

Technical Impediments to Use of the Existing On-site Sewage System of a Host House to Service a Garden Suite on the Same Property

INTRODUCTION

A “garden suite” is a temporary home located on the same lot as the house of a family member (the host house). The concept, promoted by Canada Mortgage and Housing Corporation as a housing option for seniors, can be removed and reused where needed. A typical unit would have one bedroom, a living room, a kitchen and a bathroom, as well as storage and laundry facilities and all the usual amenities of a home. It would also be connected to the water and septic tank systems of the host house.

This research project identifies and describes the technical impediments to connecting a garden suite to the on-site sewage system of a host house. In doing so, the study addresses the concerns of regulatory officials in the Atlantic provinces, and attempts to help housing regulatory authorities decide whether to allow garden suites in their jurisdictions.

RESEARCH PROGRAM

Methodology

The research study had two components. The first component was interviews with responsible officials in New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador to document technical concerns with connecting garden suites to on-site sewage systems. The second component was a review and assessment of the interview results, the reference material and the technical literature.

During the first phase of the project, the researchers identified the appropriate regulatory officials in each province and asked them to provide answers to the following questions:

1. Which agency in each province determines the policy related to technical acceptability of connecting garden suites to host house on-site systems?
2. What policies and regulations determine the design and use of on-site systems?
3. What are the technical concerns of the responsible agency in each province?
4. How are the hydraulic loads determined for the on-site systems?
5. How are the pollutant loads determined for these systems?
6. How will the capacity of the host house system be assessed in the approval process for garden suites?
7. What other technical obstacles are foreseen for the use of these systems by garden suites?
8. What conditions and/or limitations may be required to satisfy the concerns of responsible agencies?

FINDINGS

The officials responsible in the four Atlantic provinces all shared one overriding concern about connecting garden suites to existing on-site sewage systems: the potential for the system to malfunction as a result of overloading.

The potential for a malfunction depends on a number of factors including the current condition of the disposal field, the original system design, and the hydraulic and pollutant loads to which the system might be exposed. Hydraulic and pollutant loads depend, in turn, on occupancy and water use in both the host house and the garden suite. The use of water conditioners, whirlpool baths or garburators, or the connection of storm drainage to the sanitary system can all contribute to hydraulic and pollutant loading.

Another concern was that there was no simple routine or certain procedure to assess the condition and capacity of an on-site system. Currently, assessments are made by examining records about the system installation and history, and through knowledge of local soils, groundwater and system failures.

The research indicated there were a number of ways to eliminate or reduce concerns about garden suites. One of these is the implementation of water-conservation measures in the garden suite and, possibly, the host house to reduce hydraulic loads. One study indicated that a 50% reduction in hydraulic load was achieved by installing a pressure-reducing valve on the building inlet and retrofitting the units with low-flow showerheads, sink aerators and toilets.

Other measures used to address on-site sewage system malfunctioning include the following:

- upgrading the septic tank or the disposal system to accommodate the combined load from the host house and the garden suite;
- arranging for more frequent and consistent pumping of the septic tank; and
- installing devices such as effluent filters and screened pump vaults, which can reduce 50% of the suspended solids discharge and block all significant solids from entering the field.

In addition, steps can be taken to reduce the effects of clogging of an existing disposal field, although none have shown consistent results. These steps include improving the pretreatment of the effluent from the septic tank; installing intermittent dosing systems; using trenches instead of area beds; applying wastewater in large intermittent doses with dose intervals over one day; and alternating the disposal fields on a yearly basis to allow the system to rest.

Institutional approaches may also help. These include measures intended to assure provincial officials that:

- a garden suite is used as intended - as temporary housing for a senior relative;
- water conservation measures are incorporated into the garden suite and, if necessary, into the host house;
- system maintenance is carried out at the time of installation and on a regular basis; and
- if a replacement system is required, it will be installed and the lot size will accommodate it.

CONCLUSIONS

Housing organizations that want to make garden suites available in their jurisdictions should recognize and address the technical impediments related to connecting the units to the existing on-site sewage system.

The following approaches are recommended:

- upgrading the existing on-site system;
- developing and implementing institutional measures that will assure approval authorities that the system will be used and maintained as expected, and replaced if necessary.

Housing organizations wishing to promote garden suites should also pursue two other objectives:

1. the development of test procedures that can provide a more accurate and reliable assessment of the current condition of an existing system; and
2. the development of technology to reduce pollutant loads on on-site disposal systems.

For their part, regulatory agencies should be involved at an early stage in the design, planning and implementation of programs to introduce garden suites. Such programs should be introduced in conjunction with the provincial agencies identified in the report.

Finally, every site proposed for a garden suite will be different because of the actual drainage characteristics and the loadings and maintenance of the installed system. Any proposals to introduce garden suites should recognize that the capability of the system of the host house to accommodate a garden suite can only be determined on a site-specific basis.

Research Highlight

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Housing Research at CMHC

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

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