Long Term Water &Wastewater Servicing Study
Update and Discussion of Options

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Presentation to

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Wastewater Needs Assessment Objectives

- Using a ***lot-by-lot analysis***, determine which residential properties currently have or are expected to have future "wastewater needs".
- If a property has a "wastewater need" this means that a conventional septic system (either the existing one or a future one) is not expected to provide a long term, sustainable, wastewater management solution.

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Wastewater Needs Assessment Objectives

- To determine which areas of the Community ("subareas") are expected to be sustainable for long term, on-site servicing using existing or future on-site sewage (septic) systems.
- To determine which residential properties are expected to require an ***eventual, off-site sewer servicing solution***.

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Wastewater Needs Assessment

Need for Wastewater Solution by Subarea

WW Servicing Subarea	Total # Residential Homes	% Parcels Resident. Use	Year Round Residential Dwellings (%)	Total Points	Eventual Level of Need
Stanhope Peninsula	381	69%	29%	5,843	Very High
Golf Course	65	54%	97%	1,418	High
Eagle's Path	58	61%	38%	1,100	High
Covehead Road	50	75%	98%	935	Moderate to High
Eastern Road	36	80%	100%	550	Moderate

Cottages were assigned a lower weight (50%) than a year round home.

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Wastewater Needs Assessment

Need for Wastewater Solution by Subarea

WW Servicing Subarea	Total # Residential Homes	% Parcels Resident. Use	Year Round Residential Dwellings (%)	Total Points	Eventual Level of Need
Union Road	23	74%	100%	485	Moderate
Community Centre	20	87%	100%	335	Low
Bell's Creek	18	69%	94%	235	Low
Auld's Creek	8	67%	88%	168	Very Low
Settler's Road	4	40%	25%	83	Very Low

Cottages were assigned a lower weight (50%) than a year round home.

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Wastewater Needs Assessment Results
Sensitivity Analysis of Soil Conditions
in the Stanhope Peninsula (533 Parcels/370 Devel.)

Seasonal Use Factor Applied to Weight (Points) Criteria:			0.50	1.00
Soil Category Scenario	**Year Round Res. Point Totals**	**Seasonal Point Totals**	**Overall Point Totals**	**Overall Point Totals**
Category II (PEI Soil Survey)	2,530	6,610	**5,835**	**9,140**
Category I (Septic Permits)	2,145	5,820	**5,055**	**7,965**

Conclusions: not highly sensitive to soil change,
Still "very high need" for an eventual solution.

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Wastewater Needs Assessment
Implications for Long Term Planning

- The results of the lot-by-lot needs assessment ***provide an indication*** of the type of wastewater solution ***that may eventually be needed for long term sustainability***.
- These are predictors of long term risk. The results should **not be treated as regulatory requirements** that property owners must install a particular sort of septic system.

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Wastewater Needs Assessment

Implications for Long Term Planning

- Although some lots will accommodate on-site solutions, it may be more cost effective, overall, to service the entire subarea with a **cluster** or **central sewage system**.
- For isolated property owners who have **severe septic problems but are not likely to have the option to connect to a central sewer system**, various **on-site options** are available.

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Wastewater Needs Assessment
Limitations of On-site Upgrades

- Upgraded on-site septic systems may require larger tile fields or fill which may not fit on many properties.
- On-site sewage systems other than conventional septic systems can be very expensive.
- High density of lots and septics increase the likelihood of groundwater contamination from bacteria or nitrates.

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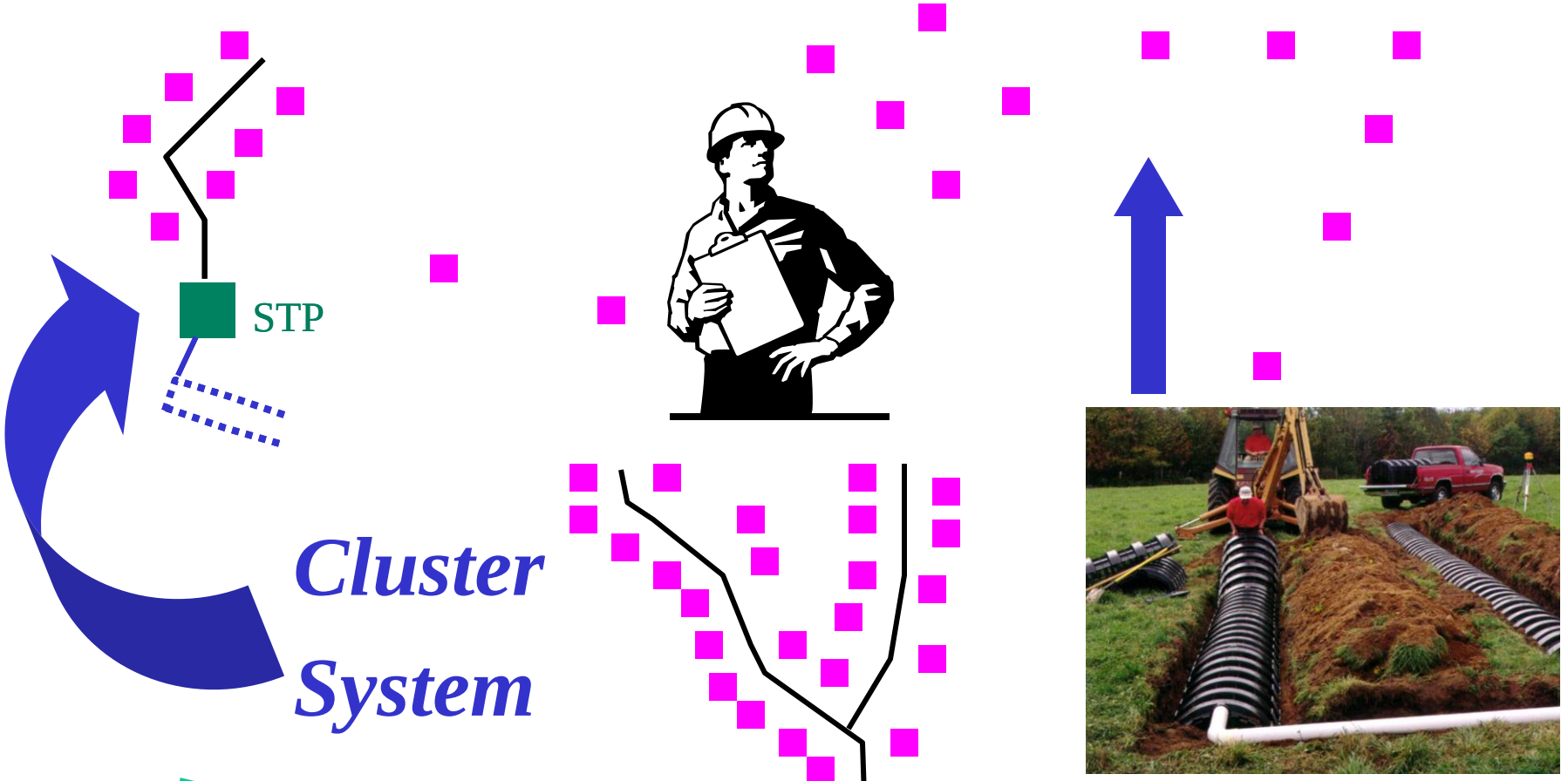
Integrated Wastewater Management



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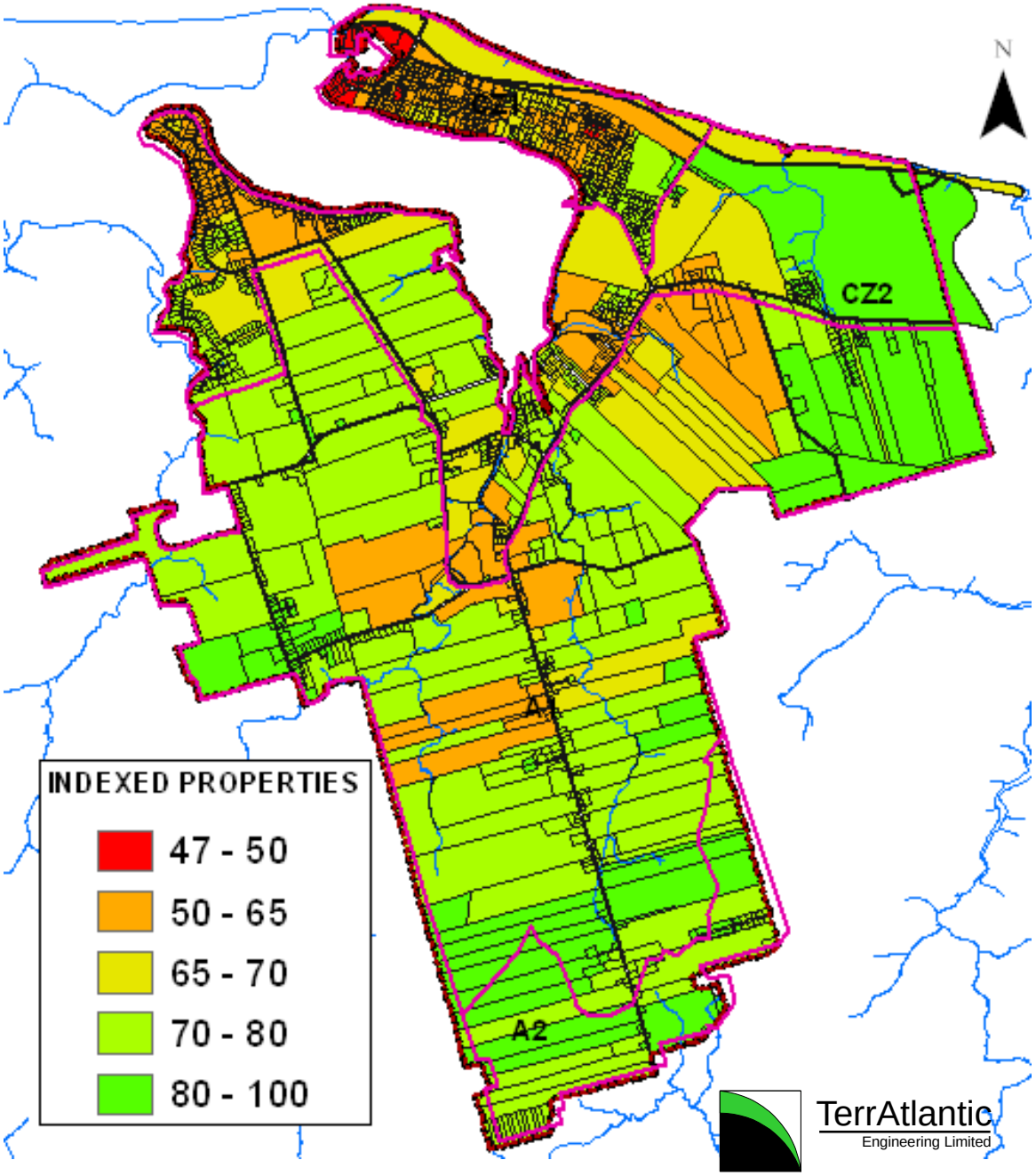

WATER NEEDS ASSESSMENT SUBAREAS

- Coastal Zone 1 - Stanhope Peninsula
- Coastal Zone 2 - balance of Coastal Zone
- Agricultural Zone 1 – Portion ***outside*** Winter River Watershed
- Agricultural Zone 2 – Portion ***inside*** Winter River Watershed

WATER NEEDS ASSESSMENT BY SUBAREA

Coastal Zone 1 - The Stanhope Peninsula:

• In the ***long-term***, a central water supply may be warranted for the peninsula (particularly the outer ~200 m rim) since most of the peninsula has a relatively higher risk for water quality and quantity issues.

• In the ***short-term***, local water problems could be resolved by: (a) drilling new wells, (b) connecting to neighbouring unaffected wells, (c) trucking of water, and/or (d) adding on-site water treatment.

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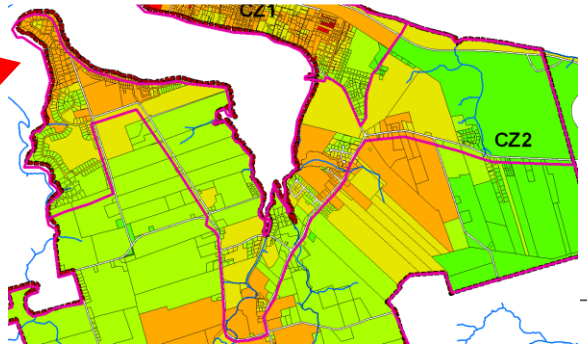
WATER NEEDS ASSESSMENT BY SUBAREA

Coastal Zone 2 - The balance of the outlined Coastal Zone:

In the long-term, the central water supply will need to be maintained for MacMillan Point with some homes added to the current system as development increases (i.e. up to ~100 homes is planned for this system at full build-out).

Elsewhere within this zone, local problems could be resolved by: (a) drilling new wells (b) deepening wells and/or casings, (c) connecting to neighbouring unaffected wells, and/or (d) adding on-site water treatment.

MacMillan Point



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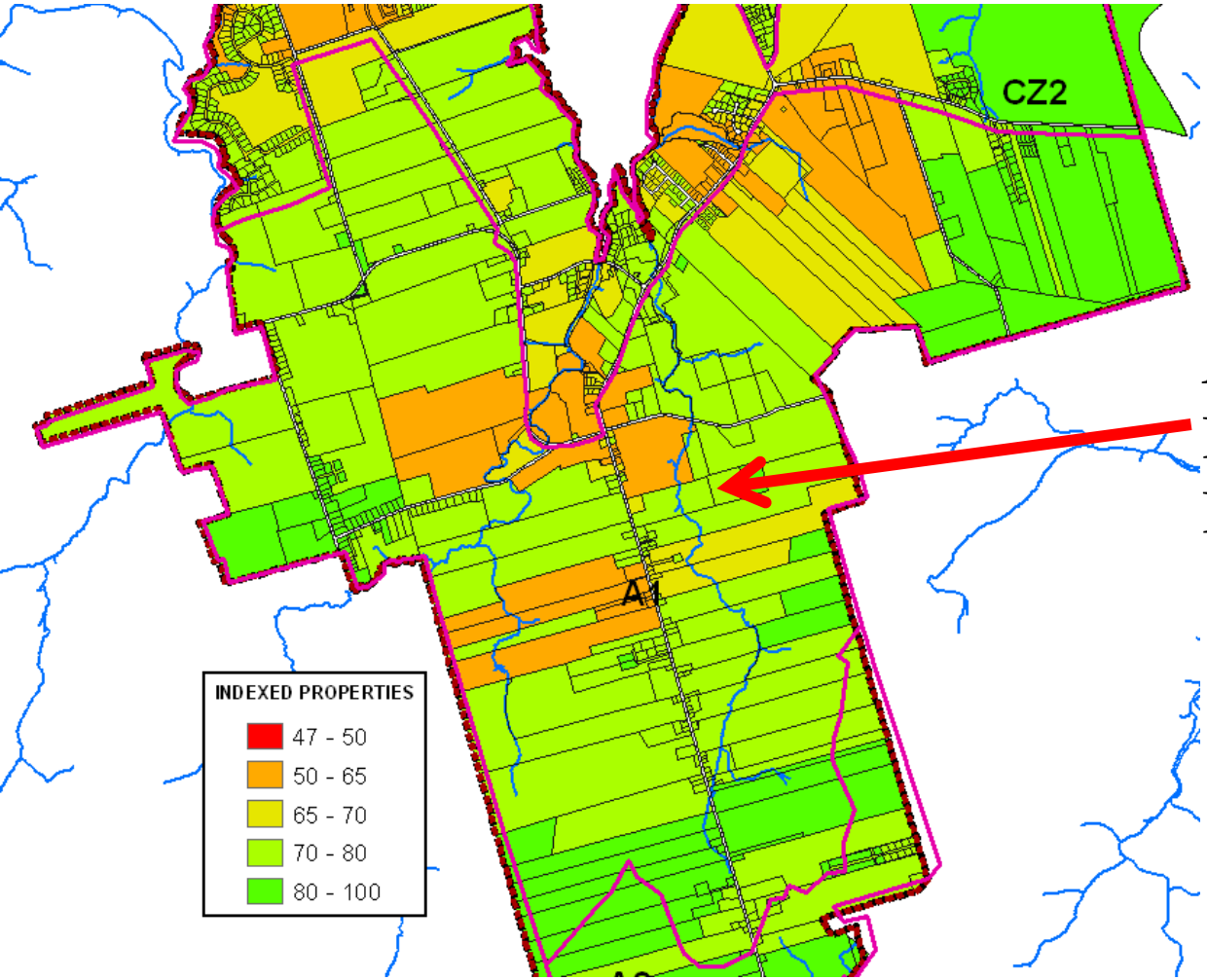
WATER NEEDS ASSESSMENT SUBAREAS



Agricultural Zone 1 – Portion ***outside*** the Winter River Watershed

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WATER NEEDS ASSESSMENT BY SUBAREA

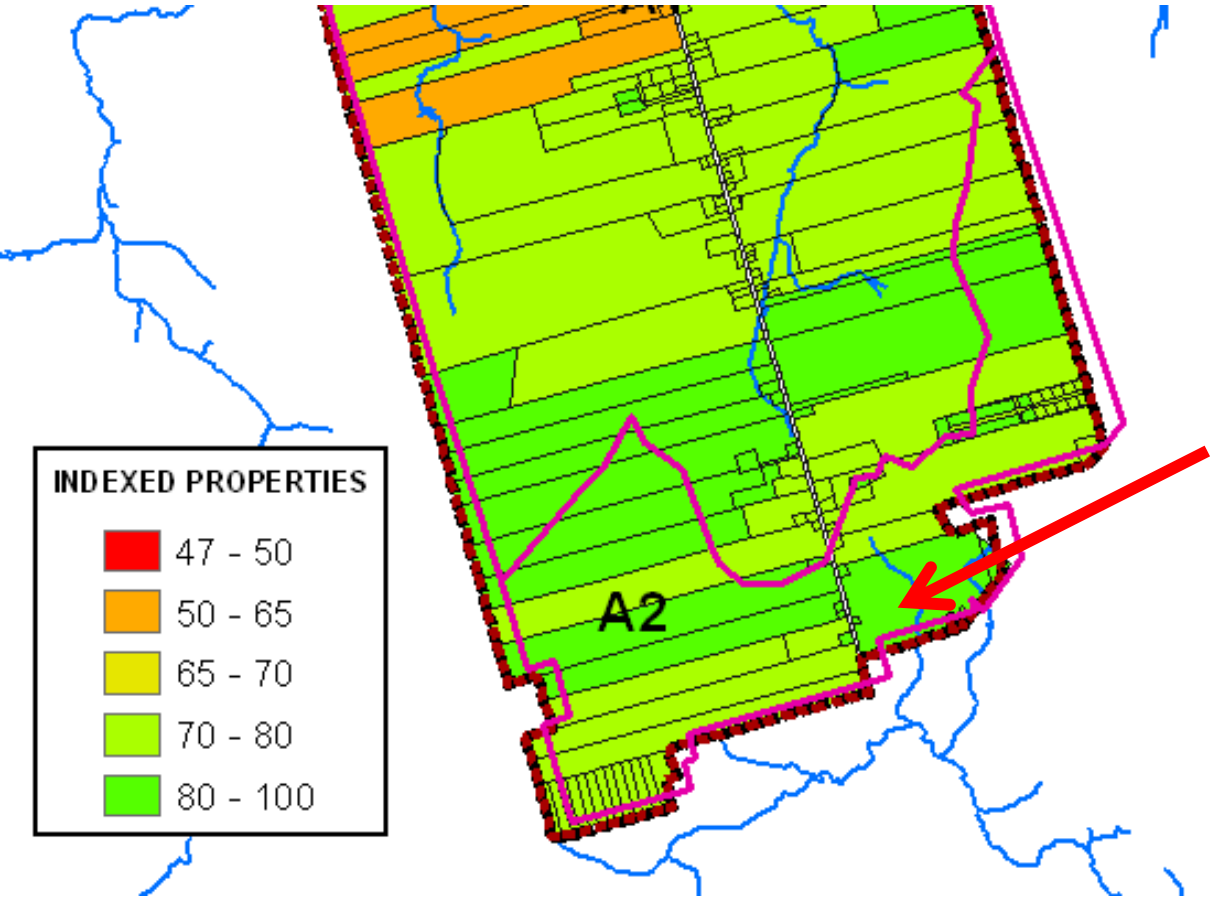
Agricultural Zone 1 - The Agricultural Zone that lies ***outside*** the Winter River Watershed:

• Central (or cluster) water supplies would ***not likely be required***, even in the longer term.

• Local problems could be resolved by: (a) drilling new wells, (b) deepening wells and/or extending well casings, or (c) on-site water treatment.

• Due to potentially high nitrate concentrations in this area, it may be advisable to drill test wells to confirm water quality ***before*** developing new lots.

WATER NEEDS ASSESSMENT SUBAREAS



Agricultural Zone 2 – Portion ***inside*** Winter River Watershed

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WATER NEEDS ASSESSMENT BY SUBAREA

Agricultural Zone 2 - The Agricultural Zone that lies ***inside*** the Winter River Watershed:

• Central (or cluster) water supplies would ***not likely be required***, even in the longer term, and might not be feasible for regulatory reasons.

• Local problems could be resolved by: (a) drilling new wells, (b) deepening wells or extending well casings, or (c) adding water treatment.

• Further domestic well development in the Winter River basin may also be restricted.

Development Patterns 2005-2009

	2005-IWMC			2009-IWMC		
Wastewater Servicing Subarea	**Total # Undeveloped Parcels***	**Total # Year Round Residential Parcels***	**Total # Developed Seasonally Used Parcels***	**Total # Undeveloped Parcels***	**Total # Year Round Residential Parcels***	**Total # Developed Seasonally Used Parcels***
Entire Community	547	422	323	487	488	317
Stanhope Peninsula	165	95	272	162	107	263
Golf Course	39	55	1	37	56	2
Eagle's Path	58	12	37	49	22	36
Covehead Road	18	48	1	17	49	1
Eastern Road	15	30	0	9	36	0
Union Road	8	23	0	8	23	0
Community Center	4	19	0	3	20	0
Bell's Creek	9	16	1	8	17	1
Auld's Creek	4	8	0	4	7	1
Settler's Road	6	1	3	6	1	3
All Other Properties	221	115	8	184	150	10
Subarea Totals:	326	307	315	303	338	307

Community should continue to monitor changes in property status.

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Development Patterns 2005-2009

Wastewater Servicing Subarea	Total # Seasonal - 2005 Parcels Chg'd to Yearound-2009	Total # Yearound -2005 Parcels Chg'd to Seasonal - 2009	Total # Undev -2005 Parcels Chg'd to Yearound-2009	Total # Undev -2005 Parcels Chg'd to Seasonal - 2009
Entire Community	21	11	56	4
Stanhope Peninsula	17	7	2	1
Golf Course	0	1	2	0
Eagle's Path	3	1	8	1
Covehead Road	0	0	1	0
Eastern Road	0	0	6	0
Union Road	0	0	0	0
Community Center	0	0	1	0
Bell's Creek	0	0	1	0
Auld's Creek	0	1	0	0
Settler's Road	0	0	0	0
All Other Properties	1	1	35	2

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Development Patterns 2005-2009

Wastewater Servicing Subarea	Change/yr in YR Residential Use	Change/yr in Seasonal Residential Use
Entire Community	16.5	-1.5
Stanhope Peninsula	3.0	-2.25
Golf Course	0.25	0.25
Eagle's Path	2.5	-0.25
Covehead Road	0.25	0
Eastern Road	1.5	0
Union Road	0	0
Community Center	0.25	0
Bell's Creek	0.25	0
Auld's Creek	-0.25	0.25
Settler's Road	0	0
All Other Properties	8.75	0.5

Growth is taking place throughout the entire community.

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Wastewater Servicing
Long Term Planning

- Investigating options for Very High, High need subareas.
- Consider technical and economic feasibility of various options.
- On-site servicing versus cluster versus central systems.
- Recommendations for monitoring programs.

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Wastewater Servicing
Long Term Planning

- Factors which may influence the “tipping point” when it becomes necessary to take action.
- Number or percentage of septic systems which are failing or malfunctioning, or wells with contamination, percentage built-out.
- Studies suggest that a 2% to 10% malfunction rate may be “normal” for homeowner managed systems.

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Water Servicing
Long Term Planning

- Investigating options for subareas recommended as needing an eventual off-site servicing solution.
- Consider technical and economic feasibility of various options.
- On-site servicing versus cluster versus central systems.
- Recommendations for monitoring programs.

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Water Servicing
Long Term Planning

- Factors which may influence the "tipping point" when it becomes necessary to take action.
- Number or percentage of wells which are experiencing salt water intrusion, or contamination, projected Nitrate concentrations.
- Priority of central water versus sewer servicing – eg. Central sewering would alleviate some groundwater problems.

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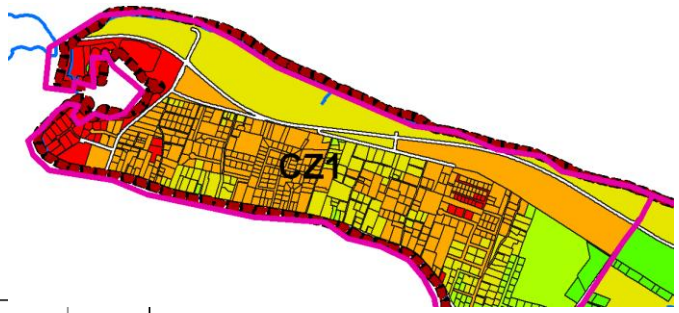
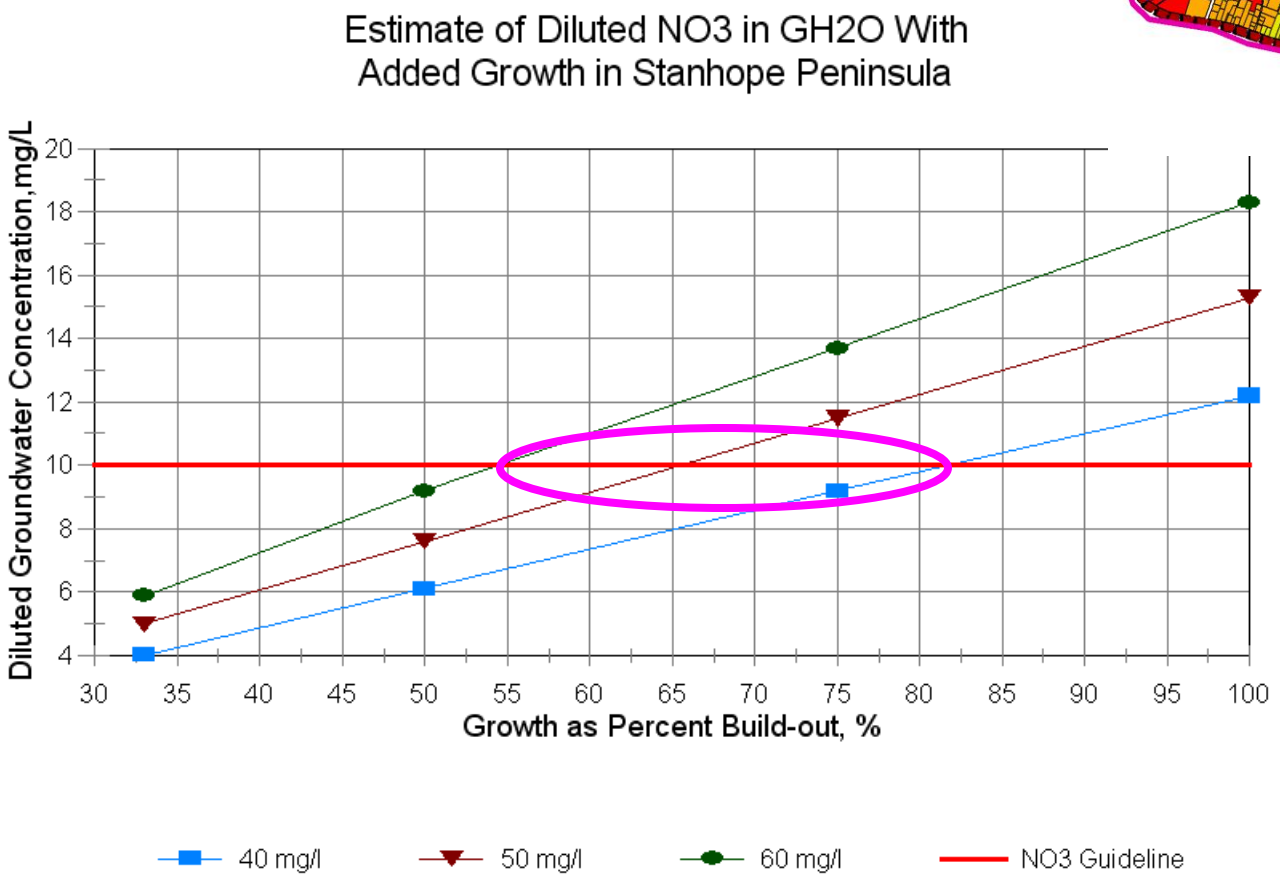
POTENTIAL GROUNDWATER IMPACTS - NITRATE

Coastal Zone 1 - The Stanhope Peninsula:





Depending on assumptions, percent build-out could range from 55% to 82% Equiv. YR Dwellings.

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Preliminary Recommendations for a Groundwater Monitoring Program for Stanhope Peninsula

- Continue to obtain updates on groundwater test results from the Province (nitrate, bacteria, etc.).
- Monitor water levels at minimum of 3 stations (wells) with automated dataloggers.
- Download data twice/year, check salt profile.
- Hydrogeologist review data periodically.
- Update models, identify trends,
- Refine projections.

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Preliminary Recommendations for a Groundwater/Septic Monitoring Program for Stanhope Peninsula

- Sample minimum 12 well sites annually- Full suite of laboratory testing (chemistry, metals, bacteriological).
- All homes/every 2 to 4 years - Check for salt levels using field C*onductivity Meter*.
- All homes/every 2 to 4 years - Interview residents about well/septic problems.

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Preliminary Recommendations for a Groundwater/Septic Monitoring Program for Stanhope Peninsula

- All homes/every 2 to 4 years - Interview residents about well/septic problems.
- Consultants review and analyze data periodically.
- Identify changing trends
- Update models, refine projections.

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Water and Wastewater Servicing Options and Issues being Considered

- Land availability for a central or cluster WWTS for Stanhope Peninsula (estimate 66 to 165 acres needed).
- Small cluster water systems can be very expensive to operate and maintain if they are constructed to modern standards.
- On-site well and septic treatment and upgrades are feasible options, but may be more expensive on a life cycle, per lot basis than central servicing.
- Septic System Management Program could help minimize malfunction rates.

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Water and Wastewater Servicing Options and Issues being Considered

- Opportunities for partnering/cost sharing with National Park.
- Parks Canada has been concerned about groundwater quality in the past. Recently installed deep wells.
- Wastewater lagoons at Dalvay are being considered for upgrades. Land-based effluent dispersal system being considered.
- Sewage system at Stanhope Campground is in need of upgrades.

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Water and Wastewater Servicing Criteria for When to Take Action

- Very subjective, many variables to consider.
- Public health impacts (illnesses)
- Septic malfunction rate criteria - > 10%, > 20%, > 30%...?
- Property values are being negatively affected (caused by increased media attention).

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Water and Wastewater Servicing Criteria for When to Take Action

- Very subjective, many variables to consider.
- Public health impacts (illnesses)
- Well contamination, salt water intrusion
- ***Council will eventually make informed decisions in consultation with, and in the best interest of residents and property owners.***

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