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TECHNICAL REPORT

Canadian Droughts of 2001 and 2002 Dialogue with Experts in Ontario: Water Conditions and Prospects

**Adaptation and Impacts Research Division (AIRD)
Samuel Wahab, 2007**

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Canadian Droughts of 2001 and 2002
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Executive Summary

This report presents the final phase of Ontario Stakeholder Consultations for the project Canadian Agricultural Adaptations to 21st Century Droughts: Preparing for Climate Change. The purpose of the project was to improve our understanding of current adaptation processes and options in Canadian agriculture. The record to near-record droughts of 2001 and 2002 were used as an analogue of future climate change stresses. Much uncertainty surrounds water supplies in Southern Ontario for agricultural and other rural water users. This reflects several factors, including increasing water demands among competing users; periodic dry spells which further increase demands while reducing supplies, and the questions about the effectiveness of existing water allocation arrangements. The need for drought preparedness has been recognized by federal and provincial governments in 2001 by implementing a plan for responding to low water levels. However, important questions about this plan's ability to reduce water supply uncertainty for agricultural and rural users need to be seriously addressed. Throughout this report many programs were carefully examined in terms of their successes and failures. The Big Creek Irrigation Advisory Committees (IACs), which evolved as part of a response to achieving local management of water resources was to serve as model for other communities to emulate, but it could not survive the test of time in Brant County due to structural and financial problems. Thus, the IAC's can be evaluated both on the outcome of their work and on the progress used and how this contributed to engaging the community. In spite of its failure in Brant County, many of our respondents felt that there is a need for the program to continue in other parts of southern Ontario or in Ontario in general. The processes and procedures of obtaining a permit to take water put in place the Ontario Ministry of the Environment is still a lengthy one that needs to be simplified. The volume of paperwork needed to apply for a water permit has increased for water users as more information is being requested from them by the MOE.

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1.0 Introduction

The history of agriculture reflects a series of adaptations to a wide range of factors from both within and without agricultural systems. For example, environmental conditions related to soil, water, terrain, and climate provide constraints and opportunities for agricultural production. As well, technological developments lead to modifications in the structure and processes of farming operations. Similarly, market factors related to input costs and prices paid have a dramatic impact on what commodities are produced and where production takes place. Public policies, legislation, and programs are also major components influencing the nature and dynamic of the farming operations in Ontario. None of these factors remain constant and their effects are interdependent. Their changes over time represent stimuli that affect the success of farming activities and that prompt adjustments to altered circumstances.¹

The nation wide droughts of 2001 and 2002 had severe impacts on agriculture with many farmers, food producers and water resource managers experiencing severe losses and problems. Periods of drought can have significant environmental and social consequences which include but are not limited to wildfire and disease. Lower flows in streams and rivers can increase the risk of fish dying, algal blooms, wetlands drying up and loss of habitats for wildlife birds. Drought destroys crops or stunts the crop's growth, causing lower yields and poor crop quality. Not only did agricultural users feel the impacts of the 2001 and 2002 droughts, but so did other non-agricultural users such as transportation, recreation, and tourism. As a consequence, the Ontario Low Water Response Program (OLWRP) was created in 2000 to improve drought awareness and preparedness. Voluntary water conservation measures were taken such as not washing vehicles and lawn watering in certain days of the week.

A nationwide project called "Canadian Agricultural Adaptations to 21st century droughts: Preparing for climate change" was undertaken to examine the impacts of droughts that

¹ Wall, E; and Smith, B.(2005) Climate Change Adaptation in Light of Sustainable Agriculture, In Journal of Sustainable Agriculture, 27(1), pp, 113-123

happened in Alberta, Saskatchewan, Ontario, New Brunswick, Nova Scotia and Prince Edward Island. Even though the 2001/02 drought was nationwide, the severity of the droughts was more pronounced in these provinces.

1.1 Methodology

The first component of this project was to undertake stakeholder consultations in order to understand how agricultural producers responded and, or adapted to the severe drought conditions in 2001 and 2002. The second component of this project was to interview selected agricultural experts in various fields such as irrigation engineers, agricultural field officers, staff from the ministry of the environment, ministry of natural resources and Ontario ministry of agriculture food and rural affairs (OMAFRA) in order to confirm and validate the results from our focus group consultations with farmers in the winter of 2006. A total of seven interviews were conducted in the months of August through early October 2006 in participant offices during working hours, tape recorded and transcribed. The report documents various agricultural programs sponsored by the federal and provincial governments and examines the successes and failures of each program.

2.0 Programs

2.1 Ontario Low Water Response Program

After extremely low water conditions in the late 1990s the provincial government came up with a new plan and established the Ontario Low Water Response Plan (OLWR). The plan, developed in conjunction with other ministries, municipalities and Conservation Authorities, ensures that all the partners are prepared on the provincial local levels to respond to severe drought conditions. The Nottawasaga Valley Conservation Authority (NVCA) along with other Conservation Authorities played a paramount role in assessing low water conditions. The NVCA assists in the establishment of local Water Response

Teams (WRT) in areas experiencing low water conditions to provide the opportunity for communities to identify and implement solutions to reduce water use. The WRT's are made of local stakeholders and is supported by various provincial ministries and municipalities to monitor low water conditions and determine what action will take place. As one of our respondents put it, the Ontario Low Water Response Team Program is one of its kinds in the province started in spring of 2002 as a response to the 1999 drought year.²

To measure drought, the provincial ministries, particularly the Ontario Ministry of Natural Resources (MNR) and Conservation Authorities collect data on rainfall and stream flow, which is evaluated to determine the extent of water conditions. When the WRT declares a level 1 condition, water users are requested to voluntarily reduce water use by 10%. At level 2, water users are asked to reduce by a further 10%. Level 3 is the most critical low water condition and requires mandatory restrictions on water users. This order is issued by the Ontario Ministry of the Environment.

2.2 The Success of Low Water Response Team Program

In order for the Low Water Response Team program to be successful, the participation of both local groups and water users are necessary. Examples include First Nation Communities, dominant local industries (Pulp and paper, aggregates, hydroelectric power generators) recreation users just to name a few. There is no distinction in decision-making power or responsibility among members of the WRT with the exception of provincial representatives – the focus of provincial representatives is on advice rather than participating in the decision-making process. Each representative should have equal opportunity for input, sharing information and accountability. It is therefore very important that the membership of the WRT accurately reflect the balance among the sectors within each watershed.

² Ontario Ministry of Natural Resources, July 2003.

The WRT program is most successful in the dissemination of information to water users. They post the Low Water Response Document through CAs and MNR websites, and ask for comments from the public. Also, every year the MNR have held debriefings since the inception of the OLWR program. As a result, the province has made a number of changes to how they disseminate information to water users. In addition, the WRT help bring in representatives of the major water user groups; they do press releases, and hold meetings. They have weather equipment in place; hire more staff to help in the monitoring of the program and they are now done regularly and accurately. Importantly, they work with the Ontario Ministry of the Environment to make sure that they have information available to water users and have dialogue with all users. One of the functions of the Low Water Response Program is to identify problems before they happen, educate users and advertise the best management practices. It is also used to encourage the information section that users can get in order to understand what the process is about.

2.3 Problems with the Low Water Response Program

- Lack of full memberships
- Poor attendance in meetings
- Sometimes meetings are held occasionally
- There is no distinction in decision-making power or responsibility among members of the Low Water Response Team with the exception of provincial representatives.

3.0 The Irrigation Advisory Committees in Ontario

The Irrigation Advisory Committees (IACs) have evolved as part of a response to achieving local management of water resources. More specifically, they are a community-based mechanism for resolving conflict related to agricultural production and irrigation practices. To date, their responsibilities have focused on the balancing of

competing agricultural interests. These committees provide an important alternative to the use of courts and to the perceived heavy handedness of provincial regulation. The goal of the IAC process is to manage the available water resources among the users (irrigators) without disrupting the natural functions of the streams.³

When the chair receives a complaint, he/she creates a subcommittee of three members to respond. This usually involves engaging in a type of ‘shuttle diplomacy’, speaking to both parties separately to hear their stories and helping them to look for possible solutions. This could occur through increased knowledge, education or through changes in management practices.

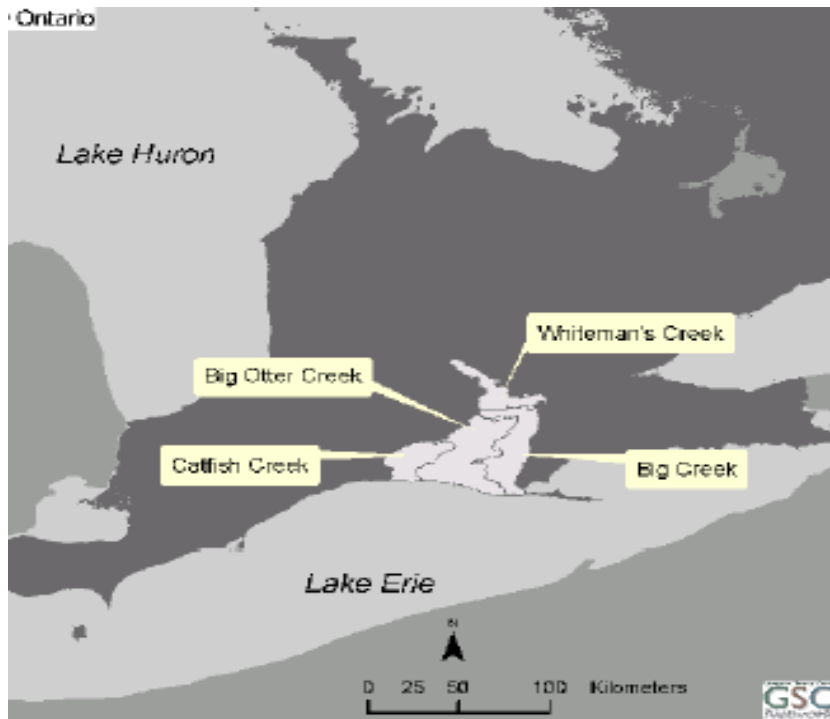
3.1 Irrigation Advisory Committees in Southwestern Ontario

In Southwestern Ontario, IACs have been organized and implemented in four different watersheds namely, Big Creek, Whiteman’s Creek, Big Otter and Catfish Creek. The Norfolk County, in which the Big Creek watershed is situated, was the first to form an IAC, which now acts as an extension of the Low Water Response Plan. Under the umbrella of the Norfolk Federation of Agriculture and in partnership with the Long Point Region Conservation Authority, local farmers collaborated to address local, low water issues.⁴

³ Shortt, R., Caldwell, W.; Bell, J.; and Agnew, P. (2006) A Participatory Approach to Water Management : Irrigation Advisory committees in Southern Ontario., *Canadian Water Resources Journal* 3(1), pp, 13-24.

⁴ Agnew, Paige (2004) Irrigation Advisory Committees in Rural Ontario: An Innovative Approach to Local management in Agriculture, Research Report, University of Guelph, Guelph, Ontario

Figure 1 Geographical locations of watersheds with Irrigation Advisor Committees
Southern Ontario.



Source: Shortt et al., 2006

3.2 The Big Creek IAC

The Big Creek watershed covers 723 square kilometers, has approximately 800 irrigation water users, and is one of the more intensely irrigated areas in the province. Drought-like conditions in Norfolk in 1998-1999 brought the area to the attention of the Ontario Ministry of Environment and highlighted the need for intensive management of water withdrawals. The Big Creek IAC was established with the aims to:

- Target surface water-takers on the watershed
- Train and educate target audience in their responsibility toward, and the importance of, maintaining the natural function of the stream
- Provide third-party, non-biased mediation and advice to users if unable to settle allocation disputes amongst themselves

- Promote cooperation amongst users on water management and conservation by the establishment of water management groups on North and South Creek as a trial project.

3.3 Success Factors Associated with the Big Creek IAC Project

While success can be difficult to measure, the IAC's can be evaluated both on the outcome of their work, on the process that was used and how this contributed to engaging the community.

- From 2001 to 2004 four conflicts requiring mediation were successfully resolved by the Big Creek IAC (two farmer-to-farmer conflicts and two farmers to ministry conflicts).
- Despite low rainfall in some years during the period of IAC operation (2001-2004), the Big Creek Watershed has achieved more stable flows than in the past. A major contributing factor to the stabilization of the flows in Big Creek was considered to be the operation of the IAC since 2001.
- Activities of the IAC also contributed to a reduction in conflicts among water users within the Big Creek watershed.
- The success of the pilot project in Big Creek led to IACs being initiated in Whiteman's Creek, Big Otter Creek and Catfish Creek in 2003.
- Commitments from farmers themselves as champions
- It was successful because the project was run by farmers for farmers not by government.
- They have strong support from the regional farm leaderships and the farm leaderships have vision beyond the current time
- They have a long term vision for the next generation.
- It is a region of high value crop production.
- There was pressure on them to be successful (regulation), which required cooperation among farmers and farm organizations

- They were given a choice and they knew they have problem, as a result they have to deal with it.⁵

4.0 Problems Associated with the Big Creek IAC Project

In spite of the success of the Big Creek IAC project and the commitments of its leaders there were some problems that the project could not overcome.

- Concern was expressed by both farmers and ministry representatives about the lack of long-term funding to support the IAC initiative.
- The IACs in each watershed function from year to year on annual budgets of \$5,000 to \$25,000 without the guarantee of funding in subsequent years.
- In some cases, IAC members contributed additional time towards preparing applications for additional government funding.
- There was no committed, long-term, governmental funding.

4.1 Permit To Take Water Program (PTTW)

Under the Ontario Water Resources Act (OWRA), the Ministry of the Environment is responsible for the supervision of Ontario's ground and surface water supply. Of special concern is the taking of water in large quantities. Large water-takings are governed by Section 34 of the Act and the new Ontario Regulation 387/04 (Water Taking and Transfer) under the Act. Anyone taking more than 50,000 litres of water in a day, with some exception, must obtain a Permit to Take Water from the Ministry of the Environment. This includes the taking of water for use, whether agricultural, commercial, construction, dewatering, industrial, institutional, recreational, remediation, water supply or for other purposes.⁶

⁵ Personal Communication (2006) October 02

⁶ Ontario Ministry of the Environment Guide to Permit To Take Water Application Form April 2005

The purpose of the Permit to Take Water (PTTW) program is to ensure the conservation, protection and wise use and management of water in the province. Permits are controlled and not issued if the taking of more water in a given area would adversely affect existing users or the environment. Ontario Regulation 387/04 (Water Taking and Transfer) greatly strengthens the Ministry's role in protecting Ontario's water resources. It prohibits water transfers out of a water basin, as defined in the regulation, and sets out specific matters for the Ministry to consider when reviewing applications for a Permit to Take Water. It also contains other important provisions.

The Ministry must refuse new and expanded takings that would remove water especially in large quantities from watersheds that already have high levels of use. All tertiary watersheds in Ontario have been classified as high-use, medium-use or low-use, based on average annual conditions and summer low flow conditions. Taking water in a high-use watershed, for example, could be temporarily suspended during summer low flow conditions.

The Ministry must notify all affected municipalities and conservation authorities of permit applications posted on the Environment Bill of Right Registry. Anyone applying for a permit is required by the Ministry to document the application of all water conservation measures and practices that have been already undertaken or will be undertaken for the duration of the permit. Permits holders are required to keep track of the volume of water they take each day and to report these amounts on a yearly basis. As indicated by Section 9 of Ontario Regulation 387/04, the volume of water taken is to be measured using a flow meter or a method acceptable to the Director. Further details are provided on the Ministry's website (www.ene.gov.on.ca). The reporting of water use is being phased in over several years beginning in July 2005. By 2008, all permit holders including agricultural users will be required to report their water takings to the Ministry.

4.2 Types of Permits to Take Water

Basically, there are three types of applications for Permit to Take Water in Ontario:

- Category 1 applications (unlikely to pose adverse environmental impacts) these types of applications are for those who already have a permit to take water and just want to renew the permits. Same person, same location and same water resources.
- Category 2 applications (requiring a scope assessment) these are short term permits less than seven days.
- Category 3 applications (requiring a detailed ecological hydrological study) they are more complex to deal with.

So the proposals for water taking are classified according to their anticipated risk to the environment; the greater the anticipated risk, the more evaluation is required. Each permit application undergoes a review process when the application is submitted to the Ontario Ministry of the Environment and it takes several months to issue one. The Ministry staff checks all permit applications, measuring them against a host of other requirements and once the application process is completed, the Ministry has 90 days to issue a Permit to Take Water.⁷

4.3 The Effectiveness of Permit to Take Water Program in Ontario

Each PTTW application undergoes a review process when an application is submitted to the Ontario Ministry of the Environment and it takes several months to issue one. The application procedure is a lengthy process as the applications are sent to the head office in Toronto for technical and other procedural review. Ministry approvals take the form of a Certificate of Approval, which is obtained from the Ministry's Environmental Assessment and Approval Branch (EAAB). This normally takes about two days for the

⁷ Ontario Ministry of the Environment, Guide to Permit To Take Water Application, April, 2005

processing in Toronto, and then the application will be sent back to the coordinator in the west central region office in Hamilton for further processing.

The application form was originally between two to three pages. It is now about eight pages in length. The reason given for this is that the Ministry requires more information. When the shorter form was used, the ministry staff used to call the applicants for more information. The usage of the longer form is to eliminate the need to call the applicants for more information.

Prior to this it would not be an expensive and long process in obtaining a water permit and the length of the process of getting a permit only depends on how much information you have to provide. Farmers do not have to consider the value added to the cost of getting a water permit. Now the process has changed due to changes in regulation. As one individual puts it “I don’t know how you can avoid that. You do not want to do it overly because it would be expensive.”

The growing process is the number one cost. They now have a third party to help fill out the applications, which they did not have before. Generally, farmers do not have to do that previously. It is a new procedure and this is the first time for the new staff they hired, so the staff are going through a new process as well as the farmers.

The new regulation has only been in place for only two years (2004-2006), as a result, the whole process is somehow new and it would require more time for the whole process to be put in place. Once that is through, we can then see whether it would work or not. The third party is the consultant, but farmers do not have to get one. If they choose to do so, they have to pay for the services rendered by the consultant, which makes the Permit To Take Water process more expensive to farmers. The Ministry of the Environment is asking for more information not just from farmers alone, but also other users such as industrial, commercial, and construction.

The application form of eight pages requires a lot of information. This is the first time they have to use it. If farmers have to do any calculations to estimate water taking rates of irrigation equipment, this is additional information beyond the 8-page form. The farmers complete it themselves or hire a qualified person (the third party to help them in the calculations). Not everyone has to do the calculations. For example, if it is on the same site that is already known or where there is a lot of water, such as a well or a spring, that is different from groundwater and you have more knowledge of the water that is there. However, if you are on a stream you may not be the only users, you are looking at the whole package. Therefore, the application will require more details and more information to be included. Depending on who you talk to, you will get a different reaction as the application gets bigger.

The Ontario Ministry of the Environment has a clinic in Norfolk County where farmers could get help from the staff on how to prepare their applications. This is done once in a year, which makes the whole process ineffective, as many farmers have to travel down to Norfolk County for the clinic. The Ministry also carries out pre-consultation whereby farmers could come into the office to get help on how to fill out the form. Again this is very difficult for farmers to do given the long distance they have to travel.

4.4 Problems with the Permit to Take Water (PTTW)

- Lack direct funding support from OMAFRA, there is only technical support
- Metering and measuring water use are not effective and not efficient or cost effective
- Long waiting time to obtain permits
- At present farmers have to provide data for the MOE in order to get new water permits
- The MOE does not know how much water there is in most aquifers in Ontario
- There is no central database for farmers to access when looking for water sources
- The use of a third party (consultants) is problematic and expensive for farmers
- A clinic is held once in a year in Norfolk county which is not frequent enough

- Lack of training on how to do an estimation of water taking rates of irrigation equipment
- Lack of monitoring and enforcement
- Too much information is needed as a result of the longer form being introduced

5.0 Healthy Futures for Ontario Agriculture

The Healthy Futures for Ontario Agriculture program was in operation between 2001/2004 for Ontario farmers. The four-year, \$90 million program was aimed at maintaining and building on the success of Ontario's agri-food industry. The focus of the program was to encourage the agri-food industry to:

- Enhance the safety and quality of Ontario food products
- Capitalize on marketing and export opportunities
- Improve rural water quality
- Make efficient use of rural water resources.

5.1 Three main initiatives of the Program

- Rural Water Quality focused on implementing best management practices or technologies in the agri-food sector to safeguard water quality and quantity in rural Ontario.
- Field to Fork Food Safety and Quality provided funding and access to technical expertise to assist the agri-food sector in maintaining and expanding its capacity to meet domestic and export market demands with regard to food safety and quality
- Healthy Futures Innovation supported applied research, new product development, expanded market access and the creation or adoption of technologies, practices and processes that enhance food safety and water quality. This includes implementing new verification and reporting. In spite of its benefits, the program is no longer in existence.

5.2 Water Supply Enhancement Project (WSEP)

The Water Supply Enhancement Project (WSEP) was a pilot project started by OMAFRA that was intended to serve as a model for other areas in rural Southern Ontario suffering from low water supplies. In all, there were four groups that have the program – the Brant Rural Water Program, The Big Creek water program, Norfolk Water Supply Enhancement Project and the Big Otter/Catfish Watersheds Irrigation Option Project. About \$4.4 million were distributed among these four groups, but the WSEP program was scrapped due to lack of funding and commitment from the Ontario government in spite of its success.

5.3 Norfolk Water Supply Enhancement Project

The purpose of the project was to develop a water conservation program with the local community that would be available to farmers interested in improving their water supplies. The Norfolk WSEP was a joint project of a diversity of private and government agricultural, municipal, conservation, agencies and business partners and supporters that were strongly interested in water and wetland conservation in Norfolk County. There were three primary objectives:

- To establish a reliable alternative water supply to direct withdrawal away from sensitive streams
- To store water when there is an abundant supply for use during the times when it is scarce by improving the water storage capacity on the landscape
- To make more efficient use of existing water supplies.
- To create or enhance fish and wildlife habitat associated with a water supply where warranted.

5.4 Achievement of the Project

- All four WSEP objectives were achieved as 323 sub-projects were implemented between 2000 and 2002.

- The project saved 836,716,153 gallons of water from being withdrawn from sensitive streams or their tributaries draining the Norfolk Sand Plain.
- The WSEP accomplished this by establishing reliable alternate water supplies, taking the water into storage when it is abundant for use when it is not and, or taking a reduced amount of water into storage spread out over time.
- 246 ponds were created or expanded
- Four impoundments and one new dam were created to store 303,958,395 gallons of additional water
- 2,772,475 square ft of additional water surface area were created in the Norfolk landscape and helped to achieve objective #2.
- Objective #3 was met by the completion of 57 equipment based sub-projects that resulted in more efficient use of existing water supplies.

5.5 Problems with WSEP Projects

- Sixty applicants were placed on the waiting list and did not receive funding.
- 102 approved sub-projects did not proceed. These sub-projects were not completed for a variety of reasons including the inability of applicants to obtain contractors and complete construction on time, economic pressures associated with farming that forced applicants not to proceed and the failure of two applicants to receive agency approval to complete their sub-projects.
- Of the 60 sub-projects on the waiting list, only 16 proceeded.

6.0 Brant Irrigation Advisory Committee (IAC)

Farmers have always known the value of water, but the last few years of low rainfall have driven the reality home for many in Brant County. Also, the long dry summers meant that demand for water for irrigation has risen at the same time. Water supplies have been put under pressure as stream levels dropped to the lowest levels recorded in years. During the summer of 2002 water users across Brant County including farmers,

municipalities, golf courses, gravel pit operators and others were asked to cut back their consumption by 20 per cent. As a result of those experiences, concerned farmers decided to look for better ways to manage their own water use in order to protect their operations as well as the ecosystem. Brant irrigators met with officials of the Grand River Conservation Authority in Burford in July 2002 to discuss the problem. The result was the creation of the Brant Irrigation Advisory Committee (IAC), which was set up as a sub-committee of the Brant Federation of Agriculture.

6.1 The failure of the Brant Irrigation Advisory Committee

- Lack of sustainable funding they needed up front
- The committee failed because they were reactive to a situation
- Poor membership
- Brant did not have the same agriculture local leadership
- Lack of agricultural leadership
- It did not have an agriculture organization
- It did not have the same problem such as the one in Norfolk County
- It has leadership problems
- There was not strong demand for water, mainly used for vegetables
- There was a lack of overall support
- There was the issue of watershed boundaries
- The watershed boundaries did not match
- Two different agriculture federations
- It has structural obstacles that Brant has to overcome
- There was no pressure such as a dry period
- The project was totally dependent on outside money

6.2 Canada-Ontario Water Supply Expansion Program

Under the Canada-Ontario Water Supply Expansion Program (COWSEP), the government of Canada provided \$5.6 million in technical and financial assistance to primary producers, agricultural and conservation groups, rural communities and municipalities, agribusinesses and rural enterprises, educational institutions and provincial government agencies and Crown corporations are eligible for COWSEP assistance.

Under COWSEP, three types of projects were eligible for assistance; Tier 1 – on-farm water projects; Tier 2 – multi-user water supplies; and Tier 3 – strategic initiatives. The federal government allocated up to \$2.2 million for each of the on-farm and multi-user programs, and up to \$1.2 million for strategic initiatives. The provincial government then matched the federal government’s contribution towards multi-user projects over the lifetime of the program. Eligible projects will be funded at up to 30%; 33%; or 50% depending on the program and category.

Under COWSEP, two pilot projects in the Niagara region were funded. The first project is the communal water distribution network and their current project is to upgrade and expand the system. Prior to this project in 2004/5, Niagara on the Lake received funding through other projects such as the “O Star Red” (Rural Economic Development). Before this time, the Niagara on the Lake received loans from the federal government at a very low interest rate for more than ten years. The second project on the Niagara region is the feasibility study for the Ministry of Natural Resources which was funded by COWSEP such as the T03 feasibility study and T02 construction; both projects are being supported by technical staff from OMAFRA. At present, no body knows what happened to the “O Star Red” (Rural Economic Development).

6.3 Conclusions

The nation wide droughts of 2001 and 2002 had severe impacts on agriculture, leaving many farmers pessimistic about the future of farming all together. The purpose of this

repost was to document some of the programs put in before and immediately after the 2001 and 2002 droughts by governments both at the federal and provincial levels. In all, we documented the strengths and weaknesses of the programs and how they could be improved upon, particularly the Permit To Take Water (PTTW) program which is still very expensive for farmers. Although farmers are exempted from the application fee, they still have to bear extra costs in the preparation of the application forms, which is sometimes very expensive if they seek the help of a third party for the calculations. In addition, the Irrigation Advisory Committee (IAC) was very successful in some jurisdictions while it failed completely in others as a result of structural and funding problems. There was a consensus among our respondents that they would like to see IACs in every farming community in Ontario due to its success. Other programs such as the Water Supply Enhancement Project (WSEP), Canada-Ontario Water Supply Expansion Program (COWSEP), and the Low Water Response Program were very effective in the realization of their main goals.

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APPENDIX 1

The complete interview questions and answers. Names were excluded for confidentiality reasons.

Interview with OMAFRA Staff

August 25, 2006 at 1PM

1. In our focus group consultations with farmers across southern and eastern Ontario, the majority of participants asked about the lack of information about dry weather conditions in 2001 and 2002. As an expert on the field what do you think about this concern?

They could not get information. Aware of the low water response program (LWRP), probably a valid concern before program started because of 2001 dry weather conditions - Certain, CA might have done stuff, but the province has done much to address that LWRP, has matured, but much more a well sounded program better than 2001. Lots of development, or internet to access low water conditions, so quite happy about that. Short term forecast more important, I do not think farmers make decisions based on long term forecasts, retroactive- may do stuff just in case.

2. The process in obtaining a water permit is long and expensive, which frustrates many producers. If so why? Is there any way this problem can be resolved?

OMAFRA is actively working on this in defense of program it can be long and expensive but does not have...

Couple of reasons: province revised regulation (Ontario Water Act), there was concern that the rule was not strict enough, bottled water and cement led to a moratorium on permits. Main reason why it was changed – over 50,000L/day must get permits, about 600 active permits, half for agriculture. Before that had a non-

compliance issue. Put effort into try to get farmers to sign up – before new regulation. Farmers frustrated but signed up and than rules changed – signed up penalized for doing a good change. Province – identified high water use watershed requiring different studies to be done, so this increases expenses, frustration of farmers in these watersheds. OMAFRA tried to streamline permits that were deemed to be low risk so other compounding factors – tones of water but may not get it at the right time (August, September), tried to work with the MOE behind the scene. Producers are trying to get rules changes, permits are issued for different periods. 5 years lag period – different areas, different lengths of time for permits. Farmers are less restricted than producers for irrigation, for manufacturing – permits are still on hold. To make in pay you have to add value (Norfolk, tobacco area, picking plant to expand to make up).

*Follow –up question: how do we deal with the issue of education? Recognize value of water in system (National Capital Res) provincial government put money and tried to diversify area. More communication between different ministries.

3. Our findings show that producers need help with infrastructure in order to irrigate effectively, particularly in the Niagara region as a result of their geographical location. Does OMAFRA provide any funding or other kinds of aid to help resolve this problem? Are there programs run by the provincial government that provide funding or technical information with respect to infrastructure?

We deal on riparian rights, so there are no priorities; officially the PTTW program sets priorities. Livestock watering, fire protection (no permit required). PTTW – just allocation process, is there enough water in watershed – bring issue of non-permitted used. No direct funding, always technical assistance, Unknown program COWSEP (infrastructure), PFRA technical advice.

4. What is the Provincial government doing to help farmers? For example, what kinds of funding, programs, information are there for producers to access?

Aside from COWSEP, EFP has water quality risk assessment on farms through EFP that will give money to repair a well. Province and AAFC have coordinated to design programs to maximize funding for farm irrigation - Best Management Practice, facts sheets (website), training I drip irrigation. Help organized field days, have been helping PTTW clinics, try to give talks in winter for water issues. One of the other changes under PTTW was reporting water use. Agriculture last one to be phased guidance for farmers how to estimate water use, pump time, gas used. OMAFRA, MOE and Conservation Authority are pilot project ways of metering and measuring water use, metering not effective, efficient or cost effective. Water is an input – you need to manage your water, like you manage fertilizer – price of gasoline, interests of stewardship make good business sense.

Stewardship is working –much awareness in farm community –see it as better to if on their own than to be forced upon. (Why is government regulating if stewardship is working?) Government tends to overact and plan for worst case situation. Still misconception in Walkerton ultimately faulty system barriers would have been in place, it would not have happened.

5. Several pilot projects were started in the Niagara region in 2004/05. These were the communal irrigation projects in which you were personally involved. In a nutshell, can you tell me what led to the creation of these pilot projects? How successful were the projects? And were these projects funded by OMAFRA?

Need to pump water up from Lake Erie to Lake Ontario (restriction and a pipeline is an expensive undertaking). Other than COWSEP program, very little infrastructure assistance compared to municipalities. Rebecca Short – impression, very successful model milestone project expanding through COWSEP. I do not think we provide direct funding lots of in kind, technical support.

6. Some pilots Irrigation Advisory Committees (IAC) have been formed in certain watersheds, such as the Big Creek. A few IAC's were successful while some have failed such as the Brant IAC that was dissolved in 2005 due to lack of sustainable funding and the usefulness of the committee. Can you elaborate on the success and failure of these committees from a personal point of view? Also, does OMAFRA want to continue to encourage the IAC movement? Lastly, is there any future for or room for IAC to grow?

Certainly success or failure is highly dependent on champions, leaders plus respect, organizational, social issue more than funding issue. They need funding up front ...have been good. OMAFRA would not discourage committee creation important linked in to OLWP. There is a room to mature in cooperation with OLWP a lot of trust has been lost because of permit system. We have had high profile farmers who have been champions of IAC and PTTW, but felt has led people into a trap. The reason they are successful is because it is run by farmers for farmers , but would not work as government program – farmers see benefits do not do this IAC would not see permit. The IAC is just another way of doing business, IAC is good MODEL – it works really well.

7. During our focus group consultation with farmers in Norfolk County, we noticed the diversification of tobacco farming to other crops, is this a new trend in Southern Ontario or is it only restricted to tobacco farmers? As a result of this diversification in tobacco farming, has the use of irrigation been decreased or increased in recent years?

I do not know. Yes –diversification largely restricted to tobacco farmers, but has seen other farmers –fruit growers there is a lot of us of irrigation for greenhouse industries. You can make a lot of money to sell your farm for housing. Golf courses (OMAFRA clients) have come along. Hamilton – Niagara area have spent 1milloin dollars on irrigation technology.

8. Throughout our consultations with farmers, the majority of participants said that they did not have information on water resources in their regions particularly those that irrigate. Could you tell us if OMAFRA funds any such program or provide technical information? Second, how can farmers access such information?

Do not any such program CAWSEP Norfolk IAC has money (Long Point Conservation Authority) is doing a pilot project enhancing monitoring, real time monitoring water levels – province have authority, NMR runs low water response program – internet program for people to get access or levels. In every CA, LWRT –OMAFRA is on that term making sure information is getting out to farmers through this committee. Until recently, OMAFRA/MNR all put in money to support low water response teams.

9. Canadian farmers cannot compete against crops that are imported from elsewhere since they are not subsidized like their American counterparts as they are subsidized and compensated for their crop failure. Could you comment on the fairness or these concerns – are they fair, unfair or biased?

Only know what reads in papers. Water – USA are more subsidized by government grow high value crops through subsidized water infrastructure - this is an issue. I would like to see work on IAC to figure out what a better way to manage water in Ontario is.

Interview with OMAFRA Staff

August 29, 2006 at 1PM

1. In our focus group consultations with farmers across southern and eastern Ontario, the majority of participants asked about the lack of information about dry weather conditions in 2001 and 2002. As an expert on the field what do you think about this concern?

Information could be made available to farmers through news letters, radio and Agro. We have talked with farmers about Environment Canada weather forecast – but it is not reliable. There are many options for farmers not to invest on certain types of crops. Our weather forecast is for a shorter period of time, our weather is not too dry that we could not grow crops. Yet, we encourage farmers to use the Environment Canada weather system. We also encouraged farmers not to use irrigation very often, not to make crop changes. Let's say Environment Canada is forecasting dry weather conditions for a particular year for example, I would not recommend soybean growers to change his crop to a crop that required irrigation. Again, if for example I am talking to tomato growers in March and there is an Environment Canada forecast for dry weather conditions, I would advise the farmer the best way to minimize the impact of the dry weather condition. Even though they have the information, it is not useful anyway because the usefulness of the forecast is modest. However, OMAFRA has the ability to disseminate information to farmers – if farmers knew about long term weather forecasting especially potatoes growers, they could make adjustments if the forecast is five or more years not just on short term which may leave farmers unprepared.

2. The process in obtaining a water permit is long and expensive, which frustrates many producers. If so why? Is there any way this problem can be resolved?

The water permit is the jurisdiction of the ministry of the environment in Ontario. Having said that, I think there is an opportunity for OMAFRA, ministry of natural resources and conservation authorities to work together with the MOE in order to reduce the waiting time to obtain water permits in Ontario. Also, there is an opportunity for them to do farm outreach with OMAFRA, conferences, workshops just to mention a few. In terms of the cost, at present the farmers have to provide data for the MOE in order to get a new water permit. This is done in order to determine water availability. This is important for the MOE so that they can know the water availability in aquifers before a permit could be issued. Again, there is an opportunity for MOE, NGOs, conservation authorities and other agencies to work out water availability data so that farmers could get the data requirements for water availability when applying for permits. What is interesting is that the MOE does not know how much water there is in the aquifer. This data could be stored in the database for farms to access. OFA could provide technical support to access water availability. Also, we could create models for water availability. For example, the Big Creek has huge data available and the Conservation Authority also has data regarding water availability that farmers could use for their water permits.

3. Our findings show that producers need help with infrastructure in order to irrigate effectively, particularly in Niagara region, as a result of their geographical location. Does OMAFRA provide any funding or other kinds of aid to help resolve this problem? Are there programs run by the provincial government that provide funding or technical information with respect to infrastructure?

Let me start with the funding – Historically, there was a program between 2001/2003 which is called the “healthy futures for Ontario farmers. The group proposed a project and all farmers could access the program. For example, in Norfolk County they have the Norfolk water supply enhancement program. The purpose of the program was to develop a water conservation program with the local community that would be available to farmers interested in improving their water

supplies for municipal, agricultural, recreational or wildlife uses. The COWSEP was a pilot project that was also intended to serve as a model for other areas in rural Southern Ontario suffering from low water supplies. In all, there were four groups that have the program – the Brant Rural water program, the Big Creek water program. In terms of money, about \$4.4 million was distributed among these four groups. There were other many healthy futures for the water enhancement program, but the program is finished due to lack of future funding and commitment from the Ontario government in spite of the success of the program. There is also money or funding under the Environmental Farm Plan (EFP) from the federal government, the province then match it with kind and get involved with technical support for farmers.

4. What is the Provincial government doing to help farmers? For example, what kinds of funding, programs, information are there for producers to access?

Let me start with the technical support aspect of the question. I am available to help individual farmers, but there is too much work involved when you try to help individual farmers, as a result it is better to do it in groups. We also produce technical books regarding different projects or programs that are available to farmers. So far, I have worked with three groups on technical problems – helped farmers with their data calculation, helped farmers to resolve issues with the ministry of the environment. We also produce some materials such as the factsheets, infosheets, newsletters, radio reports, run many courses, demonstration days and conferences.

5. Several pilot projects were started in the Niagara region in 2004/05. These were the communal irrigation projects in which you were personally involved. In a nutshell, can you tell me what led to the creation of these pilot projects? How successful were the projects? And were these projects funded by OMAFRA?

There are two activities going on in Niagara region (a), Niagara on the lake – they already have an existing communal water distribution network and their current project is to upgrade and expand the system. The program actually constructed many projects – They were funded under the Canada-Ontario Water Supply Expansion Program (COWSEP). Eligible projects may be federally funded at up to 30%, 33% or 50%, depending on the program and category. The province has matched the funding in kind in water activities. Prior to this project, the 2004/5 Niagara on the Lake received funding through other projects such as the “O Star Red” (Rural Economic Development). I am not sure where the program is at, at this moment. Prior to that, the Niagara on the Lake received loans from the federal government at a very low interest rate for more than ten years ago. (b), the second project is a feasibility study for the Ministry of Natural Resources which was funded by COWSEP - T03 feasibility study and T02 construction both projects are being supported by technical people from OMAFRA.

6. Some pilots Irrigation Advisory Committees (IAC) have been formed in certain watersheds, such as the Big Creek. A few IAC’s were successful while some have failed such as the Brant IAC that was dissolved in 2005 due to lack of sustainable funding and the usefulness of the committee. Can you elaborate on the success and failure of these committees from a personal point of view? Also, does OMAFRA want to continue to encourage the IAC movement? Lastly, is there any future for or room for the IACs to grow?

With the Niagara on the Lake, there is a long history. In that case the demands are on farmers because they have broad needs. The system is owned by the municipality but it is paid for by the farmers. There was no specific reason that makes this system jump out because some of the system existed before, for example, municipal infrastructure and some of the lands are small parcels - where they are big, they benefited from the communal system. Simply because of the geography, it was fairly inexpensive.

As for the Ministry the Niagara Region project, there were a couple of things that led to the creation, for example the “Green Belt legislation” to protect agricultural land in the region. The region has made agriculture a priority – the land cannot be used for something else. As a result, the municipal support for the feasibility study was very important. They have strong support from the regional farm leadership and the farm leaderships have vision beyond the current time. They have long term vision for the next generation and this is very important. It is a region of high value crop production, high value crop production is linked to tourism, food processing and all sort of things. Both of the projects are ongoing, the regional project phase one report is out already and may apply for more funding.

The Brant IAC was dissolved before, but it is back on track now. OMAFRA would like the IAC to continue because in high water uses, there is an opportunity – however, this model is not for every area in the province. Where there are high water uses it could be useful particularly in gravel and aggregate extracting industry.

7. During our focus group consultation with farmers in Norfolk County, we noticed the diversification of tobacco farming to other crops, is this a new trend in Southern Ontario or is it only restricted to tobacco farmers? As a result of this diversification in tobacco farming, has the use of irrigation been decreased or increased in recent years?

It is not a new trend because farmers always moved to crops where they can get higher value for their crops – also tobacco is decreasing due to opposition for health reasons. The crops that farmers are moving into will require high irrigation, however, the use of irrigation has decreased per acre.

8. Throughout our consultations with farmers, the majority of participants said that they did not have information on water resources in their regions, particularly those that irrigate. Could you tell us if OMAFRA funds any such program or provide technical information? Second, how can farmers access such information?

OMAFRA does not provide information on water resources. Conservation Authorities are in the best positions to give out information about water. However, government put a lot of money in the activity and will continue to do so.

9. Canadian farmers cannot compete against crops that are imported from elsewhere since they are not subsidized like their American counterparts as they are subsidized and compensated for their crop failure. Could you comment on the fairness or these concerns – are they fair, unfair or biased?

I do not know much about crop subsidies, but many crops in Ontario have access to crop insurance in order to protect their crops against failure. Also, in Ontario there is limited irrigation expert available to farmers, the Ontario government do not fund irrigation projects while the USA government help farmers to fund irrigation project, this is also true in many parts of the world where national governments are responsible for funding irrigation infrastructure and also by the World Bank. In Ontario, the government is undertaking feasibility studies in order to determine the benefits of investing in irrigation to the society and to the farmers. In the past, in Ontario we do not have dry weather conditions, we have more rainfall, but we now see sporadic dry conditions across the province. The way the farming system is today is changing and farmers cannot afford to lose their crops.

Consumers are demanding high quality crops – consumers will not buy small pears or apples in grocery stores. We need to keep up to date with consumer demand, this issue is driving irrigation.

Interview with MNR Staff

September 11, 2006 at 1PM

1. In our focus group consultations with farmers across southern and eastern Ontario, the majority of participants about the lack of information about dry weather conditions in 2001 and 2002. As an expert on the field what do you think about this concern?

The experience we have in our program was that there was a lack of information. There was a general hesitance in considering low water conditions and situation when we went forward on how to approach low water in 1999. We found out that our best-best is to proceed with the information that was already available, so one of the things we needed to do was to find out what the baseline condition was with regard to this question. The Ontario low water response program has identified precipitation and flow indicators and baseline conditions working with local authorities generally the Conservation Authorities and other water users groups. So we have come a long way since 2001/2002 and we now have active programs still growing. We did in briefing sections to review the progress and usefulness of some of the indicators. I think the precipitation indicators are doing a great job. So what we have done is to identify precipitation indicators, raise the awareness of the problems in the local community and we now have a fairly rigorous ongoing program to look at whether there is a lack of precipitation supply and lack of flow because farmers need more than precipitation, and irrigation.

2. The process in obtaining a water permit is long and expensive, which frustrates many producers. If so why? Is there any way this problem can be resolved?

What is precipitation and irrigation? We still have to look at the group water. So we are working with local authorities and I think the concerns were valid for 2001/2002, I think that the information now is much readily available and we are

more to take a jump on conditions. There is greater awareness, regular monitoring practice all year round now to measure precipitation on a monthly basis, weekly basis and a year and half. All information is now on our website, we regularly update it every month and in summer, every mid month, every month and end of the month, we have photo maps on the website. We have local conservation authorities doing additional monitoring now. The farming communities are more aware of the value of the information so they are looking to bring together their own information. Precipitation is quite varied too, so being able to tap into the agriculture federation is more important for monitoring and looking at municipal boundaries. We have the water resource team and when we do our monitoring, we send out notifications when the criteria are met. The low water response team bringing in representatives of the major user groups, they do press releases and they hold meetings and the representatives of the major user groups can get back to their representatives – their memberships. No, the local news papers are done through local conservation authorities and they do press releases, in areas where there are other techniques for example, in Eastern Ontario, they put signs up at the watershed boundaries of the road to tell us how many watersheds are in the area. In the Grand River watershed and other watersheds, they put indicators up saying whether it would be dry or wet, this is mainly for recreational activities, it would apply so much to farmers, but the major effort is to have the low water response teams in place for their representation. Other further notification and the communications are on our website and are directed to the low water response teams, the low water response teams communicate to the agriculture and it is done that way. We work under the low water response team, we work diligently to do two things (1), to get the MOE to make sure that they have information and dialogue with users, and (2), to encourage information section that users can get from use to understand what the process is about, so when we do low water response information, we internally, we neither provide or give the management practice guide (MNR) to OMAFRA so that information is more readily available, advertised more the low water response team to communicate this information as a way, they work with partners such as Agriculture Federations and they actually held a couple of meetings where they get

together and had workshops between sectors for the water permit users to understand what it is all about. Also, they have gave priority to revamp their water permit process, for example, they have started charging for permits, but agricultural users don't pay the fees, they don't pay the fees because their need for water is quite different than municipal or commercial water users. Agriculture water users don't need permits for watering livestock. It should not be long and expensive for the agricultural users and a lot of changes have been made, programs affecting municipal and commercial users and the way which we address the problem is to partnership with MOE and low water response team to make sure that the implications for low water response are addressed in the water permits ahead of time. There were moratoriums placed on water permits and we worked with the MOE to stop that so they will give permits to farmers where reasonable. Better understanding and sharing of water use, but the best way to resolve the problem is to have a section to inform users what the implications are, if there is no water- there is no water is nobody's fault. However, if water is not used wisely, you run out of it and the problem can be surface or ground water now because of the training and the information. They also have worked with the MOE to see how the low water response program fits within water permit process. So when you issue permits they have some conditions there regarding the low water response program. If they understand there has been a low water situation in the watershed recently then they will identify that with the locals, but that is the benefit to the users. There is no way you can do without the permit, but I don't know how expensive it is, but it depends on what is needed if someone wants to use the water, someone has to justify why he wants to use it . So there has to be a justification to the expense but we have to shorten the application process.

3. Our findings show that producers need help with infrastructure in order to irrigate effectively, particularly in Niagara region as a result of their geographical location does OMAFRA provide any funding or other kinds of aid to help resolve this

problem? Are there programs run by the provincial government that provide funding or technical information with respect to infrastructure?

I believe OMAFRA does, MNR does not, it is not our area of responsibility so we do not get involved in that. However, we do participate in some of the funding programs and the majority of the funding programs are federal Agriculture, Agri-food Canada and we do work with them in funding applications.

4. What is the Provincial government doing to help farmers? For example, what kinds of funding, programs, information are there for producers?

Again, it is an OMAFRA question, but we covered that to some extent. The low water response program is to identify problems before it happened and to educate users and advertise the best management practices so low water response teams are in partnerships with OMAFRA, OME and MMAH so we work with them to ensure that water may not get into a depression situation. And know what the best management practices and have water permits so that we know who is using the water and when to cut back everyone has to cutback not just people that hold water permits. Going back to (question two) the resolution to the water permit process is that everyone has a permit to use water so we all know who is using water. Two, we don't have to jump into the process. So to obtain the permit for your water use is part of the solution because renewing the permit is quicker and easier than obtaining permit outright. What are we doing to help the farmers? Trying to get ahead of the situation and we funded the low water response program you saw the monitoring network we fund all that, but there are additional monitoring networks we don't fund, but the initial monitoring network the over sit issue is responsible for issuing low water notification of low water condition we fund all that, we support the conservation authority and the low water response activity we fund some of their activities, we hired staff to address the issue to talk to the water response teams. We have the website and we have information to exchange with the low water

response teams. So the producers have access to the low water response teams and the website.

5. Several pilot projects were started in the Niagara region in 2004/05. These were the communal irrigation projects in which you were personally involved. In a nutshell, can you tell me what led to the creation of these pilot projects? How successful were the projects? And were these projects funded by OMAFRA?

They were funded by the MNR and I believe they were funded by combined numbers of customers, I think OMAFRA funded them, I think Agri-corp funded them, I think most of the money came from the federal government.

6. Some pilot Irrigation Advisory Committees (IAC) have been formed in certain watersheds, such as the Big Creek. A few IAC's were successful while some have failed such as the Brant IAC that was dissolved in 2005 due to lack of sustainable funding and the usefulness of the committee. Can you elaborate on the success and failure of these committees from a personal point of view? Also, does OMAFRA want to continue to encourage the IAC movement? Lastly, is there any future for or room for IAC to grow?

The reason for the pilot project was to provide a more dependable consistent supply of water that has nothing to do with low water response. Low water response was intended to address the potential situation that is not a standard problem so low water response is not to wave in a year, after year that is managed through best management practices determining processes and other methodologies in place. The reason as I understand is regarding the pilot project was the need to have more consistent and reliable water supply for two reasons: a) increase demand and b) climate variability not climate change. We experienced dry periods recently and we experienced the worst dry period in the past. So we are not just confirming that dry

condition is due to climate change but we can only say they are due to climate variability. So in view of the increase in demand and the weather climate variability my understanding is to provide more a sustained water supply. I understand that the project was very successful; they have identified some valuable areas in which they can improve upon the supply. The problem is when you get communal supply the demand goes up so much that you trigger the permitting process and you trigger the Great Lake Channel, the great lake channel water supply trigger and water consumption trigger and irrigation water use is high water trigger. So where farmers are required to get water permits is not a big deal even for a group of farmers for communal supply there is no reason for that it would not trigger the channel, but one get several dozens of hundreds farmers such as the Niagara Region project that is problematic to deal with. The failure of the Brant IAC is a disappointment for me because we did fund them through the conservation authority we did provide funding through the low water response team, so we did support them financially. I think one of the reasons why the IACs might have failed is that they were reactive, we get back to the condition of 2002 they find a need to form again. The usefulness of the committee is driven by the need and we did have some problems in 2001 and 2002 and also the formation of the committee would have allowed the opportunity to educate the water users of the permits. They now have more permits than the agricultural water users that helps manage the situation. And yet we do want to encourage the formation of the IAC and we do want to provide funding for the low water response teams for their activities. Yes, there is room for the IAC to grow and they should have representation of water response teams. We do help fund the Grand River IAC through the water response team providing directly to the Grand River Conservation Authority to help support them. I think we did that for two years. My disappointment of the failure – the Norfolk IAC was funded internally I think they provide their own funding. We provide funding for the Grand River IAC. The Norfolk IAC have more intense agriculture irrigation uses than the Brant, there were more people that were involved that is why they raise their own funding there were many that funded them. I think the farmers in Norfolk federation was facing dilemma if they did get smart up the way

they use their water, they would be in trouble. While in Brant, they would escape most uses so when the pre-condition is not better than where they were they will be able to determine what to spend money on something else. So why I am disappointed is that they have a voice at the table and they have the opportunity to sign into the membership to know what was going on. I was at the meeting in 2002 and 2003 where we talk to the Grand River federation of Agriculture about water permits and the needs for a water response team and I think the way these things are going to continue is if they realize if they don't continue they are going to lose their water or unless they are concerned with the use of water it is difficult for them to grow I think they definitely need water. I think there are so many things competing for their attention so if they get into the problem again, there is a need to react maybe that is the way farmers react to form a federation. I think IAC is a good idea they have done more than simply advising on irrigation they can advise on data so if there is agriculture irrigation advising committee, they can share the information, they can confirm with the farming community and not the government telling them what to do with their water and is the climate condition that is forcing them to manage their water. It is kind of having an understanding of what the drivers are so if you have an agricultural advisory committee telling you the water really have to be managed and not someone taking your water they are suspicious of this. They are getting their water from the front of other users particularly in the southwest where you have a lot of municipalities. Let's say non-agricultural users make them to react and use of water in municipal rate 375 L/day rate instead of 175L/day rate.

7. During our focus group consultation with farmers in Norfolk County, we noticed the diversification of tobacco farming to other crops, is this a new trend in Southern Ontario or is it only restricted to tobacco farmers? As a result of this diversification in tobacco farming, has the use of irrigation been decreased or increased in recent years?

I don't know enough about agriculture to say, my suspicion is that depending on the crop if not the demand overall that matters if the demand to a certain window, so other crops may need water not all at once. I understand tobacco has a very intense water requirements and ginseng may need water for long period of time or less. The low water issue in southern Ontario is overall demand in any point of time issue if you need now for a couple of weeks maybe you don't need it again and a lot more such as in drought situation. I don't think that is my understanding that tobacco has a high tense need of water for a short period of time that duration if water is not there that time, that would create a problem. However, I also understand that the diversification of the crops were also getting great up of best management practices so ginseng farmers might come in dripping irrigation as suppose to sprinkler irrigation which is less consumptive. I think you are going to find the importance in irrigation techniques with the diversification of crops that is going to make the difference until this century irrigation techniques have been very wasteful of water. They use a lot of water, the warmest time of the day, they irrigate during the rainfall. They have their calendar and they follow it regardless of the need. That is where you are going to find the improvement of diversification. And may longer window less attempt to irrigate and you have more use of best management practices so you expect a decrease not increase. Golf courses need less water because golf courses don't have the same demand as I understand it, so what we found for example on the Grand River is that the golf courses when the water is low will irrigate – and they can take a turn every three days, but agriculture users cannot do that because everybody needs water today. Golf course owners can just be as wasteful, I think they irrigate during the day when the weather is hot or rain and everyday instead of once in three days. I think there is opportunity for golf course owners to improve upon best management practices. The question is that how golf courses are designed? Are they providing with wetland or ground or not, I am not sure I have see some golf courses with big water channels and they provide natural habitation and they also provide a wetland that is one of the issues, one of the projects we are carrying on in Southwest Ontario is wetland drain project, so MNR is taking on funding sustainable irrigation project not through the Niagara

region project. The purpose of the wetland drain project, you need drain to get the water off the land in certain times of the year, but at the same time if you are draining your wetland when you are draining agriculture land you have no water use so if the golf course can divide the sustainability of the water table, they may be able to use their water trap for watering that is what farmers do to increase on farm watering of vegetable. Wetland drain is a way of keeping water on the land when you are draining it for agriculture use that is something MNR can provide advice for.

8. Do you have any question about the low water response program? Yes how is the program going?

Ontario low water response team program is one of its kind in the province. It was started in the spring of 2002 it was started as response to the 1999 drought year. The process was put together by MOE, MNR, OMAFRA, MMAH, MGG, CA, and association of municipalities of Ontario. We post the low water response document through the web, and we ask for comments in August 2000, we receive no valuable comment on it and were not favorable , and we held debriefing of the program every year since we started it and we have made a number of changes and improvements. We secured permanent funding for the program so we now give money to the water response teams on regular basis. We put in place weather equipment, we hired more staff that help in the monitoring of the program we now monitor regularly and accurately. The water response team received notification from MNR, MOE and OMAFRA about the potential of low water situation. It is the responsibility of the low water response team to look at the information that we provide them if there is no conservation authority they go to MNR district office to make sure they are accurate and if is accurate, determining the level of water, if is not they go to level 1 condition, level 1 condition means the water response team will meet. You get notification to the users through press releases or direct contact with water response team representatives to voluntary cut down on water demand.

Other things which the low water response team does looking at supply and demand determine where the issue is whether it is the ground water level issue or whether it is the Great Lake water level issue or whether it is the surface water level issue and depending on whether the supply is and demand is will depend on their reactions. The general reaction is a voluntary 10% cut back of water usage. If the condition is worth it, we ask for 20% cut back and is both voluntary and is also through regulation in municipal bylaws. Permit holders get sent a letter telling them to cut back their demand by 20%. The best way to monitor that is to see a response if they cut back on water usage, there will be water available the next day so if you take water when you are not supposed to do and if you kill fish you will be charged under the fishing Act. You may be charged under the municipal bylaws, fishing Act, Ontario natural resources Act, so there are regulatory requirements to be met that is why the permit holders will be sent a letter – and there is a way of trying to get the regulation permit. However, the process is not a threatening process it is an encouraging process and that is why you need the water response teams to make that characterization. The people using the water can be there and educated and you need the people to manage water to be able to indicate why this is a problem. For the Big Creek, Harbourville you can see the reservoir back in 2000 there were just a trickle going over the Harbourville reservoir trickle when we issue warnings to cut back the next day you have minimum flow rate over the reservoir. The best way to monitor if they are taken action is that they have to buy into the water team so that you can get feedback from your representative who is your members are cutting back. They are difficult to monitor by taking air photo above the ground, but the flow of water. The primary water is you working with water response teams and the users to get out message to them. Why they need to cut back – they have to cut back and two you have other indicators like flow recovering is getting worse and are people irrigating why they should be. People do tell other people if they are not cutting back. Conflicts between non farmers and farmers in water usage. People watering their lawns are subjected to municipal bylaws and they could be fined by doing so when they are not supposed to. The best way is communication, letting people know when they can water their lawns. The purpose of the water response team is

to have the participants represented and you get consensus, you have industry users, agriculture users, municipal users, different sectors, commercial, golf course. Water bottlers tends not to be under because they have bad reputation. (most of the low water response teams are in the southern Ontario). We have process in place where we can take action when people are not responding they tend to be very effective. We have protocol in place where we can talk to the water response team chairs we have MNR and MOE representative at the table. The fact that we have users at the table, when they get to the meeting they found out that it is not MNR say stop using the water, it is the farmers telling municipal to stop using the water very effective one of the water structure operation in central Ontario, you get the farmers on the cottage on the lake complaining about the lake level all are complaining that the government is messing them up at the meeting. So when they get to the meeting people on the lake started complaining about the lake level and they found out not the government that is blocking the water level, it is people down the stream that is telling the government. All of sudden, the people on the lake and people down the stream realize they are fighting each other not the government messing them up very effective. That is why we put it in the hand of local users. There are problems with the low water response team – low water response team do not have full membership they could improve upon by having more membership we have water response teams that don't meet on time so there are problems. So the process itself is very good, every good and effective but it does mean is working every where there are problems and we deal with them as they come along with debriefing and training sections, high turnover in staff we have see bad dry condition for couple of years, but we have dry condition not very bad in recent years. Maybe you get to point of where it has be three years we have here a problem and the people running forget what is going on. In the case of voluntary water management they responded very well. Particularly when other farmers are breaking the rules and causing problems. They don't respond well when we say you can have the water because when we say you have to maintain a minimum flow as the same in the ecosystem. The reason for that is, in their opinion the drains are not a natural condition, they forget that drain replace the river and therefore they are

natural condition. If there is water there, they think they are entitled to it – is there water and they do think anyone else including the ecosystem have priority. We do have water priority in there – there is direction for water fire fighters is priority, and when comes down to minimum amount of water, we short down the industry. Our experience has been so far is that when the supply dry's up, it dry's up and you don't have a lot unfortunately it happens when having taking action. We are improving through more and more water response teams are taking action and trying to get on top of the situation before it happen and there are some areas in the province that get dried up often. Federal government Yes, absolutely DFO is always involve the federal government is funding sustainable irrigation program by OMAFRA perhaps and agriculture Canada. They can get information through OMAFRA and agric food Canada. Other than that it is not our job, our job is to make sure that water supply be monitored and when we have water response team taking action when is required and when also have source of water protection role we have been working on it since last year and this year that is to make sure that water supply stay clean and if you don't have water it gets dirty. The funding of this irrigation equipment, irrigation technique, best management practices by OMAFRA and agriculture Canada. In fact, agriculture Canada received our low water information for their North America Gulf monitoring.

Interview with MOE Staff

September 14, 2006 at 1 PM

2. *The process in obtaining a water permit is long and expensive, which frustrates many farmers. If so why? Is there any way this problem can be resolved?*

I will not be able to answer all your questions, but I will do my best to answer the question related to permit to take water (PTTW). Let me start by saying that under the Ontario Water Resources Act (OWRA), the Ministry of the Environment is responsible for the supervision of Ontario's ground and surface supply. Of special concern is the taking of water in large quantities. As a result, anyone taking more than 50,000 litres of water in a day, with some exceptions, must obtain a permit to take water from the Ministry of the Environment. With some exceptions, a permit to take water is required when a person or organization wants to take more than 50,000 litres of water in a day. This includes the taking of water for any use, whether agricultural, commercial, construction, dewatering, industrial, institutional, recreational, remediation, water supply or other purposes.

Basically, there are three types of applications for permit to take water in Ontario:

- Category 1 applications (unlikely to pose adverse environmental impacts) these types of applications are for those who already have permit to take water and just want to renew the permits, same person, same location and same water resources.
- Category 2 applications (requiring a scoped assessment) these are short term permits less than seven days.
- Category 3 applications (requiring a detailed ecological/hydrological study) these are more complex to deal with,

So the proposals for water taking are classified according to their anticipated risk to the environment; the greater the anticipated risk, the more evaluation is required.

Each permit application undergoes a review process when application is submitted to the Ministry of the Environment and it takes several months to issue one. Ministry staff check all permit applications, measuring them against a host of requirements. The Ministry will post designated PTTW applications on the Environmental Registry in accordance with the Environmental Bill of Rights and consider public comments in its decisions.

A category 2 application it requires a qualified person to conduct a technical review of the proposed water taking and to complete a schedule 2 which is to be attached to the application. Technical reviewers for surface water are hydrologist and for groundwater is hydrogeologist. For categories 2 and 3 applications, a licensed professional geoscientist or exempted professional engineer as set out in the Professional Geoscientists Act, 2000m of Ontario. If your application is for more than one source, it will be classified according to the highest category of the individual sources. For example, if your application includes a category 1 source and a category 2 source, your application will be classified as category 2.

Ministry of the Environment has 90 days to issue permit to take water after the application is completed it has to go through technical review for approval. If the application is denied, the technical reviewer will have to write letter stating why the application was denied and this letter must be signed by the Director.

In summer we are very busy as compared to winter months. Short term permit is faster than long term permit of say 10 years. Sometimes, farmers applied for indefinite permits, but we cannot issue such indefinite permit. Sometimes, they applied for 10 years, but we give 5 years permit in this case they will appeal the permit. First they will contact their Lawyer and their Lawyer will then contact the Ministry's Lawyer, then the director is also contacted. At this point, the technical reviewer has to explain the reason why they issue the permit for 5 years instead of the 10 years. This stage is to help resolve the conflict before going on to the final tribunal. We do not have many appeals just a few in a year.

The application form before was between two to three pages now it is about eight pages. The reason for this is that we have more information then before which often delay the processing of the application. Before we used to call the applicant because of the short form, which contains very little information this process takes long time to complete. What is important about the long form is that we do not have to call the applicants for more information about the application.

In terms of cost to farmers – farmers do not have to pay fee for their water permit. Water takings for irrigation and frost protection for agricultural purposes, including vegetable crops, fruit orchards, flowers, nurseries, tree and sod farms, tender fruit and aquaculture (fish farming), are exempt from permit fees. The exemption does not apply to agribusiness and food processing operations, including vegetable and fruit canning, processing, picking, and beverage manufacturing, wine-making and water bottling.

First, the application is send to Toronto our head office. Ministry approvals take the form of a Certificate of Approval, which is obtained from the Ministry's Environmental Assessment and Approval Branch (EAAB). This will takes about two days for the process in Toronto then the application is send back to the coordinator in west central region office in Hamilton for further processing. There are guidelines for the coordinator to follow. We have leaders who are in charge of surface and ground water respectively.

We have clinics in Norfolk County we often go there once in a year to help farmers to fill out their applications. But, this is not done often I believe we should try to help the farmers by way of educating them how to fill out the application forms properly. I also think that we should education the farmers about the program if we do this often it would help farmers.

The application is accessible through our website, we have all the information needed in our site, all OMAFRA offices have the form and we also mail out applications to farmers this is done everyday.

We also have pre-consultation whereby they could come into the office to get help in filling out the forms. We know that it is difficult but we should find way to conserve water because they are use more. The program is a great initiative for MOE. Farmers needed to be provided with education, we need monitoring and enforcement in order for the program to be successful. We have environmental enforcement officers that go around to enforce the rule. Sometimes we get complaints from neighbors that their neighbors have no permit to take water we then sent out enforcement officers to investigate the complaint and if a person is found taking water with permit he could be fined.

Interview with OMAFRA Staff

October 02, 2006

1. In our focus group consultations with farmers across southern and eastern Ontario, the majority of participants about the lack of information about dry weather conditions in 2001 and 2002. As an expert on the field what do you think about this concern?

I am not sure what they are saying about the lack of information. What information they need about the weather? I am not sure what their concerns were I would think whoever will be able to figure that out will make a lot of money. The prediction of weather in a short and long term, there is nothing that can be done. I don't think that would ever happen – that kind of request is a long way from now how to predict accurately regarding weather conditions.

2. The process in obtaining a water permit is long and expensive, which frustrates many producers. If so why? Is there any way this problem can be resolved?

Prior to this it would not be expensive process in obtaining water permit is long, long is always relative, it is expensive which is relevant, the process of getting permit is how much information you have to provide. Farmers do not have to consider value added to the cost of getting water permit. So now the process has changed due to changes in regulation – I don't know how you can avoid that you do not want to do it overly because it would be expensive. The growing process is that number one, they have third party to help them fill out the application which they don't have to do before. Generally, farmers do not have to do that before – so is a new thing because it is new this is the first time for the people they are hiring (new staff) because the process is new the staff are going through a new process as well as the farmers. It is two years the regulation was changed so the whole process is somehow new and it would take time to put the whole thing to work properly.

Once that is through we can see whether it is clean or not. The third party is the consultant, but they do not have to get one – if they do they have to pay the fees at their own expense. They are asking for more information this was done originally because of farmers, but other permit users as well. The application for water permit is not for farmers only, we have industrial users, commercial users, construction users ... the eight pages is a lot this is the first time they have to use it. If they have to do any number of calculations that will be additional to the eight pages. The farmers themselves or get help from a qualified person (the third party to help them do the calculations). So it is not everyone that has to do the calculations if is on site that is already known or where there is a lot of water, if it is water well and spring that is different from ground water you have more knowledge of water is there, for soil you may be the only person using the water or pond you may be the only user. But if you are on stream you may not be the only users you are looking at the whole package so for the application more details and information are needed in the application. Depends on who you talk to you will get negative reaction is there because the application gets bigger – so is a new process. We are trying to work with MOE to develop a new way to help farmer in the application process, to develop information that would help them to understand it, and help them to do the calculation themselves. This is the first year they have done this it is a new process for the MOE as well as to what information needed for the implementation of the process. So it is a learning process for both sides. We are between how to see the output before the benefit.

3. Our findings show that producers need help with infrastructure in order to irrigate effectively particularly in Niagara region as a result of their geographical location does OMAFRA provide any funding or other kinds of aid to help resolve this problem? Are there programs run by the provincial government that provide funding or technical information with respect to infrastructure?

Are we talking about the transfer system? There is only one in that area and they are trying to do additional one in the area and we do have irrigation committee to look at the option we do not provide funding but the federal government do provide funding. There are more funding before that for water and irrigation which is the component to support the study and we help them through technical support in the best way we can. We do not provide funding we work with the federal Agriculture Canada and other technical people to provide support in terms of water supply – we have provided information. We have done that through publications, fact sheet that is it. So there is technical information available to them. There are in plain language, they would deal with the specific of their locations, but they would help them with decision making process in terms of the technical design and what they needed to get to the implementation stage. The private sectors have to do that. For the government to help fund infrastructure require a lot of money to do that. I do not know why they want government to do that I do want know what project they are talking about. I do not know whether they have put something in this specific project, I do not know if they are going to help individual farmers we have not got to that yet – it is possible for us to fund such project it is unique, it is hard to say no because of the uniqueness. Do we have a program specifically for putting plant for automobile industry no, do we (the province) support them yes. Specifically on individual basis, it would be repeated anywhere else, it would be dealt with specifically for such program. If we are talking about individual farmers program that is a different program there is right now for individual farmer. The federal government has provided funding for water storage all what the farmer has to do is apply for funding. In terms of transporting water through another property that is a different thing. Depending what the project is I think is 30/50% of funding from the federal government. There is often joint program partnership with us and the federal government sometimes is cost sharing, sometimes we provide technical support through rural planning.

4. What is the Provincial government doing to help farmers? For example, what kinds of funding, programs, information are there for producers to access?

Providing information to target their needs, hold information section for farmers or partners that are arranging credits. We also help them with their low water issue, we provide technical information we do have one irrigation engineer dedicated to irrigation to help individual farmers about their irrigation related problems across the province. If they want to talk to us, we would not get into the full design issue that is dealt with by the private sector the consultant (the third party). We have done research on water use to support them.

5. Several pilot projects were started in the Niagara region in 2004/05. These were the communal irrigation projects in which you were personally involved. In a nutshell, can you tell me what led to the creation of these pilot projects? How successful were the projects? And were these projects funded by OMAFRA?

This project was not new, what was new is that they trial on communal basis. What project are you talking about? Is it the transmitted station in Niagara Region Communal system has been already there for number of years what is new is the increase in capacity as people wanted to get on line that is what is new. As you get more people into it there is a need to manage the system. The planning that went into it from a planning point of view was to deliver enough or sufficient water to every farmer that needed it. At a point you reach a capacity where you do not have water to pump, they reached that stage they probably have no enough water in their area and they needed more infrastructure to pump water as people need more water, they are require a development of a new system. Right now is functioning well it is a way of telling farmers to be water wise – by efficiency, by changing their equipment. “The term pilot” the channel has been used to supply water for numbers of year the project was a new one. It was there to provide outlet for farmers who do not have outlet, drainage was number, the design and construction the use of term pilot project because they use that because of the new people that was involved.

The system was self-sustained –we did not fund them no the cost of maintaining the municipality we bear the cost.

6. Some pilots Irrigation Advisory Committees (IAC) have been formed in certain watersheds, such as the Big Creek. A few IAC's were successful while some have failed such as the Brant IAC that was dissolved in 2005 due to lack of sustainable funding and the usefulness of the committee. Can you elaborate on the success and failure of these committees from a personal point of view? Also, does OMAFRA want to continue to encourage the IAC movement? Lastly, is there any future for or room for IAC to grow?

There was pressure on them to be successful (regulation) cooperation, they were given choice, they knew that invested interest – they knew they have problem as a result they have to deal with it. In the case of Brant, it did have the same agriculture local leadership that is lack of agricultural leadership, they did not have agriculture organization, it has leadership problem, no strong demand for water, mainly vegetable. There was lack of overall support – there was the issue of watershed boundary, the boundary did not match. Two different agriculture federations – it has structural thing that Brant has to overcome. The leadership thing, there was no pressure such as the dry period or season. I believe there is a room for them to grow it is a beautiful model to work with. We do not say much about it (the government). The project is totally depend on outside money if the money is dry's up the project will be dead. There should be long team and short team funding mechanism. Order than province no one else is putting money.

7. During our focus group consultation with farmers in Norfolk County, we noticed the diversification of tobacco farming to other crops is this, a new trend in Southern Ontario or is it only restricted to tobacco farmers? As a result of this diversification

in tobacco farming, has the use of irrigation been decreased or increased in recent years?

Diversification of tobacco, your government (federal) have provided funding for tobacco farmers to diversify to other crops – to get out of tobacco farming to get into something else. We want them to get out of tobacco farming. There are programs that would help them do that. There are other programs they can take advantage of. Shifting from tobacco to other crops may result in the use of more water such as vegetable.

Interview with OMAFRA Staff

October 02, 2006 at 10: AM

1. In our focus group consultations with farmers across southern and eastern Ontario, the majority of participants about the lack of information about dry weather conditions in 2001 and 2002. As an expert on the field what do you think about this concern?

Ok – so from your focus group discussions they identified 2001/2002 as drier year in Ontario, but I would say 1997, 1998, and 1999 were drier in Ontario. In Alberta 2001/2002 were drier from Ontario perspective 1998/1999 were drier year. I guess – how did you predict weather, I have never seen anyone does that yet. What you do is you try to communicate what is happening and then they will make decision base on that. Personally, I do not get involve because very little irrigation use is occurring in this area. As an outsiders, the low water response team may be able to communicate information to farmers such as level 1,2, and 3 –stream flow and there is few irrigation committee in e.g. Norfolk county to help farmers to help themselves.

2. The process in obtaining a water permit is long and expensive, which frustrates many producers. If so why? Is there any way this problem can be resolved?

Farmers don't like to send money at any point – if they think they are to spend money on what is already available, they feel it is important to grow food and I need water to grow food right? And they look at other people – their neighbours who don't have water permit and they use water anyway. No body enforce it and I got my water permit and it don't matter anyway if the guy needs water he is going to pump it. It is like – it seems like red bureaucracy regulatory thing that don't have any value even though you spend money on it and I don't know much about it

because I hardly help people on it. In this area we do not use irrigate system we only field crops corn, hay and so on. If there is no rain farmers just stop growing corn because they would not invest in irrigation technology. Irrigation is not very important in this area corn and hay cannot be irrigated.

3. Our findings show that producers need help with infrastructure in order to irrigate effectively particularly in Niagara region as a result of their geographical location does OMAFRA provide any funding or other kinds of aid to help resolve this problem?

Are there programs run by the provincial government that provide funding or technical information with respect to infrastructure

Well, I know that there is irrigation in Niagara region they have drain system that help them to irrigate. Technology information fairly limited - talking about quality of irrigation water, are we losing water, is the quality of water good. The information is not there I never get complaint from farmers about irrigation. The low water response team was actually initiated in 1997/1998/1999 not 2001/20002 come out of lost of water.

4. What is the Provincial government doing to help farmers? For example, what kinds of funding, programs, information are there for producers to access?

Well, part of that income was stabilization which the federal government is supporting partnerships environmental protection, federal/provincial are both money for environmental issue, training, education, how to use software, voluntary, individual program, workshops activities.

5. Several pilot projects were started in the Niagara region in 2004/05. These were the communal irrigation projects in which you were personally involved. In a nutshell, can you tell me what led to the creation of these pilot projects? How successful were the projects? And were these projects funded by OMAFRA?

I do not know much about this and I do not if farmers did it because they saw the needs and they wanted reliable supply of water.

6. Some pilots Irrigation Advisory Committees (IAC) have been formed in certain watersheds, such as the Big Creek. A few IAC's were successful while some have failed such as the Brant IAC that was dissolved in 2005 due to lack of sustainable funding and the usefulness of the committee. Can you elaborate on the success and failure of these committees from a personal point of view? Also,

They are good - it was the local people that have to make decisions the users have to make decisions at the local level. In the case of Brant, I think it was due lake of dedicated people. Lack of sustained funding I do not know the useful of the project to them. Do we want to encourage that yes because people have prepare for dry weather. But if there is no drought they do not see the need for it. I think there is a future need for the project particularly the year they will have drought. The Big Creek are doing a great job because we are moving out of tobacco down the south to Norfolk County we have similar situation. I can not answer if the Big Creek project will be applicable to this area. We are encouraging farmers to get out of tobacco business all together. Here some farmers are shifting from tobacco to other crops.

7. During our focus group consultation with farmers in Norfolk County, we noticed the diversification of tobacco farming to other crops is this, a new trend in Southern Ontario or is it only restricted to tobacco farmers? As a result of this diversification

in tobacco farming, has the use of irrigation been decreased or increased in recent years?

Low water response team advisory committee was formed by OMAFRA in partnerships with MNR, and conservation authorities. Conservation authorities have water resource information, water budget information. If you are looking at dry year then you have a big concern, but if you have one year that is wet they you would not have concern. So the water budget information will help them to predict the pattern and use of water in a particular year. It will tell farmers the frequency they will irrigate.

9. Canadian farmers cannot compete against crops that are imported from elsewhere since they are not subsidized like their American counterparts as they are subsidized and compensated for their crop failure. Could you comment on the fairness of these concerns – are they fair, unfair or biased?

At the federal level there is no policy to keep farmers on, even at the provincial level the same thing. Their policy seems to eliminate farmers all together. In the U.S.A. you can get your engineering work done but here they have to pay for that. In Australia I do not know how they do that. I do not think there is much help from government here.