guidebook* can be found at [wlapwww.gov.bc.ca/epd/epdpa/mpp/stormwater/stormwater.html](http://wlapwww.gov.bc.ca/epd/epdpa/mpp/stormwater/stormwater.html).

 The Raspberry Industry Development Council successfully completed its second year of the **Raspberry Growers Nutrient Management, Environmental Stewardship and Soil Nitrate Survey**. Forty-four fields representing approximately 35% of the total raspberry hectareage were sampled in 2000, and 61 fields or 40% of total hectareage were sampled in 2001. The results indicate a possible reduction in average fall soil nitrate levels in manured and non-manured fields. However, two more years of monitoring is needed to confirm that the post-harvest nitrate test is effective and to show how nitrogen management can reduce the impact of nitrate leaching on the Abbotsford-Sumas aquifer.

The results of the first two years of the Soil Nitrate Survey were reported on at the Lower Mainland Horticultural Improvement Association-Growers

printing industry; and a guide to environmental regulations that apply to printing operations in BC. Each of these tools is now available on the new CleanPrint BC website at [www.cleanprint.org/bc](http://www.cleanprint.org/bc). CleanPrint BC is working to promote these tools to printers throughout the Georgia Basin and encouraging them to complete Environmental Management Plans for their operations.

 **The Saanich Peninsula Stormwater Pesticides Best Management Practices** project involves the identification of pesticides that are of potential concern on the peninsula and the development of best management practices for these substances. A list of commercial and domestic pesticide products used on the Saanich Peninsula and the use of these products has been developed



## Three New Garry Oak Sites Secured

Garry Oak ecosystems are a rich mosaic of woodlands, meadows, grasslands and open rocky areas that harbour many rare and endangered species in BC. Unfortunately, less than five percent of the province's original Garry Oak habitat remains. In fact, all of Canada's remaining Garry Oak ecosystems are in the Georgia Basin.

# Habitat

As part of the ongoing effort to protect the few remnants of this endangered ecosystem, three parcels of land containing rare Garry Oak ecosystems have been acquired. Mill Hill Regional Park in Langford has been extended by eight hectares, significantly enlarging the 1,000-hectare Thetis Lake, Francis-King and Mill Hill Regional Park complex. The land was acquired by the Capital Regional District (CRD) Parks, in partnership with The Nature Conservancy of Canada and Georgia Basin Ecosystem Initiative (GBEI) partners.

Twelve hectares of coastal bluffs on Galiano Island were also purchased by the Islands Trust Fund with funding from GBEI partners, The Land Conservancy (TLC) and the Habitat Acquisition Trust in order to create a new nature sanctuary. The sanctuary will protect the rare coastal bluff ecosystem that is home to nationally and provincially listed species at risk. The steep cliffs and relative isolation of this site provide important nesting habitat for seabirds.

On Salt Spring Island, 640 hectares of land were purchased by GBEI partners, the CRD, the TLC and the community of Salt Spring. The purchase includes all of Burgoyne Bay, which is the largest undeveloped bay and estuary left in the southern Gulf Islands, and a parcel of land on Mt. Tuam.

GBEI partners, in association with the Nature Trust of BC also contributed funds to the development of an overall management plan for the Garry Oak ecosystems, including a permanent monitoring system and framework for access control to these very sensitive sites.



On April 2, the Nature Trust of British Columbia and GBEI partners announced the acquisition of a substantial interest in a 147-hectare parcel of land on **Savary Island** that contains Western Canada's only intact example of a rare forested dune ecosystem. Savary Island is one of the best examples of the forested dune ecosystem in Canada. Its unique natural features provide habitat for many species of plants and animals at risk.



**The Marine Mammal Monitoring Project** promotes stewardship of marine mammals, birds and critical habitat by providing a comprehensive outreach education and monitoring program for recreational and commercial ecotourists in the transboundary area. Over the past year the project was involved with the 14th Biennial Conference on the Biology of Marine Mammals, hosting a pre-conference workshop "Viewing Marine Mammals in the Wild: A Workshop to Discuss Responsible Guidelines and Regulations for Minimizing Disturbance." In addition, a booth was set up during the conference highlighting the *Be Whale Wise* brochure, which outlines international marine mammal viewing guidelines. A copy of the *Marine Mammal Monitoring Annual Report* can be found at [www.salishsea.ca](http://www.salishsea.ca).



Through both the Pacific Estuary Conservation Program and the GBEI partnership, detailed information on estuarine areas of coastal BC, including the Georgia Basin, is being consolidated in the **Estuary Management Project**. Last year, efforts were directed towards analyzing and compiling information on current and potential threats to key estuaries, and to documenting the current level of protection on key estuaries.





#### **A Georgia Basin Steelhead Recovery**

**Team** was formed to address the continuing decline of valuable steelhead salmon stocks in the Georgia Basin. The team continues to assess steelhead conservation status and is leading the implementation of high priority projects on both the east coast of Vancouver Island and the Lower Mainland. In addition, a Greater Georgia

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# & Species

Basin Steelhead Recovery Plan is nearing completion and should be available in July 2002. The plan reviews the crisis facing Georgia Basin steelhead and summarizes the status of wild stocks and recovery options on individual rivers.



The **American Dipper** is a key species for monitoring the health of freshwater streams. Research on the south coastal BC population of the American Dipper is helping to better manage habitat in and around streams and other water bodies, and to preserve water quality in the Georgia Basin. Over the past year, researchers studied Dippers in two watersheds on Vancouver Island: the Tsolum River, a watershed heavily impacted by mining and forestry, and the neighbouring Puntledge River. The research compared the breeding success and behaviour of Dippers in a system impacted by human activities with other less affected sites.



The **Non-Indigenous Species Project** continues to document the abundance and diversity of non-indigenous species of algae, vascular plants and invertebrates in the Georgia Strait through mapping and field surveys. Through this project, Green Crab identification posters and identification cards for Zebra mussels and Mitten Crabs have been created.





# National Study Brings Top Researchers to Look at Air Quality in the Lower Fraser Valley of British Columbia

Rapid urban growth in the Georgia Basin-Puget Sound region is placing enormous pressures on the sensitive environment in the Fraser Valley. For example, “white haze”—a combination of gases and smoke that often blankets the Fraser Valley—creates conditions that impact the health of people, animals and vegetation in the region. It also causes the degradation of the valley’s natural environment.

## Clean

To better understand atmospheric haze and other air quality issues, Environment Canada, through the GBEI, spearheaded the Pacific 2001 Air Quality Study. The international field study brought together 130 scientists from various levels of government, 14 universities and the private sector to study the Fraser Valley’s air quality.

The Pacific 2001 researchers took atmospheric measurements using aircraft, ground stations and weather balloons to collect data on the haze. The study provided information on the sources, formation and distribution of key smog-causing pollutants.

A workshop was held in the spring of 2002 to provide scientists with an opportunity to present initial results from the analysis of the measurements, and to discuss these results in concert with what is already understood about the air quality within the Lower Fraser Valley airshed. One surprising result was that ordinary sea salt from the Georgia Strait combines with nitric acid from combustion products, ammonia, sulphur and biogenics from trees to create the hazy conditions in the Valley.

The data will be further analyzed over the next year, and papers on the results of the measurements will be shared with the scientific community. This scientific knowledge will also be made readily accessible to city planners, farmers, residents and all levels of government to enable them to make sound decisions that will improve our air quality and, ultimately, our collective future.



### Bilateral discussions on **Transboundary Airshed Management and Planning**

between officials in BC and Washington have continued over the past year through a series of workshops. Action steps outlined by these workshops have identified six early actions to provide a sharing of air quality information amongst the various agencies and to assist with airshed management decisions. One such activity is the Characterization of the Georgia Basin-Puget Sound Airshed Project. An initial product of this activity is a report that documents the air quality studies that have been completed in the last decade within the airshed.




The **Marine Aerosol Study** looked at the sulphur emissions coming from the Strait of Georgia that are thought to have direct influences on the production of aerosols in the Georgia Basin, which affect visibility and human health. It was determined that sulphur emissions were highest during the spring, moderately high during the summer and low in the late fall. Preliminary results were presented at a workshop held in the spring of 2001 and at the Changing Atmosphere Conference in the fall of 2001. There are also two papers in progress that will be published in scientific journals.




Sulphur is an important ingredient in the formation of fine particles that lead to the “white haze” common in the Fraser Valley. The **Sulphur Isotope Study** identified the contribution that human and natural sources make to the airborne sulphur found in the Georgia Basin. The study found that oil refineries on the coast south of the Canada-US border contributed significantly to the ambient aerosol sulphates seen in White Rock. The results also show that more sulphate from natural marine sources is observed at Powell River and on Vancouver Island than in the vicinity of the City of Vancouver. Estimates further indicate natural marine sulphate makes up 33% of the



non-sea salt sulphate precipitation at Saturna Island and about 13% of the aerosol sulphate load in the Fraser Valley. A report on the findings has been prepared for submission to a scientific journal. By clearly identifying where the atmospheric sulphur in the Georgia Basin comes from, the study will help planners develop policies to limit emissions at the source.

 Atmospheric nitrogen that finds its way into groundwater, impacting environmental and human health, is a major concern in the Fraser Valley. The goal of the **Chilliwack Nutrient Assessment Project** was to determine the concentrations of atmospheric ammonia, ammonium, nitrate, sulphate and total phosphate in the Chilliwack airshed and the rate at which

undertaken in co-operation with the US Forest Service, to calibrate moss and lichen levels versus deposition levels of metals at the Victoria, Saturna, Kitsilano and Rocky Point air quality monitoring sites. While initial results are currently being examined, the study will continue for another year to complete the impacts analysis. Part of this work included a re-survey of the contamination of the snow pack in alpine areas from Squamish to Agassiz.

 The **Georgia Basin Air Quality and Biomonitoring Data Analysis** project examined the rate at which atmospheric pollution is deposited over time in specific geographical regions in order to determine trends in airborne pollution and identify pollution "hot spots" in


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THAT SUPPORTS  
HEALTHY, VIBRANT  
COMMUNITIES  
AND HEALTHY  
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# Air

these elements are deposited. The project found ammonia concentrations were similar to those measured in other intensely agricultural areas of the world. The maximum ammonia concentrations in air were shown to coincide with the timing of most intense manure application in the early spring and early fall. Deposits of ammonia during dry conditions were found to be significant, hence an important portion of the total loading of ammonia to the other ecosystems. Data from the project have been incorporated into the Community Watershed Information System for the Elk Creek Watershed. A report is available on the GBEI website.

 The **Impacts of Atmospheric Pollutants Study** investigated the amount of air pollution that is taken up by plants in the Georgia Basin. Researchers sampled plant and invertebrate tissue from forested sites in the Lower Fraser Valley to determine the level of metals and poly-aromatic hydrocarbons (PAHs) the plants had taken up. Study results were presented at the Air Pollution Workshop in California and at the Deposition Impacts Workshop in Winnipeg. This pilot project resulted in a larger biomonitoring project,

the Georgia Basin. Researchers looked at historical pollution data from air quality monitoring networks and research findings, then combined these with current information on pollution levels in various areas. A summary of historical biomonitoring data was created along with a collation of international critical pollution loads and levels. The air quality data was then analyzed, mapped and graphed. A complete interpretive report that synthesizes the findings is in progress, but initial results were presented at the Acid Rain Workshop in Montreal and the Deposition Impacts Workshop in Winnipeg. Ultimately, the study will be used to direct new research into the impacts of air pollution on ecosystems in the Georgia Basin.



# Environmental Indicators Gauge Ecosystem's Health

More than seven million people live in the Georgia Basin-Puget Sound. By 2020, the population has been projected to rise to approximately nine million. This population growth is expected to place significant stresses on the region's air, land, water and wildlife.

# Sustainable Communities

To help address these issues in a collaborative way, Canadian and US government environment agencies have developed a report on six ecosystem indicators that measure these shared stresses on both sides of the boundary. These indicators will help governments of all levels to steer a course towards sustainable development in the Georgia Basin-Puget Sound, building on joint action programs such as the Georgia Basin Ecosystem Initiative (GBEI) in BC and the Puget Sound Water Quality Action Team in Washington State.

"For the first time in this part of the world, people from both Canada and the US at the federal, state and provincial levels have pulled together reporting on the state of the Georgia Basin ecosystem in Canada and the Puget Sound ecosystem in the US which, in terms of nature, is all part of the same big system," said Geoffrey Thornburn, Senior Advisor with Environment Canada. "Yet we tend to deal with issues and report measures within our own separate jurisdictions. Writing the Ecosystem Indicators Report was a process of building the collective capacity of people working across federal, provincial and state boundaries on common issues."

The indicators relate to human population growth, air quality, solid waste and recycling, toxic pollutants in harbour seals, species at risk and protected areas. They provide scientifically sound and easily understood information that can also act as a yardstick to measure how Georgia Basin-Puget Sound communities are progressing in their efforts to achieve sustainable natural resource management.

The Ecosystem Indicators Report is available online at [wlapwww.gov.bc.ca/cppl/gbpsei/index.html](http://wlapwww.gov.bc.ca/cppl/gbpsei/index.html).



Through the **Coast Salish Sea Initiative** Coast Salish leaders and elders continue to meet with both Canadian and US government representatives to discuss transboundary environmental matters. Over the past year, this initiative has worked on various projects, including the first draft of an inventory of Coast Salish environmental issues, priorities and capacity within the Sto:lo (Lower Fraser Valley) traditional territory.

In order to expand the inventory project, three First Nations youth interns have been hired and are working closely with Coast Salish Sea Initiative Coordinators, band offices, and GBEI partners to compile issues inventories for the Lower Mainland and Vancouver Island.

Additionally, the first Coast Salish Environment Conference was held in the spring of 2002. The conference was attended by 150 people, representing Coast Salish First Nations and tribes from BC and Washington, as well as representatives from local governments, NGOs and senior levels of government. The conference provided a unique opportunity for First Nations and tribes to discuss environmental issues and concerns, and share information and best practices on a range of issues.



**The Salish Sea Outreach Initiative** is aimed at raising awareness of the need to protect our marine ecosystems, and focuses on the Strait of Georgia-Puget Sound region, also known as the "Salish Sea." To date, the project has included: a music CD featuring singer-songwriter Holly Arntzen accompanied by school children choirs; a children's environmental festival; and



the development of an *Educators Handbook for Kindergarten-Grade 7* for helping educators teach students about oceans, marine life, stewardship and community involvement. The handbook is available at [www.pac.dfo-mpo.gc.ca/oceans/salishsea](http://www.pac.dfo-mpo.gc.ca/oceans/salishsea).

communities that will support evidence-based action to enhance sustainability. Led by the Community Development Society, the recently completed *New Westminster Healthy and Sustainable Indicators* pilot brought together local organizations and residents to find a way to report on the community's progress towards social, economic and environmental sustainability. A highlight in the report is that parkland space has increased by 50% over the past 20 years. The report is available at <http://www.newwestced.bc.ca>. Work will continue on developing an Action Plan over the fall and winter to focus on waste reduction and addressing poverty.

In addition, last year the Coastal Community Network worked with community organizations, local governments and other agencies in Powell River and Sechelt to develop *Powell River and Sechelt Sustainability Progress Reports*. The

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## RESIDENTS AND DECISION-MAKERS TAKING ACTION FOR HEALTHY, PRODUCTIVE AND SUSTAINABLE ECOSYSTEMS AND COMMUNITIES.

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and community values to ensure that conservation priorities would reflect the economic, ecological and social components required for sustainability. The project provides a process for the exchange of knowledge and environmental data between local organizations, interested individuals and government. Over the past year, a habitat and

# able communities

### The Cowichan Valley Pilot of the Integrated Data Management Initiative

provides a variety of users with easy access to a broad range of environmental information and data sets related to the Cowichan Valley. The initiative aimed to efficiently deliver resource information to a variety of users to support the activities of local government. Seven priority data sets were identified to support the business application of environmental protection through local government planning: stream locations, fish presence, private cadastre, sensitive ecosystems inventory, water quantity, water users and water quality. In May 2001, the Community Advisory Group reviewed a variety of prototype products and focused on a web mapping tool with links to live data. The application is now available at [maps.gov.bc.ca/idmi2001](http://maps.gov.bc.ca/idmi2001). Details on the project history and development can be viewed at [srmwww.gov.bc.ca/idmi](http://srmwww.gov.bc.ca/idmi).

### The development of **Community Indicator and Benchmark Reports** for New

Westminster and the Powell River-Sunshine Coast region was part of a pilot initiative for learning new ways to measure changing conditions in

Powell River pilot has created a draft sustainability framework including goals, objectives and indicators. Further consultation with the community on this framework is to continue into the fall of 2002. In Sechelt, three streams of activity have culminated in the development of a draft sustainability framework with environmental, social and economic goals. A public workshop to complete consultation on this framework further is planned for the fall of 2002.

### The purpose of the **Galiano Island Wildlife Habitat Conservation**

**Project** is to strengthen the capacity for community development through the use of Geographic Information System (GIS) technology; to provide an educational, consensus-building process; and, to protect wildlife habitat in the Coastal Douglas Fir Biogeoclimatic Zone through the establishment of habitat conservation objectives within the Island's planning framework. The GIS analysis of Galiano Island's habitat used land-use information

land-use map was completed for Galiano Island and its satellite islands. The map and overall project provided information to residents and local governments for land protection initiatives and has helped to establish landscape level priorities for ongoing local restorative activities.



# Action

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**Air Quality Models** will be acquired and installed on the GeoDisasters computer at UBC. Using the existing meteorological modelling support, these models will be applied to the Georgia Basin area to assist with the forecasting of air quality concentrations of ground level ozone and particles. These models will be used to evaluate the impact of emission control strategies resulting from various planning and policy decisions within the airshed.

A study of **Visibility Levels in the GVRD and Fraser Valley** is underway in partnership with the Environmental Economics Branch of Environment Canada. Levels of acceptable visibility have been determined by surveying residents and establishing acceptable standards for both the level and frequency of bad visibility days. Residents were shown 7-10 day simulations of visible air quality at various locations. Comparisons between different combinations of impairment and frequency were made to show how these factors combine to influence what is acceptable and what is unacceptable. The acceptable impairment levels and frequencies will then be compared to the available historical data. These survey results are also being used to assess the value residents place on improving visibility by a specified level. A discrete choice experiment has been set up where the respondents are asked to choose between visibility improvements, health outcomes and a payment vehicle (such as higher taxes).

A project on the **Health Impacts Associated with Air Quality** is underway. The work is intended to review the current state of knowledge in the Pacific Northwest context, and to provide advice to air quality managers about the best approaches for quantitatively assessing health impacts for various population sizes and geographic scales. This work will be used to guide air quality agencies in modelling health impacts, and setting priorities for reducing health risks. It will also identify gaps in knowledge and suggest approaches for addressing them. Four leading experts with international credentials and Pacific Northwest expertise have indicated interest in the project.

The development of **Management Options for Priority Toxic Substances Discharged to the Georgia Basin** will gather information and develop regulatory and non-regulatory management options for reducing releases of priority toxic substances in effluents and stormwater in the Georgia Basin and Puget Sound. The options will be reviewed by the Puget Sound-Georgia Basin Toxics Work Group and will be developed in accordance with the Canadian Council of Ministers of the Environment Toxic Substances Management Policy, which stresses a preventive approach to reducing or virtually eliminating releases of toxic substances at source.

The **Stormwater Management Pilot Project in the Byrne Creek Watershed** is supporting the City of Burnaby in reducing aquatic impacts from toxic substances in the Byrne Creek watershed by implementing a prevention program to reduce wastewater pollutants at source. Water quality data relating to aquatic impacts is being collated, watershed businesses identified, and toxic contaminants profiled against business license records and industrial activity. The project is expanding by focusing on watersheds in south Burnaby that were not part of the Byrne Creek work. The project will conduct business inspections, implement measures to control industry discharges and development and distribute various educational materials.

Through the Biodiversity Conservation Pilot Project initiated for the Greater Vancouver Region, a **Framework for Biodiversity Conservation** in the Lower Mainland is being developed. This initiative is gaining support from local governments, stewardship groups and federal and provincial agencies. The project will use technology to map and classify land cover in order to identify core areas, linkages and corridors for conservation. Additionally, the project will conduct a socio-economic analysis of the value of conserving biodiversity in the Greater Vancouver Regional District, produce education and other tools, and develop guiding principles and goals. Following a well-attended working session in 2001, work began on designating a regional indicator species and developing a habitat component, which should be



# Plan 2002 2003

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## PROJECTS THAT GBEI WILL COMPLETE OVER THE NEXT YEAR.

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completed by March 2003. To review the proceedings from the 2001 working session please visit the GVRD website at [www.gvrd.bc.ca/services/growth/projects/projects.htm](http://www.gvrd.bc.ca/services/growth/projects/projects.htm).

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The **Sensitive Ecosystems Inventory (SEI)** is a multi-year project designed to systematically inventory the remaining sensitive (rare and fragile) terrestrial ecosystems of the Sunshine Coast and islands in the northern Strait of Georgia. The main purpose of the SEI project is to provide scientific information and support to planners and local governments for use in planning initiatives such as Official Community Plans, Growth Management Strategies and Parks Plans. Future action on SEI will encompass a comprehensive evaluation of the effectiveness of the SEI on the east coast of Vancouver Island, including analysis of remaining habitat as well as an assessment of the level of influence SEI has on land-use decisions. This year, the partners will finish gathering data and producing maps for the Sunshine Coast and will write a final report for this region.

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The BC Conservation Data Centre identified an endangered Douglas Fir-Garry Oak-Oniongrass rare plant community within the Fort Rodd Hill and Fisgard Lighthouse National Historic Sites. Invasion by foreign species such as Scotch Broom and Laurel-leaved Daphne has placed this habitat at risk. In order to protect this sensitive plant community, researchers will conduct a series of studies to: understand the life cycle of Laurel-leaved Daphne and the efficacy and ecological consequences of control methods; explore ways to eradicate Scotch Broom to improve conditions for the re-establishment of native species; and measure the change in vegetation composition following Broom removal. **The Fort Rodd Hill/**

**Fisgard Lighthouse National Historic Site Studies** will also map and describe the spring vegetation at the site, paying special attention to the distribution of foreign shrubs and rare vascular plants.

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The **Coastal Shorelines Stewardship Guide** will include information on shoreline dynamics and the biological communities that depend on them. It is intended to provide tools to assist landowners, planners, developers and others to avoid impacts of shoreline development on species and habitats. A technical workshop will be held in June to review the final draft of the guide. An outreach strategy will be developed and implemented over the next year. The guide will be completed by the fall of 2002 and will be found on the Stewardship Centre website [www.stewardshipcentre.bc.ca](http://www.stewardshipcentre.bc.ca).

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The **State of the Sound Program** is building and using an accessible community information system for the long-term evaluation of, and planning for, the environmental health of Baynes Sound. Part of this program has been the **State of the Sound GIS Project** which has developed a Geographic Information System for water quality, habitat and land-use data that has been shared by different agencies. The data is used in the State of the Sound program to support ongoing, long-term planning and action that will help protect the health of Baynes Sound. Ultimately, this project will research and develop environmental health indicators, coordinate a reporting process to inform the community about the state of Baynes Sound, gather public input about future actions for the Sound, and influence decision-makers at the local government level.

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Researchers on both sides of the Canada-US border are working together to develop a prestigious conference to communicate research findings that will support activities that promote sustainability in the Georgia Basin-Puget Sound ecosystem. **The Georgia Basin-Puget Sound Research 2003 Conference** will build upon the successes of previous Puget Sound research conferences and the significant transboundary work underway in the Georgia Basin-Puget Sound ecosystem. While the first five conferences focused on marine research, the March 31-April 3, 2003 conference will expand the program to include research on atmospheric interactions with the land and water as well as ecosystem-based research and dialogue among scientists and decision-makers. More information about the conference can be found at [www.wa.gov/puget\\_sound](http://www.wa.gov/puget_sound).

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Work will be continuing with Canadian and United States partners in developing and informing citizens about ecosystem indicators at various geographic scales.

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Recognizing that children and youth are key stakeholders in shaping our future, GBEI partners will be actively involved with the **United Nations Environmental Program's International Children's Conference on the Environment** in Victoria and the **Vancouver International Children's Festival**. Both of these events will seek to provide young people and their parents with information and tools on how to protect and care for their environment.

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# Looking to the Future

As the Georgia Basin Ecosystem Initiative enters its fifth year, we are not only committed to report on the progress we have made, but on what efforts need to be continued.



Photo: Tim Ennis



Photo: Envision Sustainability Tools Inc.



Photo: Andrew McNaughton

Over the coming year, GBEI partners will be engaging partners and stakeholders through various mechanisms to help us develop and implement a second five-year plan of the ecosystem initiative.

As we begin the development of this second five-year action plan, the following key strategies and approaches have been reinforced through program reviews and evaluations:

- Partnerships are key, including transboundary partnerships in the shared ecosystem.
- New science and knowledge generation are critical.
- Capacity and awareness building for local and community groups, governments, First Nations, planners and decision-makers is an important strategy in supporting efforts to protect ecosystem health.
- The ecosystem approach is an effective and viable framework for integrating environmental, social and economic issues.
- Measuring progress through performance-based measures and other indicators is an integral part of collaborative efforts.

The GBEI will continue to generate new knowledge, build capacity and awareness, initiate environmental improvements and encourage behavioural change. Partners and stakeholders will also continue to evaluate successes and prepare to renew their efforts for another five years.



# Our Partners

The GBEI gratefully acknowledges the dedication and hard work of our partners. Without their contributions, the GBEI could not have accomplished so much over the past four years. Below is a list of some of those who share our vision of a sustainable future for the Georgia Basin.

2010 Bid Corporation Abbotsford Chamber of Commerce Abbotsford Soil Conservation Society Agriculture and Agri-Food Canada Alberni Valley Enhancement Association BC Agriculture Council BC Auto Dealer Association BC Building Corporation BC Conservation Data Centre BC Conservation Foundation BC Conservation Society BC Energy BC Environmental Network BC Ferry Corporation BC Gas BC Hydro BC Institute of Technology BC Investment Agriculture Foundation BC Onsite Sewage Association BC Oyster Growers Association BC Print and Imaging Association BC Real Estate Foundation BC Society of Landscape Architects BC Statistics BC Teachers Federation BC Water and Waste Association BC Waterfowl Society BC Wildlife Federation BC-4H Provincial Council Bird Studies Canada Boundary Health Unit Burnside Community School Burnside George Community Association Burrard Clean Canada Mortgage and Housing Corporation Canadian Association of Petroleum Products Institute Canadian Cancer Society Canadian Coast Guard Canadian Parks and Wilderness Society Canadian Power Squadron Canadian Rural Partnership Canadian Teachers Federation Capital Regional District Carbon Monoxide Information Network Centre for Coast and Ocean Research Citizens for Action Recycling and the Environment City of Abbotsford City of Burnaby City of Chilliwack City of Nanaimo City of New Westminster City of Parksville City of Port Alberni City of Richmond City of Surrey City of Vancouver CleanPrint BC Coast Garibaldi Health Unit Coastal Community Network Coastal Zone Canada Communities Futures Development Corporation of Howe Sound	Comox Strathcona Regional District Comox Valley Environmental Council Comox Valley Project Watershed Society Comox Valley Watershed Assembly Corporation of Delta Cowichan Tribes Crop Protection Institute of Canada Deep Bay Harbour Authority Delta Agricultural Society Delta Farmland and Wildlife Trust Department of National Defense Department of Wildlife, WA, USA District of Campbell River Drayton Harbor Shellfish District Ducks Unlimited Eco-Education Environment Canada Envision Sustainability Tools Evergreen Foundation Federation of BC Naturalists First Nations Fisheries and Oceans Canada Fisheries Renewal BC Forestry and Institute of Resources Et Environment Fraser Basin Council Fraser River Estuary Management Program Fraser Valley Regional District Fraser Valley Strawberry Growers Association Friends of Boundary Bay Friends of False Creek Galiano Conservancy Association Galiano Island Forest Association Garibaldi Health Office Garland Canada Incorporated Garry Oak Preservation Society Geographic Data BC Georgia Strait Alliance Greater Vancouver Regional District Greater Vancouver Transportation Authority Green Roofs for Healthy Cities Greening School Grounds Habitat Conservation Trust Fund Halfmoon Bay Community School Health Canada Health Canada Pest Management Regulatory Agency Hog Sustainable Farming Group Important Bird Areas Indian and Northern Affairs Canada Indiana University Industry Canada Institute of Health Promotion Research Insurance Corporation of BC Investment Agriculture Foundation Islands Trust Fund Land Conservancy Land Trust Alliance of BC Land Use Coordination Office Langara College Langley Environmental Partners Lester B Pearson College of the Pacific Living by Water Lookout Emergency Aid Society	Malaspina College Methanex Ministry of Agriculture, Food and Fisheries Ministry of Community Aboriginal and Womens Services Ministry of Competition, Science and Enterprise Ministry of Energy and Mines Ministry of Forests Ministry of Health Planning Ministry of Health Services Ministry of Sustainable Resource Management Ministry of Transportation Ministry of Water, Air and Land Protection Mountain Equipment Co-op Municipality of Saanich National Archives National Water Research Institute Native Plants Society of BC Natural Resources Canada Natural Sciences and Engineering Research Council Nature Conservancy of Canada Nature Conservancy of United States Nature Trust of BC Naturescape BC Nestucca Fund New Westminster Community Development Society New Westminster School District Northwest Air Pollution Control Authority Nursery Trades Association of BC Oregon State University Pacific Coast Joint Venture Partners Pacific Field Corn Association Pacific Streamkeepers Federation Pacifica Papers Parks Canada Partners in Flight Canada Partners in Flight USA Port Alberni Port Authority Powell River Economic Development Society Powell River Regional District Provincial Capital Commission Public Works and Government Services Canada Puget Sound Clean Air Agency Puget Sound Water Quality Action Team Puget Sound/Georgia Basin Toxics Work Group Raspberry Industry Development Council Real Estate Foundation of BC Regional Aquatic Management Society Regional District of Comox - Strathcona Regional District of Nanaimo Robertson Creek Hatchery Roofing Contractors Association of BC Royal Bank Royal British Columbia Museum Royal Roads University Salt Spring Island Conservancy Sechelt Indian Band Sechelt Indian Government District Semiahmoo First Nations Shell Canada Simon Fraser Health Region Simon Fraser University	Smart Growth BC Snuneymuxw First Nations Society for Children and Youth of BC Southern Rail of British Columbia Status of Women Canada Sto:lo Nation Sunshine Coast Conservation Area Sunshine Coast Community Futures Sunshine Coast Community Services Sunshine Coast Economic Development Partnership Sunshine Coast Regional District Surrey School District Sustainable Development Research Institute Sustainable Poultry Farming Group Terminal Forest Products Limited Tides Association Translink Transport Canada Tree Canada Foundation Tseycum First Nation Union Bay Improvement District Union of BC Municipalities University of British Columbia University of Calgary University of Plymouth University of Victoria Upper Island/Central Coast Community Health Services Urban Ecology Institute Urban Salmon Habitat Program US Environmental Protection Agency Region 10 US Fish and Wildlife Service US Nature Conservancy US Tribal Nations Vancouver Foundation Vancouver International Airport Authority Vancouver/Richmond Health Board Veins of Life Watershed Society Victoria Chamber of Commerce Village of Cumberland Washington State Department of Ecology Waterbird Watch Collective West Coast Islands Conservancy Weyerhaeuser West Island Timberlands Wild BC Wild Bird Trust of BC Wildlife Habitat Advisory Committee on Compensation
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*The GBEI would also like to acknowledge the many landowners, farmers, citizens, industry leaders, community groups and volunteers whose contributions have assisted in making the GBEI a success.*



**WORKING TOGETHER  
FOR THE  
GEORGIA BASIN**

**AU TRAVAIL  
POUR LE  
BASSIN DE GEORGIA**

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