5. DISCUSSION OF WASTEWATER MANAGEMENT OPTIONS

A "decentralized" wastewater treatment program is one that utilizes wastewater management solutions as close to the sources of the wastewater as possible. This is often realized by utilizing a number of on-site or shared systems to treat relatively small volumes of wastewater, generally from individual buildings or groups of buildings, at or near the source. In 1997, U.S. Environmental Protection Agency (EPA) stated that both centralized and decentralized system alternatives would need to be considered when upgrading failing on-site septic systems. The State of Vermont began a process in 1999 to evaluate and revise its overall wastewater review process to make it clearer and to promote "smart growth" or conversely discourage sprawl. The State encourages the review of decentralized approaches in low-density settings in small and rural communities.

The key to the decentralized concept is that it treats both on-site and shared systems as a permanent wastewater treatment solution—as a valuable part of the infrastructure that should be planned for, sited, designed, and installed properly, operated and maintained appropriately, and monitored as required by any relevant permits. The system's owners (whether the Town or individual property owners) should meet compliance requirements and ensure that users of the system are knowledgeable about how their actions can impact the system.

The decentralized system treatment and management concept has many advantages for communities that are trying to upgrade existing on-site systems within compact developed areas. For many communities, a suitable centralized treatment option may not be cost-effective because of treatment costs, the unavailability of single large areas of dispersal capacity, or the scattered nature of compact development in village areas, which require major infrastructure (long sewers or force mains) to collect sewage for treatment. Waitsfield's prior wastewater master planning efforts have encountered all of these obstacles—even though the "centralized" wastewater collection and treatment solution that was proposed in the Town's 2004 *Wastewater Facilities Plan* also included significant reliance on existing on-site and decentralized infrastructure. That *Facilities Plan* also clearly states that the existing onsite and shared wastewater treatment systems, especially those serving residences and smaller developments, suffer from a lack of routine maintenance--and that this lack of maintenance can strain the existing systems and cause them to malfunction.

Discussions with the Wastewater Committee have made clear that a primary benefit of this study is the articulation of a wastewater management system that will allow for the alleviation of existing wastewater treatment concerns, and that will allow for some limited level of appropriate development in accordance with local initiatives and the Town's overall Plan. Responses to questions in the property owner survey, additional comments submitted by the survey respondents, and the results of this study as described in the sections above all suggest that even though owners and residents may lack consensus about exactly what

the solution is, a wastewater management solution is needed in Waitsfield Village and Irasville and the "do-nothing" option is preferred only by a very small portion of respondents.

Responses to questions in the property owner survey, additional comments submitted by the survey respondents, and the results of this study as described in the sections above all suggest that even though owners and residents may lack consensus about exactly what the solution is, a wastewater management solution is needed in Waitsfield Village and Irasville and the "do-nothing" option is preferred only by a very small portion of respondents.

While consensus has not yet been reached about what wastewater management strategy might be appropriate, time is running out for a significant proportion of the federal grant funding that has been awarded to the Town of Waitsfield for the express purpose of constructing wastewater treatment infrastructure improvements. The proportion of the town's U.S. Environmental Protection Agency State and Tribal Assistance Grant (STAG) that is intended to fund wastewater treatment improvements, approximately $1 million, will revert to the federal government if a strategy for utilizing the funding is not implemented.

The options and costs for a centralized village-wide, single wastewater *collection/treatment/dispersal* infrastructure have been firmly established in previous studies. However, previous evaluations focused on the viability of a centralized wastewater management scheme, without independently considering how the implementation of a municipal water system might improve the prospects for successfully managing wastewater treatment closer to where the wastewater is being generated. This report, by bringing together and assessing current information about connections to the municipal water system and other water supply and wastewater treatment infrastructure, enables serious consideration of the development of a wastewater *management* and decentralized infrastructure improvement funding program.

5.1. Decentralized Wastewater Management in Vermont

The current status of wastewater system regulation and management in Vermont, illustrated in the matrix below, provides a case-in-point illustration of why decentralized systems are often considered to be a "second-rate" solution, or something that is put in place just until the sewer comes along. In Vermont, complex, centralized systems with surface water discharge are highly regulated—and are also treated as permanent infrastructure, with (for example) term-limited operating permits and stable funding mechanisms in place to help pay for ongoing maintenance and replacement. At the other end of the spectrum, small scale, passive, gravity based systems have, in practice, little or no management once a system is permitted and installed. Any maintenance, routine check-ups, pumping, monitoring, or replacement of components is entirely the burden and responsibility of the property owner, and resources to fund replacements are also currently limited to those available to the property owner.

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The gap in funding for decentralized wastewater treatment systems as compared to centralized systems is arguably the most critical barrier to the sustainability of a decentralized solution for Waitsfield—as for many other Vermont communities. Aside from bank or personal financing, there are currently very few funding sources for individual property owners to tap when small-scale wastewater treatment systems, especially those on private property, need to be replaced. The NeighborWorks® HomeOwnership Centers of Vermont do offer a low-interest revolving loan program to the owners of single-family residences for weatherization and the repair of structural problems or systems failures, subject to income limits (CVCLT, 2007). The available loan funding from this source is limited and has many competing demands upon it, and this funding is only available to home owners—not to local businesses, nor to condominium residents or landlords.

	Centralized collection, treatment, discharge wastewater systems	**>6,500 gpd onsite / decentralized wastewater systems**	**<6,500 gpd innovative/alternative technology onsite / decentralized wastewater systems**	**<6,500 gpd conventional onsite/ decentralized wastewater systems**
Current Wastewater Regulations in Vermont	Water Pollution Control Permit Regulations (NPDES)	Indirect Discharge Rules	Wastewater System and Potable Water Supply Rules	
Current Wastewater Management in Vermont	Municipally owned Certified operators Regular inspection, monitoring, and reporting Term operating permits Sinking funds often mandated locally	Municipal or private owner Certified operators (usually) Regular inspection, monitoring, and reporting Term operating permits Sinking funds…?	Private / individual owner Certified designers Regular inspection, monitoring (sometimes), and reporting…but who tracks that? Funding?	Private / individual owner Certified designers Inspection? Monitoring? Reporting? Funding?
Management Level	High (EPA's Model 5)	→	→	Low (EPA Model 1 or less)

At least one other Vermont municipality has responded to this funding gap by establishing a local low-interest revolving loan program specifically for decentralized wastewater system repairs and replacements. The Town of Colchester administers a long-term, low-interest (20-year term, 3% interest) loan fund with Clean Water SRF funding originating from the Vermont DEC (Town of Colchester,

2010a). They see their income-sensitive loan program as critical to the success of a decentralized wastewater management program, especially as the more complex treatment systems now being installed cause the Town's concerns to shift toward increased levels of management. Colchester's loan program is open to homeowners, including those in condominiums and homeowners' associations—which constitute the vast majority (over 85%) of developed properties in the Town. The funding available through this loam program is also limited, so the Town has implemented a simple priority system to ensure that the funding is being used to fix the most significant environmental problems while assisting those with the most financial need (Town of Colchester, 2010b).

By implementing a management program for decentralized wastewater infrastructure in Waitsfield Village and Irasville, the Town has an opportunity to transition the infrastructure and investment that already exists into something that is sustainable and affordable to those who live and do business here—an infrastructure that supports local objectives and is an amenity rather than a liability. Creating a voluntary program for maintenance that owners can opt in to, and a local funding program for repairs and replacements, will allow the Town to move forward from its current situation.

Stone recommends that the Town determine whether the STAG funding described above can be allocated to a decentralized management strategy, and conduct a financial analysis of appropriate wastewater management program and loan program alternatives. Such a program can appropriately value the investment that property owners have already made in constructing and maintaining existing wastewater infrastructure, enable maintenance to be completed in accordance with permitting requirements, and—most importantly—provide long-term, low-interest financing to property owners for onsite or shared system repair or replacement. Members of the Wastewater Committee have already started to explore this recommendation by initiating discussions with Josh Nemzer of the U.S. Environmental Protection Agency's Region 1 office, who is the administrator of the STAG funding program.

5.2. Who's Responsible? Wastewater Management Models and Governance

There are several different levels of management programs that the Town of Waitsfield might choose to pursue, and varying structures for the governance or the ultimate "manager" of any decentralized wastewater management program that the Town might choose to implement for the Waitsfield Village and Irasville areas. The U.S. EPA uses the term "responsible management entity" or RME to describe the manager of a decentralized wastewater management program, and they define an RME as *a legal entity responsible for providing management services to ensure that decentralized onsite or clustered wastewater treatment facilities meet established criteria* (U.S. EPA, 2003 and Water Environment Research Foundation, 2008).

The level of management that an RME can provide for decentralized systems varies significantly. The following paragraph, extracted from guidance documents that Stone helped to prepare for the Water Environment Research Foundation in 2007-2008, illustrate the different conceptual roles that an RME might fulfill. More details are included in Appendix E.

> The U.S. EPA identifies a broad range of management levels, where increased management controls correlate with increased risks to public health and the environment and/or complexity of treatment technology. For example, in low-risk contexts—where there are few serious consequences from failure—maintenance reminders to homeowners can achieve adequate management—the homeowner awareness management level in the EPA's terminology. Increased probability or consequences of failure require management by competent professional service providers rather than leaving the responsibility with property owners, be they residential, commercial, institutional, or industrial.

The sidebar at right describes how the EPA groups RMEs and associated service providers.

Several different types of RME are possible within Vermont's wastewater and utility rules, and the state's legal framework. Governance structures that could function as RMEs in Vermont communities include the following:

- Local Government
  - Municipality (via local water/wastewater ordinance)
  - Fire District
- Local Non-Government

EPA Decentralized Wastewater Management Models

Maintenance Contracts. The local regulatory authority (e.g. a public health regulator) requires property owners to have contracts with appropriately qualified, and in some cases certified, service providers to ensure proper and timely site and soil evaluation, design, installation, and professional maintenance.

Operating Permits. The local regulatory authority implements a management program that issues permits to property owners for operating their systems, with conditions and requirements for proper maintenance. The operation and maintenance must be carried out by qualified, and often certified, service providers. The authority monitors and enforces compliance, and may or may not act as the service provider.

RME Operation and Maintenance. The public health and/or environmental risks are high enough to require management by a qualified organization on behalf of the property owners. The regulatory authority permits the RME to take on obligations to meet compliance on behalf of property owners, in exchange for a fee. The RME does not own the infrastructure, so this situation is also known as "contract operation."

RME Ownership. The RME owns all the infrastructure assets including systems located on private (e.g., residential, commercial, institutional, etc.) property. For users, the service provided appears equivalent to centralized services with the RME taking on all the associated obligations to ensure performance in exchange for a fee for services. In many states, statutes mandate that RMEs providing sewerage service to multiple properties for a fee be chartered as public utilities, either governmental or private.

- Local Utility
- Co-operative
- Limited Liability Corporation (LLC)

In Waitsfield, the most efficient management entity structure is likely the first one listed—the municipality via a local wastewater ordinance—much like the ordinance that is now being constructed for the operation and management of the municipal water system.

Due to the private nature of ownership of the current wastewater infrastructure in Waitsfield Village and Irasville, and also due to the challenging environment that now surrounds the municipal water project's implementation, we strongly recommend that any management entity formed for the purpose of decentralized wastewater management be invested with the authority to manage onsite wastewater systems *only* with the consent and agreement of individual property owners.

The management entity and program could be phased in over time, as well. Initially, management activities could be documented by property owners with reporting to the management entity (similar to the EPA "Maintenance Contract" or "Operating Permit" models in the sidebar above). If replacement systems are shared between multiple property owners as the management program progresses, at some point it may become more logical for the Town of Waitsfield to either manage those systems directly, or potentially to take complete responsibility for those systems (similar to the EPA "RME Operation and Maintenance" or "RME Ownership" models described above).

5.3. How Might a Decentralized Wastewater Management Program Work in Waitsfield Village and Irasville?

The description that follows is one example of how a management program for existing decentralized wastewater infrastructure could be structured and operated for Waitsfield Village and Irasville. We offer it as a first step in what we hope will be a sustained and productive dialogue about what is truly appropriate for Waitsfield's village areas.

The Town could consider establishing a "Wastewater Management District," (similar in concept to the Town's recreation or conservation districts) with boundaries corresponding to the boundaries of the Waitsfield Village and Irasville-related zoning districts (Village Business, Village Residential, and Irasville Village). Alternately, the boundaries of the Wastewater Management District could correspond to the boundaries of the municipal Water Service Area. Within the district, properties could voluntarily choose (or be required, if the Town and property owners in the district made that decision) to have their systems managed by a public entity (such as the Town). The public entity could choose to perform the management activities itself, either by training existing staff or by hiring additional qualified individuals—or the entity might choose to contract the management activities to a local engineer, site

designer, maintenance provider, or other qualified firm and be responsible only for program administration.

Each system could be inspected annually, and the tank would be pumped as needed (generally every 3 to 5 years). The frequency of evaluation, and the performance of routine maintenance, could be varied depending on the type of system, whether the system utilized pumps, filters, or advanced treatment, and depending upon whether any additional maintenance was required by any Vermont DEC permit issued for the system.

If problems were found during a routine evaluation, the property owner would be notified and information about the Town's long-term, low-interest loan program for repairs would be offered if the property owner wished to take advantage of that funding to fix the problem. The payback periods of these loans would be on the order of 20 years with 2% interest (or they could be paid back when a property was sold), allowing for lower individual payments that would be more affordable for property owners than most other conventional finance vehicles. The loans would be secured with a lien against the property (as is also the case with other revolving loan programs in Vermont); thus, the debt could also transfer to a new owner if the property was sold.

The funding for the loan program would "revolve," so that as property owners paid back the loans over time, that principal would again be available to loan to another property owner. A priority system for awarding loan funds could be developed, to ensure that if requests for funding exceeded the amount available, the funds would be distributed equitably and transparently, in accordance with agreed-upon principles (such as financial need, environmental or public health impacts being addressed, etc.). If the STAG formed a portion of the funding available through the loan program, the Town could keep that money local and continue to revolve it. If the Clean Water SRF was the only funding available through the loan program, the loan repayments would return to the State of Vermont.

Property owners encountering significant malfunctions with their wastewater treatment systems who did not initially choose to be part of the management district could still be allowed to apply for low-interest loan funding to help with repair costs. In order to ensure that the investment of revolving loan funds in the system repair was protected, the property could be required to join the management district for at least the duration of the loan.

This approach has several benefits:

- Regular inspection and maintenance extends the life of existing systems and results in fewer malfunctions
- The Town can monitor areas of septic problems and plan for future wastewater treatment needs

- Property owners will be more aware of the importance of proper system use

A typical range of fees for this management service might be on the order of $100 to $500 per year for a single-family residence, depending on the complexity of the system and whether pumpout costs are included. (The Town's 2004 *Wastewater Facilities Plan*, for instance, estimated that managed users would be charged $200 per equivalent residential unit per year for services such as system check-ups and pumpouts, not including system upgrades such as the addition of access risers during the construction phase of the proposed municipal wastewater system.)

To reiterate, this decentralized management approach is only presented as an example. The Committee, with input from the community at large, will need to make decisions about the optimal wastewater management strategy for local conditions and users.