

COLORADO RESEARCH AND EVALUATION STUDY
PHASE IV

IMPLEMENTATION PLAN FOR ONSITE WASTEWATER TREATMENT
REGULATION CHANGES IN THE STATE OF COLORADO

B. Scheffe, Front Range Precast Concrete
J. Jatcko, Front Range Precast Concrete

December 2008

In Cooperation with:
Jefferson County Department of Health and Environment and
The Strategic Environmental Pipeline Foundation

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CONTENTS

ABSTRACT	4
INTRODUCTION	5
Phase I Summary	5
Phase II and III Summary	5
METHODS	6
Stakeholder Review of Existing Rules	6
Creating the Revised Documents	7
Structure and Format of Proposed Revisions	7
Revisions to State Statute	7
Revisions to State Guidelines	10
Stakeholder Review of Document	16
RESULTS	17
Possible Framework for Implementation of Revised State Statute	17
Legislative Process for Statutory Change	17
CONCLUSIONS	20
RECOMMENDATIONS	21
ACKNOWLEDGEMENTS	21
REFERENCES	22
APPENDIX A – DRAFT REVISED STATUTE	24
APPENDIX B – DRAFT OWS GUIDELINES	38

ABSTRACT

Phase IV of the Colorado Onsite Research and Evaluation (CORE) Study uses information gathered during Phases I-III of the CORE study, outside models, and the opinions of a professional stakeholder group to create revisions to Article 10 of the Colorado Revised Statutes, and the Water Quality Control Commission Guidelines for Individual Sewage Disposal Systems (Revised Version-Colorado Watershed Protection Code for Decentralized Wastewater Infrastructure). The revisions are suggestions based upon the opinions of many of the best minds in decentralized wastewater treatment in the United States. The documents produced are working documents meant to be used as the framework for a more current regulatory structure commensurate with watershed scale management of resources.

INTRODUCTION

Phase I Summary

As the first component of a four phase evaluative study, Front Range Precast Concrete (FRPC) developed the Colorado Onsite Research and Evaluation (CORE) Survey. The survey or questionnaire is a peer reviewed assessment tool with a wide variety of questions developed through numerous meetings with important onsite stakeholders within the state of Colorado. The survey was published online in November 2005 using QuestionPro[®] online surveying software. Either the environmental health official or the appropriate onsite wastewater program representative from each county in Colorado received an email with a link to their own individually coded survey, or a hard copy version. It was hypothesized that the survey would reveal variability in regulatory statutes, would show a lack of practices and procedures that are conducive to providing the best available technology to areas in need, and demonstrate the need and desire for guidance at the state level.

Most counties were eager to respond. Fifty-five counties out of sixty-four total counties in the state responded creating a response percentage of 86%. Data from all respondents was managed in ArcView 9.0[®] which is a geographic information system (GIS) database. This allows the end user of the information gathered to observe geographic trends throughout the state. It allowed for multi-tiered comparisons to be made, and provided limited statistical analysis. Survey questions were queried alone and with other questions in order to highlight counties that fit the desired criteria.

Whether it is an effort to reduce liability or just to simplify the permitting process, a majority of regulators surveyed are in favor of state policy.

It is the opinion of the authors of this study, based upon the information collected and the interpretation of those data that the current procedures and practices in the onsite wastewater industry in Colorado are not conducive to providing the best available technology to environmentally sensitive areas.

Phase II and III Summary

The intention of this study is to evaluate existing onsite wastewater programs and guides in the United States, in order to better make decisions locally in Colorado. Prepared in order to fulfill Phases II and III of the Colorado Onsite Research and Evaluation (CORE) Study, this paper is a continuation of Phase I, which geographically plotted survey responses from county environmental health regulators from across the state of Colorado. Survey responses showed county regulation inconsistencies, lack of unified certification and training programs, technology prohibitive regulations, and other potentially serious flaws in state and local guidelines.

This phase of the CORE study focuses on outlining various model programs and guides that are currently being used or developed at the national level, in other states, and at the local level in Colorado. Phases II and III of the study are structured so that the most nationally recognized guides are described first, followed by existing state programs in Colorado, Texas, Iowa, and Florida. Programs such as the U.S. EPA's Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment System, NOWRA Model Code, and NIOL program, NEHA Certified Installer Credential, NSF Standards and onsite inspector accreditation program, Consortium of Institutes of Decentralized Wastewater Treatment Systems training and certification are summarized and evaluated.

Potential funding options for a sustainable onsite program in Colorado are evaluated, critical components of a basic local onsite program are suggested and recommendations for and action plan are outlined. It is the intention of this document to be a further impetus for necessary changes in the Colorado onsite wastewater treatment industry's oversight, regulation, and effective protection of human and environmental health.

METHODS

Stakeholder Review of Existing Rules

A diverse group of stakeholders from the Colorado Professionals in Onsite Wastewater association repeatedly assembled in 2008 to evaluate the two existing documents that govern the onsite wastewater industry in Colorado. The stakeholder group consisted of engineers, installers, regulators, service providers, and manufacturers. The overall goals of the group were defined as follows:

1. Improve and preserve public safety and environmental health
1. Create clearly defined standards with statewide uniformity
2. Raise standards of performance for all onsite professionals
3. Increase knowledge and performance through certification and flexible performance/risk based regulation
5. Create an advisory council for regulatory and technical guidance to the state.

After completing a line-by-line evaluation of the governing documents to identify potential "road blocks" to a performance/risk based regulation, it was determined that the existing state statute would have to be modified but the existing framework could be altered to accommodate risk based guidelines. Since the statute grants ultimate authority to the ISDS Guidelines and local county government regulations, most of the specific non-workable prescriptive regulations lie in these documents. In order to accommodate the desired changes it was determined that the Guidelines would require a complete revision.

Creating the Revised Documents

Structure and Format of Proposed Revisions

It was important to determine what type of regulatory structure would work best for Colorado. Currently, all county onsite wastewater regulations are governed by the ISDS Guidelines which are managed by the Colorado Water Quality Control Commission. The guidelines are authorized by the state statute (ARTICLE 10). The guidelines are designed to be a minimum standard for practices and regulations state-wide. As a result, many counties have chosen to create local regulations that exceed the minimum requirements set forth by the guidelines. This variability in rules from county to county has resulted in vast inconsistencies across the state. This co-management not only makes operating an onsite wastewater treatment business very difficult, but is prohibitive to evaluating human and environmental health protection from a watershed perspective.

Including Colorado's co-management framework described above, there are three different onsite wastewater regulatory program frameworks currently used in the United States. A state can choose to have no state-level governance and solely rely on counties to create individual regulations. There are only two states which currently operate under this framework, California and Michigan. This often creates regulations that have no common thread, making cross-border commerce and a watershed approach to resource management and protection extremely difficult. Other states have created legislation that allows for no flexibility or modifications by local county governments. This single set of rules applies to an entire state. This approach aids in cross-border commerce, and resource management, but it may not be realistic for a state to transition to this approach as it would change the funding structure for each county. It was determined by the Colorado stakeholder group that the best approach for Colorado would be a robust set of state guidelines that work for any site or situation in any jurisdiction in the state. Counties would not be allowed to modify or make the requirements that exceed the minimum requirements set forth by the state, except for regulations regarding fees and permit duration. Counties would not be relinquishing flexibility, rather increasing their options and available methods through the use of a risk-based code, while maintaining appropriate funding levels through individual fee structures.

Revisions to State Statute

Since the state statute (ARTICLE 10) supersedes all other onsite regulations in Colorado, the steering committee identified and removed road-blocks to desired changes, and created pathways to components that were not addressed. Critical components had to be removed, modified, or added because they did not exist. The document (Appendix A) is a work in progress.

The nomenclature of the onsite wastewater industry has changed dramatically as the industry has matured. Professionals are moving away from terminology that suggests “disposal” of treated wastewater, and more towards concepts of treatment and potential for re-use or recycling. The entire document will utilize the most appropriate and suitable terminology used within the onsite wastewater treatment industry today. This “re-defining” of the industry through regulation will demonstrate and encourage best practices from the top down.

Many states who have county-level permitting for onsite systems have adopted a maximum gallon per day threshold which determines when systems must be permitted by the state and not the local jurisdiction. In Colorado, when systems treat >2000 gallons per day they must be permitted by the State. This process requires CDPHE review, effluent quality monitoring (test wells), and can result in added project costs that in some cases have reached \$100,000. The proposed changes would allow counties that staff a professional engineer to permit systems locally up to 10,000 gallons per day, and those that don't to contract with neighboring counties, or default to CDPHE.

Available to CDPHE in the past was a technical advisory committee. The “ISDS Steering Committee” was assembled for a short period of time to provide expert opinion at a time when no resources at the state were dedicated to the oversight of the onsite industry. The committee will again serve as a resource to the state. Positions could be for a fixed term or could be open-ended. It has not yet been determined whether these positions should be appointed or subject to an application process. The committee can aid the state in making decisions that need to be based upon opinions which represent all sectors of the industry. The advice of the committee could be used for reviewing new product or process approvals not “deemed to comply” or certified by an approved third party. The committee shall be named the OWS Steering Committee.

True “operating permits” for onsite systems did not seem reasonable and were advised against by the NOWRA Model Code. Unless several county programs had been successful the model code suggests operating permits can be a roadblock to implementing other regulatory changes. A more reasonable approach was to grant authority to the guidelines to require transfer of title inspection requirements for all residential and commercial properties served by onsite systems. Requiring inspections will identify failures, and allow a database to be built to identify problem areas so that planners and future policy makers can make informed decision.

Currently the statute gives counties the ability to require licensing of installers and pumpers of onsite systems. This process results in inconsistent practices across the state, and since many counties do not require licensing there are numerous practitioners who continually use practices not conducive to protecting human health, environmental health, or the financial investment of the property owner. Many states have adopted successful state-wide licensing, certification, training, and continuing education programs. It is the belief of the stakeholder group and the NOWRA Model Code that all practitioners involved in the regulation, design, manufacturing, installation, maintenance and inspection of onsite wastewater treatment systems should be certified using existing

credentials. Credentials offered by third party organizations include the Basic and Advanced Certified Installer of Onsite Wastewater Treatment Systems credential offered by the National Environmental Health Association, the Certified Inspector credentials offered by the National Sanitation Foundation International, and the National Association of Wastewater Transporters. Although professional engineers are required for design work in many cases, they are not required to work within their field of expertise. For this reason it was determined that engineers licensed to conduct business in Colorado would also have to obtain and maintain a valid license or approved credential to design onsite wastewater treatment systems.

Currently all wastewater treatment technologies not in use in the state and or not effectively addressed by the statute or guidelines must receive approval by CDPHE. These approvals are often based upon prescriptive guidelines that were designed for conventional septic tank applications, or may not be addressed in the current guidelines, such as some drainfield technologies. The industry and the treatment technologies available today have far exceeded our regulations ability to effectively govern their use. Since there are now widely accepted centralized testing facilities it is suggested that the statute allow the guidelines to certify technologies as “deemed to comply” based upon their performance at a third party testing facility. These “deemed to comply” systems would not have to go through the regulatory approval process, and would be accepted as viable technologies by their third party testing performance.

Experimental proprietary treatment systems not certified by a third party testing facility to the NSF STD 40 or equivalent would effectively be disallowed. Treatment technologies not addressed by recognized third party testing agencies, and processes that do not currently fall under a testing protocol would be given consideration for approval by the OWS Steering Committee.

The operating costs of some county governments that have well developed onsite wastewater programs have exceeded the revenue generated by permitting. The current statutory cap of \$1000.00 must be changed in order to allow some counties to recover the costs of their programs. The absolute removal of a cap could prove difficult when trying to pass new legislation as “no-limits” may be a tough sell. It is proposed that the new limit be raised to \$2000.00 and be re-visited every three years.

With the variety of certified treatment technologies available today, designers now have methods to treat waste from any location on any building site. Extremely difficult and challenging sites may require extensive technology and maintenance requirements, but options do exist for wastewater treatment on all platted lots. Prohibitions or the use of onsite wastewater treatment systems permitting to control development or as a zoning tool shall be forbidden.

Revisions to State Guidelines

The ISDS guidelines that are managed by the WQCC do not meet the current needs of Colorado, and were determined to need drastic change in order to accommodate the risk-based approach desired by the OWS stakeholders. Although many models, standards, and guidelines were referenced, the new guidelines are primarily based upon the USEPA Voluntary Management Guidelines for Management of Decentralized Wastewater Treatment Systems and the NOWRA Model Code. Both of these documents represent ideas from the best minds in onsite wastewater treatment in the United States. The core critical component changes are explained in detail below. It is important to note that the Statute and Guidelines may address many of the same issues, but in most cases the Statute is granting authority or requiring the guidelines to address a specific component.

Many states have created titles for their guidelines that more accurately represent the long-term goal of their program. The “ISDS Guidelines” should be re-named to demonstrate the overall goal of the program. Re-naming the document to the “Watershed Protection Guidelines” will help re-enforce the motivation behind the changes.

Since the new guidelines provide unprecedented flexibility for counties to evaluate properties individually, many of the reasons why counties chose to make their county regulations exceed the minimum requirements of the guidelines no longer exist. Duration of permits and permit fees must still be set by the counties in order to preserve the revenue needed to sustain existing onsite programs. These fees must conform to the Statute by generating revenue equal to the expenditures of the local department and totaling less than or equal to the fee cap of \$1500.00.

It shall be clearly defined that those individuals employed by the regulatory community may not be involved in the design, installation, and maintenance of onsite systems within their jurisdiction of authority. It has long been practiced that many county government officials design conventional (septic and drainfield) onsite wastewater treatment systems for homeowners whose property did not require a system design from a professional engineer. This provides little or no liability recourse for the homeowner should the system have been designed improperly or inadequately. The engineering community has historically borne much of the liability for system function, when in fact much of the final success of the system depends on the installation of the specified components. Resolution of this issue of liability is addressed by requiring that the engineer of a system sign-off on the final inspection. This does not take the place of the final inspection performed by the local authority rather is a supplementary requirement.

Since all permits must be issued using the same set of rules, those rules must be able to apply to all circumstances. Based upon the EPA Voluntary Management Guidelines for Decentralized Wastewater Treatment Systems, the stakeholder group created a matrix for classifying and determining treatment technology and management requirements for onsite systems. Figure 1 is Risk Evaluation Scorecard used to evaluate the risk to human and environmental health. The total score generated by the scorecard must then be placed into the Risk Management Matrix in Figure 2 to determine what type of

technology must be utilized, and how it must be maintained. The different classes of technology and the different management tiers are outlined below:

Classes of Onsite Wastewater Treatment Technologies

- Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity)
- Class 2 – Deemed to comply (NSF 40 or other national certification)
- Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound)

Tiers of Management for Onsite Wastewater Treatment Technologies

- Tier 1 – Septic tank and absorption field (pressurized or gravity)
Does not require a maintenance contract (homeowner awareness)
- Tier 2 – Deemed to comply systems (NSF Standard 40 or other national certification)
Requires a maintenance contract
- Tier 3 – Vault systems, Deemed to comply systems
Requires operating permit (needs to include ongoing sampling to justify approval)
- Tier 4 – STEP/Cluster systems
Requires RME with private or utility ownership (joint or individual ownership)

	Risk Parameter	Value	Score
1	High/Low Flow	<600	1
		600-1200	3
		1201-1999	5
		>2000	10
2	Estimated Waste Strength (BOD, nitrogen, FOG, TSS)	<500mg/L TSS/BOD or TN<60mg/L	1
		500 - 1000mg/L TSS/BOD or TN 60 - 120mg/L	5
		>1000mg/L TSS/BOD or TN>120mg/L	10
3	Density	<1 acre	5
		1-5 acres	3
		>5 acres	1
4	Groundwater	<4 ft.	20
		4-10 ft.	10
		>10 ft.	1
5	Aquifer type	alluvial	5
		watertable aquifer	3
		fractured bedrock	4
		confined aquifer	1

6	Depth to bedrock/restrictive layer		
		<4 ft.	5
		4-10 ft.	3
		>10 ft.	1
7	Impaired waters		
		yes	10
		no	1 - 5
8	Drinking water source		
		Private	3
		Public	1
9	Proximity to other wells		
		within 100 ft	20
		100-200 ft	5
		>200 ft	1
10	Proximity to other drainfields		
		<20 ft	3
		>20 ft	1
11	Well depth		
		<50 ft	5
		50-100 ft	3
		>100 ft	1
		public water supply	0
12	Well construction date		
		pre 1972	5
		post 1972	2
		no well	0
13	Slope		
		<30%	1
		30% or greater	3
14	Depth to restrictive layer (shallow soils)		
		<4 ft.	5
		4-10 ft.	3
		>10 ft.	1
15	Proximity to surface waters, designated wetlands, springs		
		<50 ft	20
		50 ft or greater	5

Total Score 0

Figure 1. Risk Evaluation Scorecard

MINIMUM REQUIRED MANAGEMENT	TIER 4			200-250
	TIER 3		100-150	150-200
	TIER 2	25-50	50-100	
	TIER 1	0-25		
		CLASS 1	CLASS 2	CLASS 3
MINIMUM CLASS OF TREATMENT REQUIRED				

Figure 2. Risk Management Matrix

Understanding that third-party performance evaluations are subject to many variables, and represent laboratory testing conditions, there remains a very strong correlation for system performance in the field. For this reason systems that are “deemed to comply” shall not be subjected to further performance testing in the field unless they are subject to surface water discharge limits set forth as a part of other regulatory requirements.

Counties that staff a professional engineer may permit systems locally up to 10,000 gallons per day, and those that don’t may contract with neighboring counties, or default to CDPHE. Systems that exceed 10,000 gallons per day in flow volume will be subject to the CDPHE site plan review process. There is high variability of this threshold across the nation. In Colorado the limited involvement of the state (CDPHE) leaves some counties better equipped to make decisions on system design and process within their location.

Individual permits may be issued for one to five years. Counties must individually determine this duration. If permits are renewed beyond one year an additional inspection is required to verify site conditions are as they were when the system was originally designed. Counties shall determine their own cost recovery fee structures as the operating cost of departments across the state varies greatly. When property ownership changes the original onsite wastewater permit shall be modified to include the new owner.

Before the sale of any property serviced by onsite wastewater treatment, an onsite system inspection must be performed to determine that the system is adequate for the current structure and use, and that the system is functioning properly. Third party licensed inspectors or the county may perform inspection, but all must maintain NAWT, NSF, or other approved inspectors credential.

Management of systems shall be determined by the Risk Management Matrix. As the potential risk to human/environmental health increases or the technology implemented requires more frequent service the level of management required increases. There are four tiers of management requirements.

Tiers of Management for Onsite Wastewater Treatment Technologies

- Tier 1 – Septic tank and absorption field (pressurized or gravity)
Does not require a maintenance contract (homeowner awareness)
- Tier 2 – Deemed to comply systems (NSF Standard 40 or other national certification)
Requires a maintenance contract
- Tier 3 – Vault systems, Deemed to comply systems
Requires operating permit (needs to include ongoing sampling to justify approval)
- Tier 4 – STEP/Cluster systems
Requires RME with private or utility ownership (joint or individual ownership)

Adjustments to setback requirements may be made appropriate to the level of treatment. Systems tested and certified to produce a higher quality effluent qualify for a reduction in setback distances.

Certification and CEU requirements for all onsite professionals in the state
All onsite practitioners must hold the appropriate certification per his/her professional practice. The requirements for appropriate certifications are outlined below.

Individuals

Construction Inspector (regulator)–
NAWT/NSF or CDPHE approved national equivalent

Designer –

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NEHA Basic or CDPHE approved national equivalent or higher level (Class A/B)

Class 2 – Deemed to comply (NSF 40 or other national certification) (R.P.E. and CIOWTS-A or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (R.P.E. and CIOWTS-A or CDPHE approved national equivalent)

Installer –

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NEHA Basic or CDPHE approved national equivalent or higher level (Class A/B))

Class 2 – Deemed to comply (NSF 40 or other national certification) (CIOWTS-A or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (CIOWTS-A or CDPHE approved national equivalent)

Maintainer/Operator -

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NAWT/NSF Inspector or CDPHE approved national equivalent)

Class 2 – Deemed to comply (NSF 40 or other national certification) system – (NAWT/NSF Inspector or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (NAWT/NSF Inspector or CDPHE approved national equivalent)

Site and Soil Evaluator –

Registered Geologist, Soil Scientist, R.P.E. or CDPHE approved national equivalent

Organizations

Responsible Management Entity (RME) –

Certified as required if performing any of the above duties (need to look at requirements for RME i.e., liability insurance, etc.)

Regulatory Agency –

NAWT/NSF Inspector, NEHA Installer or State approved equivalent

Persons holding professional licenses/certifications that nominally permit them to perform the services and tasks associated with the occupations/functions listed above must comply with their license restrictions that permit them to work only if qualified in the specific area of practice. Before initially applying for certification, onsite wastewater practitioners may be required to demonstrate prior training and experience as required by the certifying agency.

A person performing work requiring certification must produce the certification document when requested by an inspector or other government agent with jurisdiction. A

regulatory inspector must produce his/her certification when requested by any individual with whom the inspector is interacting as an agent of the state. Certifications should be maintained and kept current based on each issuing organization's requirements. Persons holding current certifications must successfully complete approved education programs after the effective date of the current certification and prior to applying for certification renewal.

Individuals are required to obtain at least six hours of State-approved continuing education specific to onsite wastewater annually.

Education programs shall be approved by the agency issuing corresponding certification or by the State. The content of the course shall be focused on improving the knowledge, skills, and abilities of certificate holders in the performance of the work covered by the certification. One hour of training equals one credit hour. The minimum requirement for continuing education is 6 hours per year. The entity conducting the approved continuing education shall perform the following functions:

- Provide mechanisms that ensure that the individual pursuing the continuing education credit actually attends the complete program and is attentive to the subject material.
- Record the attendance and issue a corresponding certificate to the individual. If direct notice is required by the certifying agency, a list of attendees and other information required by the agency shall be provided to the agency.

All onsite wastewater treatment systems and their components must be accessible for monitoring and maintenance. This includes bringing all access risers to the soil surface, mounting all control panels and alarms so that they may be easily accessed for service, inspection, maintenance, and routine monitoring.

Tank standards must be adopted in order to ensure that the water-tightness and structural integrity of the vessel can be verified.

A list of all tank manufacturers must be kept on file with the CDPHE. The list must include all tank sizes, configurations, dimensions, and uses. The tanks must be able to be identified in the field so they may be referenced against the database.

Stakeholder Review of Documents

After determining what would be the critical modifications of both the Statute and the Watershed Protection Guidelines, then next largest task is in determining the appropriateness and effectiveness of the Risk Matrix. The Risk Matrix will undoubtedly need additional revision and adjustment as new unforeseen circumstances arise. Once confidence is established the documents should be sent for peer review to critical stakeholders only in and outside of Colorado. The resulting comments should be assembled, considered, and incorporated into the two documents when applicable. After the initial peer review and incorporation of comments both documents should be

submitted to CDPHE and the WQCC for review, legal revision, and formatting for Bill. The documents should be submitted by hand with a verbal explanation of the processes that have taken place to produce the documents, and the reasoning behind the proposed changes. Full support of the revised state statute must be given by CDPHE in order to assure support for proposed legislation to make the change. Full support of the Watershed Protection Guidelines must be given by the WQCC to ensure that they not only support the statutory changes, but also agree with the content and structure of the Guidelines.

Once necessary changes have been made, and support is given by the WQCC and CDPHE, the legislative process may begin. At this point in time a professional registered lobbyist in the state of Colorado should be contracted or procured through CDPHE to work with the stakeholder group to begin the legislative process. Finding an appropriate sponsor(s) for the proposed legislation may be the key to a successful bill. Advice should be requested from CDPHE, the lobbyist, and the WQCC regarding appropriate sponsors for the bill. This should take place no later than twelve months prior to the 2010 legislative session to ensure that all costs of implementation (if additional administrative costs are generated), are included in the long bill, and can be reviewed by the Joint Budget Committee.

RESULTS

Possible Framework for Implementation of New Statute and Guidelines

The desired endpoint of the CORE study, and its authors and contributors is a paradigm shift in onsite wastewater treatment regulation in Colorado. The working rough documents that are the framework to achieving the endpoint have been constructed and upon modifications and final approval will require legislative action in order to create the desired change.

Legislative Processes for Statutory Change

Although bills may create new laws or repeal existing laws, the bill necessary in order to enact onsite regulation change would amend an existing law. If it is determined that the amended bill will have economic implications on the state budget those costs must be included in the long bill. The long bill is an appropriations bill that includes the complete annual budget. Working with the Colorado Department of Public Health and Environment to ensure that the costs are included in their piece of the long bill is essential to moving forward.

When a bill is introduced it receives a number (Senate bills start with 1, and House bills are numbered from 1001) the bills also contain a prefix referring to the year of introduction. All bills must have a House and Senate sponsor; it is the sponsors responsibility for explaining the bill and for moving it through the legislative process.

The format of bills is important and must remain consistent as to quickly identify changes in the law, capitalization (i.e. CAPITALIZATION) shows new language and strike type (i.e. ~~strike type~~) indicated deletions. When amendments are extensive as could be the case in onsite legislation the existing law may be repealed and reenacted, or entire sections can be added in all capital letters.

The usual arrangement of the provisions of a bill are as follows: title, bill summary, enacting clause, the text of the law changes, an appropriation if required, effective date, and safety clause. The text of the law changes to include new provisions of law, changes to existing law, and repeal of existing law. Each section of a bill contains an amending clause, which cites the statute to be added, amended, or repealed.

- Bill title-Each bill contains a brief but comprehensive title. The state constitution requires that a bill contain only one subject, which must be clearly expressed in its title. A bill title can be amended (or changed) as the bill progresses, as long as an amendment does not broaden the title.
- Bill summary-The title is followed by a brief summary of the bill as introduced. Although the bill may be amended as it travels through the legislative process, the bill summary is not changed to reflect these amendments. The summary has no legal effect.
- Enacting clause-Below the bill summary, there is an enacting clause. The state constitution provides that the style of the laws of this state shall be "Be it enacted by the General Assembly of the State of Colorado." This clause must be included in all bills; failure to do so invalidates the entire bill. Sometimes legislators will strike the enacting clause, thereby "killing" the bill.
- Substantive provisions-The sections that follow the enacting clause vary according to the purpose of the bill. The provisions of bills are so diverse that no definite rules are laid down for their order. For example, when a new government agency or program is established, the proposed law frequently contains a short title, a legislative declaration explaining the intent of the new law, definitions of terms used in the proposed law, sections covering the main purpose of the proposed law and how the agency or program is to be administered, and penalties for noncompliance with the law.
- Severability clause-A severability clause is found toward the end of some bills. This clause provides that if any part of an act is held unconstitutional, the remaining sections of the act are not affected. It is, in effect, a saving clause because it "saves" parts of a law if any other parts of the law are declared unconstitutional through court action.
- Safety clause-Another common clause found at the end of bills is a safety clause. This clause originates in the initiative and referendum provisions of the state constitution. The state constitution provides that a law may be referred by petition to the people for approval "except as to laws necessary for the immediate preservation of the public peace, health or safety." To preclude this procedure, the safety clause is included in a bill. Or, the General Assembly can elect not to

include a safety clause, which allows the voters to petition the measure onto the ballot.

- Effective date-The constitution states that "an act of the General Assembly shall take effect on the date stated in the act, or, if no date is stated in the act, then on its passage," meaning the date on which the governor either approves the bill or allows it to become law without his signature. Many bills contain an effective date that takes into consideration the 90 days allowed to collect signatures to place a measure on the ballot.

All bills must be proposed to House and the Senate. There are several versions to a bill depending upon its progression through the process. The official steps are as follows:

1. Introduction
2. Passage on the second reading
3. Final passage in the first house
4. Introduction to the second house
5. Second reading
6. Final passage in the second house

The different versions of a bill are as follows:

Printed bill - the bill as introduced before any amendments are added.

Engrossed bill - the bill as passed on second reading in the house of introduction. It includes any amendments adopted by that house on second reading.

Re-engrossed bill - the bill as passed on third reading in the house of introduction. It includes all amendments adopted by that house. The re-engrossed bill is the version sent to the second house for introduction and consideration by a committee of reference.

Revised bill - the bill passed on second reading in the second house. It includes any amendments made to the bill on second reading by the second house.

Re-revised bill - the bill as passed on third reading in the second house. The re-revised bill is then sent back to the house of origin for enrollment and transmittal to the governor for his or her action.

Enrolled bill - after passage of a bill by both houses, the bill is printed in the form in which it will appear in the session laws. This enrolled bill is the version signed by the President of the Senate, the Speaker of the House, and the Governor.

Committees are often regarded as the workshops of the General Assembly. All bills are sent to a committee -- referred to as a committee of reference -- immediately following introduction (first reading by title). The Speaker assigns bills to committee in the House;

the Senate President makes the assignments in the Senate. The details of bills and resolutions are carefully analyzed at committee meetings. It is at these meetings, which are open to the public, that interested citizens express their views. After study, hearings, research and discussion, a bill may be amended, recommended for passage, referred to another committee, postponed indefinitely, or laid over for consideration later in the legislative session.

After the Committee of the Whole has completed its calendar of second reading bills it reports to the Speaker of the House or the President of the Senate. The report is an itemization of the bills considered and action taken on each measure, i.e., whether the bill was passed, amended, defeated, laid over until another day, or referred back to committee. The membership of the body votes on acceptance of the report. Often members attempt to reverse action taken during second reading by offering amendments to the report of the Committee of the Whole. Roll call votes are recorded on amendments to the report.

Third reading is when a final vote is taken on a bill in each chamber. Commonly, less time is given to debate on third reading; amendments are generally not offered at this time. Members must receive approval of the body to offer an amendment on third reading. This is, however, the time that a recorded vote is taken on a bill.

If a bill has passed the House and Senate it is sent to the Governor for signature. The Governor may still veto a bill. If not vetoed, the bill is then considered law.

The passage of a revised statute governing onsite wastewater will allow the Water Quality Control Commission to adopt a new set of guidelines incorporating all of the desired changes to the regulatory structure.

CONCLUSIONS

Based upon extensive research conducted over a three year period the CORE study has identified many inadequacies in the current regulation of the onsite wastewater treatment industry in Colorado. This has a “trickle-down” effect to every sector of the industry. The inadequacies have been addressed by a diverse group of stakeholders, and many solutions have been proposed and discussed. Although accomplishing the final desired changes is not a quick or simple task, it is necessary. Through the use of model programs provided by the National Onsite Wastewater Recycling Association, the U.S. Environmental Protection Agency, and others, local stakeholders have created draft documents for revision that hopefully will be used to create necessary legislation. These statute changes will enable the WQCC to complete appropriate guideline revisions.

RECOMMENDATIONS

It is recommended that the OWS Steering Committee immediately perform the following actions:

1. Contact the WQCC to present most recent activity and garnish support
2. Submit most recent documents to WQCC for input and modifications
3. Contact the CDPHE to present most recent activity and garnish support
4. Submit most recent documents to CDPHE for input and modifications
5. Procure a lobbyist through CDPHE
6. Identify sponsor for legislation

If these first steps are taken immediately, it will drive the process that will enact change. Strategic partnerships between the stakeholder group, CDPHE, and the WQCC must be maintained.

It would be foolish to think that the documents created will not need continual honing and improving in years to come; therefore, it would be prudent to schedule an annual revision with CDPHE and the WQCC of legislative issues and the Watershed Protection Code.

ACKNOWLEDGEMENTS

Many individuals and organizations have dedicated long hours to generating ideas and documents that will improve the onsite wastewater treatment industry in Colorado for generations to come. Their hard work and dedication is greatly appreciated. They include:

Colorado Professionals in Onsite Wastewater Membership
CPOW - OWS Stakeholder Group
National Onsite Wastewater Recycling Association-Model Code Committee
Colorado Department of Public Health and Environment
U.S. Environmental Protection Agency
Colorado Environmental Health Association
Colorado Directors of Environmental Health
Phoenix-AMC

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DRAFT

Article 10 Onsite Wastewater Systems Act
Revised June 16, 2008

ARTICLE 10 ONSITE WASTEWATER SYSTEMS ACT

Editor's note: This entire article was amended in 1997 resulting in the relocation of provisions.

25-10-101. Short title.

This article shall be known and may be cited as the "Onsite Wastewater Systems Act".

25-10-102. Legislative declaration.

In order to preserve the environment and protect the public health and water quality; to eliminate and control causes of disease, infection, and aerosol contamination; and to reduce and control the pollution of the air, land, and water, it is declared to be in the public interest to establish minimum standards and rules for onsite wastewater systems in the state of Colorado and to provide the authority for the administration and enforcement of such minimum standards and rules.

25-10-103. Definitions.

As used in this article, unless the context otherwise requires:

(1) "Absorption system" means a leaching field and adjacent soils or other system for the treatment of sewage in an onsite wastewater system by means of absorption into the ground.

(2) "Applicant" means any person who submits an application for a permit for an onsite wastewater system.

(2.5) "Commission" means the water quality control commission created by section 25-8-201.

(3) "Department" means the department of public health and environment of the state of Colorado created by section 25-1-102.

Designer – Tiered abilities from Class I –III with certification, R.P.E for high risk?

(4) "Dispersal system" means a system for the disposal of effluent, after final treatment in an onsite wastewater system, by a method that does not depend upon or utilize the treatment capability of the soil.

(5) "Division" means the division of administration of the department.

(6) "Effluent" means the liquid waste discharge from an onsite wastewater system.

(7) "Environmental health specialist" means a person who is trained in physical, biological, or sanitary science to carry out educational and inspectional duties in the field of environmental health.

(8) "Guidelines for rules" means guidelines for onsite wastewater systems adopted and revised by the commission pursuant to the authority granted to the commission under this article.

(9) "Health officer" means the chief administrative and executive officer of a local health department, or the appointed health officer of the **local board** of health.

"Inspector"- Those performing site evaluation or those making final decisions on conformance of the system design and construction to regulations. **(certified credential)**

(10) "Onsite wastewater system" or "OWS" and the term "system" where the context so indicates mean an absorption system of any size or flow or a system or facility for treating, neutralizing, stabilizing, or dispersing of sewage that is not a part of or connected to a sewage treatment works.

(11) **"Local board** of health" means any local, county, district, or regional board of health.

(12) "Local public health department" means any city, county, city and county, district, or regional health department and may include a **local board** of health or local agency delegated by a **local board** of health to oversee OWS permitting and inspection or an ISDS program.

(13) "Percolation test" means a subsurface soil test at the depth of a proposed absorption system or similar component of an onsite wastewater system to determine the water absorption capability of the soil, the results of which are normally expressed as the rate at which one inch of water is absorbed.

(14) "Permit" means a permit for the construction or alteration, installation, and use or for the repair of an onsite wastewater system. **Add Requirements for Abandonment.**

(15) "Person" means an individual, partnership, firm, corporation, association, or other legal entity and also the state, any political subdivision thereof, or other governmental entity.

(16) "Professional engineer" means an engineer licensed in accordance with part 1 of article 25 of title 12, C.R.S.

"RME"-Responsible management entity.

(17) "Sanitarian" means a person who is trained in physical, biological, and sanitary sciences to carry out inspectional and educational duties in the field of environmental sanitation.

(18) "Septage" means a liquid or semisolid that includes normal household wastes, human excreta, and animal or vegetable matter in suspension or solution generated from a residential septic tank system. "Septage" may include such material issued from a commercial establishment if the commercial establishment can demonstrate to the department that such material meets the definition for septage set forth in this subsection (18). "Septage" does not include chemical toilet residuals.

(19) "Sewage" means a combination of liquid wastes that may include chemicals, house wastes, human excreta, animal or vegetable matter in suspension or solution, and other solids in suspension or solution, and that is discharged from a dwelling, building, or other establishment.

(20) "Sewage treatment works" means a system or facility for treating, neutralizing, stabilizing, or discharging of effluent, which system or facility has a designed capacity to receive more than **ten thousand gallons** of sewage per day. The term "sewage treatment works" includes appurtenances such as interceptors, collection lines, outfall and outlet sewers, pumping stations, and related equipment.

"Site Evaluator" - See site inspector

(21) (Deleted by amendment, L. 2006, p. 1129, § 6, effective July 1, 2006.)

(22) "State waters" means any and all surface and subsurface waters that are contained in or flow in or through this state, except waters in sewerage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all waters withdrawn for use, until all uses and treatment have been completed.

(23) "Systems cleaner" means a person engaged in and who holds himself or herself out as a specialist in the cleaning and pumping of sewage disposal systems and removal of the residues deposited in the operation thereof.

(24) "Systems contractor" means a person engaged in and certified as a specialist in the installation, renovation, and repair of sewage disposal systems.

25-10-104. Regulation of onsite wastewater systems - rules.

Technical Review Board

(1) The division **and/or its technical advisory committee** shall develop and the commission shall adopt the **Colorado Watershed Protection Code for Decentralized Wastewater Infrastructure. These are** rules providing minimum standards for the location, design, permitting, construction, performance, installation, alteration, management, and use of onsite wastewater systems within the state of Colorado. The commission may

establish criteria for issuing variances in such guidelines. Such guidelines shall comply with section 25-10-105, and shall be the basis for the adoption of detailed rules by **local boards** of health pursuant to subsection (2) of this section.

(2) Every local board of health in the state shall develop and/or adopt rules for onsite wastewater systems within their respective areas of jurisdiction. Such rules shall comply with the guidelines adopted by the commission pursuant to subsection (1) of this section and with the minimum requirements set forth in sections 25-10-105 and 25-10-106. Before finally adopting such rules or any amendment thereto, the local board of health shall hold a public hearing on the proposed rules or amendments thereto. Notice of the time and place of such hearing shall be given at least once, at least twenty days in advance thereof, in a newspaper of general circulation within its area of jurisdiction. The local board of health may make changes or revisions in the proposed rules or amendments thereto, after the public hearing and prior to final adoption, and no further public hearing shall be required regarding such changes or revisions. All rules and amendments thereto shall be transmitted to the department not later than five days after final adoption and shall become effective forty-five days after final adoption unless the department has sooner notified the local board of health that the rules or amendments thereto are not in compliance with sections 25-10-105 and 25-10-106.

(3) If a local board of health has not adopted rules in compliance with this section and submitted them to the commission, the commission shall then promulgate rules for such areas of the state for which no complying rules have been adopted, except for such areas as are serviced exclusively by a sewage treatment works. Rules promulgated by the commission shall comply with the guidelines and minimum requirements set forth in sections 25-10-105 and 25-10-106 and shall be the same for all the areas of the state for which the commission promulgates such rules except as may be appropriate to provide for differing geologic conditions.

(4) Rules may be adopted by a local board of health after action by the commission under subsection (3) of this section, if such rules are adopted in compliance with the procedural requirements of subsection (2) of this section and are no less stringent than those promulgated by the commission. Rules of the local board so adopted shall then become effective only after they are transmitted to the division and are found to be in compliance with the provisions of this subsection (4) and of sections 25-10-105 and 25-10-106. If state rules are adopted by local boards of health, they would not need to submit to the State.

(5) (Deleted by amendment, L. 97, p. 124, § 1, effective July 1, 1997.)

(6) Fees authorized in this article shall be set at such amounts as are deemed necessary to cover the actual and direct costs of the operation of the OWS program.

25-10-105. Minimum standards for onsite wastewater systems.

(1) Rules adopted by **local boards** of health under section 25-10-104 (2) or (4) or promulgated by the department under section 25-10-104 (3) shall govern all aspects of

the performance, location, construction, alteration, installation, risk evaluation, permitting and use of onsite wastewater systems and shall include, as a minimum, provisions regarding the following matters:

(a) Performance of SITE CHARACTERIZATION

(b) Methods for calculating the maximum daily sewage flow, which shall not exceed the capacity for which the system is designed;

(c) Design criteria, including, where applicable, minimum capacities based on daily sewage flow, and construction standards for septic tanks, other types of holding or pretreatment tanks, building sewers and sewer lines, greasetraps, distribution boxes, and serial distribution systems;

(d) Minimum distances from the various components of a system to pertinent features, including: Streams, lakes, watercourses, springs, wells, subsoil drains, cisterns, water lines, suction lines, gulches, dwellings, other occupied buildings, property lines, groundwater, and bedrock;

(e) For systems that rely on soil treatment of effluent Methods for soil evaluation, calculating minimum absorption area for various types of onsite wastewater systems, design ,and construction standards for such systems;

(f) Provisions indicating when an onsite wastewater system must be designed by a professional engineer;

(g) For systems discharging effluent into state waters: Procedures for obtaining site location approval and discharge permits; general design criteria; adoption of effluent standards; requirement of design by a professional engineer; and mandatory review by the local health department of each application for such a system;

(h) For systems discharging effluent upon the surface of the ground: Specific performance criteria to ensure that such surface discharge does not drain from the property on which the system is located, except by permit from the local board of health, and does not otherwise create a hazard to public health or water quality or constitute a nuisance or undue risk of pollution; requirement of design by a professional engineer; and mandatory review by the local health department of each application for such a system;

(i) Design criteria and construction standards for vaults; for privies and slit trenches, either of which may be prohibited at the option of the local health department; for incineration toilets, and chemical toilets; and for graywater limited to discharge of waste water from sinks, lavatories, tubs, and showers;

(j) Risk-based criteria for the design, construction, performance, operation, maintenance, and management standards for on-site wastewater systems.

Such criteria shall be developed for all systems including, but not limited to:

- Evapotranspiration systems that discharge effluent into the air by evaporation from a soil surface or transpiration of plants;
- Systems that discharge of effluent by means of dispersal elements;
- Advanced treatment units
- Systems that service commercial, business, institutional, or industrial property or multifamily dwellings; requirement of design by a professional engineer; and mandatory review by the local health department of each application for such a system;

(m) If a local board of health is a separate governmental entity from any general purpose government, a provision:

(I) Requiring the local board of health to notify the local general purpose government responsible for issuing building permits whenever the local board of health intends to approve an application for an onsite wastewater system; and

(II) Requiring the local board of health to provide an opportunity for comment by such local general purpose government.

(2) (a) A local board of health shall have authority to grant variances to OWS rules in accordance with the guidelines for rules adopted and revised by the commission pursuant to the authority granted to the commission under this article.

(b) Applicants for a variance from the provisions of OWS rules shall have the burden of supplying the agency with information demonstrating that conditions exist that warrant the granting of a variance.

25-10-106. Basic rules for local administration.

(1) Rules adopted by local boards of health under section 25-10-104 (2) or (4) or promulgated by the department under section 25-10-104 (3) shall govern all aspects of the application for and issuance of permits, the inspection, testing, and supervision of installed systems, the issuance of cease and desist orders, the maintenance and cleaning of systems, and the disposal of waste material, and shall, as a minimum, include provisions regarding the following matters:

(a) Procedures by which application may be made for the issuance of a permit for an onsite wastewater system. The application for a permit shall be in writing and shall include such information, data, plans, specifications, statements, and commitments as may be required by the local board of health in order to carry out the purposes of this article.

(b) Review of the application and inspection of the proposed site by the local health department;

(c) Specification of mandatory tests to be performed by the local health department or under the supervision of a professional engineer, including percolation tests unless excused or previously performed by a professional engineer;

(d) Specification of additional tests to be performed and reports to be made by the applicant and the circumstances under which such tests or reports may be required by the local health department;

(e) Determination on behalf of the local health department by a sanitarian, an environmental health specialist, or a professional engineer after review of the application, site inspection, test results, and other required information, whether the proposed system is in compliance with the requirements of, and the rules adopted under, this article; and the issuance of a permit by the health officer or the health officer's designated representative if the proposed system is determined to be in compliance with the requirements of this article and the rules adopted under this article;

(f) Review by the **local board** of health, upon request of an applicant, of applications denied by the health department;

(g) The circumstances under which all applications shall be subject to mandatory review by the local health department to determine whether a permit shall issue;

(h) Final inspection of a system to be made by the local health department or its designated professional engineer after construction, installation, alteration, or repair work under a permit has been completed, but before the system is placed in use, to determine that the work has been performed in accordance with the permit and that the system is in compliance with this article and the rules adopted under this article;

(i) Inspection of operating systems at reasonable times, and upon reasonable notice to the occupant of the property, to determine if the system is functioning in compliance with this article and the rules adopted under this article. Officials of the local health department shall be permitted to enter upon private property for purposes of conducting such inspections. Maintenance requirements for onsite wastewater systems. **Transfer of title or use permit**

(j) Issuance of a repair permit and an emergency use permit to the owner or occupant of property on which a system is not in compliance. Application for a repair permit shall be made by such owner or occupant to the local health department within two business days after receiving notice from the local health department that the system is not functioning in compliance with this article or the rules adopted under this article or otherwise constitutes a nuisance or hazard to public health or water quality. The permit shall provide for a reasonable period of time within which repairs shall be made, at the end of which period the system shall be inspected by the local health department to insure

that it is functioning properly. Concurrently with the issuance of a repair permit, the local health department may issue an emergency use permit authorizing continued use of a malfunctioning system on an emergency basis for a period not to exceed the period stated in the repair permit. Such an emergency use permit may be extended, for good cause shown, in the event repairs may not be completed in the period stated in the repair permit, through no fault of the owner or occupant. Issuance of operating or renewable permits that govern the continued ongoing operation and maintenance of onsite wastewater systems.

Require inspection upon transfer of title or other type of use permit

(k) (I) Issuance of an order to cease and desist from the use of any system or sewage treatment works that is found by the health officer not to be in compliance with this article or the rules adopted under this article or otherwise to constitute a nuisance or a hazard to public health or water quality. Such an order may be issued only after a hearing that shall be conducted by the health officer not less than forty-eight hours after written notice thereof is given to the owner or occupant of the property on which the system is located and at which the owner and occupant may be present, with counsel, and be heard. The order shall require that the owner or occupant bring the system into compliance or eliminate the nuisance or hazard within a reasonable period of time, not to exceed thirty days, or thereafter cease and desist from the use of the system. A cease and desist order issued by the health officer shall be reviewable in the district court for the county wherein the system is located and upon a petition filed not later than ten days after the order is issued.

(II) For the purposes of this paragraph (k), any system or sewage treatment works that does not comply with any statute or rule of this title shall constitute a nuisance.

(III) For the purposes of this paragraph (k), sewage treatment works shall not include any sewage treatment facility with a discharge permit issued pursuant to section 25-8-501.

(l) Reasonable periodic collection and testing by the local health department of effluent samples from onsite wastewater systems for which monitoring of effluent is necessary in order to ensure compliance with the provisions of this article or the rules adopted under this article. Such sampling may be required not more than two times a year, except when required by the health officer in conjunction with action taken pursuant to paragraph (k) of this subsection (1). A fee not to exceed actual costs, plus locally established mileage reimbursement rates for each mile traveled from the principal office of the local health department to the site of the system and return, may be charged by the local health department for each sample collected and tested, and payment of such charges may be stated in the permit for the system as a condition for its continued use. Any owner or occupant of property on which an onsite wastewater system is located may request the local health department to collect and test an effluent sample from the system. The local health department may, at its option, perform such collection and testing services, and it shall be entitled to charge a fee not to exceed actual costs, plus locally

established mileage reimbursement rates for each mile traveled from the principal office of the local health department to the site of the system and return, for each such sample so collected and tested.

(m) At the option of the local board of health, maintenance and cleaning schedules and practices adequate to insure proper functioning of various types of onsite wastewater systems. The local board of health may additionally require proof of proper maintenance and cleaning, in compliance with the schedule and practices adopted under this subsection (1), to be submitted periodically to the local health department by the owner of the system.

(n) Disposal of septage at a site and in a manner that does not create a hazard to the public health, a nuisance, or an undue risk of pollution.

25-10-107. Fees.

(1) A local board of health may set fees for permits. The permit fees may be no greater than required to offset the actual and direct cost of the local health department's services. With respect to any permit, the fee for such permit shall be set so as to recover, as nearly as can be practically established, the costs associated with that permit, (*Set a higher fee limit, or end the sentence with recovering costs, many jurisdictions have already approached or exceeded this cap*) A local board of health may also set fees for soil evaluation and other services as requested by the applicant. Such fees may be no greater than required to offset the actual and direct costs of such services.

(2) Local boards of health may set fees for percolation tests and other soil evaluation services that are performed by the local health department. The fees may be no greater than required to offset the actual and direct cost of such services.

25-10-108. Performance evaluation and approval of systems employing new technology. These evaluations will be conducted by an appointed technical advisory committee.

(1) Upon application by a systems contractor, a professional engineer, or a manufacturer of onsite wastewater systems, the division may hold a public hearing to determine whether a particular design or type of system, based upon improvements or developments in the technology of sewage disposal and not otherwise provided for in paragraphs (e) to (k) of subsection (1) of section 25-10-105, has established a record of performance reliability that would justify approval of applications for such systems by the health officer without mandatory review by the local board of health.

If the division determines, based upon reasonable performance standards and criteria, that such reliability has been established, the division shall so notify each local board of health, and applications for permits for such systems may thereafter be acted upon by the health officer, the health officer's designated representative, or the local board of health's designated representative, in the same manner as applications for systems described in section 25-10-105 (1) (e). The division shall not arbitrarily deny any person the right to a

hearing on an application for a determination of reliability under the provisions of this section.

Problem with existing language:

THIS SECTION OBSOLETE(2) Except for designs or types of systems that have been approved by the division pursuant to subsection (1) of this section, the local health department may approve an application for a type of system not otherwise provided for in paragraphs (e) to (k) of subsection (1) of section 25-10-105, only if the system has been designed by a professional engineer, and only if the application provides for the installation of a backup system, of a type described in said paragraphs or previously approved by the division under subsection (1) of this section, in the event of failure of the primary system. A local health department shall not arbitrarily deny any person the right to consideration of an application for such a system and shall apply reasonable performance standards in determining whether to approve such an application.

INSERT A SECTION THAT DEALS WITH OPERATING PERMITS (SUCH AS USE PERMITS, TRANSFER OF TITLE INSPECTIONS)

25-10-109. Licensing of systems contractors (need definition) and systems cleaners, and systems inspectors. Spell out authority – details in guidelines. Certified vs. Licensed

(1) System Contractor License: The **local board** of health may adopt rules that

- Provide for the licensing of systems contractors.

GOAL: State established OWS license standards that allow you to practice in all counties.

- A fee not to exceed actual costs may be charged by the local health department for the initial license of a systems contractor.
- A fee not to exceed actual costs may be charged by the local health department for a renewal of the license.
- Initial licensing and renewals thereof shall be for a period of not less than one year.
- The **local board** of health may revoke the license of a systems contractor for violation of the applicable provisions of this article or the rules adopted under this article or for other good cause shown, after a hearing conducted upon reasonable notice to the systems contractor and at which the systems contractor may be present, with counsel, and be heard.

(2) System Cleaner Licensing: The **local board** of health may adopt rules that provide for the licensing of systems cleaners, pursuant to section 25-10-106 (1). A fee not to exceed actual costs may be charged by the local health department for the initial license

of a systems cleaner; a fee not to exceed actual costs may be charged for the renewal of the license. Initial licensing and renewals thereof shall be for a period of not less than one year. The local board of health may suspend or revoke the license of a systems cleaner for violation of the applicable provisions of this article or the rules adopted under this article or for other good cause shown after a hearing conducted upon reasonable notice to the systems cleaner and at which the systems cleaner may be present, with counsel, and be heard.

25-10-110. Enforcement by local health department and local board of health.

The primary responsibility for the enforcement of the provisions of this article and the rules adopted under this article shall lie with local health departments and local boards of health. In the event that a local health department or local board of health substantially fails to administer and enforce the provisions of this article and the rules adopted under this article, the department may assume such of the functions of the local health department or board of health as may be necessary to protect the public health and water quality.

25-10-111. Prohibition of onsite wastewater systems in unsuitable areas.

DELETE SECTION

The local board of health may conduct a public hearing, after written notice to all affected property owners as shown in the records of the county assessor and publication of notice in a newspaper of general circulation, at least ten days prior to the hearing, to consider the prohibition of permits for onsite wastewater systems in defined areas that contain or are subdivided for a density of more than two dwelling units per acre (zoning). The local board of health may order such prohibition upon a finding that the construction and use of additional onsite wastewater systems in the defined area will constitute a hazard to the public health or water quality. In such a hearing, the local board of health may request affected property owners to submit engineering and geological reports concerning the defined area and to provide a study of the economic feasibility of constructing a sewage treatment works. (Make general – related to risk analysis)

25-10-112. General prohibitions.

(1) No city, county, or city and county shall issue to any person a permit to construct or remodel a building or structure that is not serviced by a sewage treatment works, until a permit for an onsite wastewater system has been issued by the local health department.

(2) No city, county, or city and county occupancy permit shall be issued to any person for the use of a building that is not serviced by a sewage treatment works until a final inspection of the onsite wastewater system has been made by the local health department, as provided for in section 25-10-106 (1) (h), and the installation has received the approval of the local health department.

(3) No onsite wastewater system presently in use shall be permitted to remain in use without compliance with this article and the rules adopted under this article.

(4) Construction of cesspools, defined as covered underground receptacles that receive untreated sewage from a building and permit the untreated sewage to seep into surrounding soil, is prohibited.

(5) Not more than one dwelling, commercial, business, institutional, or industrial unit shall be connected to the same onsite wastewater system unless such multiple connection was specified in the application submitted and in the permit issued for the system.

(6) No person shall construct or maintain any dwelling or other occupied structure that is not equipped with adequate facilities for the sanitary disposal of sewage without endangering the public health or water quality.

(7) All persons shall dispose of septage removed from systems in the process of maintenance or cleaning at an approved site and in an approved manner under this article.

No property shall be allowed to transfer ownership without an inspection of the septic system.

25-10-113. Penalties.

(1) Any person who commits any of the following acts or violates any of the provisions of this article commits a class 1 petty offense, as defined in section 18-1.3-503, C.R.S.

(a) Constructs, alters, installs, or permits the use of any onsite wastewater system without first having applied for and received a permit as provided for in section 25-10-105 (1) (g) or section 25-10-106;

(b) Constructs, alters, or installs an onsite wastewater system in a manner that involves a knowing and material variation from the terms or specifications contained in the application or permit;

(c) Violates the terms of a cease and desist order that has become final under the terms of section 25-10-106 (1) (k);

(d) Conducts a business as a systems contractor without having obtained the license provided for in section 25-10-109 (1) in areas in which the local board of health has adopted licensing regulations pursuant to said section (note includes engineer now – may need to add separate item for engineers);

(e) Conducts a business as a systems cleaner without having obtained the license provided for in section 25-10-109 (2) in areas in which the local board of health has adopted licensing regulations pursuant to said section;

(f) Falsifies or maintains improper record keeping concerning system cleaning activities not performed or performed improperly; or

(g) Willfully fails to submit proof of proper maintenance and cleaning of a system as required by rules adopted pursuant to section 25-10-106.

(2) Upon a finding by the **local board** of health that a person is in violation of the provisions of this article or the rules adopted and promulgated pursuant to this article, the **local board** of health may assess a penalty of up to fifty dollars for each day of violation. In determining the amount of the penalty to be assessed, the **local board** of health shall consider the seriousness of the danger to the health of the public caused by the violation, the duration of the violation, and whether the person has previously been determined to have committed a similar violation.

(3) A person subject to a penalty assessed pursuant to subsection (2) of this section may appeal the penalty to the **local board** of health by requesting a hearing before the appropriate body. Such a request shall be filed within thirty days after the penalty assessment is issued. A hearing before the **local board** of health pursuant to this subsection (3) shall be conducted in accordance with section 24-4-105, C.R.S.

DRAFT

Colorado Watershed Protection Code for Decentralized Wastewater Infrastructure

Effective Date: January 1, 2011

Prepared as a guide for the: *Colorado Water Quality Control Commission*

Based upon: *National Onsite Wastewater Recycling Association
Model Code for Decentralized Wastewater Treatment and the U.S. EPA Voluntary Management
Guidelines for Decentralized Wastewater Treatment Systems*

LIST OF CHAPTERS AND SECTIONS

CHAPTER 1. INTRODUCTORY TOPICS

- 1.1 Title
- 1.2 Authorized Legislation
- 1.3 Purpose and Intent
- 1.4 State/Local Responsibility
- 1.5 Focus
- 1.6 Costs
- 1.7 Reasonableness
- 1.8 Wastewater-Treatment and -Management Options for Every Site
- 1.9 Equipment Evaluation
- 1.10 Essentiality of Maintenance
- 1.11 Sustainable Performance
- 1.12 Component Location
- 1.13 Delegation of Authority
 - 1.13.1 Governmental Entities
 - 1.13.2 Private-Sector Entities
- 1.14 Withdrawal of Delegated Authority
- 1.15 Conflict of Interest
- 1.16 Scope
- 1.17 Applicability
 - 1.17.1 Effective Date of Code
 - 1.17.2 Type of Code
 - 1.17.3 Application of the Code to Existing Facilities
- 1.18 Severability
- 1.19 Liability Limitation
 - 1.19.1 Exception to Liability Limitation
- 1.20 Code and Policy Advisory Council

CHAPTER 2. DEFINITIONS OF TERMS

CHAPTER 3. GENERAL REQUIREMENTS

- 3.1 Deployment of Decentralized Systems
- 3.2 Abandonment
 - 3.2.1 When abandonment is required
 - 3.2.2 Procedures for abandonment
- 3.3 Emergency Repair
- 3.4 Right to Inspect
- 3.5 Final-Effluent Requirements
- 3.6 Compatible System Components
- 3.7 Domestic Wastewater Flow—Determination
 - 3.7.1 Systems Designed to Serve One to Eight Households
 - 3.7.1.1 Prescriptive Determination

- 3.7.1.2 Adjusted Base Flow Determination
- 3.7.1.3 Determination Waiver
- 3.7.1.4 Recording of Adjusted Flow Rate
- 3.7.2 Systems Designed to Serve More than Eight Households or More than Twenty People
- 3.7.3 Systems Designed to Serve Commercial Structures
- 3.8 Operational Responsibilities
 - 3.8.1 System Owner and System Operator
 - 3.8.2 Licensed and Certified Person
- 3.9 Time Limits for Repair
- 3.10 Point of Standards Application
- 3.11 Deemed-to-Comply Determination
- 3.12 Code Violations
 - 3.12.1 Penalties
 - 3.12.2 Imminent Threat Abatement—Enforcement
- 3.13 Appeals to Regulatory Decisions and Orders
 - 3.13.1 Level I Appeal
 - 3.13.2 Level II Appeal
- 3.14 Variances
- 3.15 Written Records

CHAPTER 4. APPROPRIATE SOURCES

CHAPTER 5. EFFLUENT AND SITE REQUIREMENTS

- 5.1 Effluent Requirements
 - 5.1.1 Characteristics of Final System Effluent
 - 5.1.2 Final Effluent Minimum Requirements
 - 5.1.3 Site Risk Evaluation and Management Requirements
 - 5.1.4 Requirements for Reused Water
 - 5.1.4.1 Potable Water
 - 5.1.4.2 High-Contact-Risk Water
 - 5.1.4.3 Low-Contact-Risk Water
- 5.2 Site Requirements
 - 5.2.1 Horizontal Setback Requirements
 - 5.2.2 Service Accessibility and Safety Requirements
 - 5.2.2.1 Access Ports—New Systems
 - 5.2.2.2 Access Ports—Existing Systems
 - 5.2.3 System Access by Service Equipment
- 5.3 Prohibited Substances
- 5.4 Adjustment for Potential Leaks
- 5.5 Component Structural Integrity
- 5.6 Safety of Access Ports
- 5.7 Soil-Component Evaluations—Limitation of Use

CHAPTER 6. QUALITY ASSURANCE AND QUALITY CONTROL

- 6.1 Construction and Repair Permits
 - 6.1.1 Construction Permit
 - 6.1.2 Repair Permit
 - 6.1.3 Posting
 - 6.1.4 Expiration
 - 6.1.5 Transfer
 - 6.1.6 Revocation
- 6.2 Operating Permit
 - 6.2.1 Issue
 - 6.2.2 Duration
 - 6.2.3 Revocation
- 6.3 Permit Administration
 - 6.3.1 Application Submitted
 - 6.3.2 Retention of Documents
 - 6.3.3 Application Processing Time
 - 6.3.4 Written Response
- 6.4 Design Plan Review
 - 6.4.1 Information Required for an “Onsite” System
 - 6.4.2 Information Required for a “Cluster” System
 - 6.4.3 Information Required for an REM-Owned and -Operated System
 - 6.4.4 Submittal of an “As-Built” Plan
- 6.5 Site Sustainability Plan
- 6.6 Inspection
 - 6.6.1 Construction Inspection
 - 6.6.1.1 Inspection Waiver
 - 6.6.2 Grading Inspection
- 6.7 Maintenance
 - 6.7.1 Operational Maintenance
 - 6.7.2 Maintenance Oversight
 - 6.7.3 System-Assessment Protocol
 - 6.7.4 Reporting a Malfunctioning System
- 6.8 Certification
 - 6.8.1 Areas of Certification
 - 6.8.2 Prior Qualifications for Initial Certification
 - 6.8.3 Display of Certificate
 - 6.8.4 Duration of Certification
 - 6.8.5 Continuing Education
 - 6.8.5.1 Course Approval
 - 6.8.5.2 Credit Hours
 - 6.8.5.3 Reporting Credit Hours
 - 6.8.5.4 Failure to Report Required Credit Hours

Appendix A: Classification Matrices

Appendix B: Listed Components

Appendix C: Soil Component
Appendix D: Procedure for Administering the Confined Treatment
Component Database
Appendix E: Tank Standards
Appendix F: Don't Flush Listing

CHAPTER 1

INTRODUCTORY TOPICS

1.1 TITLE

These regulations shall be known as the Colorado Watershed Protection Code for Decentralized Wastewater Infrastructure (the code).

1.2 AUTHORIZING LEGISLATION

The code is authorized under the provisions of C.R.S. 25-10-104 and created, administered, and enforced by the Colorado Department of Public Health and Environment Water Quality Control Commission. .

1.3 PURPOSE AND INTENT

The purpose of the code is to regulate the treatment, dispersal, and reuse of wastewater from structures not served by centralized treatment systems. It is intended to serve the best interests of the citizens. To that end, it manages risk to public health, public safety, and the natural environment and promotes public welfare in a manner acceptable to the public

1.4 STATE/LOCAL RESPONSIBILITIES

The code is intended to be a **state** code in all matters that it regulates, except that **local governments** are granted certain discretionary responsibility for setting regulatory requirements and policy on a locality-by-locality basis in the following areas (see also Section 1.13.1, Delegation of Authority):

- Performance standards for effluent **from non-deemed to comply** decentralized wastewater-treatment trains
- Permit Fees and Duration of permits

Exercise of these discretionary powers shall not result in jurisdiction-wide pollution abatement that is less than that required by the code. The burden of documenting the risk and effectiveness of the risk-reduction measures imposed by the code lies with the regulatory agency.

1.5 FOCUS

The code is focused on the output performance of individual wastewater-treatment systems in terms of effluent quality. Required output performance is linked to the risk conditions associated with individual sites.

1.6 COSTS

The state recognizes that the code may have cost implications for the public and may restrict citizens' choices and opportunities. Consequently, the code's requirements will be established at minimum levels consistent with their achieving the necessary reduction in risk to health and safety for the targeted human and natural environments. **Permit fees**

must conform to the statute by generating revenue equal to the expenditures of the local department and totaling less than or equal to the fee cap of \$1500.00.

1.7 REASONABLENESS

The provisions of the code and their enforcement are intended to be reasonable. To that end, the following standards are set:

1. The requirements imposed will be minimally necessary to manage the known or reasonably anticipated risks to human and natural environments.
2. Each code provision will be drafted in a manner that makes the obligation clear to the regulated persons.
3. Each code provision will be accompanied by a statement of its purpose in language that facilitates communication and the development of alternate methods of compliance.
4. Code requirements will be based on accepted management, science, and engineering principals. In cases where the science and engineering considerations are not settled, the code will be based on the best judgment of committees of experienced and expert persons in each area of practice.

1.8 WASTEWATER-TREATMENT OR -MANAGEMENT OPTIONS FOR EVERY SITE

The code is intended to provide decentralized wastewater-treatment or –management options for all owners of building sites that are not served by any other system of wastewater conveyance and treatment.

1.9 EQUIPMENT EVALUATION

Recognizing that standard designs and components for decentralized wastewater treatment systems are deployed in regional and national markets, this code supports a national evaluation program and a multi-level classification system based on performance. The purpose is to eliminate duplicative product-evaluation and –approval programs at state and county levels, while supporting state and local government discretion in selection of performance standards to match local risk conditions.

1.10 ESSENTIALITY OF MAINTENANCE

The code recognizes that decentralized wastewater-treatment systems need to be maintained in a manner that assures that they continue to provide effective treatment over their predicted lifetimes.

1.11 SUSTAINABLE PERFORMANCE

The code recognizes that decentralized wastewater-treatment systems are part of the continuum of water provision, conditioning, conveyance, and waste treatment for the communities that they serve. They are the permanent infrastructures for wastewater treatment for about a quarter of the population and nearly a third of new construction. Consequently, it is critical to the welfare of a large segment of the population that the performance levels of decentralized wastewater-treatment systems be sustainable for as long as the sites they serve are occupied.

1.12 COMPONENT LOCATION

To allow for flexibility in design, the code recognizes that decentralized wastewater treatment and transfer components can be located inside or outside the structure served.

1.13 DELEGATION OF AUTHORITY

Governmental and private-sector organizations or persons may be authorized as agents of the state to administer and enforce the code.

1.13.1 Governmental Entity

County agencies are granted authority as agents of the state in the following matters:

- **Adopting the Code.** The agent may adopt, administer, and enforce the code by means of employees or appointed agents who possess the qualifications required by the code.
- **Adopting More Stringent Requirements.** The agent may selectively adopt more stringent requirements than those prescribed in the code in limited code areas and use them in focused application in the following regulatory matters:
 - Final effluent performance standards for non-deemed to comply systems (requirements may be adjusted to reflect the particular human and natural conditions occurring within selected localities of the jurisdiction).
 - Permit fees and duration
- **ADOPTING MODIFYING LANGUAGE** — Governmental entities modifying state code language in areas where such modification is permitted must first submit the language to the **Division** for approval and may not implement until such approval has been received.
- **IMPOSING FEES** — Governmental entities may be granted authority as agents of the state to adopt fee schedules for permits, reviews, inspections, and other related administrative functions. **All fees must be based upon cost recovery only for program operation. Individual permit fees may not exceed \$1500.00.**
- **ESTABLISHING APPLICATION PROCEDURES** — The department will establish a uniform permit-application form and procedure. Local government entities may be granted limited authority as agents of the state to establish modifications to the procedures, provided the modifications are first approved by the Department.

1.13.2 Private-Sector Entities

The Department or its delegated governmental agents may appoint qualified nongovernmental entities or persons as agents to perform regulatory duties required by the code. Those agents are subject to the direct supervision of the appointing authority.

1.14 WITHDRAWAL OF DELEGATED AUTHORITY

The Department may discipline or revoke the authority of an agent to administer or enforce the code for good cause. “Good cause” in the case of a governmental entity is defined as any of the following transgressions: failure to enforce the provisions of the code as required by the Department; failure to provide timely service to citizens; failure to adequately supervise the performance and qualifications of employees and private-sector agents; malfeasance; and conflict of interest. “Good cause” in the case of a private-sector agent is defined as any of the following transgressions: failure to maintain required credentials, failure to conduct required inspections, failure to maintain accurate records of inspections, malfeasance, and conflict of interest.

1.15 CONFLICT OF INTEREST

Employees of the state, employees of agent-government entities, and private-sector agents and organizations who are engaged in administering or enforcing the code are prohibited from engaging in activities that create a conflict of interest between those regulatory responsibilities and their private interests, professional responsibilities, or other duties. **Specifically, other than their official regulatory services, they may not provide any person or organization with compensated services related to decentralized wastewater treatment, such as, but not limited to, soil evaluation, site evaluation, and system design, construction, installation, operation, or maintenance.**

1.16 SCOPE

These regulations shall apply to:

1. The structure and components referred to as a decentralized wastewater treatment system, including its design, its manufactured, site-constructed, or in-situ components, its location, its operation, and its effluent quality.
2. Activities and personnel involved in evaluating the site and soil associated with the installation of the wastewater-treatment system.
3. Activities and personnel involved in designing, manufacturing, constructing, installing, repairing, modifying, maintaining, monitoring, inspecting, and regulating the wastewater-treatment system.
4. The qualifications and training of personnel referred to in Items 2. and 3.)

1.17 APPLICABILITY

1.17.1 Effective Date of Code

The effective date of the code is **January 1, 2011**. The code applies to decentralized wastewater treatment systems installed or modified on or after the effective date.

1.17.2 Uniform Code

The code is a Uniform Code. All matters regulated by the code are subject to its specific requirements, except in cases where authority is granted to delegated government agencies to modify the requirements or adopt alternative ones. The delegated authority

must be exercised only with respect to matters specifically identified in the code as subject to that prerogative and exercised in accordance with any concurrently specified limitations. More stringent requirements may be adopted in the following areas:

- Determination of final effluent performance standards
- Determination of operational, maintenance, inspection, and repair standards (See Section 1.13.1; also notes following that section discussing code types.)

1.17.3 Application of the Code to Existing Facilities

A decentralized wastewater-treatment system that existed prior to the effective date of the code is subject to the regulations in existence at the time the system's permit was first issued or, if no permit was issued, at the time the system was first used, except that operation of a decentralized wastewater-treatment system under any of the following circumstances is prohibited:

- Operation results in wastewater with a fecal coliform content that exceeds [*matrix standard, e.g., < 10⁵, 50% of the time*] being discharged to surface waters or to land surfaces in a manner that permits direct human contact.
- Operation results in discharge of wastewater to groundwater from soil treatment components deemed to generate fecal coliform exceeding [*matrix standard*].
- Change in the principal use of the structure has caused the effluent loads and flows to exceed the limits of the design parameters of the system's components.
- Changes to the structure have caused the effluent loads and flows to exceed the limits of the design parameters of the system.
- Changes to the loads and flows of a cluster system have caused the design capacity of the system to be exceeded

1.18 SEVERABILITY

Should any provision of this code be held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall remain in full force and effect.

1.19 LIABILITY LIMITATION

Liability of the state and its employees, agents, and deputies, when acting within the scope of their authority is limited by the provisions of [*state statute and section on limitation of liability*].

1.19.1 Exception to Liability Limitation

State agencies, local governments, and individual agents providing services deemed to be a conflict of interest in Section 1.15 are subject to tort claims in the same manner as private persons and organizations offering the same services.

Except as provided in the preceding paragraph, regulatory approval of any authorized activity of this chapter may not be construed as an assumption of responsibility by the agency or its agents for any decisions, errors, and omissions in the execution of its duties. The responsibility for the design, construction, repair, and operation of any decentralized

wastewater-treatment system is ultimately the responsibility of the owner. The performance of duties by any other person is the responsibility of that person.

1.20 CODE AND POLICY ADVISORY COUNCIL

The Department shall appoint a Decentralized Wastewater-Treatment System Policy Advisory Council and may create technical subcommittees as appropriate. No member of the Department may be a voting member or officer of the Council. The council shall have [*number*] members. Council membership shall be balanced with proportional representation between local government regulators, manufacturers of decentralized wastewater-treatment equipment, service providers of the decentralized wastewater-treatment industry, engineers of decentralized wastewater-treatment systems, users of decentralized wastewater-treatment systems, and citizen interest groups, as follows:

- Regulators - 2
- Manufacturers – 2
- Service Providers – 1
- Engineers - 2
- Users - 1
- Citizen Interest Groups - 1

The council, upon request of citizens affected by a Department decision or a dispute over application of the code at the local or state level, may conduct a hearing and provide an advisory opinion on the matter.

CHAPTER 2

DEFINITIONS OF TERMS

~~NOTE: The definitions contained in [name of dictionary] apply to words or terms not included herein.~~

Accepted engineering practice means the norms by which components and treatment trains are (1) designed in accordance with all relevant factors influencing safety and performance and (2) manufactured, installed, built, and verified in a manner that ensures their operational safety and performance during their intended life spans when used in reasonably foreseeable conditions.

Acceptance rate is the maximum flow and load rate acceptable for treatment or conveyance by any component of the system, measured in [*unit/time*].

Black water means wastewater contaminated by human body waste, toilet paper, and any other material intended to be deposited in a receptor designed to receive urine or feces.

Capacity means the maximum liquid volume able to be accommodated without effluent surfacing or backing into the structure or the maximum flows and loads as specified by the design manual or permit for the treatment train of component.

Cluster system means a wastewater collection and treatment system that is under some form of common ownership and management and provides treatment and dispersal/ discharge or reuse of wastewater from two or more homes or buildings but less than an entire city or metropolitan area.

Decentralized means a generalized class of wastewater-treatment applications that includes onsite and cluster systems that discharge their treated wastewater near the point of origin. The contrasting term “centralized” refers to the extensive collection and-treatment works serving large geographic areas such as cities.

Deemed to comply means that a system is assumed to comply with pertinent effluent-performance standards during operation without effluent-sample monitoring, provided the system is operated and maintained in a manner specified in the approval document.

Default code means a state code whose provisions concerning given subject matter(s) are, by state statutes, applicable to a political subdivision only if that subdivision has not adopted regulatory provisions applicable to the same subject matter(s). The subdivision’s provisions may impose greater or lesser levels of regulation than the state’s code. If the subdivision imposes no requirements, the state’s requirements apply by default—whence the term “default code.”

Department or Division means Colorado Water Quality Control Division.

Engineered design means the design of an onsite or cluster system created to meet specific performance requirements for a particular site as certified by a licensed professional engineer or other qualified and licensed or certified person.

Experimental system means a type of system component or treatment train that does not conform to an evaluated design and whose processes are not based on confirmed science or engineering practices. These are systems for which valid and reliable data are being sought to demonstrate compliance with the intent of the code.

Final effluent means the wastewater at the point it leaves the treatment train.

Grey water means any putrescible wastewater discharged from domestic activities including, but not limited to, washing machines, sinks, showers, bath tubs, dishwashers, or other sources except toilets and urinals.

Habitable structure means a permanent or semi-permanent structure intended for human habitation.

Holding component means a vessel designed to hold sewage or wastewater without leaking to the immediate environment while awaiting transportation to a treatment and dispersal facility.

Imminent threat to human health and safety means a substance, activity, or condition that poses an unacceptable risk to public health and safety and requires immediate abatement.

Load and flow means:

Load—the total weight of individual wastewater constituents of interest entering a pretreatment component over a given period of time or applied to a given area of soil over a given period of time (unit of weight / time).

Flow—the volume of liquid entering a pretreatment component over a given period of time or applied to a given area of soil over a given period of time (unit of volume / time).

Long term acceptance rate means the acceptance rate of a component after the break-in period is complete. The break-in period may include the development of a suitable level of biological activity. The break-in period for a soil dispersal component may also include the time to develop ponding of the surface caused by the development of a hydraulically restricting biomat.

Major repair means the replacement of a component such as a septic tank or other treatment component including the dispersal system.

Management Model IV means the situation wherein a decentralized wastewater treatment system is owned by the property owner and managed by a third party organization.(See EPA Voluntary Management Guidelines.)

Management Model V means the situation wherein a decentralized wastewater treatment system is owned and operated by a third party organization, such as a utility. (See EPA Voluntary Management Guidelines.)

Minimum code means a state code that, in accordance with state statutes, may be amended by sub-units of government in a manner that equals or increases its health, safety, and environmental requirements. This term is contrasted with “uniform code” and “default code.”

Minimum daily flow means the minimum flow required to maintain the level of biological activity necessary for treatment.

Minor repair means the replacement of subcomponents such as a switch, pipe, pump or valve. Servicing of the system by cleaning, tank pumping tank, filter replacements, and adjustments is not considered a repair.

Modification means to substantially alter the design or use of a component or group of components in an existing wastewater-treatment system.

New construction means the installation of a wastewater-treatment system on a parcel that did not previously have such a system installed.

Non-treatment component means a wastewater confinement, holding, or transfer device that is not intended to provide wastewater treatment.

NOWRA means National Onsite Wastewater Recycling Association.

Onsite wastewater-treatment system means a system that (1) collects wastewater from as single structure, treats it, and disperses it to the surface or subsurface environment on one or more legal parcels near the source of the wastewater generation or, alternatively, (2) stores the collected wastewater or the collected and treated wastewater in a holding component until transported to another location for the necessary final step(s).

Onsite system means an onsite wastewater-treatment system.

Operating permit means a document or certificate issued by an authorized government agency giving permission to operate a decentralized wastewater treatment system.

OWTS means onsite wastewater-treatment system.

Performance code means an administrative regulation written in terms of ends or results that are required to be achieved by application of a process. It allows the general use of designs or components that achieve the objective requirements or standards without a code revision.

Performance requirement means a clear statement, numeric or narrative, of a measurable and achievable condition or output to be achieved at a specific point in a process. The requirement must allow for multiple solutions and a clear pass/fail determination of compliance.

Performance standard is a substitute term for “performance requirement.”

Point of standards application means the specific location, depth, or distance from a regulated facility, activity or practice at which the concentration of a substance in the system effluent plume must comply with the specified performance standard.

Point of standards application, design means the point where the wastewater leaves the last treatment zone. This may be the same as the point of standards application or some point prior to reaching that point.

Prescriptive code means an administrative regulation that specifies the process of achieving an objective and excludes or limits the use of other processes that achieve the same objective.

Quality assurance (QA) means an integrated system of activities involving planning, quality control, quality assessment, reporting’ and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Repair means to restore a system to a functional condition without substantial modification.

Requirement (See “Performance requirement.”)

Responsible management entity (RME) means a legal entity responsible for providing various management services. It must demonstrate managerial, financial, and technical competence and capacity sufficient to ensure long-term, cost-effective management of onsite or clustered wastewater-treatment facilities in accordance with applicable regulations and performance criteria.

System means a decentralized wastewater-treatment train.

Sewage means wastewater containing fecal matter that exceeds the adopted performance standards for bacteria in the final effluent of a wastewater-treatment train.

Standard (See “Performance standard.”)

System construction inspector means a person who observes construction of wastewater-treatment systems for compliance with code specifications and the approved design.

System designer means a person who matches site and soil characteristics with appropriate wastewater-treatment technology and prepares system designs and installation plans for the site.

System installer means a person who constructs and assembles the components of a wastewater-treatment train to the designer's specifications.

System maintainer/operator means a person who provides operational, maintenance, and service activities to assure the effective and continuous operation and performance of a system.

System operation inspector means a person who inspects the system for compliance with the code and permit specifications.

System plan reviewer means a person who reviews required documents for compliance with the code prior to issuance of a construction permit. The documents may include but are not limited to the permit application form, site and soil evaluation report, management plan, and system-construction plans.

System soil evaluator means a person who makes the determination of soil morphology by defining its physical constitution as exhibited by the types, thickness, and arrangement of the horizons in its profile and by the texture, structure, consistence, and porosity of each horizon. (Modified EPA)

Treatment means the intended transformation of specific properties of wastewater from one state or condition to another.

Treatment component means a discrete portion of the wastewater-treatment train within which wastewater treatment is intended to occur. It may be located within or outside the structure and is defined by specifically identified points of influent and effluent.

Treatment train means the total assemblage of wastewater treatment, transfer, and holding components beginning with the first wastewater treatment component within or outside the structure and ending at the point where the effluent is dispersed from the last treatment or conveyance component. The term "system" is often use synonymously with "treatment train."

Type I compliance violation means discharge of sewage to the ground surface or surface water or within a structure where such discharge is not otherwise intended or permitted.

Type II compliance violation means the dispersal of sewage to the groundwater measured at a point of standards application for the regulated constituent where such discharge is not otherwise intended or permitted.

Type III compliance violation means the performance or operation of a treatment or conveyance component in a manner that does not comply with an applicable standard or

specification but which is not a Type I or II compliance violation. The expected response to a Type III condition is maintenance of the component by an authorized person.

Unconfined treatment component means the volumetric area of land and water that is not within a confining structure with a discrete point of effluent discharge and which has been evaluated for treatment capacity by a person or organization authorized to do so by the code.

Uniform code means a state code that reflects provisions in state statutes prohibiting subordinate levels of government from adopting ordinances that add to, delete from, or otherwise modify the regulations contained in the code except where the state code specifically permits such modifications. This term is contrasted with “minimum code” and “default code.”

Wastewater means:

- Wastewaters associated with dwellings, business establishments, institutions, and other structures or places used for human habitation, employment, or congregation. It may be further characterized as domestic wastewaters normally discharged from or similar to those discharged from plumbing fixtures, appliances, and other devices dedicated to, but not limited to, sanitary, bath, laundry, dishwashing, garbage disposal, water conditioning, and cleaning purposes.
- Storm and clear-water wastewater generated in or near buildings or other site improvements, when commingled with domestic wastewater.

Water reuse means any specific beneficial use of the treated wastewater in place of releasing it to the surface or subsurface environments.

CHAPTER 3

GENERAL REQUIREMENTS

3.1 DEPLOYMENT OF DECENTRALIZED SYSTEMS

An onsite or cluster wastewater-treatment system or holding component shall be provided where a permanent or semi-permanent structure discharges wastewater through a plumbing system whose effluent is not conveyed by sewer to a centralized municipal treatment facility other than a cluster system.

A wastewater treatment or holding component shall be provided at habitable structures that do not have wastewater plumbing. An approved wastewater collection and treatment system or a holding component shall be provided at property or locations where people routinely congregate or are employed, such as construction sites, fairs, carnivals, revivals, agricultural workers' field locations, encampments, and other locations where the public congregates for short temporary periods.

3.2 ABANDONMENT

3.2.1 When abandonment is required

The system shall be properly abandoned in the following circumstances:

- When the system is permanently disconnected from the structure served and has not been approved for subsequent use by another structure.
- When the building sewer has been connected to a sanitary sewer that is part of a municipal treatment works.
- When the system has been condemned by the regulating authority

3.2.2 Procedures for abandonment

The procedures for abandonment of external vaults and tanks are as follows:

- The property owner or agent shall apply for a permit to abandon the system if the system contains tank or vault components.
- The contents of tanks or vaults shall be pumped and equipment removed.
- Pipes or plumbing attached to the tanks or vaults shall be disconnected or sealed.
- Electrical connections shall be disconnected.

- Tanks or vaults shall be EITHER:

- Removed and the void leveled to the surrounding grade with sand or other suitable inert material and completely covered with soil or material similar to that at the surface in the immediate area,

OR

- The covers of tanks or vaults shall be removed, the bottoms ruptured, and the void leveled to the surrounding grade with sand or other suitable inert material and completely covered with soil or material similar to that at the surface in the immediate area.

(Instead of removing the tank covers, the tank may be completely filled with material such as concrete, sand, or pea gravel smaller than #1 stone.)

3.3 EMERGENCY REPAIR

Notwithstanding any provision requiring a permit to commence repair to a system with a Type I or Type II compliance violation, if a Type I or Type II compliance violation poses an imminent threat to public health or safety, the owner or agent may commence corrective action immediately without securing such permit. The owner or agent must then notify the regulatory authority within 2 workdays of commencement of the action and apply for any required permit. Where an imminent threat to human health and safety exists, the regulatory agency may cause the abatement of the threat by:

- Issuing a directive to the owner to abate the threat
- If the owner does not abate the threat in the time specified in the directive, the agency may abate the threat and bill the owner for the cost.

3.4 RIGHT TO INSPECT

Staff and agents of the regulatory authority may enter the property of a permittee to inspect the system during reasonable hours and with appropriate notice to the owner and occupants. The right to enter does not include the right to enter an occupied private residence or associated structure absent permission or an inspection warrant. The owner or agents shall produce permit documents and required records at the request of the regulatory agent inspecting the system.

3.5 FINAL-EFFLUENT REQUIREMENTS

The system design selected for a site is required to comply with the final-effluent requirements adopted in Chapter 5 or determined by local ordinance.

3.6 COMPATIBLE SYSTEM COMPONENTS

Components listed in NOWRA Matrices may be selected to create a treatment train if they have complementary influent and effluent parameters as specified. A treatment train designed by site-specific engineering or an experimental design is considered to be a single, discrete treatment component and is evaluated at the time of the application for a permit.

3.7 DOMESTIC WASTEWATER FLOW— DETERMINATION

3.7.1 Systems Designed to Serve One To Eight Households

The owner or owner's agent of a residential system designed to serve one to eight households (flows less than or equal to 10,000 gallons/day) may select one of the two following methods for calculating the estimated wastewater load and flow from a structure for the purpose of determining the system's minimum design flow. **If a county agency employs a professional engineer it may process permits up to 10,000 gallons/day. Flow volumes greater than 10,000 gallons/day are subject to the division site plan review process.**

3.7.1.1 Prescriptive Determination. Determination of minimum design flow for systems treating or containing domestic wastewater wherein black water is present shall be based on 150 gpd [568 Lpd] per defined two-person bedroom and half that amount for a defined one-person bedroom. For plumbing systems that separate grey water from black water,

an estimated 60% of the un-separated flow is considered to be grey water and the remaining 40% is considered to be black water.

3.7.1.2 Adjusted Base Flow Determination. The designer of the treatment system may adjust the minimum design flow determined in accordance with paragraph 3.7.1.1 based on, but not limited to, the following:

- Incorporation of water-conserving features within the structure
- Utilization of flow-management techniques
- Use of actual occupancy values and flow rates

The adjusted design flow in [*units/time*] for the structure must be recorded as provided in paragraph 3.7.1.4.

3.7.1.3 Determination Waiver. The designer may specify a treatment design of a given capacity (in gallons/liters per day) without regard to the design features of the structure, provided the actual use is equal to or less than the design flow and provided notice is provided as required by paragraph 3.7.1.4.

3.7.1.4 Recording of Adjusted Flow Rate. For system designs that invoke the provisions of 3.7.1.2 or 3.7.1.3, the design capacity in gallons/liters per day maximum flow shall be declared and, along with the prescriptive design flow specified in paragraph 3.7.1.1, (1) filed with the regulatory agency, (2) recorded with the deed, and (3) displayed on a permanent placard mounted in clear view near the primary electrical distribution box of the structure. The notice shall also contain the estimated number of occupants the system will support based on an average daily use of 60gpd (227L) per person.

3.7.2 Systems Designed to Serve More than Eight Households or More than Twenty People

Design flows and loads for multifamily structures and cluster systems designed to serve more than eight households or more than 20 people shall be determined by a professional engineer or other qualified designer who shall be responsible for the design. The design flow shall be filed with the regulating agencies and recorded with the property deed. The owners of the structures served shall be presented with notices that inform them of the capacity of the treatment systems. The notices shall explain that, in the event of the capacity's being exceeded, either the capacity of the system must be increased or the total flow must be limited.

3.7.3 Systems Designed to Serve Commercial Structures

Design flow and loads from commercial structures shall be determined by a professional engineer or other qualified designer who shall be responsible for the design. Such determination shall be recorded with the property deed.

3.8 OPERATIONAL RESPONSIBILITIES

3.8.1 System Owner and System Operator

The owner of the system is ultimately responsible for the proper installation, operation, and maintenance of the system, unless otherwise provided in the code. A designated

system operator shall comply as a minimum with the operational and maintenance requirements contained in applicable component manuals and the code.

3.8.2 Licensed and Certified Person

Licensed or certified personnel involved in the regulation, design, installation, and monitoring of decentralized wastewater-treatment systems shall perform their functions in conformance with the code and the standards of practice of their occupation.

3.9 TIME LIMITS FOR REPAIR

A system deemed to have a Type I or II compliance violation not an imminent threat to health and safety shall be repaired or replaced within the following time limits:

- Type I compliance violation—Plan of action within 30 days; remedial work completed within 90 days.
- Type II compliance violation—Plan of action within 30 days; remedial work completed within 120 days.

If weather conditions prevent timely repair, the time periods for correction of Type I and II violations may be extended by the regulatory agency.

3.10 POINT OF STANDARDS APPLICATION

The performance standards applicable to the system's final effluent quality must be equaled or exceeded as the wastewater exits the treatment train. The unconfined treatment component terminates at the edge of the assessed volume of soil.

3.11 DEEMED-TO-COMPLY DETERMINATION

Treatment components that have been evaluated and classified by approved field or test center evaluation protocols to specific performance requirements are deemed to comply with those requirements without sample monitoring of the effluent provided that:

1. The influent characteristics comply with those listed in the component's specification manual.
2. There is no Type I or Type II compliance violation.
3. The system is in compliance with the adopted operation and maintenance requirements.

3.12 CODE VIOLATIONS

Installation or operation of a system in violation of the code is unlawful. Notice of a code violation from the regulating authority to the responsible party shall be in writing and shall identify the nature of the violation, the code provision violated, amount of time permitted for correction, and potential penalty if not corrected. Prosecution of unsatisfied corrective orders is **provided by the local county agency.**

3.12.1 Penalties

Penalties for violations of the code are a Class I petty offence punishable by \$50.00 per day of violation.

3.12.2 Imminent Threat Abatement—Enforcement

Enforcement action to abate imminent threat to human health and safety or to the natural environment from Type I and Type II compliance violations consists of one or both of the following.

- Issuance of a compliance order to repair the system in a specific period of time or to discontinue use of the system until repaired.
- Issuance of a citation. Authority to issue citations is provided by **the local county agency**

3.13 APPEALS TO REGULATORY DECISIONS AND ORDERS

A person affected by an order or decision of the regulating authority may file a Level I or Level II appeal. The appeal shall be sent to **the local county agency**

3.13.1 Level I Appeal

A person receiving an order or decision from the department may appeal the order or decision by filing a written appeal within 30 calendar days of receipt. The appeal shall be signed by the appellant and contain a clear statement of the issue(s), reasons for the appeal, a proposed alternate decision, rationale for the proposed alternate decision, and the applicable fee. At the request of the appellant, the department may conduct a meeting with the appellant and representative(s).

The department shall consider the appeal and issue a determination within 15 working days of its receipt. The 15-day period may be extended by mutual consent.

If the agency does not answer in writing within the 15-day period or any extension thereof, the fee shall be returned to the appellant and the complaint deemed to be denied. The appellant, after denial or receipt of an answer deemed to be unsatisfactory, may, within 30 days, file a Level II appeal. In the event the appellant desires to skip the Level I Appeal stage, he/she may file a Level II appeal in the first instance.

3.13.2 Level II Appeal

A person receiving an order or decision of the department may appeal the order or decision by filing an appeal within 30 days of receipt of the order or decision. The appeal shall be signed by the appellant and contain a clear statement of the issue(s), reasons for the appeal, a proposed alternate decision, rationale for the proposed alternate decision, and the applicable fee (see source of fee schedule in paragraph 3.13.1).

The department shall schedule a contested-case hearing within 30 calendar days and issue a determination within 30 working days after the hearing. Failure of the department to respond to the appellant within 15 calendar days to schedule a hearing or failure to answer the complaint with a decision within the 30 days shall be deemed a denial of the appeal and the appellant may appeal the decision to court. Failure to schedule a hearing or to render a decision within the time limits shall cause a return of the fee to the appellant.

3.14 VARIANCES

Any person affected by the code may apply for a variance to a code provision for a specific application. The regulatory agency that adopted the provision shall consider the variance request. If both the local and state agency adopted the provision, the state has primary jurisdiction and shall consider the position of the local government in the determination.

The variance request shall be in writing. It shall identify the code provision(s) for which the variance is requested, state the requested variance, identify the proposed application, and state the rationale for the request. **The variance request shall be sent to the local county agency and is subject to cost recovery fees set by the county.**

The standard for approval is that the variance substantially achieves the purpose of the provision(s) and provides a degree of protection equal to or greater than that afforded by the provision(s). The regulatory authority shall render a decision on the variance request within 30 working days of receipt of the application, unless the applicant agrees to an extension. Failure to answer the variance request within the 30 working days or within the period of extension shall be considered a decision to deny and the fee shall be returned to the applicant. The agency granting all or part of the variance request shall include in its decision a declaration as to whether the decision is non-precedent setting or precedent setting. Precedent setting variances shall be published **annually**.

3.15 WRITTEN RECORDS

Administrative codes, policy statements, code interpretations, compliance directives, and agency determinations shall be in written form or, if maintained in electronic form, shall be capable of being converted to written form upon request.

CHAPTER 4

APPROPRIATE SOURCES

4.1 STANDARDS, PROTOCOLS, AND LISTS

The following protocols, standards, and lists are recognized as appropriate sources for supporting a claim of compliance with performance standards or requirements:

4.1.1 NOWRA Classification Matrices (Appendix A) **NOT PUBLISHED**

4.1.2 NOWRA List of manuals for evaluated components that meet the various performance-classification levels within the NOWRA Classification Matrices **NOT PUBLISHED**

4.1.3 NOWRA soil-treatment credit tables and calculations. (Appendix C) **WORKING DOCUMENT**

4.1.4 NOWRA protocol for component evaluation (Appendix D) **WORKING DOCUMENT**

4.1.5 NSF Standard 40 and listed components

4.1.6 ETV-NSF protocol and reports

4.1.7 The publication of Bureau de normalization du Québec (BNQ) entitled: *Wastewater Treatment — Stand-Alone Wastewater Treatment Systems for Isolated Dwellings — Certification Protocol*

4.1.8 NOWRA tank standard (Appendix E)

4.1.9 20th Edition of *Standard Methods for the Examination of Water and Wastewater*, a joint publication of the American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF).

CHAPTER 5

EFFLUENT AND SITE REQUIREMENTS

5.1 EFFLUENT REQUIREMENTS

5.1.1 Characteristics of Final System Effluent

The final effluent of a decentralized wastewater-treatment system as it leaves the final treatment component shall achieve the treatment levels prescribed in paragraph 5.1.2. by constituent. The following methods may be used to determine whether compliance with the final-effluent minimum requirements has been achieved:

- ***Deemed to Comply.*** The whole system is deemed to comply with the final effluent requirements if it is operated and maintained in accordance with the permit-approval documents. The system may consist of components evaluated according to methods contained in Appendices C and D (see paragraphs 4.1.3 and 4.1.4) or it may be designated as having a site-specific engineered design. A treatment component individually classified as “deemed to comply” is assumed to comply with the requirements without effluent sampling during system operation.
- ***Experimental.*** The treatment train or one or more of its components is (are) defined as experimental and appropriate safeguards are in place at the time the permit is issued to ensure that the requirements are met.
- ***Effluent Monitoring.*** The final effluent is evaluated under an **established national sampling protocol.**

5.1.2 Final Effluent Minimum Requirements

The system effluent shall meet the following requirements as it leaves the final treatment component:

- **Land surface discharge**
 - Fecal coliform: [requirement *]
 - [other constituent] [requirement]
 - Etc.
- **Land subsurface discharge**
 - Fecal coliform: [requirement *]
 - [other constituent] [requirement]
 - Etc.
- **Surface water discharge**
 - Fecal coliform: [requirement *]
 - [other constituent] [requirement]
 - Etc.

* Example: <200 colony-forming units per 100mL, 95% of the time.

5.1.3. Property Information

For all site served by decentralized wastewater treatment, the determination of appropriate treatment technology and treatment system management must be based upon perceived risk. The different classes of technology and the different management tiers are outlined below:

Classes of Onsite Wastewater Treatment Technologies

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity)

Class 2 – Deemed to comply (NSF 40 or other national certification)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes [includes mound]

Tiers of Management for Onsite Wastewater Treatment Technologies

Tier 1 – Septic tank and absorption field (pressurized or gravity)

Does not require a maintenance contract

Tier 2 – Deemed to comply systems (NSF Standard 40 or other national certification)

Requires a maintenance contract

Tier 3 – Vault systems, Deemed to comply systems

Requires operating permit (needs to include ongoing sampling to justify approval)

Tier 4 – STEP/Cluster systems

Requires RME with private or utility ownership (joint or individual ownership)

Figure 5-1 is a risk evaluation scorecard. The scorecard is to be used to evaluate the potential risk to human and environmental health on any site served by decentralized wastewater treatment. The total score generated by the scorecard must then be placed into the Risk Management Matrix (Figure 5-2) to determine what type of technology must be used and how it must be maintained.

Risk Parameter	Value	Score
1 High/Low Flow	<600	1
	600-1200	3
	1201-1999	5
	>2000	10
2 Estimated Waste Strength (BOD, nitrogen, FOG, TSS)	<500mg/L TSS/BOD or TN<60mg/L	1
	500 - 1000mg/L TSS/BOD or TN 60 - 120mg/L	5
	>1000mg/L TSS/BOD or TN>120mg/L	10
3 Density	<1 acre	5
	1-5 acres	3
	>5 acres	1

4 Groundwater		
	<4 ft.	20
	4-10 ft.	10
	>10 ft.	1

5 Aquifer type		
	alluvial	5
	watertable aquifer	3
	fractured bedrock	4
	confined aquifer	1

6 Depth to bedrock/restrictive layer		
	<4 ft.	5
	4-10 ft.	3
	>10 ft.	1

7 Impaired waters		
	yes	10
	no	1 - 5

8 Drinking water source		
	Private	3
	Public	1

9 Proximity to other wells		
	within 100 ft	20
	100-200 ft	5
	>200 ft	1

10 Proximity to other drainfields		
	<20 ft	3
	>20 ft	1

11 Well depth		
	<50 ft	5
	50-100 ft	3
	>100 ft	1
	public water supply	0

12 Well construction date		
	pre 1972	5
	post 1972	2
	no well	0

13 Slope		
	<30%	1
	30% or greater	3

14 Depth to restrictive layer (shallow soils)		
	<4 ft.	5
	4-10 ft.	3
	>10 ft.	1
15 Proximity to surface waters, designated wetlands, springs		
	<50 ft	20
	50 ft or greater	5
Total Score		0

Figure 1. Risk Evaluation Scorecard

MINIMUM REQUIRED MANAGEMENT	TIER 4			200-250
	TIER 3		100-150	150-200
	TIER 2	25-50	50-100	
	TIER 1	0-25		
		CLASS 1	CLASS 2	CLASS 3
MINIMUM CLASS OF TREATMENT REQUIRED				

Figure 2. Risk Management Matrix

5.1.4 Requirements for Reused Water

The following requirements pertain to treated non-industrial, domestic wastewater, including gray-water that is reused above the soil. The requirements shall be met both at the discharge point and a point prior to a transmission line.

5.1.4.1 Potable Water. Refer to the USEPA potable water standards

5.1.4.2 High-Contact-Risk Water.

- Fecal coliform shall have a median level of <1 colony-forming units/100 mL. (<2.2 mpn/100 mL), with a single sample not exceeding 14 colony-forming units/100 L.
- Turbidity shall be < 2 NTU (continuous monitoring)
- No odor shall be detected

5.1.4.3 Low-Contact-Risk Water.

- Fecal coliform shall have a median level of <200 colony-forming units/100 mL (<200 mpn/100 mL.), with a single sample not exceeding 800 colony-forming units/100 mL. (<800 mpn/100 mL).
- Turbidity shall be < 5 ntu (continuous monitoring).
- No odor shall be detected.

5.2 SITE REQUIREMENTS

5.2.1 Horizontal Setback Requirements

The horizontal setback requirements between system components and other features shall be determined by the system designer by use of one of the two options presented respectively in paragraphs 5.2.1.1 and 5.2.1.2:

5.2.1.1 Compliance with the prescriptive requirements provided in Table 5-1.

5.2.1.2 Compliance with the following performance requirements:

- Released effluent may not pond around the structure's footings or reenter the structure
- Released effluent may not cause a violation of the applied water quality standards at a drinking-water well.
- Released effluent may not pond in the trench of a utility service or suction pump discharge line.

TABLE 5-1
Required horizontal separation distance in feet (meters)
between a system component and a site feature*

Feature	Dispersal component	Exterior septic tank or holding tank	Servicing, suction lines and pump discharge lines
Structure	[number]	[number]	[number]
Property line	[number]	[number]	[number]
Ordinary high water mark of navigable waters	[number]	[number]	[number]
Swimming pool	[number]	[number]	[number]
Water service	[number]	[number]	[number]
Well	[number]	[number]	[number]

*Distances assume that site soil evaluation was properly conducted.

5.2.2 Service Accessibility and Safety Requirements

5.2.2.1 Access Ports—New Systems. Service access ports to components shall be located to be accessible to service personnel as follows:

- The location of the access port, if not visible at the surface, shall be marked in a manner that the service personnel can determine its location. Methods may include a physical marker, a marker on the site plan, or other acceptable indicators.
- Service ports that, according to the management plan, are to be accessed more frequently than once every **3 years** shall be accessible to the surface without digging. Access ports may be covered by ornamental or other coverings provided the cover can be easily removed.
- Service ports that are buried shall be located within 6 inches (15.2 cm) of the surface and shall be accessible by use of hand tools.

5.2.2.2 Access Ports—Existing Systems. Access ports of existing systems shall be made to conform to the requirements presented in paragraph 5.2.2.1 at the first scheduled service or repair event following adoption of the code.

5.2.3 System Access by Service Equipment

In new construction, access ports for system component shall be accessible to service vehicles as follows:

- The horizontal distance between a component’s pumping-access port and the closest parking point for a truck weighing 60,000 pounds (27,216 Kg) shall not exceed 200 feet (61 meters). For a holding tank, the parking point shall be suitable for truck access in all weather conditions during periods of occupancy.

- The vertical elevation difference between the parking point and the bottom of the tank to be pumped shall not exceed 20 feet (6.1 meters) for truck-mounted vacuum pumps.
- For individual systems, the vertical and horizontal requirements may be waived if other suitable transfer methods for enabling servicing of the components are demonstrated to the regulatory authority.

5.3 PROHIBITED SUBSTANCES

No person may introduce any substance into a decentralized wastewater-treatment system that would cause the system's effluent-safety requirements imposed by this code to be violated or cause a violation of law if discharged to the ground surface or to surface waters.

5.4 ADJUSTMENT FOR POTENTIAL LEAKS

System components such as, but not limited to, septic tanks and connections, that are not watertight shall be sized to accommodate unintended infiltration of storm water, ground water, water from high water tables, and other sources. (REFERENCE APPENDIX E, TANK STANDARDS)

5.5 COMPONENT STRUCTURAL INTEGRITY

A list of all wastewater treatment tank manufacturers and the available materials must be maintained by the Division. All systems employed must be on the list.

Components of a wastewater-treatment system shall be capable of bearing the live and dead loads applied when installed and operating. The standard applied should be determined base on site risk conditions. Optional standards that might be considered for adoption, depending on site risk, include:

- shall be acceptable under expected soil load as determined by testing or suitable calculation.
- shall be acceptable under expected soil and human traffic loads, including light lawn tractors, as determined by testing or suitable calculation.
- shall be acceptable under expected soil load and the weight of a pickup truck as determined by testing or suitable calculation, unless physical barriers to such traffic protect the area.
- shall be acceptable under expected soil load and weight of a pumper truck as determined by AASHTO H-10 standard for a 16,000 lb/axle load, unless the area is protected from such traffic

5.6 SAFETY OF ACCESS PORTS

Ports provided to give access to system components shall not create a safety hazard. All exposed access openings shall be guarded. Openings larger than 4 inches in diameter shall be secured by bolted or locking lids or by lids that are set to prevent sliding and weigh at least 59 lbs in accordance with ASTM C 1227 – “7.6.1.” If the foregoing requirements will not prevent access, a physical barrier shall be erected to prevent access to the site of the opening. Covers, risers, and lids shall be capable of bearing the expected live and dead loads.

5.7 SOIL-COMPONENT EVALUATIONS—LIMITATION OF USE

System designers may apply the soil-treatment and hydraulic-conductivity capabilities of the unconfined-soil component only to the extent that the characteristics of the site soil have been evaluated. Table 5-2 provides the amount of credit that may be claimed based on the extent of evaluation.

TABLE 5-2
Soil Treatment Credit Available by Type of Soil Evaluation
(Uniform, Known Area Conditions)¹

X = Credit can be taken, subject to any applicable footnote								
Soil and Site Evaluation Type		Hydraulic Conductivity	Nitrogen	Phosphorus	Bacteria	In situ Organic	Dilution	Comments
Observation of site ²		X	X	X	X	X	X	
NRCS Map–Scale ³	1:400	X	X	X	X	X	X	
	1:20,000	X	X	X	X	X	X	
Percolation Test								Should be used only as a source of supplemental information if there are questions relative to water movement in area soils
Soil Evaluation								Not necessary if area soils evaluated
Ground Water Characterization								
Perched								Not necessary if area soils evaluated
Seasonal								Not necessary if area soils evaluated
Permanent								Not necessary if area soils evaluated
Vegetative								Not necessary if area soils evaluated
Soil Climate								
Temperature								Not necessary if area soils evaluated
Moisture								Not necessary if area soils evaluated

¹ Some dispersal component sites are in soils that have relatively homogenous characteristics across broad areas. If the characteristics of the area are known, the site evaluator can rely on that information. Reliance on maps and general observations should be avoided at the edge of the map classification area and at the margin of a design classification breakpoint—example if the maps indicated GW depth is at 38 inches and the code requires 35 inches, do not rely on the map. Maps should only be used in conjunction with a specific site observation.

² Must be used in conjunction with a suitable soil map.

³ Must be used in conjunction with suitable site observation.

CHAPTER 6

QUALITY ASSURANCE AND QUALITY CONTROL

6.1 CONSTRUCTION AND REPAIR PERMITS

Performing construction or repair of a decentralized wastewater-treatment system may require that a permit be obtained before work begins. When such a permit is required by the state or local regulatory agency, the language in this section applies.

6.1.1 Construction Permit

Construction, installation, modification, or add-on work shall not be performed on a decentralized wastewater-treatment system unless the owner has first obtaining a permit for the work to be performed from the **local county agency**.

6.1.2 Repair Permit

No major repair of a decentralized wastewater-treatment system may be performed unless the owner has first obtaining a permit for the work to be performed from **local county agency**. Minor repair and normal servicing does not require a permit.

6.1.3 Posting

The construction or repair permit shall be posted conspicuously in a place on the building or other location that is visible from the street. The permit shall remain posted until the construction or repair activity is completed and final inspection has occurred.

6.1.4 Expiration

The construction and repair permits shall expire from **1-5 years from the date of issuance** or when the work is complete. If work is commenced within the specified period, the permit may be extended for an additional period **not greater than 5 years**. The code in effect at the time the permit was issued shall be applicable during the period that the permit remains active. The permit may be renewed at the discretion of the permitting authority at any time up to **5 years**. If significant changes have occurred in the code since the permit was issued, the renewal permit may be made subject to any pertinent new requirements. **Extended or renewed permits may require an additional inspection to verify site conditions have not changed.**

6.1.5 Transfer

Upon application by a new system owner, a construction or repair permit shall be transferred to the new owner.

6.1.6 Revocation

The permit may be revoked for the following reasons:

- An imminent threat to human health and safety or to the environment would occur if the work subject to the permit continues.
- The permit application contains false information that is material to the decision to grant the permit.

6.2 ~~OPERATING~~-PERMIT

6.2.1 Issue

A decentralized wastewater-treatment system shall not be operated unless a ~~an operating~~ permit has been issued by the ~~local regulatory agency or the division~~ to the owner or jointly to the owner and operator when the operator is not the owner but a certified responsible management entity (RME).

6.2.2 Duration

The ~~operating~~ permit continues in effect until its expiration date or until it is revoked for cause. ~~The permit expires and must be re-issued in the new owners name or upon property transfer.~~

6.2.3 Revocation

The ~~operating~~ permit may be revoked for the following reasons:

- Existence of a Type I or Type II compliance violation beyond the authorized repair period.
- Existence of a Type I or Type II compliance violation that is an imminent threat to human health and safety or to the natural environment.
- Persistent failure to perform required inspections and maintenance.
- Change in use or increase in the size of the structure that significantly increases the wastewater loads and flows.

6.3 PERMIT ADMINISTRATION

6.3.1 Application Submittal

- **Person.** The owner of the decentralized wastewater-treatment system, the owner's agent, the owner's assigned operator, or the person performing the work shall apply for the permit.
- **Application Form.** The permit application shall be filed on a form supplied by (or by other method acceptable to) the ~~local county regulatory agency.~~
- **Attachments.** The following documents shall be attached to the permit application:
 - ~~plot plan,~~
 - ~~soil report/certificate~~
 - ~~site sustainability plan~~

- *Addressee.* [name and address of agency]

6.3.2 Retention of Documents

Records pertaining to construction and operating permits shall be retained in the following manner:

- **By the owner or operator.** Construction and repair permits and attached documents shall be retained at the worksite during the course of the work until the system is allowed to be operated. They shall be produced when requested by the inspector. The **operating** permit and related documents, **for example [names of documents]**, shall be retained by the owner or operator while the permit is active and shall be made available to the inspector within a reasonable time of their being requested..
- **By the regulatory agency.** Construction and repair permits and attached documents shall be retained during the course of the work until the system is allowed to be placed in operation or until the system is abandoned).

The **operating** permit and related documents shall be retained until the **property is transferred to new ownership when a revised permit may be issued.**

6.3.3 Application Processing Time

The regulatory agency shall process a permit request, perform a plan review (if required; see section 6.4) and issue an approval or denial of the completed permit application within **30** business days of receipt. The process time may be extended by agreement of the applicant. Failure to issue a determination within the required time shall cause the agency to rebate **5** percent of the application fee for each day the reply is late.

6.3.4 Written Response

The agency response to a permit and application shall be in writing. If the permit application or plan approval is denied, the agency shall state the specific reasons for the denial in the response.

6.4 DESIGN PLAN REVIEW

A design plan shall be submitted with the permit application for construction of any new decentralized wastewater-treatment system or modification of an existing system. The plan shall contain the information specified in paragraphs 6.4.1 and 6.4.2.

6.4.1 Information Required for an “Onsite” System

The following information shall be provided with the design plan for an “onsite” system (as distinct from a “cluster” system):

- **Completed Risk Evaluation Scorecard and Risk Management Matrix**
- A scale drawing showing the property boundaries, the location of existing and proposed structures (including those associated with the subject system’s components), current and proposed easements, driveways, below-ground water and utility lines, public and private wells, and surface waters. Off-site property that potentially affects the placement of system components because of setback requirements shall be shown, but not necessarily to scale. On large lots, those features that are more than twice the distance of the largest setback requirement

from any system component may be omitted. If the system's components are on a legal parcel other than that of the structure served, the site plan must include all parcels with interconnected system components.

- Soil- and site-evaluation reports
- Operation and maintenance manuals for the system components, including the unconfined-soil treatment/dispersal component.

6.4.2 Information Required for a “Cluster” System

If the decentralized wastewater-treatment system is a “cluster” system, a single cluster-system design plan may be submitted for review and permitting. The plan shall include the cluster system's maximum influent design loads and flows and a detailed specification and drawing of the standard connection between a structure's plumbing system and the last off-lot or first on-lot treatment component, whichever is applicable.

Completed Risk Evaluation Scorecard and Risk Management Matrix. Further plan reviews of the cluster system for individual structure connections are not required provided design flows are not exceeded. Hook-up of an individual structure shall be subject to any plumbing-permit process pertinent to that structure. The cluster system's construction permit shall be in effect until the development served by the approved cluster system is completed, unless revoked for cause. An easement shall be recorded for the cluster system's components.

6.4.3 Information Required for an REM-Owned and -Operated System

If a decentralized wastewater-treatment system serving a single structure is owned and operated by a certified Responsible Management Entity (RME), the plan review and inspection provisions contained in paragraph 6.4.2 apply to the individual on-lot system.

6.4.4 Submittal of an “As-Built” Plan

A permit for system construction or modification is issued pursuant to approval of the design plan. If unexpected site conditions or other circumstances are encountered that require that the system be installed in a manner other than in conformance with the approved design plan, an “As-Built” plan shall be submitted to the approving agency.

6.5 SITE SUSTAINABILITY PLAN

The designer shall provide a site sustainability plan to the regulating agency and the owner. The plan shall describe the procedures for maintaining the decentralized wastewater-treatment system at the site in successful operating condition for the expected life of the structure(s) served. The presumed life of the structure(s) is 100 years unless stated otherwise. If the site is expected to be connected to a non-onsite wastewater conveyance- and treatment-system in the future, the sustainability plan may be limited to that period. The plan shall assume that all components will fail and require repair or replacement during the life of the system unless the designer can demonstrate indefinite operating life for the components. For the unconfined-soil treatment/distribution component, the plan may prescribe, but is not limited to:

- Use of rejuvenation techniques.
- Relocating the component to areas reserved for the purpose.

- Using alternating drainfields or pretreatment to eliminate the formation of a clogging layer.

6.6 INSPECTION

6.6.1 Construction Inspection

Except as provided in paragraph 6.6.1.1, systems and system components that have been newly installed, modified, or subjected to major repairs shall not be covered or placed into service until inspected and approved by the local county inspector. The contractor performing the work shall contact the local county inspector to schedule an inspection. If the inspector is unable to inspect the facility within 30 days, or verbally waives the inspection, the contractor may cover the components.

6.6.1.1 Inspection Waiver. A licensed professional engineer who holds an Advanced Certified Installer certificate shall notify the local county inspector that the work is complete. The system/component (s) then may be covered and placed into service without inspection unless the agency or the inspector specifically requests otherwise. The Licensed Engineer shall inspect the system/components(s) prior to covering and certify that the system was installed per code and permit requirements.

6.6.2 Grading Inspection

The inspector may require an inspection of final grading and landscaping to ensure that the system is not subject to storm-water erosion or ponding over the components.

6.7 MAINTENANCE

6.7.1 Operational Maintenance

The owner shall have the system and its components serviced during its operational lifetime in accordance with the requirements of the code, the ~~operating~~ permit, and the components' service manuals.

6.7.2 Maintenance Oversight

The local county agency shall verify that the system and its components are being maintained in compliance with the requirements of the code, the ~~operating~~ permit, and the components' service manuals. A combination of maintenance-record inspections and physical inspections may be employed in a manner appropriate to the operator's history.

6.7.3 Existing-System Assessment Protocol

Upon the transfer of title or change of ownership of any property serviced by a decentralized wastewater treatment system an inspection of the existing system shall determine whether the system is operating in compliance or not in compliance with pertinent requirements. The authority having jurisdiction shall determine the level(s) of inspection required based on risk conditions.

- Level I. The system is operating with a Type I compliance violation.
- Level II. The system is operating with a Type III compliance condition

- Level III. The system is operating with a distribution component that conforms with the pertinent design specifications or, alternatively, the distribution component functions hydraulically and provides the intended level of treatment.
- Level IV. The system is operating with a Type II compliance violation. Determination of compliance or level of noncompliance shall be achieved by either of the two following methods:

1. Deemed-to-Comply Method. The soil-component design features are in conformance—OR are not in conformance—with the prescriptive design requirements in effect at the time the component was constructed or last modified. If those design requirements have been superseded by those of a subsequent code with retroactive application, the new design requirements apply.
2. Treatment-Evaluation Method. Treatment performance evaluated by testing the effluent as it leaves the treatment train. Sampling protocol and evaluation shall conform to recognized protocols.

6.7.4 Reporting a Malfunctioning System

The owner or operator of a decentralized wastewater-treatment system shall report the occurrence of a Type I or Type II compliance violation to the **local county agency within 60 days.**

6.8 CERTIFICATION

6.8.1 Areas of Certification

An individual or organization employed at a decentralized wastewater-treatment system to perform the services and core tasks associated with the following occupations or functions must possess current certification from the indicated organizations:

Individuals

Construction Inspector (regulator)–

NAWT/NSF or CDPHE approved national equivalent

Designer –

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NEHA Basic or CDPHE approved national equivalent or higher level (Class A/B)

Class 2 – Deemed to comply (NSF 40 or other national certification) (R.P.E. and CIOWTS-A or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (R.P.E. and CIOWTS-A or CDPHE approved national equivalent)

Installer –

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NEHA Basic or CDPHE approved national equivalent or higher level (Class A/B))

Class 2 – Deemed to comply (NSF 40 or other national certification) (CIOWTS-A or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (R.P.E. and CIOWTS-A or CDPHE approved national equivalent)

Maintainer/Operator -

Class 1 – Septic tank and absorption/evaporation field (pressurized or gravity) septic tank and field (NAWT/NSF Inspector or CDPHE approved national equivalent)

Class 2 – Deemed to comply (NSF 40 or other national certification) system – (NAWT/NSF Inspector or CDPHE approved national equivalent)

Class 3 – Wetlands and other non-NSF certified secondary treatment (generally accepted onsite technologies). System requiring more complex technology or large flow volumes (includes mound) (NAWT/NSF Inspector or CDPHE approved national equivalent)

Site and Soil Evaluator –

Registered Geologist, Soil Scientist, R.P.E. or CDPHE approved national equivalent

Organizations

Responsible Management Entity (RME) –

Certified as required if performing any of the above duties (need to look at requirements for RME i.e., liability insurance, etc.)

Regulatory Agency –

NAWT/NSF Inspector, NEHA Installer or State approved equivalent

Persons holding professional licenses that nominally permit them to perform the services and tasks associated with the occupations/functions listed above must comply with their license restrictions that permit them to work only if qualified in the specific area of practice.

6.8.2 Prior Qualifications for Initial Certification

When initially applying for certification, applicants engaged in the following occupations/functions must demonstrate the prior training and experience shown after each listed item:

- Construction Inspector: [*requirements*]
- Designer: [*requirements*]
- Installer: [*requirements*]
- Maintainer/Operator (option: excluding homeowner): [*requirements*]
- Plan Reviewer: [*requirements*]
- Site Evaluator: [*requirements*]
- Soil Evaluator: [*requirements*]
- Responsible Management Entity (RME): [*requirements*]

6.8.3 Display of Certification

A person performing work requiring certification must produce the certification document when requested by an inspector or other government agent with jurisdiction. A regulatory inspector must produce his/her certification when requested by any individual with whom the inspector is interacting as an agent of the state.

6.8.4 Duration of Certification

Certificates issued by the state expire in accordance with their respective administering authority.

6.8.5 Continuing Education

Persons holding current certifications must successfully complete approved education programs after the effective date of the current certification and prior to applying for certification renewal.

6.8.5.1 Course Approval. Education programs shall be approved by the agency issuing corresponding certification. The content of the course shall be focused on improving the knowledge, skills, and abilities of certificate holders in the performance of the work covered by the certification.

6.8.5.2 Credits Hours. One hour of training equals one credit hour. The credit hours required for each certification are **determined by their respective administering authority.**

6.8.5.3 Reporting Credit Hours. The entity conducting the approved continuing education shall perform the following functions:

- Provide mechanisms that ensure that the individual pursuing the continuing education credit actually attends the complete program and is attentive to the subject material.
- Record the attendance and issue a corresponding certificate to the individual. If direct notice is required by the certifying agency, a list of attendees and other information required by the agency shall be provided to the agency.

6.8.5.4 Failure to Report Required Credit Hours. Persons who fail to report sufficient credit hours for certification renewal shall be denied a new certification, with the following exceptions:

- The applicant may apply for the current certification to be extended for a four month period to provide time to earn the necessary credits hours or resolve disputes concerning awarding/reporting of credit hours.
- The agency may grant a second extension upon the applicant's request showing good cause for such extension. The determination of "good cause" shall be solely at the discretion of the agency.

APPENDIX A

Classification Matrices

Pending beta testing by Florida Department of Health.

APPENDIX B

Listed Components

Reserved for list of evaluated and classified components.

APPENDIX C
Soil Component
Under development.

APPENDIX D

Procedure for Administering
the Confined Treatment
Component Database

Pending beta testing by Florida Department of Health.

APPENDIX E

Tank Standards

GUIDANCE

Decentralized wastewater treatment systems employ various buried structures such as septic, pump, holding and treatment tanks. While the majority of this guidance addresses the septic tank, it also applies to the other uses of the tank.

The primary purpose of the septic tank is to clarify the wastewater; to separate constituents that float and sink from the other wastewater constituents. A second benefit is that decomposition of organic material begins in the septic tank. Raw waste is reduced to sludge, scum, gases, and effluent with the aid of beneficial microbes that reduce the organic material without outside energy sources. In this regard, the septic tank is extremely beneficial at a nominal cost when compared to the overall system cost.

FIT FOR THE INTENDED USE AT THE SITE

The septic tank system needs to be fit-for-use in its operating environment. The operating environment of most septic tanks is: buried below ground, in or above ground water, empty or full of sewage. The septic tank system consists of the tank, riser and inlet/outlet ports. The common performance standard in many state codes is that the tank system is watertight and structurally sound while installed and operating.

- **Watertight – Inflow of groundwater or storm water.** Onsite wastewater treatment systems are designed to return a predetermined volume and quality of wastewater to the environment. A septic tank allowing inflow of water can permit large unintended volumes of ground water into the treatment and disposal system. This can overwhelm the capacity of the downstream components which may not be able to handle the extra water and provide adequate treatment. Also surges of inflow can displace solids from the tank adversely affecting the operation and operating life expectancy of downstream components. Groundwater and soil often have compounds such as sulfur, iron and manganese which can severely impact the septic tank and treatment components downstream.
- **Watertight – Outflow of sewage.** Leaking tanks can pollute groundwater in circumstances where there is a lack of suitable soil treatment between the tank and the groundwater.
- **Structurally sound –** The buried tank needs to be structurally sound to withstand the live and dead loads experienced at the site to prevent cracking or collapse.

The potential impacts include safety of people in the area of the tank, the operation of the treatment system and the formation of cracks or other openings that cause leaks.

In many jurisdictions, the watertight, structurally sound requirements have not been aggressively enforced. Because the manufacture and installation of truly structurally sound, watertight tanks are marginally more expensive, and because the customers are very cost sensitive, this lack of enforcement gives a price marketing advantage to vendors of poor quality tanks. This problem is compounded because the tank is “outof- sight” and

“out-of-mind” of homeowners so they may not know that the tank system is leaking or structurally unsound.

The intent of the NOWRA code is that the treatment system be sustainable for the expected period that the treatment system needs to serve the structure. For most systems that is the expected life of the structure. Sustainable means that the system components can be maintained in operating condition through maintenance, repair or replacement. This model code guidance does not suggest that an installed tank be designed to last for 100 plus years, the expected life of many structures. Obviously, the actual life will vary depending on the waste stream influent, timely inspection, pumping and other operational factors. Robust components require less maintenance and repair and have a longer life expectancy. The determination of the targeted design life of the system can be determined by the designer/owner and/or the regulating jurisdiction.

DETERMINATION OF THE WATERTIGHT AND STRUCTURALLY SOUND REQUIREMENTS

In a performance code, the determination can be made by the inspection of an installed system during its operational life. The performance standard for a structurally sound tank with watertight connections is simple: it leaks or it does not; and it remains intact when installed and operating, or it does not. If the tank is not leaking and is not showing signs of structural collapse, the tank satisfies the two requirements. However, there are several issues to be considered in this matter:

- The inspection of an installed, operating tank may be technically impractical or too expensive.
- Pressure testing can be dangerous if the tank fails. Such tests must be done in a manner that complies with OSHA safety standards. If the test is conducted in the excavation, entry into the excavation is also subject to OSHA shoring and excavation rules.
- Most regulations are designed to prevent the non-compliant condition from occurring with health and safety rules establishing minimum design requirements and implementing construction/manufacturing inspection programs.

It is useful to be able to determine if the tank design will meet the requirement before it is placed in operation. Two methods are typically employed to verify watertightness and structural capacity, respectively:

- The tank is tested by filling with water or by applying a vacuum or pressure test.
- The tank design and construction satisfies engineered standards and approved industry quality control methods.

The tank should be designed to withstand all likely conditions with an appropriate safety factor and remain watertight and structurally sound for the intended life of the component. There are several methods to test a tank. Each tank, or a random sample of tanks can be tested at the factory and/or each tank can be inspected and tested at the site

after it is installed and/or after it is placed in operation. The installed tank must meet the appropriate standards.

TANK STANDARDS

The NOWRA model code provides a series of successively more stringent performance requirements and code language. Following are the options for each of the major issues:

STRUCTURALLY SOUND

Purpose: Prevent tank collapse; protect public safety and protect the internal components and processes.

Policy Options: standard and code language

- No adopted standard
- The installed tank shall be structurally sound, capable of bearing all anticipated live and dead load conditions exerted on a buried tank. Those conditions may include: tank empty and full, and tank installed above and below the water table, as determined by the following language:

The tank shall be structurally sound as determined by Engineering Design with appropriate safety factors, and watertight verified through appropriate testing and compliance monitored by local authority. All tanks shall be designed and certified by a Professional Engineer, licensed and qualified to perform structural design. Design should contemplate all reasonably expected loading conditions, including burial depth, tank full to top of riser, an empty tank installed with water table at top of ground and any other reasonable expected loading conditions. Manufacturer should be required to certify that all tanks manufactured meet the engineer design.

ACCESS GUARDED

Purpose: Prevent injury or death caused by child or unintended adult entry into the system components while maintaining ease of access by maintenance personnel.

Policy Options: standard and code language:

- No provision
- All exposed access openings shall be guarded. Openings larger than 4 inches should be secured by bolting or locking lids or by lids that weigh a minimum of 59 lbs (from ASTM C 1227 – “7.6.1”) and are set to prevent sliding. Covers, risers and lids shall be capable of bearing the expected live and dead loads.

WATERTIGHT TANKS

Purpose: Prevent unintended leaks to protect the tank’s function of clarification and to protect downstream components from excess flows and loads.

Policy Options: standard and code language:

- No provision
- Tank shall be watertight to the outlet hole
- Tank shall be watertight, including inlet and outlet pipe penetrations, to a point 2 inches into the riser

- Tank shall be watertight, including inlet and outlet pipe penetrations, to and including the riser assembly
- Testing [SEE TESTING OPTIONS BELOW]

EVALUATION PROTOCOLS

The objective of quality assurance (QA) and quality control (QC) procedures is that the installed tank be “fit-for-use” as a component in an installed wastewater treatment train. The QA and QC processes focus on the safety of the tank structure and the wastewater loads and flows exiting the tank. Two key components of that process are ensuring that tanks are structurally sound and watertight when installed. Evaluating the tank assembly at the site is an important component of a QA program. However, site evaluation for structural soundness and watertight condition of the installed tank (buried in both the full and empty state) is sometimes difficult and may increase cost of system. Cost is always an important consideration along with the risk posed by failure to perform to performance requirements. As a result, alternative QA and QC processes are often employed such as evaluating the tank at the site before it is buried, certifying the personnel doing the work, certifying the manufacturer to accepted industry standards. Because tanks are made from materials that have different strengths and weaknesses, different test methods will affect the designs differently. Further, various testing methods have different time and money costs. Adoption of existing evaluation protocols - Different tank systems and materials may require different evaluation protocols for watertight and structurally sound requirements. Where an accepted evaluation protocol for the material or tank assembly exists, the entity specifying the evaluation requirement should first consider adopting that protocol. Listed below is a general explanation of the procedures and a rationale for selecting the testing procedure.

Watertightness Testing Procedure

- ***Water Test Procedure:*** A water test is performed by installing tank, connecting inlet and outlet piping (with caps), installing risers, and filling tank to required depth. Some materials, such as concrete, may require a period of time for natural absorption into the material prior beginning the watertight test. Backfill may or may not be in place depending on whether the backfill is integral to the structural design. Mark the level of water in the tank “or riser.” After a predetermined “test time” applicable to the material or assembly, make a visual check on the outside of the tank for leakage (if possible), and check water level in the tank (or riser). If no visual evidence of leaking and water is at mark, tank passes.

ADVANTAGES: This test is easily and quickly administered, and pass/fail is fairly obvious. A small leak will have evidence (a wet spot). The weight of the water also provides a test on the foundation under the tank. If bedding under the tank is uneven or has rock protruding, tank may crack causing failure of test.

DISADVANTAGES: Water may not be available on site, and will have to be transported to the tank.

- ***Pressure Test Procedure:*** A pressure test is usually performed by capping inlet and outlet piping, sealing access openings, and then pressurizing tank to 5 PSI.

Pressure in the tank is held for a given period of time, depending on the adopted protocol. If leaks are discovered and repaired, the test may be run again. In the final test, any leakage is considered a failure.

ADVANTAGES: This test is easily and quickly administered, and pass/fail is fairly obvious.

DISADVANTAGES: Installer/tester must purchase and maintain testing equipment.

• ***Vacuum Test Procedure:*** A vacuum test is usually performed by plugging inlet and outlet piping, installing risers and using a vacuum pump to pull a negative\ pressure of 4 inches of Mercury. The tank must hold this vacuum for a given period of time, depending on the adopted protocol. Any leakage is considered a failure.

ADVANTAGES: This test is easily and quickly administered, and pass/fail is fairly obvious.

DISADVANTAGES: Installer must purchase and maintain testing equipment.

When selecting the method of testing, the manufacturer/engineer should be required to approve the test method procedure to insure that the actual test loading condition does not exceed the “engineered design” loading condition.

The longer a test is performed, the more accurate the result to identify relatively small leaks. Length of test must be balanced with the increased cost of the longer test.

Repairs can be made to tanks failing watertight test provided the structural integrity has not been compromised.

TANK EFFLUENT CHARACTERISTICS

Designer must ensure that the various components of the treatment train are compatible. This edition of the model code does not provide an evaluation scheme to classify effluent quality from the septic tank component. Like other treatment train components, the quality and volume of the influent are major determinants of effluent quality characteristics.

Septic tanks should be sized to minimize the required maintenance. Smaller tanks will require pumping more often than larger tanks with the same flow. Effluent filters, screens or other methods are strongly encouraged to prevent large solids from passing to downstream component during operation. Care should be taken to prevent solid flows during servicing.

Provide Access to Components

Proper maintenance and repair are important to the long-term success of all systems.

If maintenance workers cannot easily or adequately access components, maintenance will either be ignored or put off until a crisis happens. Access at ground level or above is highly recommended for all tanks and/or components contained therein. Openings should be of adequate size to facilitate maintenance. See the code document for language and guidance on tank access.

APPENDIX F

Don't Flush Listing

ITEMS TO AVOID FLUSHING INTO AN ONSITE SYSTEM

The following guidance is a collaborative effort of wastewater professionals within the National Onsite Wastewater Recycling Association (NOWRA). The purpose is to identify common issues that can cause problems with the operations of newer onsite treatment and traditional septic systems. Many operational problems exist today because owners are either unaware of the results of daily practices to these systems.

NOWRA's goal is to ensure that owners are educated and informed about the safe practices for their treatment systems in order to avoid costly repairs and to protect groundwater quality. The items listed below are known to have caused failures of onsite treatment systems and must be considered if waste generated by/from a particular site will contain them in excessive quantities. Since excessive is a subjective word, it is highly recommended by NOWRA that you share concerns with your Wastewater Professional to come up with a treatment strategy for your particular needs.

A list of NOWRA wastewater system professional services is found on www.septiclocator.com

Inert Materials: Plastic, rubber, scouring pads, dental floss, kitty litter, cigarette filters, bandages, hair, mop strings, lint, rags, cloth and towels do not degrade in an onsite treatment system. Inert materials will build up solids and lead to system malfunction, clogging or increased pump out frequency.

Paper Products: Disposable diapers, paper towels, baby wipes, facial tissues, baby wipes, lotioned, scented or quilted Toilet tissue, moist toilet paper, do not dissolve readily in an onsite treatment system. Excessive amounts of toilet tissue will also not decompose. All can lead to system malfunction, back-up or increased pump out frequency.

Food Wastes: Do not put animal fats, bones, grease, coffee grounds, citrus and melon rinds, corn cobs, egg shells down the sink. Garbage disposal use should be limited to waste that cannot be scooped out and thrown in the trash. Spoiled dairy products and yeasts from home brewery or baking may cause excessive growth of microbes that do not degrade sewage.