PUBLIC WORKS DEPARTMENT
Water and Wastewater Division
Source Water and Infrastructure Planning Section

WELCOME TO THE

Class Environmental Assessment for Lynden Communal Water Supply

PUBLIC INFORMATION CENTRE NO. 1

Please Complete the Sign-in Sheet and review the display materials.

The Project Team is available to answer your questions and address any concerns.

Your input is valued!

Please fill out a comment sheet.

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What is a Class Environmental Assessment?

- An Environmental Assessment Study examines alternatives and impacts for proposed projects and confirms the best alternative solution.
- The study will consider the short and long term water supply requirements for the Community of Lynden.
- Input from the Public and Government Agencies will be a key component of the study.
- Information gathered during the study will be used to assess the alternatives and develop a recommended solution.

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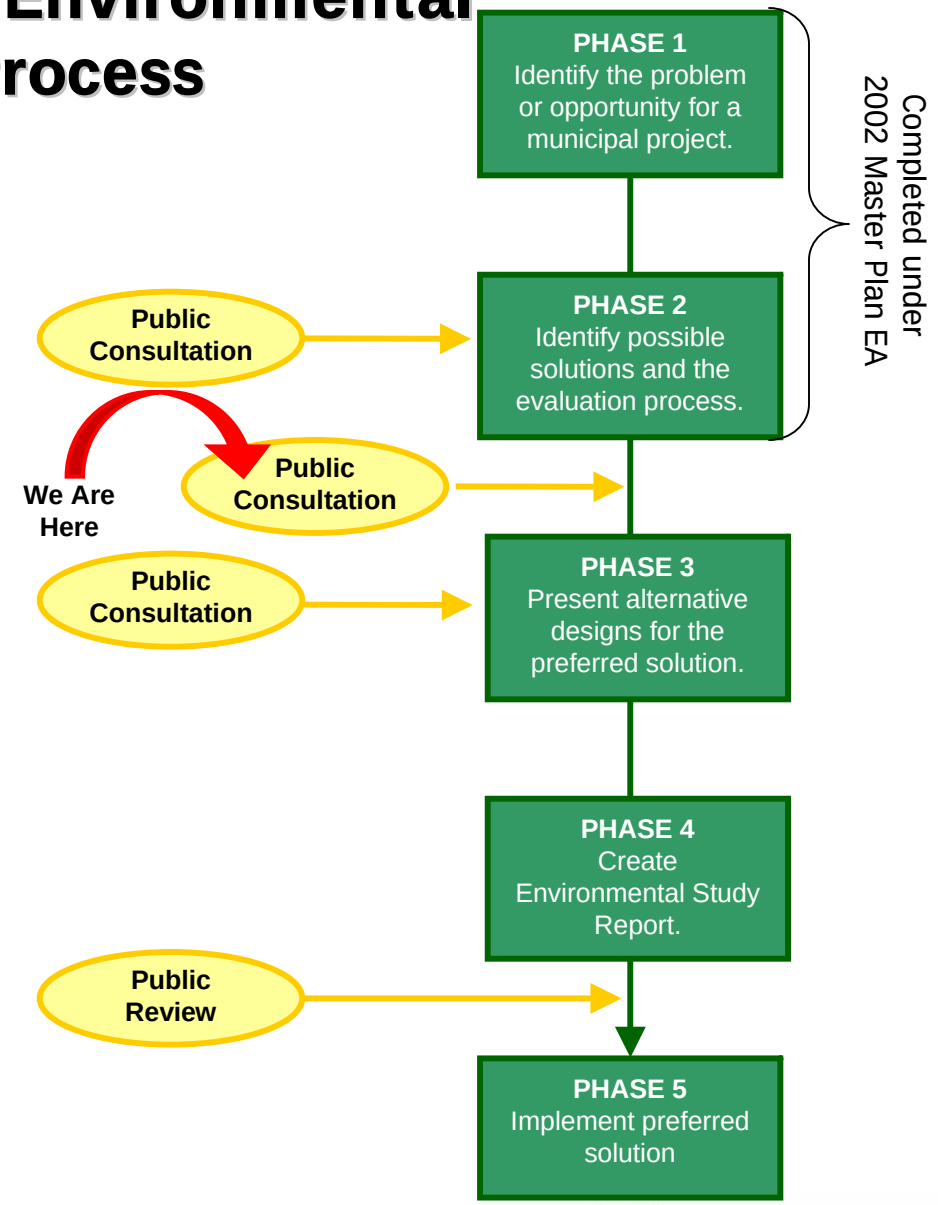
Overview of the Class Environmental Assessment Process

- This project is being undertaken in accordance with the *Municipal Class Environmental Assessment (2000)* for a Schedule 'C' undertaking (Phases 1 to 5).
- The *Municipal Class EA* is approved under the *Environmental Assessment Act* and enables the planning of municipal infrastructure projects in accordance with a proven process for protecting the environment.
- The Schedule 'C' Class EA process includes public and review agency consultation, an evaluation of alternatives, an assessment of the effects on the environment, and identification of reasonable measures to mitigate any adverse effects.
- There is an opportunity at any time during the Class EA process for public input, including this Public Information Centre.
- Upon completion of the Class EA process, an Environmental Study Report (ESR) will be available for public review.



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The Existing System - Water Treatment & Storage

- Existing facility has a permitted capacity of 227 L/min.
- Existing well water originates from a deep, protected aquifer.
- Raw water requires chlorine disinfection and hydrogen sulphite removal prior to being pumped to the distribution system.
- The treatment/storage facility is comprised of one well and an underground reservoir, comprising two (2) treatment/storage cells and two (2) interconnected pump wells complete with a high lift pumping station.

- Raw water from the well enters the first cell where aeration is carried out. Disinfection of the raw water is carried out in the second cell before the water is delivered to the distribution system by the high lift pumps.

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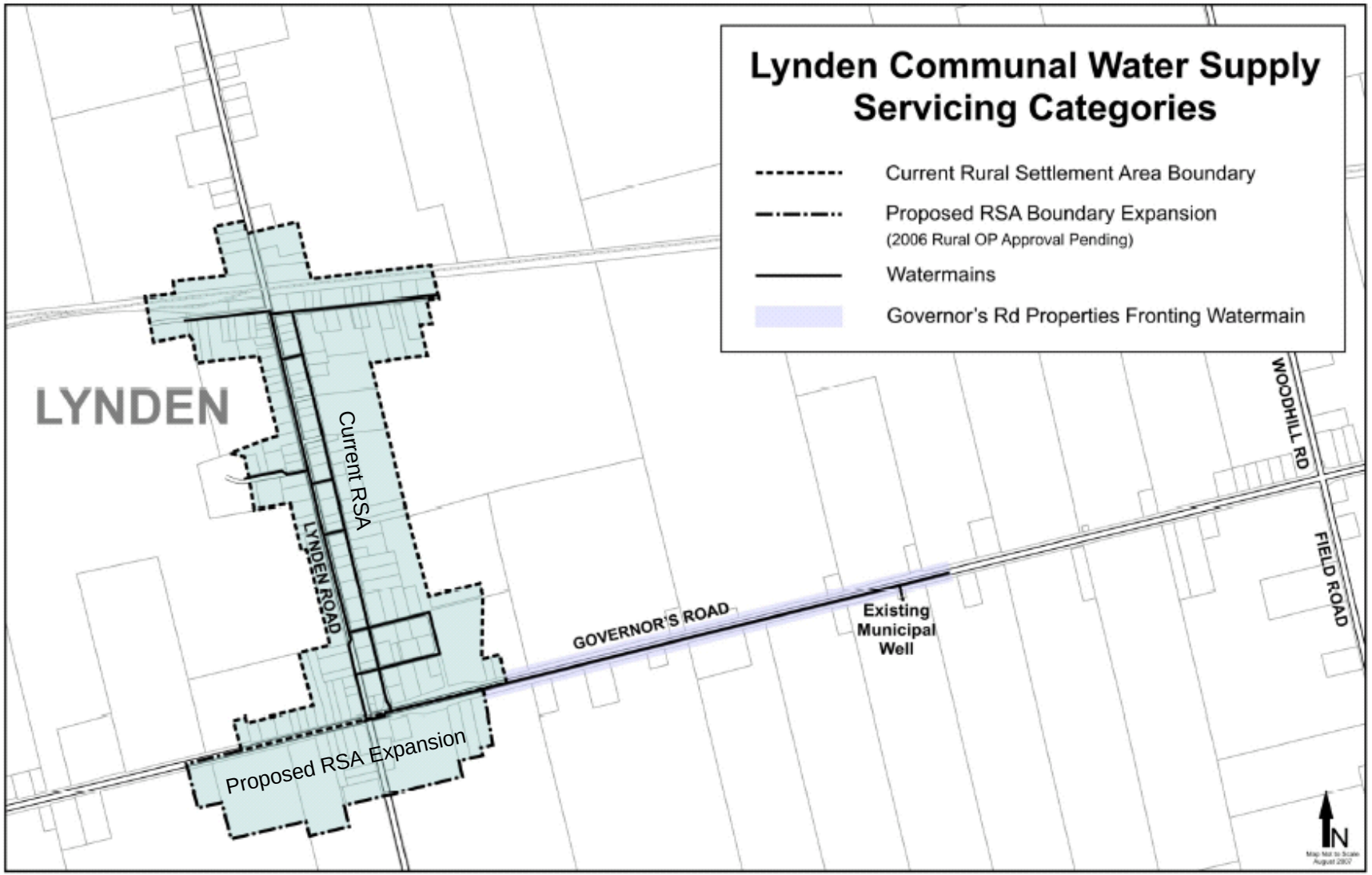
Proposed Lynden Water Servicing Area



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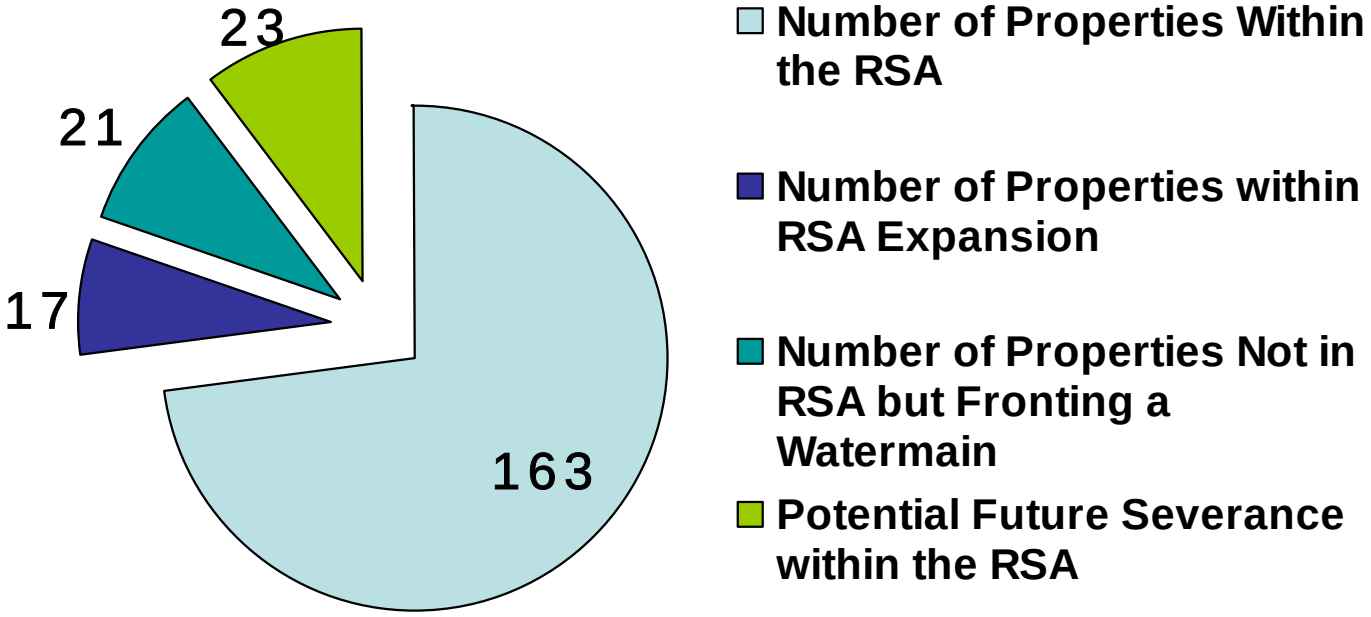
Lynden Water Servicing Area



- Of the 163 properties currently in the RSA, 116 are connected and metered and 26 are not connect or not metered.
- Of the 17 properties in the proposed RSA expansion 3 are already connected and metered.
- Of the 21 properties outside the future RSA boundary but fronting a water main 8 are already connected.
- Current there are a total of 127 connections, with 224 potential connections in the future.

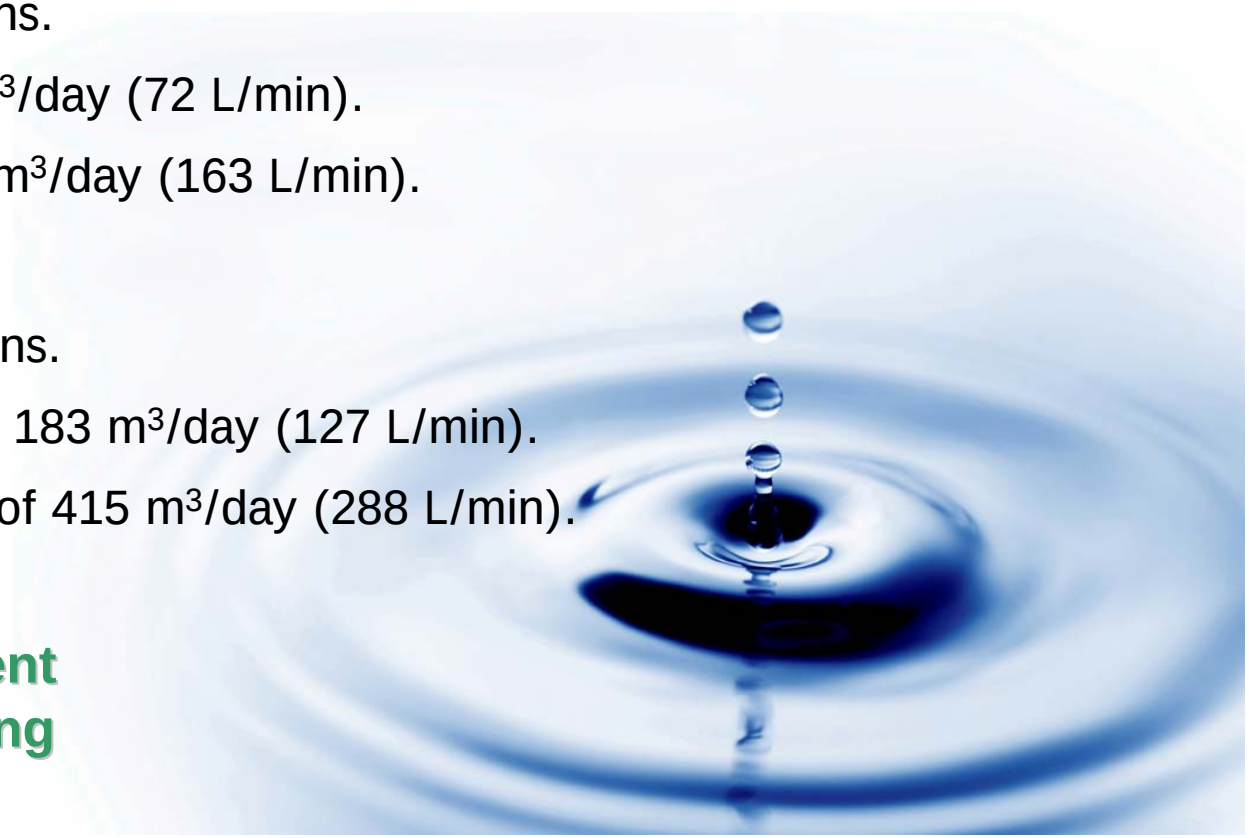
Water Demand Projections

Current Demands

- Permit to Take Water for the existing system limits the maximum pumping rate to 227 L/min or 327 m^3/day, this is also the design capacity of the facility.
- 127 metered service connections.
- Average day demand of 103 m^3/day (72 L/min).
- Maximum day demand of 235 m^3/day (163 L/min).

Future Projected Demands

- 224 potential service connections.
- Future average day demand of 183 m^3/day (127 L/min).
- Future maximum day demand of 415 m^3/day (288 L/min).



The new well and treatment facility will need a pumping capacity of 415 m^3/day

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Problem Statement

This study is being undertaken to address the following conditions in the existing Lynden potable water supply system:

- The current single well and treatment system provide no redundancy to ensure a secure supply; and,
- The capacity to meet the future demands of the water servicing area.

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Comprehensive Water Servicing Master Plan For the Lynden Rural Settlement Area (RSA), 2002

In 2002 the City of Hamilton commissioned a Comprehensive Water Servicing Master Plan For the Lynden RSA, this was conducted in accordance with a Class Environmental Assessment.

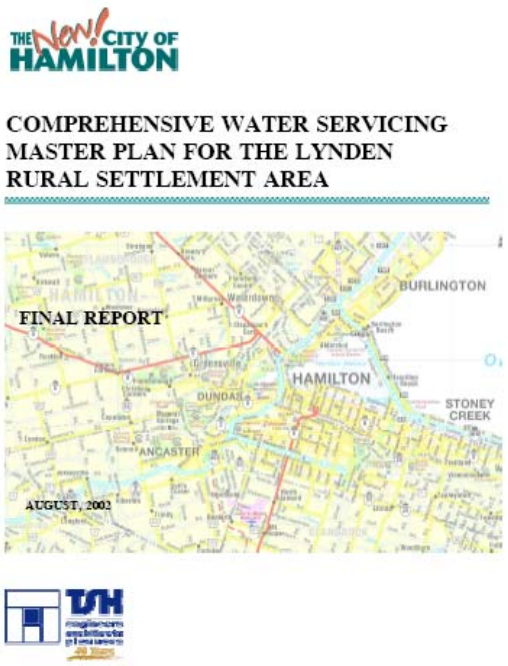
The Master Plan considered the following:

✦ Water Supply Alternatives

- Do Nothing
- Water Conservation /Demand
- **Upgrade the Existing Well System *(Selected)***
- New Groundwater Supply
- Connect to an Adjacent System

✦ Water Distribution System Alternatives

- Do Nothing
- **Upgrade to Improve Operation/Looping *(Selected)***
- Upgrade to Fire Protection
- System storage for pressure control



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Comprehensive Water Servicing Master Plan For the Lynden RSA - Recommendations

The Master Plan recommended the following:

- Upgrade the existing facility
  - Replace the well discharge pipe. (***Completed)***
  - Replace the well pump. (***Completed)***
  - Recalibrate the well sensor. (***Completed)***
  - Implement turbidity treatment to reduce raw water turbidity levels. (***Completed)***
  - Upgrade well cap and install measuring port. (***Completed)***
  - **Construct a backup well (Subject of this Assessment)**
- Water efficiency public education. (***On Going)***
- Looping of water distribution system. (***Completed)***
- Undertake hydrogeological investigation to determine aquifer capacity and local well interference. (***Future Work)***
- Further assess ability to supply water from the Dundas system. (***No longer Considered due to the policies within the Greenbelt Act, 2005)***
- Develop wellhead protection strategy. ***(In Progress)***

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Water Servicing For the Lynden RSA - Alternatives

Alternative	Description	Conclusion
Do Nothing	The "Do Nothing" alternative represents what would occur if none of the alternatives were selected.	***Did not meet the requirements of the RSA and considered in Master Plan***
Water Conservation /Demand	Implement water conservation measures such as flow metering, encouraging the use of low flush toilets in existing and new developments, toilet replacement, leak detection, undertaking rehabilitation activities.	***Did not meet the requirements of the RSA and considered in Master Plan***
Upgrade the Existing Well System	Upgrading the existing facility to meet the Ministry of the Environment requirements. The upgrades would include treatment to reduce the treated water turbidity, replacement of the pump and well cap and construction of a backup well with increased capacity.	***Selected Alternative in Master Plan and remains Selected Alternative with increased capacity***
New Groundwater Supply	Develop a new groundwater supply form an alternate groundwater source in the Lynden area and construct a new treatment facility.	***Not economic, even with the increased capacity requirement and provided greater disruption during construction***
Connect to an Adjacent System	Build a new transmission main and booster station that would connect the Lynden RSA to the adjacent City of Hamilton lake based system. The closest connection is in Dundas, approximately 15km away.	***Considered for Long-term Expansion but no longer feasible due to the restriction of the Greenbelt Act, 2005.***

Reason for the Construction of a Backup Well
Security of Supply

- Currently, all supply to Lynden is dependant on a single groundwater well.
- Ministry of the Environment Guidelines recommend that a minimum of two groundwater supplies be provided for the Lynden municipal system.
- Providing a second supply that ensures security in the event that one well needs to be taken out of service or is temporarily compromised.

What Has Changed Since the 2002 Master Plan

Future Capacity *(Considered in this Information Centre)*

- Confirm the number of ultimate connections given:
  - Current City Policy to allow the connection of everyone within the RSA, as well as those lots fronting a water main.
  - Proposed expansion of the RSA.
- Consider the last three years of recorded demands on the existing facility.

Well Siting *(Considered in this Information Centre)*

- More detailed assessment of potential locations for the proposed well.

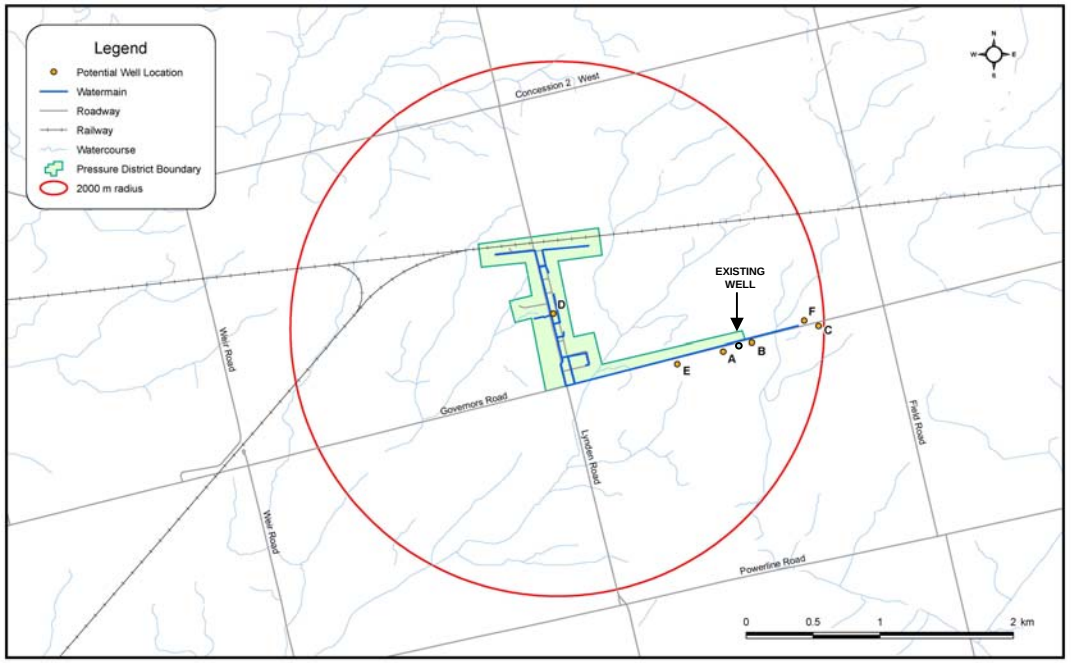
Additional Treatment and Storage *(Further assessment of options in the next Information Centre)*

- New legislation requires improved security and back up for water treatment.
- A second facility would provide redundancy and additional flexibly of operation and maintenance.

Proposed Locations for the Backup Well

Six Potential Locations:

- Alternative A – 175m west of existing well
- Alternative B – 100m east of existing well
- Alternative C – 550m east of existing well
- Alternative D – Lynden, 575m north of Governor's Road
- Alternative E – 525m west of existing well
- Alternative F – 475m east of existing well
- Alternative G – Existing well site



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Criteria for Assessment of Potential Well Locations

Criteria	*Factor*
Supply Potential	1. Target greater aquifer thickness 2. Required capacity of 415 m^3/day based on surrounding wells
Land Ownership	1. City owned land preferred 2. Cost effective
Physical Constraints	1. Site accessibility 2. Minimize disturbance 3. Environmental conditions
Water Quality	1. Fresh water probability

Criteria	*Factor*
Interference Potential	1. Minimize impacts to nearby water wells 2. Minimize impacts to surface water features
Potential for Contamination	1. Low susceptibility to surface contamination
System Redundancy	1. Maximize distance from existing well
Groundwater under the Influence Potential	1. Greater than 100 m to surface water
Proximity to Distribution System	1. Minimize distance to distribution system

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Assessment of Potential Well Locations

Evaluation Criteria		Supply Potential	Land Ownership	Physical Constraints	Probable Water Quality	Interference Potential	Potential for Contamination	System Redundancy	Groundwater under the Influence Potential	Distance to Distribution System (m)
Evaluation Factor		**Low / Medium / High**	**Private / City**	**Low / Medium / High**	**Low / Medium / High**	**Low / Medium / High**	**Low / Medium / High**	**Low / Medium / High**	**Yes / No**	**< 2000**
Site	**Ranking**									
A	**4**	Medium	Private	Medium	High	Low	Low	Medium	Yes	30
B	**3**	Medium	Private	Low	High	Low	Low	Medium	No	30
C	**5**	Low	Private	Low	High	Medium	Low	High	No	220
D	**6**	Low	Private	Medium	High	Medium	Medium	High	No	<100
E	**2**	Medium	Private	Medium	High	Low	Low	High	No	20
F	**1**	**Medium**	**City**	**Low**	**High**	**Low**	**Low**	**High**	**No**	**140**
G	**7**	High	Private	Medium	High	Low	Medium	Low	No	0

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Preferred Location for the Backup Facility

Preferred First Priority:

- **<u>Alternative F (3505 Governors Rd.)</u>**
- City of Hamilton owned property
- No physical constraints
  - Easy site access
  - Existing open space/passive agricultural use
- No foreseeable environmental concerns
- Has the potential to provide the required supply

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Drilling Program at the Preferred Site

Well Survey

- A private well survey will be conducted to determine which residences in the area use wells.

Drilling of Test Well

- A large drill rig will be mobilized on site to drill the test well.

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Well Evaluation and Monitoring Program

New Well Evaluation

- Environmental features will be assessed within a 500m radius of the proposed well site
- A 72-hour pumping test will be conducted to determine the yield and water quality of the new well
- Discharge during the test will be directed to nearby ditches.

Monitoring

- Water levels in private wells will be monitored during the test to determine potential interference. This will be on a volunteer basis.*

* Please speak to our project team if you are interested in participating in the private well survey

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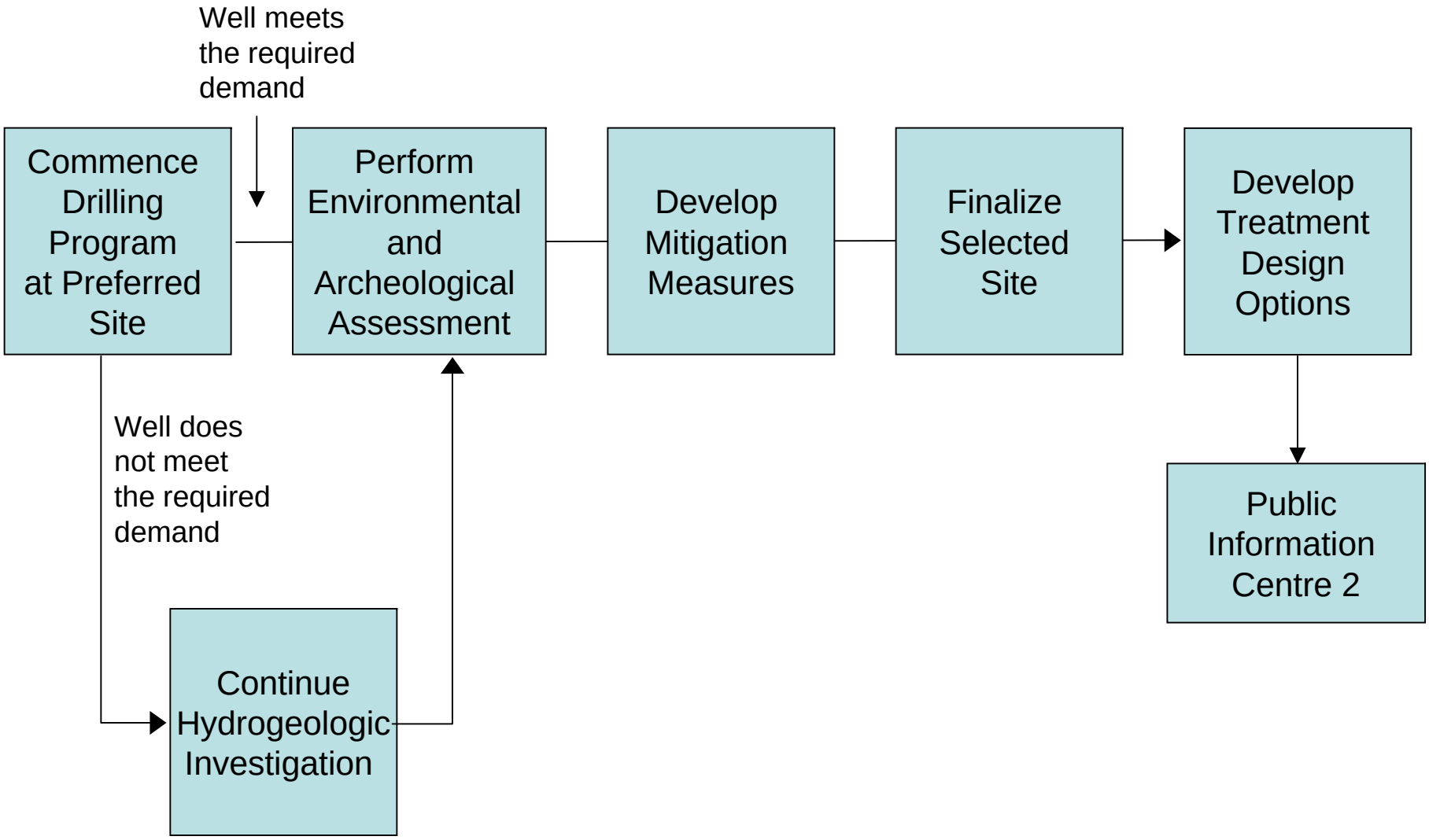
Prior to the Next Public Information Centre



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Next Steps

October 2007 — Summer 2008

Notice of Study Commencement and Public Information Centre
Oct. 12 & 19, 2007

Public Information Centre
October 23, 2007

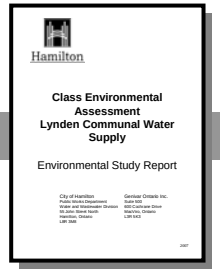
- Overview of Class EA Process
- Problem/Opportunity Statement
- Existing Conditions
- Water Demand
- Alternative Solutions
- Preferred Solution
- Hydrogeology
- Next Steps

Conduct Drilling Program and Evaluate Preferred Alternative

Meetings with Review Agencies and Municipalities

Public Information Centre
January, 2008

- Overview of Class EA Process
- Problem/Opportunity Statement
- Review Selected Alternative
- Present Design Options
- Evaluation of Design Options
- Mitigative Measures
- Next Steps



- Prepare Environmental Study Report (ESR)

Notice of Completion & Public Review

- File ESR for mandatory 30 calendar day public review period.

Detail Design

Construction

Commission

Ongoing Consultation as Required

A second Public Consultation Centre will be held to solicit input on the selection process and the recommended solution in January, 2008.

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How to Get Involved?

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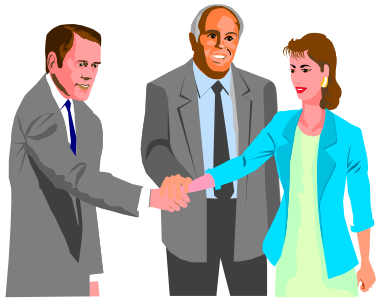
We Would Like to Hear From You



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