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Hello my name is Elke Ursin, and I am the research coordinator for the Florida Department of Health, Onsite Sewage Programs. Florida is committed to conducting quality research in the field of Onsite Sewage and is one of the few states in the nation to have a statutorily supported revenue source to fund this research. It is important to understand what the rules are, but it is also important to understand how the rules came to be. The research program was created to help test the current rules, or help develop new ones.

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Some of my objectives today are to introduce the research program and the people involved in the process, to present the results from past projects and discuss some ongoing or upcoming projects, and to solicit any ideas for future projects that you may have.

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Looking at these numbers, you should realize that septic systems are contributing to our groundwater. We must protect this resource. The code and the statute are in place to protect this. When things are working properly our services are out of sight, but when they are not working properly there can be negative effects on public health and the environment.

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The research program was formed in 1983. The research program is charged with investigating public health impacts, environmental impacts, and performance of onsite systems.

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All septic permits for new septic systems have a five dollar surcharge that goes to fund research projects. New septic system permits are generally issued for new construction and exclude permits for repairs, modifications, or abandonment's.

Our funding is also supplemented when we receive funding for specific projects as directed by the Florida Legislature or when we apply for grants. Some of the programs that we have received funding from previously are the United States Environmental Protection Agency's Gulf of Mexico Program, the St. John's River Water Management District Surface Water Improvement and Management Program, and the 319 Non-point Source Management Program, which is funded by the United States Environmental Protection Agency and administered by DEP.

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So why is research on onsite systems important? The department is charged with protecting the health of everyone in Florida as well as protecting our environment. We need to be concerned with the environment because people interact with the environment every day. We also want to be current on the technologies that are out there.

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What can the results of this research do to promote change? Some of the research results help us with getting new products approved as well as changing the rules. There are different areas throughout Florida that have local rules and ordinances that are more stringent than the Florida Administrative Code. This is often due to the results of localized research.

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There are several different people involved in the research program.

There is the Department of Health staff, which includes myself as the coordinator. There is also technical and supervisory support provided by Eberhard Roeder and Gerald Briggs.

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Another key group of people involved in the research program is the Research Review and Advisory Committee, or RRAC. The statute requires this committee to look at where we want to go with research and determine what it is we want to study. The RRAC committee also makes sure we choose the right contract providers, ensures the final reports are accurate, and that the data supports the conclusions.

There are 10 represented groups on the RRAC. There is a representative from environmental health, the septic tank industry, the home building industry, an environmental interest group, the state university system, a professional engineer, the real estate profession, the restaurant industry, a local government representative, and a consumer.

This committee is required to meet twice a year, but lately the committee has been meeting more frequently due to increasing public and industry interest in the research program.

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The final two key groups of people involved in the research program are our contract partners and outside funding agencies.

We have to have good contract providers to have accurate scientific results. Generally, we work with universities, private consulting companies, local county health departments, and other state agencies such as the Florida Department of Environmental Protection, or DEP.

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I will now go into detail on some Department of Health research projects.

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Past research results include a wide range of findings.

We did a study to look at why we need a 2-foot separation from the water table and found that 2-feet removed most pathogens, such as bacteria like e. coli and salmonella.

We did a subdivision study to see the cumulative impacts from septic systems on a large scale and compare them to previous predictions from a groundwater model. Four subdivisions were selected. The results were more variable and lower compared to the

model predictions. This revealed to us that the individual plumes might still be important at this scale and the study gave us valuable information on septic tank effluent concentrations. The results led us to focus future research on individual septic system plumes.

Because systems getting commercial strength waste tended to fail more quickly than systems getting domestic waste, we did a study looking at the amount of commercial strength sewage waste that soil can accept before the system will go into failure. By determining this critical load we are able to properly size commercial strength wastewater systems and evaluate failures.

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We completed a project to develop a method to look at a water sample and see whether it has a wastewater input. You may ask how we can do this. Many laundry detergents have an optical brightener in them to make your whites whiter. You can look at the wavelengths and distinguish these brighteners from other things. If you detect this brightener, you can assume there is a wastewater source. The results of this study are a good platform for developing a field instrument to detect optical brighteners.

We have conducted several studies looking at the results of sewerage coastal communities that were previously served by septic systems. Methods used to determine a human contamination source involve looking for specific tracers that tie back to human waste, like caffeine, optical brighteners, and DNA. One project, conducted in a coastal community in Taylor County, found that there did not appear to be a very big difference between areas served by sewer versus those on septic as it relates to nutrients and tracers.

Another project, conducted in the Town of Suwannee, compared results of samples taken just prior to the town converting to sewer with results taken 10 years after the conversion. We sampled in the canals around the town, and out in the river away from the town. The results did not suggest that there was a large improvement in water quality that could be attributed to converting to sewer, but the study did show a significant reduction in the elevation of fecal coliforms in the canals relative to the river water.

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We did a study that found that septic systems installed in karst environments show rapid transport of effluent to the groundwater and limited nutrient reduction. Karst is a landform found throughout much of Florida. It is where limestone has been dissolved to look like Swiss cheese. It's because of Karst that we see sinkholes. A second phase of this project involved retrofitting the existing systems for nitrogen removal and monitoring the results. We found that the nitrogen was reduced, but that maintenance and management of these types of systems is extremely important in ensuring that the system works as intended.

We have conducted several studies that showed the importance of maintaining proper setbacks to various types of water bodies. Nutrients and other wastewater contaminants can contaminate surface waters and seasonally inundated areas if they are not installed with proper setbacks.

We completed a laboratory scale study looking for different passive nitrogen removal strategies. Media such as tire chips and oyster shells could be cost-effective options to reduce nitrogen without having to install a more complicated and costly performance based treatment system. The results of this study were very promising and were the

launching point for an ongoing legislatively mandated study looking at nitrogen reduction strategies.

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Now I want to go into some of the new research trends that are the focus for many of our ongoing and upcoming projects.

First of all, there is a lot of concern about limiting nutrients, such as nitrogen and phosphorus. We know that conventional septic systems are pretty good at getting rid of the pathogens, but are not as good at getting rid of nutrients. We need to know how to address the issue in the most effective and economical way.

The next trend in research is making sure that systems are performing in such a way that protects the health of the public and the environment. If you maintain your system it will reduce the number of failures. If a system fails, then it is not doing what it was designed to do.

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I have given you an overview of the research program and have shown you quite a few projects and their outcomes. The State of Florida Department of Health Onsite Sewage Program is a model program for the nation. The Research Program helps ensure that our drinking water is protected from pollutants, which is an essential component to the Department of Health's mission to protect public health and the environment.

As someone interested in onsite sewage issues, you could be exposed to various situations that warrant further research. Your insights are vital to the continued success of the program.

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A paradigm is the model that forms the basis of something. It's the norm. It's not difficult to have an idea, we all have them everyday. It's following through with it, letting people know. Your idea can change the paradigm; can flip the 'it's always been done this way' attitude on its head.

Feel free to contact me with any ideas you may have. The onsite research program is set up to test the paradigms (even destroy them) and to make the program better.

Protection of public health and the environment is of critical importance to us, and we are constantly changing and evaluating to ensure that this is done. I hope that many of you will be willing to be involved with a research project in the future.

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I would also like to thank all of you for listening! Feel free to contact me if you have any questions or ideas for research projects.

You can also visit the Florida Department of Health's onsite sewage research website to find out about our current or planned research projects, to read past research project reports, and to find out information on past and upcoming Research Review and Advisory Committee meetings.

I've enjoyed speaking with you and showing you how the research program is making a difference in the onsite sewage industry. Thanks in advance for your ideas and support. They are critical to helping us expand our knowledge.