

# **Peter Krause, Chair, Conservation Ontario**

## **Address to American Water Works Association**

### **November 10, 2005, Quebec City**

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Introductory comments

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Across Ontario, our water resources are coming under increasing pressure from a variety of sources, including urban growth and agricultural intensification. The demand for water is growing and so are the expectations placed on those of us in the water industry.

Ever since the Walkerton tragedy, the people of Ontario have looked to us – and by that, I mean all of us in the water industry -- to ensure that their water supplies are safe, secure and reliable.

Source water protection is a key component of the answer. It is cheaper and safer to stop water from getting polluted in the first place than to pay to have to clean it up later.

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That's why Justice Dennis O'Connor identified source water protection as the first step in a multi-barrier approach to protecting Ontario's drinking water.

The Ontario government has committed to implementing source water protection across our province. In fact, we expect the legislation to be introduced in the near future.

When we see the legislation and regulations, we will have a clear picture of how the process will unfold, how long it will take, how it will be paid for and how it will affect conservation authorities, municipalities, land owners, industries and others. In the meantime, it is possible to talk in general terms about what we can expect, based on the information contained in the draft version of the bill and the reports of several multi-stakeholder committees that provided advice to the province.

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But before I discuss the role conservation authorities will play in the process, I want to set the stage by telling you a little about Ontario's conservation authorities. That will help explain the role they will play and why they are particularly well suited to that role.

To find the origins of today's conservation authorities we really have to go back to the 1800s. That's when most of southern Ontario was settled.

To make way for their villages and farms, the early settlers cut down the forests, drained the wetlands and dammed rivers and streams.

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The environmental impact of those actions was felt in the early 1900s.

Spring floods were larger, more frequent and more destructive.

During dry summers, rivers and streams were reduced to a trickle. Raw sewage and industrial chemicals were dumped into rivers. Soil erosion and the runoff of manure and fertilizers from farmland lowered water quality, as well. It was an intolerable situation that was putting the health and economic vitality of many communities at risk. In the Grand River watershed, a movement started to try to correct some of the environmental damage. Community leaders from cities and towns throughout the watershed came together in the 1930s to develop a unified approach to these issues.

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Out of it, came the first watershed management agency in Ontario – and one of the first in the world. The Grand River Conservation Commission, as it was called then, developed a plan to build a network of reservoirs to tackle the flooding and drought problems plaguing the watershed.

The early success of the commission was noted around the province, and in 1946 the Ontario government passed the Conservation Authorities Act .

The act allowed for the creation of authorities in the rest of the province. Today there are 36 conservation authorities covering most of Southern Ontario and the major communities of Northern Ontario. More than 10 million people – that's 90 per cent of Ontario residents -- live in a watershed where there is a conservation authority.

Conservation Ontario is the umbrella group representing Ontario's conservation authorities. It works with the province, the federal government and many other organizations to promote environmental issues, conduct research and spread knowledge to the public.

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The principles established in the earliest days of Ontario conservation authorities are still in place today.

Conservation authorities are:

- watershed based
- created through local initiative
- a provincial-municipal partnership
- dedicated to the idea that a healthy environment is required for a healthy economy
- committed to a comprehensive approach to water and environmental issues

I'd like to elaborate on the idea that a conservation authority is a partnership of municipalities. The boards are made up entirely of members appointed by the municipal councils in the watershed. It is the board that sets the policies, direction and budget.

Conservation authorities work with their municipal partners, across municipal boundaries, to conduct research and manage programs that are of general benefit to the entire watershed, its residents and its natural systems.

They monitor the state of Ontario's watersheds and suggest strategies for the best way to manage our natural resources.

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When Justice O'Connor recommended that source water protection be adopted as a way to protect water quality and supply, he said it should be done on a watershed basis.

That makes sense. Water doesn't respect boundary lines drawn on a map and, of course, neither do waterborne pollutants. Natural systems are tied together, so what happens on the surface can affect groundwater. What gets into the groundwater can make its way back to the surface.

Similarly, it made sense when Justice O'Connor recommended that the existing watershed agencies – the conservation authorities -- co-ordinate the development of source water protection plans.

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The key word is co-ordinate, because it will be the task of Conservation Authorities to co-ordinate and support the work being done by the decision makers.

In this case, the decision makers will be the members of the Source Protection Planning Committees which will broadly represent key stakeholders in the watershed. I'll talk about the make-up and role of the committee in more detail later on in my presentation.

In essence, a source water protection plan represents an agreement among the people and municipalities of a watershed about the ways to protect water quality and quantity.

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It all starts with good science and research. It is absolutely essential that source protection plans be science based if they are going to be successful.

While the source protection planning process may be new, the scientific foundation of the process is not.

In many parts of Ontario, conservation authorities and municipalities have been working for years to conduct the research and develop the information that will be part of source water protection plans.

Technical experts from CAs and municipal water systems have a long history of sharing information and managing joint projects to advance knowledge about water issues.

Municipalities are carrying out groundwater studies and identifying well-head protection areas. Conservation authorities are conducting water quality studies, analyzing groundwater movement and studying recharge areas.

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In the Grand River watershed, for example, the conservation authority and municipalities are partners in a program to monitor water quality on a real-time basis.

Seven automatic water quality stations analyze river water 24 hours a day, seven days a week, to detect changes in temperature, oxygen levels, pH levels and other parameters. These stations provide an early warning of spills or other problems and give municipal water systems several hours notice of problems on the way.

These stations also provide invaluable information about long-term changes in water quality in the Grand River.

That's just one example of the kind of research already underway by conservation authorities across Ontario.

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We also need to identify the vulnerable areas in our watershed. That includes the areas that are susceptible to contamination, or the places where water enters the groundwater system. Of course, it also includes the areas around our municipal wells and water intakes.

We need to know the threats to water from our activities in our cities, factories and farms.

Once we have identified the vulnerable areas and the threats, we need measure the risks they pose to our water supplies and begin to develop strategies to reduce those risks.

I'd like to give you a sense of how that is done, by providing some examples from my watershed.

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Here's a map of the Grand River watershed, in southwestern Ontario. It is 7,000 square kilometres in area. The Grand is about 300 kilometres long, and it has four main tributaries.

The Grand River watershed is blessed with rich soils and good climate, so it is a particularly rich agricultural region. More than 75 per cent of the land is actively farmed.

It is also heavily urbanized. The watershed has a population of about 875,000 people, and the overwhelming majority live in the five cities: Kitchener, Waterloo, Cambridge, Guelph and Brantford. The total population of those cities is forecast to grow by more than 50 per cent in the next 25 years.

About 69 per cent of the people of the watershed use groundwater from municipal and private wells. About 29 per cent get their water from the Grand River.

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With so many people using groundwater, it is critical that we know the recharge areas in our watershed.

This map shows the major recharge areas. Most of the recharge areas are in the region of two major moraine systems – the Waterloo Moraine, near Kitchener-Waterloo, and the Galt-Paris Moraine complex which runs along the east side and through the central part of the watershed.

The orange areas are high recharge and the red areas are very high recharge. When you add them together, the orange and red areas amount to 30 per cent of the land base, but account for about 80 per cent of the recharge. So, in these major recharge areas, we must learn how to keep the water going into the ground “clean”, or we can encourage growth and intensification in another direction. The choice between these two can be considered by the municipalities, individually in developing their growth strategies, and also jointly in developing the source water protection plan.

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The most sensitive areas are

- immediately around wells,
- where there are coarse or shallow soils and high water tables, and
- in the major recharge areas.

The most directly sensitive areas are wellhead areas immediately around municipal wells, and private wells for that matter. This is where there is the most direct threat to the safety of drinking water.

Wellhead areas have been mapped as part of their groundwater protection studies undertaken by municipalities. This sample is for the Regional Municipality of Waterloo, at the heart of the Grand River watershed.

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This map shows the areas where the ground is susceptible to contamination. The most vulnerable areas are shown in pink. There’s a lot of overlap between these pink areas and the recharge areas I showed you before.

Where soils are coarse or shallow and water tables are high, groundwater can be contaminated by waste or chemicals applied or spilled at the surface.

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This slide illustrates the connection between the groundwater and the surface water systems.

The blue on this map shows where most water flows from groundwater into the streams and rivers. The darker the blue, the greater the contribution.

Groundwater discharge adds cold, clean, fresh water into the river system, which is benefit to the communities that draw their water from the river, as well as the natural system.

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To protect surface water, we have to manage what is running into the streams and what we discharge into the streams. The contaminants to surface water mainly come from wastewater treatment plants, manure, and chemicals applied, or spilled, onto both rural and urban land, in excess of the ability of the watercourses to assimilate it.

Farmers can play an important role in protecting water quality by adopting best management practices that reduce erosion, limit runoff of manure and chemicals and protect water courses. In some watersheds, the Rural Water Quality

Program provides financial incentives to farmers to adopt these practices. These programs are supported by a number of municipalities which know firsthand the benefits of protecting their water sources.

Rural Water Quality Programs could provide a model for action in source water protection plans.

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The other priority for protecting surface water quality is the wastewater treatment plants discharging directly to the river system.

We can quantify the cumulative effects of the various wastewater discharge loads, and determine the assimilative capacity of the river.

Even though our wastewater treatment plants are quite advanced, we know that major investment in wastewater treatment will be needed over the coming years if we want river water quality to continue to improve into the future.

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Those are some examples of the scientific research that is underway.

Now I'd like to address the process that will be used to develop the source water protection plans.

As I said before, the real work of drafting the plans will be done by Source Protection Planning Committees.

The provincial government is still developing the legislation and regulations to set up these committees, but it is safe to say that they will be broadly representative with members from a variety of sectors, including significant representation from municipalities.

It's wise – and fair – to have a broad cross-section of the community involved in developing the plan. After all, the people living in the watershed ultimately need to own the plan that municipalities, conservation authorities and others will implement.

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In essence, the Source Protection Planning Committees will try to answer one question:

How do we make sure that water is clean as it enters the ground or river?

To answer that question the committees will study research data, land use patterns, population projections and the threats to water quality. They will evaluate the risks and decide on what actions to take to reduce those risks.

- Should some areas be set aside from development?
- What do we do with source waters areas already designated for development?
- What do we do with areas that are already developed?

There will be discussions about the location, size and boundaries of protection areas. There will be discussions about what types of incentives and regulations will ensure that best practices are encouraged and enforced in source water protection areas.

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One critical component of the committee's job – with support of the technical experts from conservation authorities and municipalities – will be to involve the public in the planning process.

One of the reasons conservation authorities were selected to co-ordinate the planning process is because they have had decades of experience in working with watershed residents and getting them involved in many aspects of watershed planning.

To be successful, source water protection plans need the support of watershed municipalities and residents. If the work has been done right – if everyone has been engaged from beginning to end – theoretically, it should be a fairly straightforward exercise.

Once feedback is received, it is expected that the plan will be submitted to the Source Water Protection Planning Board, which is identical to the local Conservation Authority Board, wherever there is a conservation authority. The board would then submit the plan to the province for final approval.

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When it comes time to implement source water protection plans, the world will still look much as it looks today.

Municipalities will still oversee their own land use plans and growth strategies. They will still design and operate water and sewage plants.

Conservation authorities will still provide technical and planning advice to their municipal partners. They will still protect sensitive environmental areas, such as wetlands, and will continue to promote conservation in the cities and best management practices on the farm and in rural areas.

The province will still issue Permits to Take Water and Certificates of Approval for water and wastewater plants. It will still conduct research and set water quality standards.

The difference, however, is that all of this activity by municipalities, conservation authorities, the province and others will take place against the new backdrop of the source water protection plans.

Decisions will be made with more knowledge of how water quality and water supplies will be affected in their own communities as well as their neighbours.

We will have a better handle on how urban growth, agricultural intensification and industrial development affect the quality and quantity of our drinking water supplies.

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In the end, a source water protection plan that is science-based and broadly supported, will become an invaluable tool for every municipality as it goes about the important job of protecting the health of its residents and promoting growth in an economically sustainable, environmentally responsible way.

It is critical that the plans be comprehensive, transparent, cost effective and fair, because of the important role source protection plans will play in the future development of our urban and rural areas.

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For all of this to be successful, a number of factors should be in place. We need a clear framework provided by new legislation and regulations. Stakeholders from a variety of different sectors within local watersheds need to be involved in understanding what source water protection is and why it is important. They need to have clear and adequate information so they can make the decisions about the best approach to take to protect their lakes, rivers, streams and groundwater sources. Strong, defensible technical data needs to be available to the committees as they start to build their action plans. And the political support of all levels of government, particularly the municipal level, is critical to the success of the entire process. In the end, these source water protection plans will be living documents that are reviewed and updated as needed to reflect current knowledge and science as well as the development pressures on the landscape.

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Conservation Authorities are ready to get on with the job of working with municipalities and experts such as yourselves to ensure that our watersheds are safe, healthy and sustainable. We share a common responsibility. We have been entrusted by the people of Ontario with the task of providing them with that most fundamental requirement of life: safe, clean water. It is a significant responsibility, but one that I know all of us are ready and willing to undertake.