

Partners in Building Maine's Future: Decentralized Waste Water and Smart Growth





Maine towns that lack funds to build centralized sewer systems have found it difficult to encourage traditional village-type growth. Current zoning regulations tend to promote low-density development in areas where higher densities are desired (such as village growth centers). The Maine State Planning Office (SPO) hired Stone Environmental to determine if decentralized wastewater infrastructure could support higher densities in Maine's villages without compromising the quality of the state's watersheds.

Stone studied the state's environmental laws and regulations, and the characteristics of its soils, groundwater, and bedrock. We analyzed decentralized wastewater technologies and the options for managing decentralized infrastructures. We then compared our findings with Maine's growth goals to determine whether the use of decentralized wastewater systems is desirable and feasible in the state. Finally, we summarized our findings in a set of handouts and technical papers to educate local decision makers and real estate developers.

- An eight-page brochure, *Partners in Building Maine's Future: What Subdividers and Planners Need to Know about Septic System Options in Local "Growth" Areas*. It provides a comprehensive look at the issues surrounding decentralized water and wastewater infrastructure.
- Four two-page handouts that provide an overview of decentralized infrastructure from four angles.
 - *Technology Choices for Developers and Subdividers in Non-Sewered Areas*
 - *Management of Decentralized Wastewater Systems in Maine*
 - *Creating Communities with Decentralized Wastewater Solutions*
 - *Partners in Building Maine's Future: Decentralized Wastewater and Smart Growth.*
- Four technical assistance bulletins (TABs) that describe in detail the scientific basis for our findings.
 - *Decentralized Wastewater and Water Supply Technologies and Performance (TAB #9)*
 - *Management, Policy Options and Guidance for Water Supply and Decentralized Waste Water (TAB #10)*
 - *How to Make Growth Areas Work Without Sewers: Three Approaches Plus None of the Above (TAB #11)*
 - *Decentralized Wastewater and Water Supply: Further Reading (TAB #12)*

We conducted our work for the Maine SPO between May and December 2003.

Stone Environmental was founded in 1992 and quickly established itself as one of the top US firms evaluating the environmental effects of agrochemical use. Since then, we have grown into a successful multidisciplinary team of more than 25 scientists and 40 employees, and added services in the areas of water resources and wastewater, site investigation, and information for sustainable development. Stone is based in Montpelier, Vermont, an area admired for its quality of life and strong environmental values.

For further information, please contact Scott Johnstone, leader of Stone's Water Resources and Wastewater Group, at 802.229.6432 or sjohnstone@stone-env.com.

Partners in Building Maine's Future: Decentralized Waste Water and Smart Growth



ONE OF THE BIGGEST challenges facing towns in Maine is how to grow successfully without using central sewers. Communities want to direct growth to the most suitable areas of town, near existing services or expanding traditional villages, but have no prospect of public sewer lines to serve these areas. Thus, new development must rely on soils, usually on a lot-by-lot basis, to handle waste water. Conventional wisdom says that on-lot waste water disposal using septic systems means low development densities, negating the effectiveness of a growth area.

However, towns without sewers have more options than they may realize. The science, practice, and rules of subsurface waste water disposal have advanced so much that some of the concerns that stymie good “growth” areas are

no longer valid. For instance, above the 20,000 square foot requirement in state law, there is no correlation between soils and the lot sizes required for septic systems. With good planning principles, new technology, and a commitment to maintenance and management, it is possible, while following state subsurface waste water disposal rules and good management practices, to have effective “growth” areas that depend on individual septic systems and wells.

Three Examples for Development with Septic Systems in Local Growth Areas

Each of the following alternatives was developed from an actual situation described in a comprehensive plan for a Maine town. Each approach to successful development that is described takes best advantage of the existing conditions in each town. These are specific

examples of how septic systems can be used to develop successful growth areas.

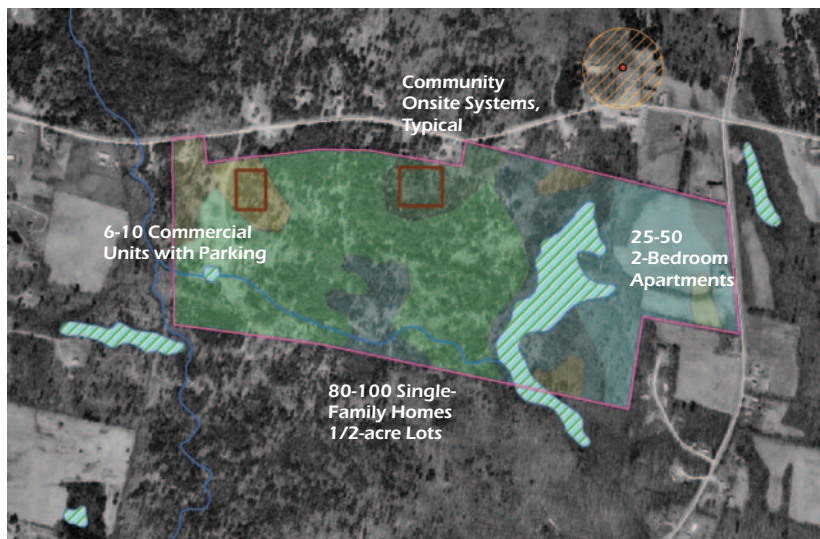
Case 1: Small Scale for Small Towns

A large, mostly rural town in Maine with no public sewers or water designated an existing village with a community school complex and a growing area along a main road as a growth area. The area along the main road west of the village was designated as “planned mixed-use development,” but the large lot sizes required in this area reflect concerns about waste water disposal and are not conducive to a successful growth area.

A 139-acre area in this town’s “planned development” area could support both commercial and residential development. If the property was developed using assumptions of minimum allowable lot sizes, individual drilled wells, and community septic systems, it could accommodate:

- 6 to 10 small businesses with off-street parking
- 25 to 50 2-bedroom apartments
- 80 to 100 single family houses
- 20 to 25 acres of open space, including a preserved wetland
- 2 community septic systems, one for the commercial activity and one for the residential properties

In this case, the town could create a Sanitary District to own and operate the two community septic systems that serve the new development. (A proposal is underway to authorize creation of sanitary districts geared specifically to small, decentralized waste disposal systems, which will



This aerial photo shows a conceptual development plan for a 139-acre parcel in the planned development area for Case 1.



In this aerial photo of Case 2, the growth area boundary is shown in green, and the subdivision's boundary is shown in purple. Although the subdivision was developed with 19 single-family homes, it could support as many as 56 single-family homes.

make this strategy even easier. Meanwhile, the existing authority to create a district also works.) Working with owners in the growth area, the district would acquire land for community septic systems in advance of development. The district would finance the construction of the leach fields (the treatment system). The developers would be responsible for installing the septic tanks and lines to the waste water fields at their cost. Once completed and inspected, the district would maintain the collection system and the leach fields. Property owners connected to the system would pay monthly fees for the operation and maintenance of the system.

Case 2: Big Help for Small Systems

A large town in Maine designated a long-settled hamlet as a growth area. Although other areas of the town are densely developed and have public sewers and water, this area is not expected to be sewered. Within this growth area, a 45-acre parcel was developed conventionally, by subdividing it into 19 large lots. If this property was developed using the assumptions of minimum allowable lot sizes, individual drilled wells, and a community septic sys-

tem, approximately 56 lots could be created on the same parcel.

Maine's Subsurface Waste Water Disposal Rules require that a legal independent entity own and maintain any community septic system. This situation is a good opportunity to bring existing management capabilities, in the form of the town's existing sanitary sewer district, into the picture. In this case, the developer designs and constructs the community waste water system at his or her cost (which is recovered through sale of the lots). When the system is completed, the developer turns it over to the Sanitary District, along with additional land to be used for system expansions or replacement. The Sanitary District maintains the system and charges user fees for this maintenance.

Case 3: Water, Water Everywhere

A small town with an established village did not designate growth areas in its comprehensive plan. Instead, it designated areas suitable for residential growth, some of which are close to existing services and have access to a public water supply. One of these areas contains about 23 acres of buildable land. If

this property was developed using the assumptions of minimum allowable lot sizes, public water supply, and individual septic systems, about 35 lots could be created.

In this case, each individual property owner would own and manage their septic system. With the presence of a water utility providing water to the homes, the town has an opportunity to implement a systematic education and reminder system to insure that the septic systems are properly maintained and perform well over the long term.

Keeping "Smart Growth" Smart

Each of these examples shows how a community can use readily available "low-tech" management methods to accommodate growth in designated areas, even without public sewers. However, ensuring high-quality waste water disposal facilities and clean water for new developments is only one aspect of planning successful communities. Many other factors must be considered in order to protect what's good about Maine's towns—the village centers and the open space and natural beauty around them, the safe neighborhoods, and the quiet streets. By properly managing septic systems as one aspect of balanced development, it is possible for Maine communities to grow successfully while protecting the environment and preserving the high quality of life that Mainers expect.

For More Information

Maine State Planning Office
(207) 287-3261
www.maine.gov/spo/

Maine Department of Environmental Protection
(207) 287-2111
www.maine.gov/dep/index.shtml

Maine Department of Human Services, Wastewater & Plumbing Control Program
(207) 287-5689
www.maine.gov/dhs/eng/plumb/index.html