March 11, 2005

Honourable Leona Dombrowsky
Minister of the Environment
The Executive Council of Ontario
12th Floor
135 St. Clair Avenue West
Toronto, ON M4V 1P5

Re: Review of Regulation 170 for Small Drinking Water Systems

Honourable Minister:

I had the opportunity to review your speech that was delivered at the combined ROMA/OGRA conference the week of February 22, 2005. I noted your references regarding the need for public health units to become more involved in small drinking water systems currently regulated under the Safe Drinking Act, O. Reg. 170/03.

Various committees and stakeholder groups have been involved in the current review of the existing legislative and administrative structure relating to small drinking water systems (SDWS) across Ontario. The purpose of these ongoing discussions and activities is to ensure that small drinking water systems have practical and feasible mechanisms in place to protect drinking water supply users/consumers. Public health risks to consumers and costs for the operator and the public are major issues addressed in the review.

As part of this review, the Association of Supervisors of Public Health Inspectors of Ontario (ASPHIO) were asked to participate on the ‘MOE/Health Unit O. Reg. 170/03 Working Group’ led by Paul Froese, Policy Advisor, as part of the Ministry’s overall review. In addition, during the consultation process conducted by the Drinking Water Advisory Council, ASPHIO provided comments on the review of the Drinking Water Systems Regulation and the requirements for small water systems.

Subsequent to the consultations an ASPHIO Working Group was formed to provide input to the review and offer possible solutions. The result is the attached "Options Paper on the Role of Public Health Units in the Administration of Legislation Governing Small Drinking Water Systems". This "Options Paper" is clearly only the beginning of the longer process of discussion between public health units, the Ministry of Health and Long-Term Care and with the Ministry of Environment in the administration of Ontario Regulation 170/03. Should the Ministry(s) accept the recommendations identified in the "Options Paper" there would need to be a clear commitment in providing 100%
funding, legislative authority, appropriate training and additional human resources (public health inspectors) for successful implementation.

The members of ASPHIO look forward to participating in further discussions with your Ministry and various stakeholders. Should you have any questions in the interim, do not hesitate to contact me.

Regards,

Siobhan Kearns
President, ASPHIO

c.c.:

Honourable George Smitherman
Minister, Health and Long Term Care

Dr. Sheela Basrur
Chief Medical Officer of Health and Assistant Deputy Minister

Mr. Larry O'Connor
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OPTIONS PAPER ON THE ROLE OF PUBLIC HEALTH UNITS IN THE ADMINISTRATION OF LEGISLATION GOVERNING SMALL DRINKING WATER SYSTEMS

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February 6, 2005
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Disclaimer

This paper was developed by a working group of Association of Supervisors of Public Health Inspectors of Ontario members and is presented to the Ministry of Health and Long-Term Care and the Ministry of the Environment for consideration in their discussions on the role of public health units in the delivery of an expanded Safe Water Program to include specific small drinking water systems.

ASPHIO understands the public health importance of monitoring drinking water systems and is committed to working with the MOHLTC and MOE to ensure that an effective, reliable program is in place to accomplish this goal.

This paper presents a preliminary look at the requirements and needs for the delivery of an expanded Safe Water Program through public health units. It does not completely quantify the impact and costs of such a program across the province given the vast demographic and geographic differences and the number, type and spatial distribution of small drinking water systems in health unit areas. Thus it does not include the needs of all health units.

If the Ministry of the Environment intends to transfer certain aspects of Ontario Regulation 170/03 to the Ministry of Health and Long-Term Care with subsequent downloading to public health units, there needs to be dialogue with public health units to identify and agree upon the solutions (strategies) to the issues and feasibility surrounding this transfer.

Public health units are in the same position as the MOE as they do not presently have a good grasp on the number of small drinking water systems in their health unit area. Considerable investigation is needed to get to this stage. It is therefore recommended that prior to any proposed transfer, that a process be set up whereby health units would be given the resources (time and money) to identify and build an inventory of small drinking water systems and to conduct a ‘pre-feasibility study’ to estimate the costs and resources necessary to deliver the program.
1. Introduction

The Ministry of the Environment (MOE), the Ministry of Health and Long-Term Care (MOHLTC), Public Health Units in Ontario (PHU) and select committees and stakeholder groups have been active in the past year reviewing the existing legislative and administrative structure relating to small drinking water systems (SDWS) across Ontario. The purpose of these ongoing discussions and activities is to ensure that small drinking water systems have the mechanisms in place to protect drinking water supply users/consumers while ensuring they are feasible. Public health risks to consumers, costs for the operator, the public and the practicality of this are major issues addressed in the review.

The Association of Supervisors of Public Health Inspectors of Ontario (ASPHIO) was asked to participate in these workgroups, provide input to the review and offer possible solutions. ASPHIO representatives were asked to participate on the ‘MOE/Health Unit O. Reg. 170/03 Working Group’ as part of the Ministry’s overall review. The goal of this working group was “… to provide a forum for feedback from public health professionals with ground level experience dealing with small rural and remote facilities with particular focus on … microbiological testing, minimum treatment and relief, definition of GUDI system, use of professional engineering services and scope of sign posting option.”

In the fall of 2004, an adhoc ASPHIO Safe Water – Small Drinking Water Systems Options Workgroup formed (ASPHIO WG) to explore options with respect to the role of health units in the administration and monitoring of small drinking water systems in Ontario. These options and the Workgroup recommendations are outlined in the following paper and are submitted to the MOE and MOHLTC for their consideration.

This paper represents a preliminary review of options for PHU to administer program delivery for specific SDWS. Further investigation and consultation must be undertaken before developing any expanded PHU program relating to SDWS. These consultations must include all stakeholders including the MOE, MOHLTC, PHU, government laboratories (MOE, MOHLTC) and SDWS operators. Other stakeholders may include the Association of Public Health Agencies (alPHA), the Canadian Institute of Public Health Inspectors, Ontario Branch (CIPHI), the Ontario Public Health Association (OPHA), the Association of Municipalities of Ontario (AMO) and the Ontario Medical Association (OMA).
2. Executive Summary

Background

Public health units in Ontario have historically played a vital role in ensuring the safety of drinking water supplies. This role has included:

- health promotion:
  - information and advice to owners/occupants serviced by private drinking water systems (DWS),
  - coordination of water analysis through public health laboratories; and

- health protection:
  - ensuring that public and community drinking water systems meet drinking water standards,
  - monitoring and auditing DWS, and
  - enforcing actions to inform and protect consumers when a potential health hazard relating to drinking water quality is suspected.

The Ontario Health Protection and Promotion Act (HPPA) and its predecessor, the Public Health Act (of which sections of Schedule B are still in effect in some jurisdictions) gave powers and duties to PHU to ensure public health protection with respect to drinking water. In addition the HPPA states that every Medical Officer of Health is responsible for the inspection of the area of health jurisdiction served by him/her for the purpose of preventing, eliminating and decreasing the effect of health hazards in the health unit.

Notwithstanding MOE jurisdiction for Regulation 903 - Water Wells, PHU are the lead agency promoting and ensuring the safety of drinking water for unregulated (private and public) DWS through the HPPA and Mandatory Health Programs and Services Guidelines (MHPSG) under the HPPA. Examples of unregulated DWS include those excluded from the Ontario Water Resources Act based on their capacity and service connections. With the Exception of the Regulation -903 no other regulation other than the HPPA/PHA “B” have relevance to these small or private water supplies.

While Mandatory Programs outline PHU responsibility to ensure that all DWS meet applicable drinking water standards, the requirements for operators of regulated DWS to provide safe drinking water is contained in MOE legislation – the Safe Drinking Water Act (SDWA) and its regulations, specifically Regulation 170. Currently this legislation is administered by the MOE while PHU continue to monitor these regulated DWS to ensure community health protection. PHU also monitor DWS that will be regulated under the SDWA in the near future.
The current reform of Regulation 170/03 includes a review of administrative and legislative provisions for monitoring SDWS. PHU have been considered and recommended as the delivery agent for certain SDWS by key stakeholders including the Association of Municipalities of Ontario and groups and organizations that presented to the Advisory Council on Drinking Water Quality and Testing Standards in the Fall of 2004.

In response to these considerations the ASPHIO WG has reviewed several options for the delivery of an expanded Safe Water Program for SDWS by PHU. Three options are outlined below as Option A, Option B and Option C. The ASPHIO WG has also investigated processes that must be included in a Safe Water Program for SDWS. These include regulatory mechanisms, interagency agreements (MOE, MOHLTC and PHU), risk assessment approaches, training and education and funding/cost recovery mechanisms.

**Summary of Recommendations**

Given the feasibility issues identified in this paper and the additional work needed to investigate the impact and costs, it is recommended that the ministries and public health units further investigate health units' expanded role in the administration/monitoring of specific small drinking water systems in Ontario, focusing on the proposal as outlined in Option B. Certain processes that must be included in this investigation, while not inclusive, are listed below.

It is recommended that PHU provide an expanded role in the administration/monitoring of specific SDWS in Ontario, as outlined in Option B. This option would entail legislative amendments giving: powers and duties of PHU; duties of SDWS operators; a detailed MOU between MOE, MOHLTC and PHU; specific training for Public Health Inspectors (PHI) and SDWS operators; an initial risk assessment and risk categorization for each SDWS (including well/surface water supply); a water sampling schedule based on risk category (weekly for high risk, monthly for medium risk and quarterly for low); analysis by a provincial laboratory (preferably a public health lab); and full 100% funding to PHU in order to deliver this program successfully.

Any proposal regarding the role of PHU in O. Reg. 170/03 needs to be framed in the context of the MOHLTC’s Mandatory Health Programs and Services Guidelines with supporting public health legislation. While the Health Protection and Promotion Act gives health units broad powers and duties to ensure safe drinking water, these roles and responsibilities would have to be clearly articulated in legislation if PHU are to administer an expanded Safe Water Program for SDWS.

Risk assessment process models will be used by PHU to determine the risk status of a water supply and can be based on the principles in the current Hazard Analysis Critical Control Point (HACCP) Risk Assessment model used by PHU for the food safety program. The CSA document - "Drinking Water Quality Management Standard" - July, 2004, suggests this approach. The New Zealand model that is outlined in the document titled, "How to Prepare and Develop Public Health Risk Management Plans for Drinking Water Supplies" also details risk management principles that form part of a water quality management plan.
The government’s commitment to full funding (including 100% subsidy transfer and cost recovery) of PHU is paramount to this proposal. It is important to note that the specific SDWS in option B includes premises that MOE/PHU currently do not inspect and PHU presently do not have the capacity to inspect these facilities (B&B’s, churches, ball parks etc). A preliminary overview of identified costs of this proposal is outlined in this paper (Chapter 8) recognizing the diversity of the 37 PHU and the additional costs that cannot be quantified at this time (e.g. number, type and spatial distribution of SDWA, travel costs in remote areas, etc.).

Option B is a logical fit for PHU based on their staff experience and training. PHI are trained in risk assessments and presently monitor water quality as part of inspections of food premises and other facilities on private wells/surface water supplies that PHU are mandated to inspect (recreational camps, migrant farm worker housing, public halls etc.) Specific education and training will form an important component for PHU initially and ongoing training of PHI will be required to maintain core competency.

Option strategies and legal amendments can vary and are discussed throughout this document but a solid memorandum of understanding (MOU) is a significant requirement in the legislative opportunities section. This MOU must incorporate a full funding proposal.

The utilization of a provincial laboratory for PHU audit samples and operator required samples (microbiological) is also vital to the feasibility of this proposal. Requirements for chemical testing and other parameters needs to be reviewed and this should be done using the risk assessment approach.
3. Options Review

The options and required processes for the delivery of an expanded Safe Water Program for SDWS to be administered by PHU are outlined below. The estimated cost as well as pros and cons of each option are presented. The ASPHIO WG has also presented the recommended option and processes that must be in place to ensure that the option is feasible for PHU, operators of SDWS and consumers.

This list is by no means inclusive of all the costs or needs of individual PHU across the province. If the MOE proposal is to transfer certain aspects of Ontario Regulation 170/03 to the MOHLTC with subsequent downloading to PHU, there needs to be ample opportunity for dialogue with public health units to identify and agree upon the solutions (strategies) to the issues and feasibility surrounding this transfer.

Option A – Business as Usual – Existing Safe Water Program for DWS

Description

Ensuring safe drinking water is a component of several MHPSG administered by PHU:
- Safe Water
- Food Safety
- Health Hazard Investigation
- Infection Control.

The objective of the Safe Water Program is to ensure that community drinking water systems meet the Ontario Drinking Water Standards. PHU are required to:
  a) maintain a list of drinking water systems
  b) receive adverse water reports for these DWS
  c) have a protocol for responding to adverse reports
  d) take actions to protect the health of the public with respect to adverse conditions
  e) provide advice/consult on health hazards associated with adverse water quality.

PHU are also required to assist owners/occupiers of private water systems (single household) in ensuring the safety of their drinking water supply. PHU facilitate free water testing analysis of private water samples through the PHL.

Presently, PHU are the only government agency that ensure the safety of unregulated DWS in public facilities such as restaurants and other food premises, campgrounds, migrant farm housing, residential facilities for the aged and tenant-occupied premises (on a complaint basis). PHU may inspect other types of facilities based on local programs and policies (e.g. churches, B & B’s, boarding homes, lodging homes). PHU use their PHL for water audit testing for small and private drinking water supplies.
A Risk Assessment approach is utilized by the PHU to assess the safety of drinking water systems in the community. This risk assessment includes:

- identifying high risk operations or facilities
- identifying high risk populations served by the DWS
- prioritizing inspection and sampling requirements
- assessing potential sources of contamination
- ensuring barriers addressed (source, sampling, treatment, notification)
- assessing likelihood of adverse water quality
- ensuring that owner/operator has protocol in place to respond to adverse incidents
- ensure contingency plan is in place (involving owner, municipality, health unit)
- ensure PHU has protocols in place to respond to adverse reports.

As part of the Safe Water Program, and other appropriate mandatory programs (e.g. Food Safety, Infection Control), PHI ensure the safety of drinking water at these facilities through the following activities:

- bacteriological water sampling
- review operator records (water results, water treatment)
- respond to adverse water results
  - recommending corrective action
  - issuing Boil Water Advisories and/or Orders
  - notifying users and providing information on water use restrictions
- providing advice on water treatment options
- liaising with MOE on legislative requirements (O. Reg 903 – Well Water, SDWA and Regulations) and technical advice.

PHU have a mandate to ensure safe drinking water for regulated DWS and are named in the SDWA and Regulations. PHU respond to reports of adverse water results for these regulated systems and work with the owner/operator and the MOE to ensure that consumers are notified, water use restriction information is provided and corrective action is implemented immediately to protect the health of the public.

**Process**

Maintaining the existing structure and service delivery, PHU would continue to monitor the drinking water quality of all DWS as outlined above. MOE would be responsible for the administration and enforcement of regulations governing DWS under the SDWA. SDWS operators would be required to meet the testing and treatment deadlines of Ontario Regulation 170/03 and would be responsible for the ongoing monitoring costs of maintaining the DWS including sampling costs.

**Cost of Option A**

Presently PHU are jointly funded for the delivery of MHPSG through the MOHLTC and local boards of health/municipalities. PHU allocate these funds independently to each Mandatory Program, including the Safe Water Program, in an effort to meet the requirements and standards of each program and local needs.
Estimating the cost of administering the Safe Water Program for DWS is difficult as PHU activities relating to DWS vary across the province. For example some PHU, based on risk assessment and local needs, conduct extensive audits of regulated and unregulated DWS which includes frequent monitoring, providing advice on water source protection and water treatment needs, routine sampling and provision of public health laboratory services for regulated sample analysis. Some PHU have PHI teams that specialize in the Safe Water Program and provide specific training for these PHIs. Other PHU deliver the Safe Water Program as part of a generalized program and have limited resources for training staff and specializing staff in this area.

While the current costs to PHU to deliver the Safe Water Program for DWS varies, the budget for this program includes:

- PHI salary - inspection time, travel time, report review
- Equipment – chemical test kits
- Administrative costs for PHI and clerical staff – computers, databases,
- Travel costs for PHI and delivery of samples to public health laboratory
- Communications – e.g. public notification of adverse water quality
- Training and Education for PHI
- Number of unregulated DWS in each region.

**Pros of Option A:**
- Risk Assessment Approach - the majority of high risk premises (serving food to the public or serving a high risk population) are inspected on a routine basis by the PHI
- PHIs maintain an ongoing relationship with the operator of these premises
- Mandated aspect of this program ensures that health units budget for the program delivery
- HPPA powers to identify health hazards and order corrective action.

**Cons of Option A:**
- Lack of specific legislative requirements or guidelines to provide consistency in addressing corrective action for ‘problem’ drinking water systems. (Use of HPPA is an overall approach)
- DWS not presently being monitored because they are not regulated and not part of routine inspection program of PHU – e.g. public buildings, tenant-occupied premises
- Regulated DWS awaiting MOE registration and thus not presently monitored
- Insufficient sampling frequency to ensure a stable, safe supply
- Variations in enforcement strategies among PHU e.g. some PHU issue Boil Water Orders, others issue BWA only, charges for non-compliance
- Follow-up to ensure safe drinking water for systems that will be regulated in the near future – difficulty in determining/enforcing corrective action (e.g. permanent treatment device) given that legislative requirements are pending.
Option B – Administration of Safe Water Program for Specific SDWS

Description

As an alternative to the current administration of Ontario Regulation 170/03, this option outlines the process whereby PHU would provide inspection and monitoring services for specific SDWS. This program could be provided at a reasonable cost provided that legislative, administrative, and funding processes are in place. These SDWS would have a trained operator who would be responsible for sampling and maintaining the water system. PHI would be provided with applicable training to assess/inspect all the systems initially and semi-annually thereafter. The activities involved in monitoring these SDWS focus on drinking water from the source to the consumers/users tap.

A key component to this proposal is the expectation that government laboratories would provide the analysis/testing services. The preference is for the utilization of MOHLTC Public Health Laboratories (PHL), since PHU currently use their services. Based on a risk assessment, operator/owner sampling frequency would range from weekly for high-risk systems to monthly for a low risk system. Consultation with the PHL indicates that the estimated per sample cost would be approximately $5.50 per sample. (Note: This represents the approximate cost for analysis only, and does not include additional cost such as delivery, bottles etc.) Participation by the PHL (or MOE laboratory) in providing the bacteriological analysis is critical in this proposal being economical and successful.

Specific Small Drinking Water Systems

The SDWS included in this proposal are those identified in O. Reg 170/03 categories:

| Small Municipal Non-Residential (e.g., community centres, town halls, sports and recreation facilities) | A municipal drinking-water system that does not serve a major residential development, is not capable of supplying drinking water at a rate of more than 2.9 litres per second and serves a designated facility or a public facility |
| Non-Municipal Seasonal Residential (e.g., communal cottages, trailer parks, serviced campgrounds) | A non-municipal drinking-water system that is a seasonal system and serves a major residential development or a trailer park or campground that has more than five service connections |
| Small Non-Municipal Non-Residential (e.g., motels, resorts, restaurants, campgrounds with less than 6 hook-ups, gas stations, designated facilities, churches) | A non-municipal drinking-water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve a major residential development or a trailer park or campground that has more than five service connections |
Examples of SDWS in this proposal can be divided into 2 types of premises:

- **DWS presently monitored by PHU** as part of Mandatory Programs (Food Safety, Infection Control) – Restaurants and other food premises/food service establishments (O. Reg 170/03 definition), day cares/nurseries, Homes for Special Care, migrant farms, recreational camps, resorts, and hotels

- **DWS not routinely monitored by PHU** (recognizing variances among PHU) Churches, community centres, ball parks, bed and breakfast, gas stations, campgrounds, and trailer parks.

**Process**

**Phase I Activities – Initial Set Up**

- Identification of Resource Needs and Costs – equipment, field computers, databases
- Identification of SDWS
- Risk Assessment/Inspection (see Chapter 4 – Risk Management Processes--page 18)
- Classification of Risk
- Training of PHI and Operators (see Chapter 5 – Training and Education--page 20)
- Administration and Database Set Up

**Phase II Activities – Ongoing Monitoring**

- Semi-annual Inspection/Audit (see Chapter 5)
- Risk Assessment Review (see Chapter 4)
- Follow Up Inspections
- Sampling by Operator (see Chapter 4)
- Reporting
- Data management of water results

**Phase III Activities Enforcement and Litigation**

- (see Chapter 6 – Legislative Options--page 22)

**Cost of Option B**

This preliminary overview of types of costs cannot quantify the impact and costs of such a program across the province given the vast demographic and geographic differences and the number, type and spatial distribution of small drinking water systems in health unit areas. Thus it does not include the needs of all health units. **Additional costs not identified in this proposal must be investigated and included in any agreement prior to implementation.**
Appendix 1 (Table 1 and Table 2) give an example of a small health unit’s estimation of costs associated with the set up and maintenance of a semi-annual inspection/assessment program for specific SDWS consistent with the option B proposal. Note: No attempt should be made to extrapolate this estimation to all PHU.

**Estimated Initial Costs for Program Set-Up**

- Risk Assessments of all applicable Systems
- Administration, set up of database
- Equipment – e.g. computer laptops, software
- Training in equipment use
- Laboratory Costs
- Travel costs

**Ongoing Costs**

- Semi-annual Assessment/inspection/audit-follow-up of non-compliance
- Administration and maintenance of database and reviewing results
- Time for remediation & Adverse Results follow-up with potential legal mitigation
- Laboratory Costs
- Travel - Costs will vary among PHU jurisdiction and may increase considerably in the north and larger PHU e.g. air travel only access to premises.

**Cost Recovery and MOU**

A memorandum of understanding (MOU) between MOE, MOHLTC and PHU needs to be developed to ensure adequate funding of the program. Without additional resources the proposal would not be feasible for most PHU. In order to minimize the analysis costs to the facility owner it is recommended that the MOHLTC amend current policy to enable regional PHL to process water samples. Travel costs in the north and larger health units will increase considerably especially when the only access is by air. This difference needs to be accommodated when developing the MOU.

A consumer-system cost-recovery model would be incorporated where each facility/system pays a set annual fee that includes laboratory analysis, semi-annual inspection/audit and initial risk assessment costs. Until it is defined which type of risk assessment process will be used it is difficult to discuss at this stage what additional costs would be incurred to address these premises. The fee would be collected by the province and the funding of the program in each health unit would be a simple 100% subsidy transfer based on the per system cost. The MOE would reimburse the PHU and the laboratory service for the costs of the program.

**Pros of Option B:**

- SDWS will now have consistent monitoring, and risk assessment (using HACCP principles) with fair sampling schedule and treatment requirements identified
- Cost effective - more economical operations and enforcement than current system
- Cost recovery system so operators help pay for sampling/monitoring/auditing
- Reduced cost for SDWS operator e.g. utilizing provincial laboratory.
- Addresses public health concerns more efficiently
- Incorporates auditing of SDWS that the MOE or PHU currently do not have capacity to monitor
- Most unregulated SDWS are accustomed to dealing with their PHU/PHI. This established relationship would facilitate ongoing communication with operators
- With the development of a SDWS template the cost of engineer assessments and reports would be reduced or not needed. A template ensures that DWS are uniform and not over designed.

**Cons of Option B:**

- Amendments to legislation required as PHU are not currently mandated to enforce O. Reg. 170/03, and PHI are not included in current legislation
- A process for enforcement and litigation activities will need to be developed. The time/resources allocated for legal activities has not been estimated
- Additional human resources with risk assessment experience (PHIs) and appropriate training, laptop/tablets equipment and software needed for proposed program to function efficiently.
- Most PHU do not have an accurate inventory and magnitude of target systems
- Presently, PHU do not have engineers or consultants on staff nor do they have such resources at the Ministry level for consultation
- Cost for northern PHU where travel to long distance premises is a resources issue.
- Provincial laboratory (public health or environment) not included in discussions and there is critical need for "buy in" (resources and capacity capabilities) for proposals to "function".
Option C – Full Administration of All Small Drinking Water Systems

Description

Option C includes all items proposed in Option B with two additional categories and expansion of PHU role in monitoring of these systems. These DWS would include:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Municipal Non-Residential</td>
<td>A municipal drinking-water system that does not serve a major residential development, is not capable of supplying drinking water at a rate of more than 2.9 litres per second and serves a designated facility or a public facility</td>
</tr>
<tr>
<td>Non-Municipal Seasonal Residential</td>
<td>A non-municipal drinking-water system that is a seasonal system and serves a major residential development or a trailer park or campground that has more than five service connections</td>
</tr>
<tr>
<td>Small Non-Municipal Non-Residential</td>
<td>A non-municipal drinking-water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve a major residential development or a trailer park or campground that has more than five service connections</td>
</tr>
<tr>
<td>Small Municipal Residential</td>
<td>A municipal drinking-water system that serves a major residential development but serves fewer than 101 private residences</td>
</tr>
<tr>
<td>Non-Municipal Year-Round Residential</td>
<td>A non-municipal drinking-water system that is not a seasonal system and serves a major residential development or a trailer park or campground that has more than five service connections</td>
</tr>
</tbody>
</table>

PHU would administer Ontario Regulation 170/03 as applied to these categories of SDWS and would also conduct the required sampling regime for these systems. Full administration would involve such activities as: routine inspections of water/treatment systems, monitoring, routine sampling, education/consultation, remediation, enforcement, review of the design and operation of treatment systems, and administration.

Process

Phase I Activities – Initial Set Up

- Identification of Resource Needs – staffing, equipment, field computers, databases
- Identification of SDWS
- Risk Assessment/Inspection (see Chapter 4 – Risk Management Processes)
- Classification of Risk
• Training of PHI and Operators (see Chapter 5 – Training and Education)
• Administration and Database Set Up
• Design of Water System Templates
• Development of Resources

**Phase 2 Activities – Ongoing Monitoring**

• Semi-annual Inspection/Audit (see Chapter 5)
• Risk Assessment Review (see Chapter 4)
• Follow Up Inspections
• Sampling by PHI (see Chapter 4)
• Reporting
• Data management of water results

Sampling would be based on risk category and would also be done after disruptions or in an outbreak investigation e.g. power outages, water main breaks, floods or spills, repairs.

**Phase III Activities - Enforcement and Litigation**

• (see Chapter 6 – Legislative Options)

In some PHU, enforcement protocols would need to be developed and an enforcement infrastructure built. PHU may need to further develop a relationship with their legal department. The process of building an enforcement infrastructure can be quite onerous and time consuming. Also, as outlined in Phase 1, the process may work better if a separate regulation is enacted that designates PHU staff to administer and enforce the regulation.

**Cost of Option C**

The cost to PHU to deliver this program would be over and above costs outlined in Option B and Chapter 8 – Funding Requirements. Additional costs would include monitoring/auditing of additional SDWS identified in this option, sampling for all SDWS, and training and resources. The cost to SDWS operators under this option would be reduced as a result of PHU sampling and PHL analysis.

**Pros of Option C:**

• Most unregulated SDWS are accustomed to dealing with their PHU/PHI. This established relationship would facilitate ongoing communication with operators
• With the development of a SDWS template the cost of engineer assessments and reports would be reduced or not needed. A template ensures that DWS are uniform and not over designed
• The administration of a SDWS regulation would ensure a consistent approach for inspection, monitoring, etc.
• Reduced cost for SDWS operator e.g. utilizing provincial laboratory.
Addresses public health concerns more efficiently
Incorporates auditing of SDWS that the MOE or PHU currently do not have capacity to monitor.

Cons of Option C:

- Estimated program costs would include additional salaries and benefits, staff training, travel, administrative time for database set-up and maintenance, lab costs for analysis and adverse reporting, and risk assessments/inspections of facilities
- Staffing to implement this option would be stretched beyond capacity
- There is a disconnection between the administration of the Part 8 (Septic Systems) and Regulation 903 (Water Wells). Part 8 is not administered by all PHU. This can provide obstacles, for example, determining the location of a well for a SDWS in relation to an onsite sewage disposal system
- PHU do not have engineers or consultants on staff nor do they have such resources at the Ministry level for consultation
- Total number of SDWS has not been estimated. In some areas (i.e. the North) the number and types of SDWS can be quite high. Implementation and ongoing costs will depend on the number, type and geographical dispersion of SDWS
- The PHL would have to process samples. The expected number of water samples would put a strain on existing PHL and PHU resources e.g. increased consultations, after hours work, etc.
- PHI will require additional training in order to administer this option
- Cost recovery models will need to be developed and implemented. Additional administrative staff will be needed to deal with finances
- The need to develop numerous resources; i.e. fact sheets, flow charts, best practices documents, etc for each class of system/SDWS operator
- A process for enforcement and litigation activities will need to be developed. The time/resources allocated for legal activities has not been estimated.
4. **Risk Management Process**

To effectively determine the monitoring, treatment and sampling requirements of SDWS a risk assessment process will be used. PHI are very familiar with the risk assessment process since they pioneered the HACCP system in Canada as it relates to food preparation. The current Ontario Food Safety HACCP risk assessment model could be used to determine the risk status of each SDWS. Reference to the New Zealand model that is outlined in the document titled, "*How to Prepare and Develop Public Health Risk Management Plans for Drinking Water Supplies*" should be reviewed for inclusion of applicable processes. In addition, the Canadian Standards Association (CSA) is also developing a Drinking Water Quality Management Standard that includes mechanisms to provide operational control at critical control points, including methods that will monitor performance and trigger corrective action where required. The details of the risk assessment process must be further developed prior to PHU monitoring of SDWS.

**Phase I — Initial Risk Assessment and Inspection**

Risk Assessment of Each DWS Should Include:

- Owner Information & contact numbers
- Existing MOE records (well records and water quality records)
- Identify source of water supply i.e. drilled well, shallow well, surface water, GUDI
- Diagram of property with location of buildings, well(s), on-site sewage systems, abandoned wells
- Physical description of well and type, including housing/superstructure
- Record type of pump, pump rate, capacity of flow (maximum rate)
- GPS record of site with specific location of well
- Type & frequency of use i.e. daily, weekly, church services, group activities, meal preparation
- Assessment of historical sample results
- Digital picture/record of well(s)
- Determine existing backflow prevention
- Assess distribution system where applicable
- Record number of fixtures, especially taps
- Weekly/daily sewage flow (optional requirement to have flow meters for this determination)
- Record and assess operation of existing treatment systems. E.g. Softeners, filters, bacteriological treatment (UV, Cl₂, RO)
- Assess Reg. 903 compliance
- Assess existing location in relation to pollution sources E.g. STS, manure, other
- Determine risk of supply contamination from site information & neighbouring properties (use Groundwater Study)
- Determine aquifer vulnerability and capture zone that includes the Wellhead Protection Area (WHPA)
- Use pre-engineered SDWS template to determine treatment options based on the proposed use.
Additional items to consider for:
High Risk—Shallow Dug Wells/Surface Water Supplies

- Determine existing well head protection
- Review and record type and condition of well casing construction.—i.e. concrete, steel, brick, stone
- GUDI status

Medium Risk—Drilled Well In A Pit or Not in Compliance with current Reg. 903

- Determine existing well head protection
- Assess drainage in pit
- Presence of adequate sanitary seal on well casing pipe
- GUDI status

Low Risk—Drilled Well casing above ground & in compliance with Reg. 903

- Determine existing well head protection
- Assess casing pipe cap for integrity

Phase II – Ongoing Monitoring - Semi-annual Assessment - All DWS

- Review sample results
- Review well head protection on-site and GUDI status
- Review backflow protection and assess distribution system where applicable
- Record flow and volume used; percentage of capable capacity being used.
- Review of previous non-compliance issues
- Action taken
- Review of reporting requirements for treatment devices and maintenance records

NOTE: If compliance requires all wells in program to comply with current standards of Reg. 903 there may be a need to amend appropriate regulations or create specific by-law.
5. **Training and Education**

Regardless of the type of risk assessment process used for SDWS training of the operator/owner and PHI would be required initially and ongoing to maintain competency. Training can be offered at the Walkerton Centre, and/or any other reputable facility. Training should be offered throughout the province and accessible to operators and PHU in the north and other remote locations (O’Connor Recommendation 63). It is important to conduct training for PHI, focusing on specific geographical locations.

O’Connor’s Recommendation 64 suggests that the MOE meet with stakeholders to evaluate existing training courses and to determine the long-term training requirements of the water works industry. The MOE should play an active role in ensuring the availability of an array of courses on the subjects required to train operators. PHI training should be incorporated into this recommendation.

**Operator Training**

Currently the MOE Advisory Committee is reviewing the training needs and course requirements for DWS Operators. This is addressed in the next section - PHI training point No. 2 below. The same process would be required for PHI.

**Public Health Inspector Training**

As a minimum PHI should have knowledge/training in:

- Basic hydrogeology & general groundwater protection issues
- Basic well construction; Reg. 903; backflow prevention issues and devices
- Water treatment systems: design assessment and maintenance issues
- Computer program training to input the data from well assessments

1. **Current PHI Training**

PHI are adequately trained to ensure the standard of care outlined under the SDWA that applies to owners and operators. Note: The MOE provided their new field staff with a 6 - week introductory program to ensure achievement of adequate training needs. PHI training in this module should be similar to Water Operators. However, based on PHI existing risk assessment training and experience, this course could be condensed. PHI currently provide information, education and advice to owners, operators and operating authorities and to the public about:

- The prevention of contaminants entering the raw water supply
- Health risks associated with poor drinking water quality
- The technology (including treatment) to ensure that drinking water is safe
- The operational requirements necessary to ensure that the drinking water is safe
- Other environmental issues relating to drinking water
- Interpretation of contaminants in drinking water e.g. microbiological and chemical parameters
2. PHI Training Needs

It is recommended that a “Training Needs Assessment and Gap Analysis” for PHI is developed, similar to one commissioned by the MOE and completed by Georgian College for Entry Level Operators. Once this assessment is complete the MOE RFP process could be modeled for curriculum to meet the training needs for PHI.

PHI should have training equivalent to entry-level operators to ensure a basic minimum knowledge of principles. This would include:

- Basic hydrogeology, sources of contamination, source protection, general ground water protection issues, supply and distribution components of a communal water system, disinfection methods, filtration, monitoring, sampling procedures, parameter measurements, distribution water quality management, best practices
- Reg 903, basic well construction; backflow prevention issues and devices
- Technology regarding treatment devices and system process design/treatment
- On site training – as required
- Public Health Risk Management Plan training
- Computer program training to input the data from well assessments.

3. PHI Training Program Development

The MOE would be tasked with the delivery and availability of the necessary training. A collaborative forum involving the MOE, MOHLTC, ASPHIO, CIPHI and the Walkerton Clean Water Centre should develop a detailed training implementation plan. This should include activities to:

- Assess the full range of training needs for PHI and the existing training capabilities for them (Walkerton Clean Water Centre and other University and Colleges who currently deliver similar type programs)

- Prepare a training plan and program to include:
  o Short term needs (PHI currently working at PHU) and
  o Long term needs - Emerging issues and incorporating training into PHI Ryerson program
6. Legislative Options

The HPPA and its predecessor, the Public Health Act gave powers and duties to PHU to ensure public health protection with respect to drinking water. In addition the HPPA states that every Medical Officer of Health is responsible for the inspection of the area of health jurisdiction served by him/her for the purpose of preventing, eliminating and decreasing the effect of health hazards in the health unit. While the Health Protection and Promotion Act gives PHU broad powers and duties to ensure safe drinking water, these roles and responsibilities would have to be clearly articulated in legislation if PHU are to administer an expanded Safe Water Program for SDWS. Any proposal regarding the role of PHU in O. Reg. 170/03 needs to be framed in the context of the MOHLTC’s Mandatory Health Programs and Services Guidelines with supporting public health legislation.

In the presentation of this options paper it is assumed that, in order for PHU to administer/monitor specific SDWS, certain amendments would be made to existing legislation or new legislation would be drafted. The options can vary from, referencing PHI and PHU in the SDWA and O. Reg. 170/03, to having a separate regulation for PHU enforcement. This would require a Memorandum of Understanding between the MOE, MOHLTC and PHU.

Presented below are some ideas for MOE/MOHLTC consideration:

- **Amending Safe Drinking Water Act and O. Reg. 170/03**
  - Reference to PHI/MOH and public health units in existing SDWA and O. Reg. 170/03
  - In Interpretation section add "public health inspector" means a Certified Public Health Inspector as per the requirements of the CIPHI Board of Certification
  - In SDWA amend interpretation of "provincial officer" that includes a PHI
  - Medical Officer of Health “medical officer of health” means, in respect of a drinking-water system, the medical officer of health for the health unit in which the system is located or if none exists, the Chief Medical Officer of Health
  - Public Health Unit - means a board of health within the meaning of the Health Protection and Promotion Act (HPPA)

- **PHU Water Regulation under SDWA or HPPA**

Despite the fact that the SDWA addresses the majority of DWS, it would not be unprecedented to incorporate a separate regulation under the HPPA that addresses those facilities/premises that PHI currently inspect under other regulations. The HPPA describes "Food" as "food or drink for human consumption, and includes an ingredient of food or drink for human consumption". Section 20 requires all residential building owners to provide potable water for residents. Section 96 enables the Minister to make regulations relating to water haulers and the sale of bottled water. Schedule B of
the HPPA is still in effect in many jurisdictions and has various requirements in relationship to providing potable water.

The following outlines some of the initial detail that would be required if a separate regulation were implemented under either the HPPA or the SDWA:

- O. Reg. 170/03 Sections and schedules would be applicable to PHU when auditing SDWS including Sections 2, 3, 4, 12, 13 and schedules 2, 5, 6, 9, 12, 15, 16, 18, and 19

- Short Form Wording must be developed for enforcement, effectiveness and efficiency in using the POA


7. Memorandum of Understanding (MOU)

At the very least PHU/MOHs and PHI must be referenced in the current regulation. Note: MOHs are defined in the interpretation section of the SDWA. Unless the legislative changes provide the details, a very clear and strongly worded MOU would still be required and the wording would detail how funding and other resources will be transferred. This would be based on a per system inspection process. Equipment and software needs to be included in addition to ongoing training of PHIs to ensure continuous competency that was established from the initial training.

The regulation and/or MOU would include sections related to a licensing and fee process. The collection of the fees would be by the Ministry and 100% funds transfer to the PHU for administering of the program. Reference would be needed in the MOHLTC Mandatory Programs and Guidelines, Safe Water section.

The preferred option is a separate regulation for the areas/systems that PHU would be responsible for. This regulation could either be under the SDWA or the HPPA.

One area that needs to be clearly identified is the commitment to have a provincial laboratory role (either through MOE or MOHLTC) that provides the necessary bacteriological analysis performed for the systems that are identified above. Without this commitment the entire concept of providing a more manageable and economic system will not work.

Other items that must be incorporated into the MOU include full access to MOE databases of well records and water quality records for all private and public drinking water systems.
8. Funding Requirements

A preliminary look at the requirements and needs for the delivery of an expanded Safe Water Program through PHU cannot begin to quantify the impact and costs of such a program across the province given the vast demographic and geographic differences and the number, type and spatial distribution of small drinking water systems in health unit areas. Public health units do not presently have a grasp on the number of small drinking water systems in their health unit area. Much work and investigation would have to be done to get to this stage.

If the Ministry of the Environment proposal is to transfer certain aspects of Ontario Regulation 170/03 to the Ministry of Health and Long-Term with subsequent downloading to public health units, there needs to be ample opportunity for dialogue with public health units to identify and agree upon the solutions (strategies) to the issues and feasibility surrounding this transfer.

Appendix 1 (Table 1 and Table 2) give an example of a small health unit’s estimation of costs associated with the set up and maintenance of a semi-annual inspection/assessment program for specific SDWS. The estimated costs are based on 100 SDWS not currently monitored by PHU. The SDWS of premises that PHU monitor presently (e.g. food premises or other fixed premises) are not included in the estimated costs. Note: No attempt should be made to extrapolate this estimation to all PHU. It is recommended that prior to any proposed transfer, that a process be set up whereby health units would be given the resources (time and money) to identify and build an inventory of small drinking water systems and to conduct a ‘pre-feasibility study’ to estimate the costs and resources necessary to deliver the program.

Additional costs not identified in this proposal must be investigated and included in any agreement prior to implementation.
9. **Conclusion and Recommendations**

This preliminary investigation of an expanded role for PHU with respect to small drinking water systems cannot begin to quantify the impact and costs of such a program across the province given the vast demographic and geographic differences and the number, type and spatial distribution of small drinking water systems in health unit areas. Thus it does not include the needs of all health units. Public health units do not presently have a grasp on the number of small drinking water systems in their health unit area.

If the Ministry of the Environment proposal is to transfer certain aspects of Ontario Regulation 170/03 to the Ministry of Health and Long-Term, with subsequent downloading to public health units, there needs to be ample opportunity for dialogue with public health units to identify and agree upon the solutions (strategies) to the feasibility issues surrounding this transfer. It is recommended that prior to any proposed transfer, that a process be set up whereby health units would be given the resources (time and money) to identify, build an inventory of small drinking water systems and to conduct a ‘pre-feasibility study’ to estimate the costs and resources necessary to deliver the program.

Given the additional work needed to investigate the impact and costs, it is recommended that the ministries and the public health units further investigate health units’ expanded role in the administration/monitoring of specific small drinking water systems in Ontario, focusing on the proposal as outlined in Option B. Certain processes that must be included in this investigation, while not inclusive, are listed below.

Option B requires the development of a specific regulation under the Health Protection and Promotion Act or the Safe Drinking Water Act that includes the appropriate sections that parallel the current O. Reg. 170/03 to incorporate the role of public health units and specifically the public health inspector.

Short form wording needs to be included to complement legislative changes for enforcement effectiveness and efficiency in using the Provincial Offences Act.

The review of existing models from New Zealand and the CSA risk assessment proposal, that incorporates the current Ontario food safety HACCP principles, would be advised in considerations of legislative changes.

Development of risk assessment criteria and establishment of water sampling frequency is also required.

A clear, detailed memorandum of understanding will be needed between the Ministry of Health and Long-Term Care, the Ministry of Environment and public health units outlining respective roles and how the 100 % subsidy transfer will be administered.

Initial and ongoing training will be needed for the operators of the applicable systems and also for public health inspectors.
The specific role and commitment for funding of a provincial laboratory to maintain water sample analysis of the applicable systems would need to be developed.

Further investigation and consultation must be undertaken in order to develop an expanded public health unit program relating to small drinking water systems. These consultations need to include all stakeholders.
Appendix 1 – Amended Oxford County example for small health units

Table 1- Estimated Set-up Costs (based on 100 SDWS) for Audits with CCP Monitoring

<table>
<thead>
<tr>
<th>Item</th>
<th>Per Unit</th>
<th>Range</th>
<th>Cost Per Unit</th>
<th>Cost Per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Range--Lower</td>
<td>Range--Higher</td>
</tr>
<tr>
<td><strong>Water Systems</strong></td>
<td>Assume 100 systems</td>
<td>Time for initial risk assessment: 1 to 3 1/2 hrs.</td>
<td>Cost at 1 hour = $41</td>
<td>Cost at .5 hours = $143.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Health Inspector (based on full-time annual salary of $62000 plus benefit costs @ 22%)</td>
<td>$41 per hour (includes benefits at 22%)</td>
<td>Labour costs: $41 to $143.50</td>
<td>(A) 100 x $41 = $4,100</td>
<td>(A) 100 x $143.50 = $14,350</td>
</tr>
<tr>
<td>Travel Distance (one way)</td>
<td>$0.45 cents per km</td>
<td>40 km to 100 km</td>
<td>(B) 100 x 40km x $.45 = $1,800</td>
<td>(B) 100 x 100km x $0.45 = $4,500</td>
</tr>
<tr>
<td>Travel Time</td>
<td>0.5 hour to 1 hour one way = 0.5 x $41 to 0.5 x $102</td>
<td>Time 0.5 hr. to 1 hr. one way</td>
<td>(C) 100 x 0.5 x $41 = $2,050</td>
<td>(C) 100 x 1 x $41 = $4100</td>
</tr>
<tr>
<td>Clerical Support--Administrative Costs $36,400 plus benefits @ 22%</td>
<td>Time per unit $24.40</td>
<td>1 hour</td>
<td>(D) 100 x 0.25 x $24.40 = $610</td>
<td>$14,350+4,500+4,100+2,44 = $25,390</td>
</tr>
<tr>
<td><strong>Sub-Total Set up Cost</strong></td>
<td>A + B + C + D</td>
<td>4,100+1,800+2,050+610 = $8,560</td>
<td>Per System Assessment Cost</td>
<td>$25,390 / 100 = $253.90</td>
</tr>
<tr>
<td>Lab Costs (personnel and materials for E.coli and Total coliforms analysis)</td>
<td>$5.50 per sample for initial risk assessment sample(s) 2 to 5 samples</td>
<td>Per Assessment Cost based on 100 systems</td>
<td>2 x 100 x $5.50 = $1,100</td>
<td>5 x 100 x $5.50 = $2,750</td>
</tr>
<tr>
<td>Lab Costs (bacteriological analysis) Sub-Total plus Sub-Total Risk Assessment for 100 systems</td>
<td></td>
<td></td>
<td>$1,100</td>
<td>$8,560</td>
</tr>
<tr>
<td><strong>Total Set up cost for 100 systems</strong></td>
<td></td>
<td></td>
<td>$9,660</td>
<td>$28,140</td>
</tr>
<tr>
<td>Per System Cost based on 100 systems</td>
<td></td>
<td></td>
<td>$96.60 (~$100)</td>
<td>$281.40 (~$300)</td>
</tr>
<tr>
<td>Start up costs Training Public Health Inspectors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database development</td>
<td></td>
<td></td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td>To be determined</td>
<td></td>
</tr>
</tbody>
</table>

The costs are based on an amended Oxford model for small health units in southwestern Ontario. The estimated costs are based on 100 SDWS not currently monitored by the health unit. The SDWS of premises that the health unit presently monitors (e.g. food premises or other fixed premises) are not included in the estimated costs. Realistically these estimates should not be extrapolated to estimate costs for all PHU across the province.
Table 2- On-going Estimated Costs for (based on 100 SDWS) Audits with CCP Monitoring

<table>
<thead>
<tr>
<th>Item</th>
<th>Per Unit</th>
<th>Range</th>
<th>Cost Per Unit Range-Lower</th>
<th>Cost Per Unit Range-Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Systems</strong></td>
<td>Assume 100 systems x 2 Audits per year = 200</td>
<td>Time for initial risk assessment: 1 to 3 1/2 hrs.</td>
<td>Cost at 1 hour = $41</td>
<td>Cost at 3.5 hours = $143.50</td>
</tr>
<tr>
<td>Public Health Inspector (based on full-time annual salary of $62,000 plus benefit costs @ 22%)</td>
<td>$41 per hour (includes benefits at 22%)</td>
<td>Labour costs: $41 to $143.50</td>
<td>(A) 200 x $41 = $8,200</td>
<td>(A) 200 x $143.50 = $28,700</td>
</tr>
<tr>
<td>Travel Distance (one way)</td>
<td>$0.45 cents per km</td>
<td>40 km to 100 km</td>
<td>(B) 200 x 40km x $0.45 = $3,600</td>
<td>(B) 200 x 100km x $0.45 = $9,000</td>
</tr>
<tr>
<td>Travel Time</td>
<td>0.5 hour to 1 hour one way = 0.5 x $41 to 0.5 x $102</td>
<td>Time 0.5 hr. to 1 hr. one way</td>
<td>(C) 200 x 0.5 x $41 = $4,100</td>
<td>(C) 200 x $41 = $8,200</td>
</tr>
<tr>
<td>Clerical Support--Administrative Costs $36,400 plus benefits @ 22%</td>
<td>Time- per unit $24.40</td>
<td>Time 0.25 to 0.5 hour</td>
<td>(D) 200 x .25 x $24.40 = $1,220</td>
<td>(D) 200 x 0.5 x $24.4 = $2,440</td>
</tr>
<tr>
<td><strong>Sub-Total Annual Audit Cost</strong></td>
<td></td>
<td>A + B + C+ D</td>
<td>8,200+3,600+4,100+1,220 = $17,120</td>
<td>28,700+9,000+8,200+2,440 = $58,340</td>
</tr>
<tr>
<td><strong>Per System Assessment Cost</strong></td>
<td></td>
<td>$17,120 / 100 = $171.20</td>
<td>$48,340 / 100 = $483.40</td>
<td>($-500)</td>
</tr>
<tr>
<td>Lab Costs (personnel and materials for E.coli and Total coliforms analysis)</td>
<td>$5.50 per sample for initial risk assessment sample(s) 1 per month (low risk) to 52 per year (1/wk high risk) samples</td>
<td>Per Assessment Cost based on 100 systems</td>
<td>12 x 100 x $5.50 = $6,600</td>
<td>52 x 100 x $5.50 = $28,600</td>
</tr>
<tr>
<td>Lab Costs (bacteriological analysis) Sub-Total plus Sub-Total for 100 systems</td>
<td></td>
<td>$17,120</td>
<td>$48,340</td>
<td>$28,600</td>
</tr>
<tr>
<td><strong>Total Audit cost for 100 systems completed 2 times annually</strong></td>
<td></td>
<td>$23720</td>
<td>$76,940</td>
<td></td>
</tr>
<tr>
<td><strong>Per System Cost based on 100 systems</strong></td>
<td></td>
<td>$237.20 ($-250)</td>
<td>$769.40 ($-800)</td>
<td></td>
</tr>
</tbody>
</table>

The costs are based on an amended Oxford model for small health units in southwestern Ontario. The estimated costs are based on 100 SDWS not currently monitored by the health unit. The SDWS of premises that the health unit presently monitors (e.g. food premises or other fixed premises) are not included in the estimated costs. Realistically these estimates should not be extrapolated to estimate costs for all PHU across the province.
10. References


- Association of Municipalities of Ontario - AMO Task Force Finalizes Recommendations on Regulation 170/03, October 2004

- Advisory Council on Drinking Water Quality and Testing Standards – minutes from December 10, 2004 (Minister appointed council)

- Health Protection and Promotion Act, R.S.O. 1990, Chapter H.7 (including Schedule 'B')

- Mandatory Health Programs and Services Guidelines, December 1997

- Ontario Safe Drinking Water Act, 2002

- Ontario Regulation 170/03 made under the Safe Drinking Water Act, 2002 Programs

- Michigan Department of Environmental Quality - "Non-community Public Water Supply Owner's Guide"