

**Chapter 246-272C WAC
On-Site Sewage System Tanks**

Preliminary Significant Analysis

August 2009

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Section 1: Introduction

Overview

Based on local health jurisdiction and Department of Health (the department) reporting, more than 800,000 on-site sewage systems (OSS) are in use in Washington State, which equates to approximately 31 percent of households in Washington.¹ Each year approximately 15,000 to 20,000 new or repair/replacement OSS are installed.² Properly designed and constructed OSS protect public health by reducing public exposure to raw sewage, and minimizing groundwater or surface water infiltration or contamination.

A sewage tank is one of multiple barriers designed to interrupt or disrupt, and prevent disease transmission. Public health is protected when these barriers remain in place. These multiple barriers remove pathogens from sewage, providing important safety measures for near-by drinking water systems, shellfish growing areas, and water recreation and tourism areas. Examples of sewage tanks include:

- Septic tanks
- Grease interceptors
- Pump tanks
- Holding tanks
- Tanks in proprietary treatment products registered under chapter 246-272A WAC

Washington State currently regulates on-site sewage systems through two separate rules: Small systems – Chapter 246-272A (systems below 3,500 gallons/per/day), and Large systems – Chapter 246-272B (systems 3,500 – 100,000 gallons/per/day). Each of these regulations requires the department to review and approve the sewage tank component of an on-site sewage system. However, neither regulation specifies the design and construction standards or establishes the process to receive department review and approval.

The proposed rule, chapter 246-272C WAC, establishes design and construction standards, sewage tank design and construction plan review and approval procedures, and a registry of sewage tanks built from department approved design and construction plans. These requirements will provide for well-designed and structurally sound sewage tanks and establish a statewide minimum standard for septic tank design and construction.

Background on the Sewage Tank Rule

In the early 1990's, an ad hoc committee, the Septic Tank Standards Development Committee, formed to assist the department in developing a recommended guidance and standards document for sewage tank design and construction. The ad hoc committee considered issues and solutions in such areas as tank design and construction standards, regulatory relationships, and administrative recordkeeping procedures. The department began using their final draft, *Standards for On-Site Wastewater System Tanks* (tank standards), dated August 1996, to review and approve tanks for use in Washington State.

¹ State of Washington, Department of Health, Decision package and Fiscal note, October 2007

² Same

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The department convened an on-going Technical Review Committee (TRC) to provide technical input related to on-site sewage systems and to develop recommendations on sewage treatment technologies. In 2003, the TRC reviewed the sewage tank standards and provided the department with recommendations. The department planned to use input from the TRC and from stakeholder workshops to develop a new sewage tank rule. The State Board of Health (the board) adopted Chapter 246-272A WAC (small systems rule) in July 2005. The rule established its full effective date as July 1, 2007.

After the adoption of the small systems rule, the board began the rulemaking process for the sewage tanks rule by filing a CR-101, Pre-proposal Statement of Inquiry, with the Office of the Code Reviser in February 2006. Because the department and local health jurisdictions were expending significant resources preparing to implement the new small systems rule, the board instructed the department to develop guidance as an interim measure and continue the sewage tanks rulemaking process after the guidance was implemented. The department incorporated in the new guidance document any changes identified during the implementation phase for chapter 246-272A WAC. The department also coordinated the guidance document release date with the full effective date of the small systems rule. The guidance document, *Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance, On-site Sewage System Tanks*, (RS&G) was finalized and took effect on July 1, 2007.

In February 2008, the department held scoping meetings in Tumwater and Moses Lake to continue the sewage tanks rulemaking process. The purpose of the scoping meetings was to brief interested parties on the history of the sewage tank rulemaking efforts, review the July 2007 RS&G, and discuss emerging issues. The department asked for input on rulemaking topics and requested volunteers to participate on a Sewage Tanks Rule Advisory Panel (the panel). The panel met regularly over the next few months to discuss issues and provide the department recommendations based on the 2007 On-site Sewage Systems RS&G.

The department prepared a draft rule and held workshops in April 2009. The department reviewed the comments received with the panel in May 2009 and incorporated suggested changes into the proposed rule.

Section 2: What is the scope of the rule?

Focus of the Proposed Rule

The proposed rule provides manufacturers, design engineers, and on-site sewage system reviewing agencies consistent sewage tank design and construction standards. Placing these standards in rule:

- Protects public health by ensuring sewage tanks have structural integrity to prevent leaking or collapsing;
- Creates a “level playing field” among manufacturers;

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- Establishes a Department of Health design review and approval process; and
- Creates a registered list from approved plans that provides industry professionals and local health jurisdictions one consolidated source to find prefabricated sewage tanks that meet all state requirements.

Portions of the Rule Requiring Significant Analysis

The department and the board determined the sewage tanks rule is a significant legislative rule and subject to the requirements under RCW 34.05.328. A significant legislative rule is defined in 34.05.328(5)(c)(iii)(A-C) as a rule that:

- Adopts substantive provisions of law pursuant to delegated legislative authority, the violation of which subjects a violator of such rule to a penalty or sanction;
- Establishes, alters, or revokes any qualification or standard for the issuance, suspension, or revocation of a license or permit; or
- Adopts a new, or makes significant amendments to, a policy or regulatory program.

The department evaluated the proposed sewage tank rules to determine which sections contain significant changes and, as such, require further analysis. Sections containing significant changes are identified in the table below and are analyzed in the Section-by-Section Analysis (Section 5). All other sections include non-significant changes as indicated in the table below.

Number	Section Title	Significant Change?
	<i>Purpose and Administration</i>	
0001	Authority, Purpose, and Objectives	No. All new requirements are analyzed in the Section-by-Section Analysis.
0005	Administration	No. All new requirements are analyzed in the Section-by-Section Analysis.
0010	Applicability and Relationship to Other Rules	No. All new requirements are analyzed in the Section-by-Section Analysis.
0020	Definitions	Yes. All new requirements are analyzed in the Section-by-Section Analysis under the section in which they are used.
	<i>Sewage Tank Approvals and Registered List Requirements</i>	
0110	General Requirements	No. Restates requirements of chapters 246-272A and 246-272B WAC.
0120	Application Process for Sewage Tank Design and Construction Plan Approval	Yes

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Number	Section Title	Significant Change?
0125	Required Application Information	Yes
0130	Sewage Tank Registered List Requirements: Prefabricated Tank	Yes
0140	Sewage Tank Registered List Renewal	Yes
0150	Transition from the Approved On-site Sewage Tanks List to the Sewage Tank Registered List	No. Administrative/procedural changes only.
0160	Post-construction Cast-in-place Sewage Tank Requirements	No. Restates requirements of chapters 246-272A and 246-272B WAC.
<i>Design and Construction Requirements</i>		
0200	Design Drawing Requirements for Sewage Tanks	Yes
0210	General Design and Construction Requirements for Sewage Tanks	Yes
0220	Additional Requirements for Septic Tanks	Yes
0230	Additional Requirements for Grease Interceptor Tanks	Yes
0240	Additional Requirements for Pump Tanks	Yes
0245	Additional Requirements for Trash Tanks	Yes
0250	Identification	Yes
<i>Waivers, Compliance, and Enforcement</i>		
0500	Waiver of State Regulations	No. Procedural requirements.
0520	Enforcement	No. Procedural requirements.
0540	Notice of Decision: Adjudicative Proceeding	No. Procedural requirements.
0650	Severability	No. Procedural requirements.

Section 3: What are the general goals and specific objectives of the proposed rule's authorizing statute?

RCW 34.05.328(1)(a) requires that agencies clearly state in detail the general goals and specific objectives of the statute that the rule implements. Several statutes direct the department and the board to protect public health from exposure to human sewage.

Statutory Goals and Objectives

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The statutes outlined in this section provide the basis for protecting public health through regulating sewage exposure and the systems that treat sewage.

1. RCW 43.20.050

RCW 43.20.050 authorizes the board to adopt rules, standards, and procedures that protect public health in a variety of settings. For OSS and its components, the board shall adopt rules and standards to prevent, control, and abate health hazards and nuisances related to sewage.

RCW 43.20.050(2) In order to protect public health, the state board of health shall:

(b) Adopt rules and standards for prevention, control, and abatement of health hazards and nuisances related to the disposal of wastes, solid and liquid, including but not limited to sewage... and other environmental contaminants; adopt standards and procedures governing the design, construction, and operation of sewage, garbage, refuse and other solid waste collection, treatment, and disposal facilities...

Additionally, RCW 43.20.050(3) requires the board adopt rules for the design, construction, installation, operation, and maintenance of those OSS with design flows of less than three thousand five hundred gallons per day.

2. RCW 43.70.005

The legislature recognizes the importance of a healthy environment for work, social, and economic vitality.

The legislature finds and declares that it is of importance to the people of Washington state to live in a healthy environment ... The legislature further finds that the social and economic vitality of the state depends on a healthy and productive population... Further, it is the intent of the legislature to improve illness and injury prevention, and health promotion.

3. RCW 43.70.130(3)

The legislature mandates the department to enforce all rules, regulations, and orders of the board.

The secretary of health shall:

(3) Strictly enforce all laws for the protection of the public health and the improvement of sanitary conditions in the state, and all rules, regulations, and orders of the state board of health...

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4. RCW 69.30.030

The legislature recognizes the importance of protecting public health through protecting shellfish harvest areas from contamination. This section authorizes the State Board of Health to adopt rules for sanitation, water supply, sewage, and wastewater disposal.

The state board of health shall cause such investigations to be made as are necessary to determine reasonable requirements governing the sanitation of shellfish, shellfish growing areas, and shellfish plant facilities and operations, in order to protect public health and carry out the provisions of this chapter; and shall adopt such requirements as rules and regulations of the state board of health. Such rules and regulations may include reasonable sanitary requirements relative to the quality of shellfish growing waters and areas, boat and barge sanitation, building construction, water supply, sewage and waste water disposal...

Collectively, the general goals of these statutes focus on protecting public health and creating a healthy environment that supports public health for the people who live in Washington State. The legislature clearly intends that the term “health” includes both social and economic factors.

The specific objectives of these statutes focus on:

- Reducing and preventing exposure to sewage;
- Preventing and controlling infectious and non-infectious diseases;
- Maintaining safe drinking water sources-ground water, surface water, springs;
- Protecting water sources where people relax and play;
- Protecting shellfish growing areas from sewage contamination; and
- Recognizing the link between public health and social and economic vitality.

Section 4: What is the justification for the proposed rule?

RCW 34.05.328(1)(b) requires that agencies determine that the rule is needed to achieve the general goals and specific objectives stated under (a) and analyze alternatives to rulemaking and the consequences of not adopting the rule.

The sewage tank rule meets the general goals by assuring all sewage tanks are structurally sound and designed and constructed to withstand the site conditions. Further, the rule intends to meet the specific objectives by establishing design and construction standards, review and approval requirements, and creating a process to register sewage tanks built from reviewed and approved designs. Through these measures, the proposed rule meets the general goals and specific objectives of the applicable statutes.

The department assessed the proposed rule and determined it achieves goals and objectives of the authorizing statute because there are no feasible alternatives to rulemaking.

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Other rules do not address sewage tank design standards and review and approval requirements. Additionally, no other rule offers a streamlined approach for registering prefabricated sewage tank models and sizes built from design and construction plans the department approves. The alternative, continuing to rely on the RS&G, is not acceptable because guidelines are not enforceable.

The consequences of not adopting a rule include:

- Continuing public health risk from unenforceable standards;
- Leaving the design and construction standards open to interpretation and thus, more vulnerable to irregularities, which include on-site sewage system failure;
- Losing the efficiencies gained through using a registered list approach and reverting to a time-consuming individual review and approval methodology for prefabricated sewage tanks; and
- Continuing an inequitable regulatory framework for manufacturers that does not allow for a “level playing field” among manufacturers.

Section 5: What are the Probable Costs and Benefits of Rule?

RCW 34.05.328(1)(d) requires agencies to determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

The department evaluated the qualitative and quantitative costs and benefits, taking into account the specific directives of the statute and on-site sewage system regulations. This section is organized to view costs and benefits using two methods. The first method analyzes each section deemed significant and identifies the costs and benefits of that section (section-by-section). The second method looks at potential societal costs that could be caused by leaking or failing sewage tanks. Avoiding these types of costs by preventing disease outbreak or pollution events is a primary benefit of regulating sewage tanks.

Cost estimates gathering process

The department estimated there are less than one hundred manufacturers producing sewage tanks in Washington State. The department recognized that while some of these manufacturers comply with the current department guidance provided in the RS&G, not all manufacturers comply with the RS&G. As a result, three cost scenarios emerged:

1. Some tanks meet the provisions of the current RS&G. These tanks were approved through the department or a local health jurisdiction following the provisions of the current RS&G.

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2. Some tanks currently included in the approved sewage tanks list meet some, but not all, of the provisions of the 2007 RS&G. This occurred when the department allowed tanks on the list from local health jurisdictions that have a less stringent review and approval process than that outlined in the 2007 RS&G.
3. Some tanks currently included in the approved sewage tanks list do not meet the provisions of the 2007 RS&G. This occurred when the department allowed tanks on the list from local health jurisdictions that do not have a sewage tank review and approval process.

Where possible, the department accounts for these scenarios by reporting the costs to comply with the rules as a range.

To gather cost information, the department prepared a brief informal cost survey for volunteer manufacturers to respond to via email in June 2009. Volunteers were requested from the Sewage Tanks Rule Advisory Panel and from participants of the draft rule workshops conducted in April 2009. To be sure that at least one manufacturer from each county was included in the survey, department staff reviewed the approved sewage tanks list to select manufacturers from counties not represented in the volunteer group. These additional manufacturers were contacted and agreed to participate in the survey as well.

The initial survey included the assumption that all counties were complying with the current RS&G and so estimated no new costs related to the proposed rule. (See Appendix A, June 11, 2009 Email Survey) The response from survey volunteers was that many counties do not use the RS&G and that there would be costs associated with the proposed rule for many companies. Some respondents also provided cost estimates for the portions of the rule that created new costs.

A second email was prepared with the revised assumptions and cost ranges. (See Appendix B, June 25 Email Survey) Volunteers were asked to provide additional information if their cost estimates were different than those provided in the email. No additional or conflicting information was received.

The department has included the cost information provided by manufacturers in the Section-by-Section Analysis below.

Section-by-Section Analysis – Costs and Benefits

Section 0120 and 0125 - Application Requirements

Department review and approval of sewage tanks is required in WAC 246-272A-0230(2)(b), WAC 246-272B-11501(4)(b), WAC 246-272A-0250(3)(d), and WAC 246-272B-13501(2)(c) for both prefabricated tanks and cast-in-place tanks as part of on-site sewer system review and approval. Sections 0120 and 0125 of the proposed rule establish the application process for approval of all sewage tank design and construction plans and

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identify required application information. These sections also identify department actions related to application review and approval. If a design and construction plan for a prefabricated sewage tank is approved by the department, the tank is registered. If a design and construction plan for a cast-in-place tank is approved by the department, the manufacturer may proceed with construction.

Costs: The costs of the application process include employee time to prepare the department application, gather supporting documents (the cost to obtain these documents is identified under section 0200 of this analysis), and material costs for office supplies. Since some counties adopted the entire RS&G and others did not use a formal approval process to include sewage tanks on the registered county list, there is a range of costs for this activity. For those companies operating in counties that have a process substantially similar to that of the RS&G, the department estimates there is no additional cost for these companies. For companies operating in counties with a minimal approval process, the department assumes this is a new cost that could be as much as \$150 for labor and materials for each application.

For prefabricated sewage tanks, a manufacturer may use the same design and construction plan to build several sizes and models of sewage tanks. For this reason, the department assumes manufacturers of prefabricated tanks will submit as many tank designs as possible in a single application, and the number of applications may range from one to five for a single company. The total cost is estimated at a range from \$0 for companies that currently comply with the RS&G to \$150 for companies that submit a single application up to \$750 for companies that submit up to five applications.

Benefits: Public health is protected by requiring department review and approval of sewage tank design and construction plans prior to use. Using approved designs and plans reduces the possibility that poorly designed sewage tanks become part of on-site sewage system designs.

Designers, design engineers, installers, manufacturers, local health officers, and the public benefit from knowing and understanding what is required to obtain department review and approval under this rule.

Creating a flexible application process that accommodates multiple styles and sizes of tanks built from approved design and construction plans into one application streamlines the review and approval process without diminishing the structural integrity of the sewage tanks.

Sections 0130 and 0140 - Sewage Tank Registered List Requirements and Registered List Renewals

These sections establish the requirements for the creation and maintenance of the *Sewage Tank Registered List* for prefabricated sewage tanks and the expiration date for registration. This section also identifies the circumstances under which the department may remove a tank from the registered list, and the steps a manufacturer must take to

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ensure a registered tank remains on the registered list, including registration renewal procedures, required information, and deadlines.

Costs: The costs for initial and ongoing inclusion on the *Sewage Tank Registered List* are included in the analysis of sections 0120 and 0125 (application procedures and information) and the analysis of sections 0200 (design drawing requirements).

Benefits:

The benefits of establishing a registered list are:

- Providing a single place to locate approved sewage tanks; and
- Avoiding costs associated with multiple design reviews (and approvals) on the same set of design and construction plans.

Manufacturers – The primary benefit for manufacturers is an objective and consistent regulatory framework. All manufacturers will be subject to and must meet the same statewide requirements.

Designers and Installers – Creating a registered list in rule makes it easier for designers and installers to select qualified sewage tank sizes and models for use in on-site sewage systems.

Local health officers and the department – The primary benefit of the list is expediency. Local health jurisdictions and the department will be able to check one approved source to verify whether an on-site sewage system design uses an eligible sewage tank size and model.

Section 0200 - Design Drawing Requirements

This section describes what a design engineer must include on the design drawing of the sewage tank. This section also lists the types of calculations and loading requirements the design engineer must submit to demonstrate that the sewage tank is structurally sound.

Costs: The costs for this activity include the services of a design engineer to create drawings of the sewage tank that meet the requirements of the chapter. Since some counties adopted the entire RS&G and require engineered plans and others do not require engineered plans for approval, there is a range of costs for this activity. For those companies operating in counties that have a process substantially similar to that of the RS&G, the department estimates there is no additional cost for these companies. Based on survey responses, for companies operating in counties with no design drawing requirements, the department assumes this is a new cost that could range from \$500 to \$1500 per tank type for design engineer services depending on the complexity of the tank being designed.

Since tanks are often designed by type with incremental sizes included in a single design, the department assumes that manufacturers will include multiple tank sizes in a single

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design. As a result, the department assumes that the number of engineered designs may range from one to five for a single company. The total cost is estimated at a range from \$0 for companies that currently comply with the RS&G, to \$500 for companies that submit a single set of less complex engineered documents, to \$7500 for companies that submit up to five more complex engineered documents.

Benefits: Consistent standards for design and construction drawings with appropriate calculations help ensure that tanks are structurally sound. Design engineers benefit by knowing the extent of information and level of detail required for department review and approval of the design drawings component.

Section 0210 - General Design and Construction Requirements

There is no federal rule for sewage tank design and construction. The board is left to develop minimum technical standards for Washington State. Between 2006 and the present, department staff thoroughly researched on-site sewage tank design and construction standards. Staff conducted literature searches, reviewed technical articles, reviewed technical reports, and analyzed other states' sewage tank requirements.

The design and construction requirements in the proposed rule incorporate this data and research, along with recommendations from the 2008 Sewage Tank Rule Advisory Panel. The changes reflect existing design practices and construction standards throughout the United States and update those found in Washington State's *Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance, On-site Sewage System Tanks*, July 1, 2007.

This section establishes sewage tank design and construction standards and criteria. The section:

- Specifies tank loads;
- Lists acceptable construction materials;
- Requires structurally sound and watertight connections and components;
- Specifies the purpose, materials, and function of inlets, outlets, and inter-compartmental fittings and baffles;
- Describes seal and gasket performance criteria and lists acceptable materials and alternates;
- Requires a watertight sewage tank and encourages water-tightness testing in the field;
- Prescribes air space, venting, and confined space criteria;
- Allows manufacturers to use any form or process that meets the standards;
- Allows purpose rated coatings that come with a warranty; and
- Specifies access opening criteria, such as - opening diameter, maximum distance, location, secured or lockable lids, and structurally sound risers and lids.

The only measureable cost of the proposed rule is for tanks that may need additional reinforcement to meet the design requirements.

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The following is a list of specific changes from the existing RS&G to the proposed rule:

- Removes the exclusion for design and construction review for tanks that are components of proprietary treatment products tested under the National Sanitation Foundation American National Standards Institute/National Science Foundation (ANSI/NSF) Standard 40 protocol or Environmental Protection Agency (EPA) Environmental Technology Verification Program (ETV) protocol;
- Changes the definition of professional engineer to include professional engineers licensed in any state with the appropriate experience;
- Allows concrete baffles if they are cast when the tank is poured; and
- Allows 18” access openings for tanks of 2000 gallons or less and maintains 20” access opening for tanks over 2000 gallons.

Costs:

The department assumes most tanks produced under current requirements and guidance meet the reinforcement requirements of these proposed rules. However, some small tanks may need additional reinforcement to meet the design requirements established in this chapter. Based on survey responses, some companies may incur engineering costs ranging from \$75 to \$200 per tank design to meet the requirements of this section. The total cost is estimated at a range from \$0 for companies that currently meet the proposed rule requirements to \$75 for companies that require a single set of engineered documents to \$1000 for companies that require up to five engineered documents.

For those companies operating in a county that does not have a formal approval process and does not currently require water-tightness certification, the costs for this activity could include the initial cost of equipment and the ongoing cost of tank testing necessary to maintain certification. These costs are estimated at \$1500 for equipment and \$30 to \$60 per tank test. The department assumes that companies will test tank types randomly to make certain the tank design and manufacturing processes used for construction are adequate to maintain water-tightness. For companies operating in a county that adopted the RS&G, there is no substantial difference between the rule and the proposed requirements, so there is no estimated additional cost for these companies. Bases on survey responses, the costs are estimated to include a one-time expense of \$1500 for equipment and a range of costs for random testing from \$30 to \$1000 for companies who must begin water-tightness testing under the proposed regulations. Companies whose facility is certified from National Precast Concrete Association testing meet the requirements of the rule and the department assumes there will be no additional costs.

Of the specific changes from the RS&G to the proposed rule, the department determined that only one is stricter – the removal of the ANSI/NSF and ETV exclusion. The department assumes this change may impact some proprietary device companies who use tanks that fall under this exclusion for their products. Even so, the department assumes that these companies will be able to meet their needs by choosing tanks from the department approved registry or by requesting approval of the tanks used in their designs

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at the time the system is reviewed and approved. Our assumption is that neither approach will increase costs for these companies.

The department determined the other specific changes from the RS&G to the proposed rule are mitigation measures that provide flexibility and result in unquantifiable cost savings.

Benefits: Properly designed and constructed on-site sewage systems and components prevent or reduce public health risk from contact with or contamination from inadequately treated sewage. As noted in the 2005 Significant Analysis³, the sewage tank is the simplest and least expensive treatment process in a typical on-site sewage system. Its primary purpose is to reduce the solids in the effluent before discharge into the drainfield, which protects the drainfield from plugging. When drainfields plug-up, effluent backs-up into structures or leaches into the surrounding area and contaminates groundwater or drinking water. Similar outcomes occur with cracked, deformed, or leaking sewage tanks. Design and construction requirements or standards assure the sewage tank component of the onsite sewage system is designed and built to operate correctly.

Specific Industries: One of the main benefits of the proposed rule section is reduced costs to industries that rely on clean water. For example, recreation areas and shellfish harvest areas close when receiving water reaches certain levels of contamination. For the shellfish industry, no harvesting translates to lost productivity and reduced profit. For water recreation areas, lost income occurs when the area is closed to recreational use. Depending on the number of months the water recreation area is closed and not operating, this could be a significant loss of revenue. For the shellfish industry, the value of the loss can go beyond the dollar value of the harvest to include costs associated with downgraded commercial growing areas. Between 1985 and 2002, 25 percent of the approved commercial shellfish growing areas had been downgraded. In response to reduced commercial growing areas, shellfish growers must grow more shellfish in smaller areas to meet market demands for the products.⁴ This space overuse can have long term consequences for the growing areas.

Communities: Communities save costs by reducing the potential for waterborne disease transmission and contaminated ground water or surface water. Properly designed and constructed sewage tanks reduce the number of incidences of on-site sewage systems backing up into structures or contaminating groundwater or drinking water.

Homeowners: In addition to industries, on-site sewage system owners also benefit from properly designed and constructed sewage tanks. Owners experience reduced long-term costs, including repair and replacement costs, over the life of the system. Homeowners along waterways receive the benefit of unrestricted recreational water activities and personal shellfish harvesting.

³ Chapter 246-272A WAC, Draft Significant Analysis, May 2005, p. 48

⁴ Chapter 246-272A WAC, Draft Significant Analysis, May 2005, p 20

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0220 - Additional Requirements for Septic Tanks

This section establishes additional requirements for septic tanks. General requirements for all sewage tanks are established in section 0210. Septic tanks are a subset of sewage tanks and are the most common type used. This section reflects industry standards and assigns criteria for septic tanks including:

- A minimum of 2 compartments, sizing and liquid depth restrictions;
- Specific inlet criteria and standards, such as location, length, and pipe extensions;
- Specific outlet criteria and standards, such as liquid depth, length, and location;
- Designs that accommodate an effluent screen or filter;
- Inter-compartmental wall fitting criteria for location and circumstances when slots or ports used as inter-compartmental wall fittings;
- Inter-compartmental wall standards to restrict solids and withstand adjacent compartment pumping;
- Specific air space volumes for scum storage;
- Specific length to width ratios standards based on liquid capacity; and
- A 3 foot minimum liquid capacity depth.

The proposed rule differs from the current RS&G in that it does not include the requirement to install effluent screening devices. The proposed rule also changes the current RS&G standard from a maximum liquid depth to requiring a length to width ratio.

Costs: Based on stakeholder input and survey responses, the department assumes there are no additional costs for the requirements established in this rule section.

Benefits: Ensuring septic tanks are designed and constructed appropriately in on-site sewage systems benefits the public. Public health is protected by decreasing the risk of sewage surfacing or backing-up into structures due to an on-site system failure caused by a tank not removing solids to a sufficient level.

0230 – Additional Requirements for Grease Interceptor Tanks

This section establishes additional requirements for grease interceptors. General requirements for all sewage tanks are established in section 0210. Grease interceptor tanks are a subset of sewage tanks that remove grease from the effluent and treat it separately before discharging to the drainfield. They are most commonly used as part of on-site sewage systems for restaurants and commercial kitchens. This section reflects industry standards and assigns criteria for grease interceptors including:

- A minimum of 2 compartments, sizing and liquid depth restrictions;
- Specific inlet criteria and standards, such as location, length, and pipe extensions;
- Specific outlet criteria and standards, such as liquid depth, length, and location;

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- Inter-compartmental wall fitting criteria for location and circumstances when slots or ports used as inter-compartmental wall fittings;
- Inter-compartmental wall standards to restrict solids and withstand adjacent compartment pumping;
- A 3 foot minimum liquid capacity depth; and
- Length to width ratio instead of a maximum liquid depth to provide adequate depth for treatment.

Costs: The requirements for grease interceptors in the proposed rule are currently included in the RS&G. Based on stakeholder input and survey responses, the department assumes there are no additional costs for the requirements established in this rule section.

Benefits: Public health is protected from waterborne disease transmission and contamination from surfacing sewage. Properly designed and constructed grease interceptor tanks reduce these risks when appropriately integrated as part of on-site sewage systems.

Sections 0240 and 0245 Additional Requirements for Pump Tanks and Trash Tanks

These sections identify standards and criteria for pump tanks and trash tanks. (General requirements for all sewage tanks are established in section 0210.) Pump tanks and trash tanks are subsets of sewage tanks that are used under certain circumstances in combination with septic tanks.

Pump tanks require a sanitary tee or baffle that is installed in the inlet and extends at least 8 inches below the invert elevation of the inlet pipe. Gravity fed pump tanks do not require a sanitary tee or baffle. Trash tanks can only be used for pre-treatment and the volume cannot be used as part of the calculations for the septic tank volume. Trash tanks are not required by the proposed rule.

Costs: These proposed requirements for pump tanks are currently included in the RS&G. Standards for trash tanks are not included in the current RS&G. However, based on stakeholder input and survey responses, the department assumes there are no additional costs for the requirements established in this rule section.

Benefits: Public health is protected when standards and criteria make certain pump and trash tanks are designed, constructed, and appropriately integrated components of on-site sewage systems.

0250 - Identification

This section requires that manufacturers permanently identify each sewage tank produced. The section specifies the information required and where the information is displayed on the tank.

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Costs: The department assumes a minimal increase in cost for this requirement of \$1 to \$5 per tank for materials and employee time. The total cost is estimated at a range from \$0 for companies that currently meet the proposed rule requirements to \$50 for companies that produce a minimal number of tanks to \$650 for larger companies.

Benefits: Public health is protected when faulty or leaking sewage tanks are removed, usually due to a repair of a damaged or failing on-site sewage system. By requiring manufacturers to permanently identify sewage tanks, the department will be able to track faulty sewage tank models. If the department identifies a consistent problem with the tank model, the department can delay renewal and, if unresolved, remove that tank from the *Sewage Tank Registered List* and the marketplace.

Manufacturers - Manufacturers benefit from being held to the same standards statewide. The proposed rule lists identification requirements every manufacturer must meet.

Local Health Jurisdictions – Local health jurisdictions benefit from permanently identified sewage tanks. With this proposed requirement, sewage tanks can be tracked as part of operation and maintenance documents, particularly those related to on-site sewage repair or replacement.

Cost Summary

The proposed rule, chapter 246-272C WAC, establishes design and construction standards, sewage tank design and construction plan review and approval procedures, and a registry of sewage tanks built from department approved design and construction plans. As discussed previously, these requirements are largely based on the existing RS&G that took effect in July 2007. As the preceding sectional analysis demonstrates, many tank manufactures are already manufacturing tanks based upon the RS&G. For these manufactures, the cost impact of the proposed rule will be minor. For the other manufacturers that will have to make changes to their application process, tank design, or manufacturing process to comply with the rule, the department identified compliance costs associated with the proposed rule that range from \$2,260 to \$12,400.

The department, however, also identified potential cost reduction opportunities although they were not assigned a specific value, for example, a manufacturer can reduce application costs by using one application for two tank sizes, or a homeowner can have reduced costs over the lifetime of their on-site sewage system because tank failure is less likely.

Benefit Summary

Properly designed and constructed sewage tanks provide sewage treatment, reduce the risk of direct exposure to untreated sewage, and minimize the risk of contaminating water

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sources, such as drinking water, ground water, and surface water. The primary benefits of this proposed rule include:

- Creating a flexible sewage tank review and approval process that accommodates multiple tank styles and sizes on a single application, and is based on consistent design and construction requirements, .
- Reducing the risk of ground or surface water contamination that could:
 - Cause a waterborne disease outbreak;
 - Contaminate shellfish growing areas; or
 - Contaminate waterways used for recreation.
- Reducing the failure rate for on-site septic systems for individual homes that could:
 - Cause sewage to back up into homes, damaging homes and posing a public health threat; or
 - Damage systems so home owners would have to pay to replace their systems.

Creating a flexible sewage tank review and approval process that accommodates multiple tank styles and sizes on a single application, and is based on consistent design and construction requirements

Consistent standards for design and construction drawings with appropriate calculations help ensure tanks are structurally sound. Design engineers benefit by knowing the extent of information and level of detail required for department review and approval of the design drawings component of the application. This will make the tank design process more uniform which will ultimately reduce the engineering costs for applications.

Manufacturers can now use one application for two tank sizes or reduced homeowner costs over the lifetime of their on-site sewage system. This will reduce their cost in applying for tank approval. Avoiding costs associated with multiple design reviews (and approvals) on the same set of design and construction plans.

Reducing the risk of ground or surface water contamination

The sewage tank is a primary treatment component in an on-site sewage system. These requirements will ensure sewage tanks are well designed and structurally sound. As stated earlier, sewage tanks are one of the multiple barriers in an on-site sewage system that interrupt or disrupt, and prevent disease transmission. Public health is protected when these barriers remain in place. Sewage tanks help remove pathogens from sewage, providing important safety measures for near-by drinking water systems, shellfish growing areas, and water recreation and tourism areas.

If sewage tanks are not designed and constructed properly, they can contribute to contamination, pollution, and disease outbreaks. Untreated sewage carries bacteria and viruses that cause several diseases including cholera, typhoid, and viral gastroenteritis

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(e.g. Norovirus). These diseases are transmitted by direct contact: Either person-to-person or through ingesting contaminated water or food.

There are a variety of costs that can be associated with these events, including:

- Medical – health care for outbreak patients, lab costs, and any epidemiological studies;
- Productivity loss;
- Property value reduction;
- Repair or replacement of community wastewater or drinking water components;
- Rehabilitating water bodies;
- Lawsuits and legal fees; and
- Death, particularly for immune compromised individuals when enteric disease occurs. (The United States typically uses a figure of \$6 million per death when determining cost of various events).

The 2003 Norovirus outbreak in Samish Bay, WA discussed in the 2005 Significant Analysis illustrates these types of costs. Since Norovirus is not a reportable condition, it is difficult to determine how many people fell ill during this outbreak. In addition to the human illnesses associated, the economic impact of this 2003 outbreak to the shellfish industry included:

- Lost sales – \$130,000 (combined) for shellfish companies.
- Product recall costs – over \$20,000 in issued credits and unspecified costs to notify affected states and purchasers.
- Lay-offs – 11 employees.

Beyond effects to the shellfish companies, other businesses also felt the effects. Local restaurants and retail markets expended additional costs to locate and purchase shellfish product from elsewhere. Lastly, when an outbreak occurs, recreational use of waterways is restricted. The cost of this restriction is not quantified in this analysis.

Reducing the failure rate for on-site septic systems for individual homes

In addition to the costs of illness and business-related costs identified above, there are direct costs to home owners when a system tank fails. The primary purpose of a sewage tank is to reduce the solids in the effluent before discharge into the drainfield. This protects the drainfield from plugging. When drainfields are plugged, effluent can back-up into structures, damage the home, and pose a public health threat to the inhabitants.

Similar outcomes occur when sewage tanks crack, are deformed, or leak. Leaking tanks can also cause the entire septic systems to fail if groundwater intrudes into the tank. Drainfields are designed with specific flows. When these systems pump groundwater that has leaked into the tank into the drainfields, the drainfields will fail. The cost to

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replace a failed on-site sewage system could range from \$8,000 to \$17,000, based on the size and type of the system.⁵

Probable Costs and Probable Benefits Conclusion

Society benefits by adopting standards that apply to sewage tank design and construction. Eliminating one waterborne illness event of Norovirus includes both quantifiable and qualitative benefits. In the example provided, quantifiable benefits start at a minimum of \$150,000, which accounts for lost sales and product recalls only. An upper limit to the range is difficult to quantify given that Norovirus is not a reportable disease. Costs associated with lay-offs, individual illnesses (i.e., medical costs), and changing behaviors due to the outbreak are not calculated.

In summary, the proposed rule also offers ways to reduce costs to manufacturers and homeowners. The department also identifies qualitative benefits of the proposed rule that focus on incremental increases in sewage tank quality and process efficiencies. The combination of identified quantitative and qualitative benefits identified demonstrates that consistent application of sewage tank design and construction standards will help provide a healthier and safer environment for Washington State residents. These improvements translate into measurable benefits attributed to lower societal costs of illness outbreaks related to environmental pollution.

Based on this analysis, the department determined that the probable benefits of the requirements proposed in chapter 246-272C WAC are greater than the probable costs.

Section 6: What alternative versions of the rule were considered? Is the proposed rule the least burdensome approach?

RCW 34.05.328(1)(e) requires that agencies determine, after considering alternative versions of the rule and this analysis, that the rule being adopted is the least burdensome alternative for those required to comply.

The department assessed compliance burdens of the various components of the proposed rule throughout the rulemaking process. The department incorporated changes to the proposed rule at both the RS&G to draft rule stage and the draft rule to proposed rule stage. At each stage, the department evaluated compliance burdens for manufacturers, design engineers, installers and designers, and local health jurisdictions. The department

⁵ Discussion with Jim Hunter and Associates, Septic System Designers in Thurston County.

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took into consideration these burdens and in many instances reduced the potential compliance costs by allowing alternate methods to achieve the desired results.

The following examples demonstrate the department's efforts to make certain the proposed rule is the least burdensome that achieves the goals and objectives of the underlying statutes:

Extended Phase-In: The department increased the phase-in time by extending the transition between the current approved sewage tanks list to the sewage tank registered list by an additional year. Extending the transition to 2012 allows manufacturers to stretch the upfront design and construction plan approval cost over a two-year period. Manufacturers also gain additional time to sell-off existing sewage tank inventory.

Removing the installation and on-site water-tightness testing requirements: The department determined that project site installation and water-tightness testing requirements are best addressed in chapter 246-272A and 246-272B WAC.

The draft rule also contained requirements to witness and verify water-tightness testing results, which impact small system designers and installers. Removing these two sections eliminates the associated burdens on small system designers and installers for this rule.

Removing the requirement for effluent screens: The draft rule included a requirement for installation of effluent screen devices. After considering stakeholder comments, the requirement was removed as overly burdensome for the design and construction of the tank.

Conclusion

The department considered alternate versions for several of the proposed requirements. The department determines the proposed rule is the least burdensome alternative for those required to comply that achieves the goals and specific objectives of the underlying statutes.

Section 7: Does the rule require those to whom it applies to take an action that violates requirements of another federal or state law? RCW 34.05.328(1)(f)

No. The rule does not require those to whom it applies to take an action that violates the requirements of federal or state law.

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Section 8: Does the rule establish more stringent performance requirements on private entities than on public entities unless the difference is required in federal or state law? RCW

34.05.328(1)(g)

No. The rule does not impose more stringent performance requirements on private entities than on public entities.

Section 9: Does the rule differ from any federal regulation or statute applicable to the same activity or subject matter? (If so, is the difference justified by an explicit state statute or by substantial evidence that the difference is necessary?) RCW

34.05.328(1)(h)

No. No applicable federal regulation or statute exists. Therefore, the rule does not differ from any applicable federal regulation or statute.

Section 10: Is the rule coordinated to the maximum extent possible with other federal, state, and local laws applicable to the same activity or subject matter? RCW 34.05.328(1)(i)

Yes, the department coordinated the rule to the maximum extent practicable with federal, state, and local laws regulating on-site sewage systems. (Chapter 246-272A WAC and Chapter 246-272B WAC)

Local health jurisdictions: The department updated Environmental Health Directors throughout the rulemaking process during their regularly scheduled meetings. Prior to workshops on the draft rule, the department emailed environmental health directors and their on-site sewage inspection staff the notice and the draft rule. Based on feedback provided, the department adjusted the rule language in several areas. The department also made one substantive change – removing water-tightness testing in the field from this proposed rule. This allows local health jurisdiction discretion on when water-tightness testing in the field is appropriate in their area. Some local health jurisdictions have already adopted this requirement in their local regulations. This change does not invalidate any local rule requirement for water-tightness testing since local health jurisdictions may adopt more stringent requirements.

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Department of Licensing: The department consulted with the Department of Licensing on this rule, particularly related to professional engineers. The Department of Licensing also assisted by emailing the draft rule workshop material to their designer, installer, and professional engineer listserv distribution lists. The Department of Licensing also provided comments that refined the type of engineer needed to design sewage tanks.

Appendix A June 11, 2009 Email Survey

Thank you for volunteering to provide information for the cost/benefit analysis of the draft on-site sewage tank rules.

As a basis for this analysis, the department has developed an overall assumption about the current relationship between the *Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance, On-site Sewage System Tanks*, July 1, 2007 (RS&G); Chapter 246-272A WAC, Small On-Site Sewage Systems; and Chapter 246-272B WAC, Large On-site Sewage Systems. Chapters 246-272A and 246-272B WAC currently require department or local health jurisdiction approval of sewage tanks used for small and large on-site sewage systems. The application process and design and construction standards for obtaining department and local health jurisdiction approval of sewage tanks is established in the RS&G. Therefore, all manufacturers providing sewage tanks for small or large systems in Washington State are following these standards in order to meet the requirements of the large and small on-site sewage system rules. Due to this relationship between the RS&G and the existing rules, we assume there will be few if any additional costs associated with the draft rules.

The following is a list of the changes from the existing RS&G to the draft rules that we have identified as significant. The draft rule:

- Removes the exclusion for design and construction review for tanks tested under National Sanitation Foundation ANSI/NSF Standard 40 protocol or EPA Environmental Technology Verification Program ETV protocol;
- Changes the definition of professional engineer to include professional engineers licensed in any state with the appropriate experience;
- Allows concrete baffles if they are cast when the tank is poured;
- Allows 18” access openings for tanks of 2000 gallons or less and maintains 20” access opening for tanks over 2000 gallons;
- Removes requirement for installation of effluent screen devices;
- Removes the maximum liquid depth and uses a length to width ratio to provide adequate depth for treatment; and
- Removes on-site installation water-tightness testing requirements.

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Since nearly all of the changes in the draft rule either maintain or lessen existing standards, we assume that doing business under the requirements identified in the draft rules will not increase costs above your current costs. The one area that we have determined the rule is stricter than existing standards is the removal of the ANSI/NSF and ETV exclusion. We assume this change may impact some proprietary device companies who use tanks that fall under this exclusion for their products. Even so, we assume that these companies will be able to meet their needs by choosing tanks from the department approved registry, or by requesting approval of the tanks used in their designs at the time the system is reviewed and approved. Our assumption is that neither approach will increase costs for these companies.

The timeline the State Board of Health has established for rule adoption requires completing the cost/benefit analysis by June 18 and we need your responses quickly. If you believe there are changes in the draft rules that will impact your business and create additional costs, please contact me at 360-236-3011 or vicki.bouvier@doh.wa.gov by Monday, June 15. Please be prepared to provide an estimate of your identified costs and a description of how they were calculated. In addition, Vicki and Peter Beaton, DOH economist, will conduct follow-up phone calls on Tuesday, June 16 and Wednesday, June 17. We hope to gather as much information as possible during this very short timeframe. If you have any questions, please let me know.

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Appendix B

June 25, 2009 Email Survey

Based on the feedback from our initial information request on June 11, we have revised the cost assumptions for the draft sewage tank rules. Please review the rule descriptions, assumptions, and the estimated costs provided below and let us know if your costs will be similar or different. Also, if your costs are different, please provide cost estimates and a description of how they were calculated.

The first part of the rules, Purpose and Administration, sets the structure for the chapter. As such, this part does not create a requirement on its own and so does not create a cost to the regulated community.

The second part, Sewage Tank Approvals and Registered List Requirements, establishes the general approval requirements and the process for adding and maintaining tanks on the registered list. We anticipate this part will create administrative compliance costs for both the initial registration process and the renewal registration process. We do not have estimates for these costs, but expect them to be minimal as this part outlines the application submittal requirements that demonstrate compliance with the design and construction requirements below rather than the actual design and construction requirements themselves.

The third part, Design and Construction Requirements, we expect to create the bulk of the costs associated with these draft rules. This part establishes design drawing requirements; general design and construction requirements; additional requirements for septic tanks, grease interceptors, pump tanks, and trash tanks; and identification requirements. Below are some initial cost estimates provided by a couple folks to date. Please review these, as well as the draft rules (attached for your information), to determine your potential costs.

Engineering: \$1000 - \$1500 per tank model

Vacuum water tightness testing: \$1500 for equipment, \$30 - \$60 per tank tested

Added reinforcement: \$75 - \$200 per tank

Identification: \$5 per tank

Additional information that will assist us in estimating costs include:

- Size and type of tanks produced;
- Number of tanks produced annually by size and type;
- Whether you plan to submit all your tanks for registration in a single application or individually; and
- Anticipated frequency of tank design and construction changes that may require DOH review and approval.

The last two parts of the rules, Waivers, Compliance, and Enforcement; and Severability, are administrative for the department in carrying out the requirements of the draft rules and do not create a cost to the regulated community.

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At this time, there are no fees proposed under the draft rules and so no fee costs are included in this rulemaking activity.

For those of you who do business in a county that already requires compliance with the RS&G, here is the list of significant changes from the RS&G that were identified in the initial email note. The draft rule:

- Removes the exclusion for design and construction review for tanks tested under National Sanitation Foundation ANSI/NSF Standard 40 protocol or EPA Environmental Technology Verification Program ETV protocol;
- Changes the definition of professional engineer to include professional engineers licensed in any state with the appropriate experience;
- Allows concrete baffles if they are cast when the tank is poured;
- Allows 18” access openings for tanks of 2000 gallons or less and maintains 20” access opening for tanks over 2000 gallons;
- Removes requirement for installation of effluent screen devices;
- Removes the maximum liquid depth and uses a length to width ratio to provide adequate depth for treatment; and
- Removes on-site installation water tightness testing requirements.

The timeline the State Board of Health has established for rule adoption has been slightly modified to accommodate this change of assumption and the time needed to gather cost information. However, we are still working with a very short timeline. Please provide comments to me by Thursday, July 2. If you have any questions, please contact me at 360-236-3011 or vicki.bouvier@doh.wa.gov, or Peter Beaton at 236-4031 or peter.beaton@doh.wa.gov.