

**V(A). Planned Program (Summary)**

**Program # 4**

**1. Name of the Planned Program**

Individual Wastewater Systems-Implications for a New Rural Generation

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	15%			
111	Conservation and Efficient Use of Water	5%			
112	Watershed Protection and Management	15%			
133	Pollution Prevention and Mitigation	20%			
723	Hazards to Human Health and Safety	30%			
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%			
	<b>Total</b>	100%			

**V(C). Planned Program (Inputs)**

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	2.4	0.0	0.0	0.0
Actual	2.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
105311	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
109401	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

Field days will be offered to show how to properly install and maintain on-site sewage systems. A core curriculum is developed for training in on-site sewage system basics and site selection. Workshops will be offered to increase awareness and skills for selection of on-site systems and site location. Professional education credit classes will be offered to keep real estate professions, home inspectors and installers updated and trained on the latest technologies and alternative systems available. Media (printed, radio, television coverage) are used to increase awareness of programs and classes.

**2. Brief description of the target audience**

The primary audience for this program is on-site sewage system installers, inspectors, home-loan inspectors, lenders, real estate appraisers and real estate professionals. This course is being offered to agency personnel to assist them in understanding site selection limitations and alternative on-site systems that can be used in environmentally sensitive areas.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	500	1500	0	0
<b>Actual</b>	152	575	0	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2010  
 Plan: 0  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	0	0	
<b>Actual</b>	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- A core curriculum will be produced and used for the PEC courses.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	6	0

**Output #2**

**Output Measure**

- University of Missouri Extension will offer classes totaling between 4.5 and 6 hours of professional education credit each year for real estate professionals, home building inspectors, and others.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	6	4

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Five hundred (500) on-site sewage installers, real estate professionals, home inspectors and agency personnel will increase their awareness and knowledge related to on-site sewage technologies.
2	Five hundred (500) class participants will incorporate information about human health risk and environmental quality when evaluating site selection and on-site system design during inspections and land transfers.

## **Outcome #1**

### **1. Outcome Measures**

Five hundred (500) on-site sewage installers, real estate professionals, home inspectors and agency personnel will increase their awareness and knowledge related to on-site sewage technologies.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	400	145

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The Missouri Department of Natural Resources and the Department of Health see on-site sewage systems as a major problem area with both human and environmental health concerns. Nutrients and bacteria from improperly functioning septic tanks create concerns in waterbodies and degrade aquatic habitat. Whole-body water sports and activities can be seriously limited by the presence of bacteria and sewage. This can result in lower property values, reductions in tourism and an increase in human health concerns.

#### **What has been done**

Extension has offered educational classes for private citizens on proper care and maintenance of on-site sewage systems. Cost-share programs have been offered for the pumping of septic tanks and in some cases the replacement of private systems. Educational programs for the Small Flows Organization have been used to promote maintenance planning by installers and builders. Field day demonstrations have been used show how a septic tank should be pumped and what happens when it is not properly maintained.

#### **Results**

Through educational efforts and cost-share programs, more than 300 septic tanks have been pumped. Field day demonstrations proved to be effective in showing people the concerns associated with lack of maintenance of a septic tank. Testing before and after the Small Flows Organization conference showed a gain in short-term knowledge and understanding of the importance of regularly scheduled maintenance. Educational activities with different watersheds associated with waterbodies on the 303 (d) list of impaired waters saw a change in attitude and behavior as more septic tanks were pumped and several new systems were installed.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

## **Outcome #2**

### **1. Outcome Measures**

Five hundred (500) class participants will incorporate information about human health risk and environmental quality when evaluating site selection and on-site system design during inspections and land transfers.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	250	145

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Failing on-site sewage systems have been identified by the Missouri Department of Health and the Department of Natural Resources as an area of concern. Human and environmental health can be affected by systems that place raw sewage, nutrients and bacteria into the environment. Excessive nutrients cause heavy algae growth that can destroy aquatic habitat. Algae and bacteria can create human health issues. On-site sewage education becomes critical to mitigate concerns.

#### **What has been done**

Training for agency personnel, on-site sewage installers and homeowners has been provided to increase awareness and understanding of on-site sewage systems and the maintenance needed to keep them working properly. Field days were used to show levels in septic tanks with and without general maintenance. Tests given to homeowners before and after training indicate a short-term gain in knowledge of the care and maintenance of on-site systems.

#### **Results**

Results of testing among those who received training show a 67 to 86 percent increase in knowledge of on-site sewage systems. About 300 septic tanks in targeted areas have been checked and pumped. Resource materials were distributed at the Small Flows Conference after a

presentation on what homeowners should know about on-site sewage systems. Agency personnel within the pilot area have reported an increase in questions regarding how to find a certified septic tank installer and pumper and those wanting private well test kits. The number of inspections on septic tanks has increased in the pilot area.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

##### Brief Explanation

Several external factors have affected the outcomes of the project. Increased awareness of bacteria levels in waterbodies caused heightened interest in the project and prompted excellent attendance. Changes in environmental regulations related to bacteria levels in lakes and streams increased the need for bacteria regulator information. A slower economy reduced available funds for many homeowners and may have hampered the levels of success seen in the pilot area. More people retired and moved into the pilot area, causing more on-site inspections to take place. Some individuals have retired to properties that were once used occasionally and now are used for full-time residence. These trends have caused concern about possible overloading and malfunctioning of older on-site sewage systems.

#### V(I). Planned Program (Evaluation Studies and Data Collection)

##### 1. Evaluation Studies Planned

- After Only (post program)

##### Evaluation Results

Pre- and post- test results show a 19 percent increase in the number of correct responses. More than 300 septic tanks were pumped and inspected to ensure they are working properly. There was an increase in the number of requests in the pilot area for certified on-site pumpers. There was an increase in the number of requests in the pilot area for well test kits.

There was an increase in the number of requests in the pilot area for on-site sewage system inspections.

### **Key Items of Evaluation**

Water quality is a key factor affecting human health, food production and economic growth. Educational programs that directly respond to issues related to water quality lead to implementation of management practices that reduce nutrient and bacteria loading into bodies of water. This reduction in contaminants helps protect human health and increases the tourism value of waterbodies. When a community's economic base is tied to water quality issues, concerns about pollutants in the water and human health concerns can cause severe shortfalls in the local economy. Proper on-site sewage maintenance reduces the risk of bacteria in private wells and in waterbodies. This reduces the chance of health issues that are associated with bacteria in drinking water and in areas for swimming and other whole-body contact.