Texas A&M AgriLife OSSF Extension and Research Programs

67th Annual V.G. Young School for County Commissioners Courts Annual Conference

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BIOLOGICAL AND AGRICULTURAL ENGINEERING

Presentation Outline

- Introduction of TAMU OSSF Team
- OSSF Extension and Research Programs Overview
- Education Programs for Owners and Professionals
- Research and Education Programs
- Questions / Discussion…

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Introduction

Myself… https://baen.tamu.edu/people/jantrania-anish/

Work Experience:
Onsite Industry since 1989
1. WVU/NSFC 1989-1993
2. Gloucester 1993-1996
3. Virginia DH 1996-2008
4. NSC/NWC 2008-2014
5. TAMU/AgriLife 2014-???

Education:
B.E., University of Udaipur, Agricultural Engineering, 1982
M.S., Ohio State University, Agricultural Engineering, 1985
Ph.D., Clemson University, Agricultural Engineering, 1989
M.B.A., West Virginia University, 1994
Registered Professional Engineer in TX and VA

Research Objective: Evaluate and demonstrate cost-effective and sustainable **onsite** water and wastewater infrastructure options.

Research Interests:
- Sustainable and integrated water infrastructure;
- Wastewater treatment and reuse;
- Desalination – groundwater and seawater;
- Cost analysis, pricing, and water economics;
- Regulatory framework for water quality and supply.

TAMU Onsite Team…

Dr. June Wolfe, III
Research Scientist
BREC-Research

Dr. Gabriele Bonaiti
Extension Program Specialist
BAEN-Extension

Lisa Prcin
Senior Research Associate
BREC-Research

Joshua Segura
Extension Assistant
BAEN-Extension

TAMU Onsite Team…

Tanya Mitchell
Extension Assistant
BAEN-Extension

William (Bill) Hyder
Program Coordinator I
BAEN-Extension

Jakob Davis
Research Assistant
BAEN-Extension

Dr. Rajiv Srivastav
Post Doctoral Fellow
BAEN/BREC

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OSSF Extension Programs Overview

- Extension programs
  - Homeowner education in-person, virtual (Zoom and Teams), and online/on-demand (no CEUs)
  - Professional education in-person only for now, **but online planned starting Summer this year (CEUs)**
  - Mapping and Inventory focused on coastal zone of Texas, also expanding in other watersheds
  - Repair and Replacement projects in Lampasas Watershed
  - Publications (https://ossf.tamu.edu/educational-materials-2/)
  - Presentations at local, state, national, and international events.

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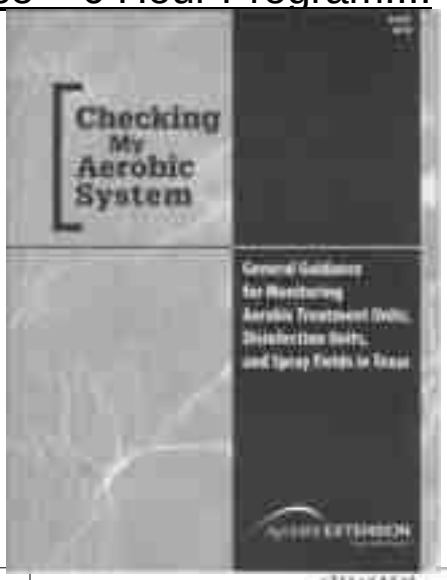
Homeowner's Education

- Half day Septic System Education, about 1.5 to 2 hours of PowerPoint Presentation + Question/Discussion time as needed;
- Offered throughout the state via various Watershed Protection Programs, funded primarily through 319 funding;
- *Planning to develop an online/on demand module for homeowners on a fee-based delivery method!*

Aerobic system maintenance course – 6 Hour Program....

- Introduction
- Avoiding illness and accidents
- Understanding how aerobic systems work
- Testing wastewater and reporting results
- Feeding the system
- Checking the O&M of your aerobic system
- Tools, parts, and supplies
- Aerobic system operation checklist.



AGRILIFE RESEARCH

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Professional's Education

- TCEQ license holders offer OSSF design, installation, and maintenance services to home and business owners; and they need CEUs to maintain their licenses.
- Texas A&M AgriLife is one of many CEU providers "approved" by TCEQ.
- We offer fee-based CEU classes, both in-person and now Online/OnDemand format.
- Professionals also call us directly for phone consultation!

TEXAS A&M AGRILIFE RESEARCH

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TEXAS A&M AGRILIFE EXTENSION

On-Site Sewage Facilities (OSSF)

https://ossf.tamu.edu/

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TEXAS A&M AGRILIFE EXTENSION

OSSF Research Programs Overview

- Research projects
  - TCEQ funded TOGP Phase-I, II, and III projects
    - ATU, LPD, and Reuse (Phase-1), completed
    - RV-ATU, DRIP, and E-FLOW (Phase-2), completed
    - RVR, RtR, and FLOW-EQ (Phase-3), on-going

    https://ossf.tamu.edu/togp-research/
  - TGLO sub-contracts for coastal zone projects
    - Integrative Assessment of Bacterial Pollution (TAMU only)

      Galveston web mapping application: https://arcg.is/184OuH0

      https://benkleinapps.shinyapps.io/gm_exceedance_app/
    - Identify potential BMP tools to reduce bacteria loading in Neches River (Lamar and TAMU)

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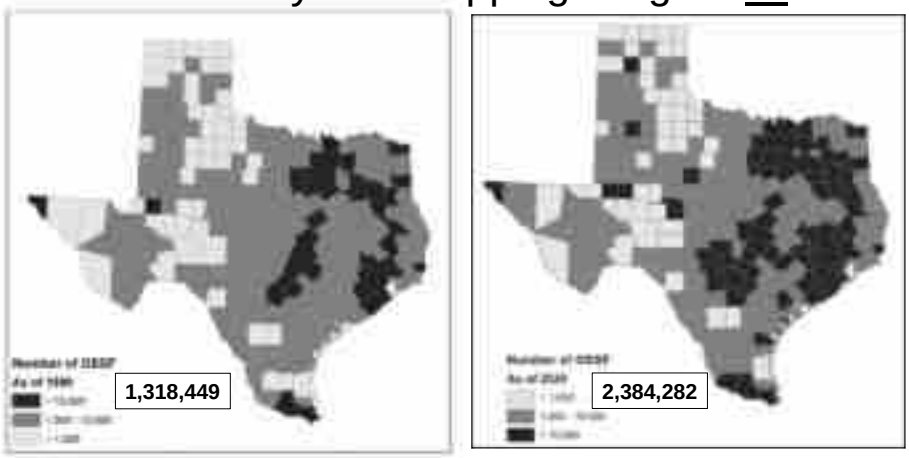
Number of OSSFs in TX then and now… Inventory and Mapping Program…



This information was complied from 1990 Census data and OARS data from TCEQ.

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Current Map as of 2023

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About 927,000 new permits issued since 1990… of which about 418,000 (~45%) were for ATU Spray… (# of permits/year v. year)

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OSSF Progress during the 20th Century

- Septic tank drain-field

- Primary treatment by a septic tank (~20%), rest (~80%) by soil.

- Aerobic tank spray-field

- Secondary treatment by ATU or Media filter (~80%), rest (~80%) by soil

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TAMU's OSSF Research Center

2-Acre facility on RELLIS with access to water and sewer lines, **wastewater treatment and reuse technologies, POU drinking water treatment technologies, and a field laboratory!**

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Background on State Funding for OSSF Research….

- In 1987 H.B. 32, 70th Legislative Session, created a fee of $10 for each permit processed to support OSSF research program;
- 1991 onwards TCEQ collected $10 fee from local permitting entity and the "Research Council" working with TCEQ funded research programs;
- Research Council sunset in 2011, stopping the research funding but not the $10 fee collection;
- House Bill 2771 was proposed and passed in 2017, restarting the research funding without the Research Council, under a new program called **TOGP**;
- In 2019 and in 2021, TCEQ issued two RFGAs specifying four "Research Topics" in each RFGA;
- Our OSSF Team developed a strategy that has been successful in securing FULL FUNDING for three times, totaling ~ $1M;
- Again in 2023, AgriLife was the ONLY agency to respond to TOGP RFGA!

NOWRA's OSJ's Article…

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Highlights of TOGP-I (completed) and TOGP-II (competed)

TOGP-I (2019-2021)

1. ATU performance, effects of high-strength and time-dosing (JW);
2. LPD design configuration, by the rules and new concepts (GB);
3. Reuse wastewater for toilet flushing, treatment-train performance (AJ).

Final reports and conference papers on OSSF Website…

TOGP-II (2021-2023)

1. RV Parks and ATU performance in real-world (JW);
2. Drip challenges and recommendations for improvement (GW);
3. Effluent flow reduction **to minimize need for disposal area** (AJ).

Projects completed and Final Reports available on OSSF Website…

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Highlights of TOGP-III 2023-2025 (in-progress)

1. **RVR** Recreational Vehicle Research, to collect and analyze real-world RV park OSSF data (AJ);
2. **RtR** Research the Research, to create a database with a high-volume content of literature relating to OSSFs (GB);
3. **FLOW-EQ**, Flow Equalization or Dosing Refinement determine an optimal dosing period for ATUs (WH).

OSSF Website…

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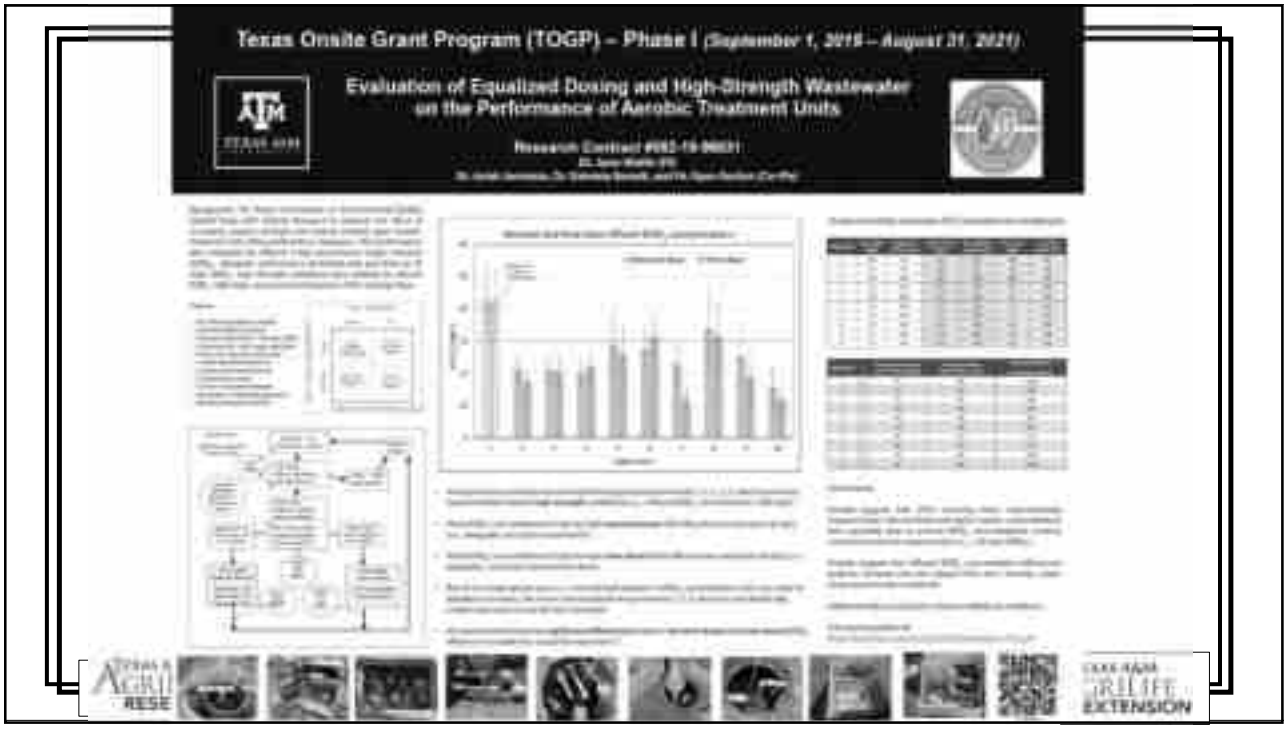
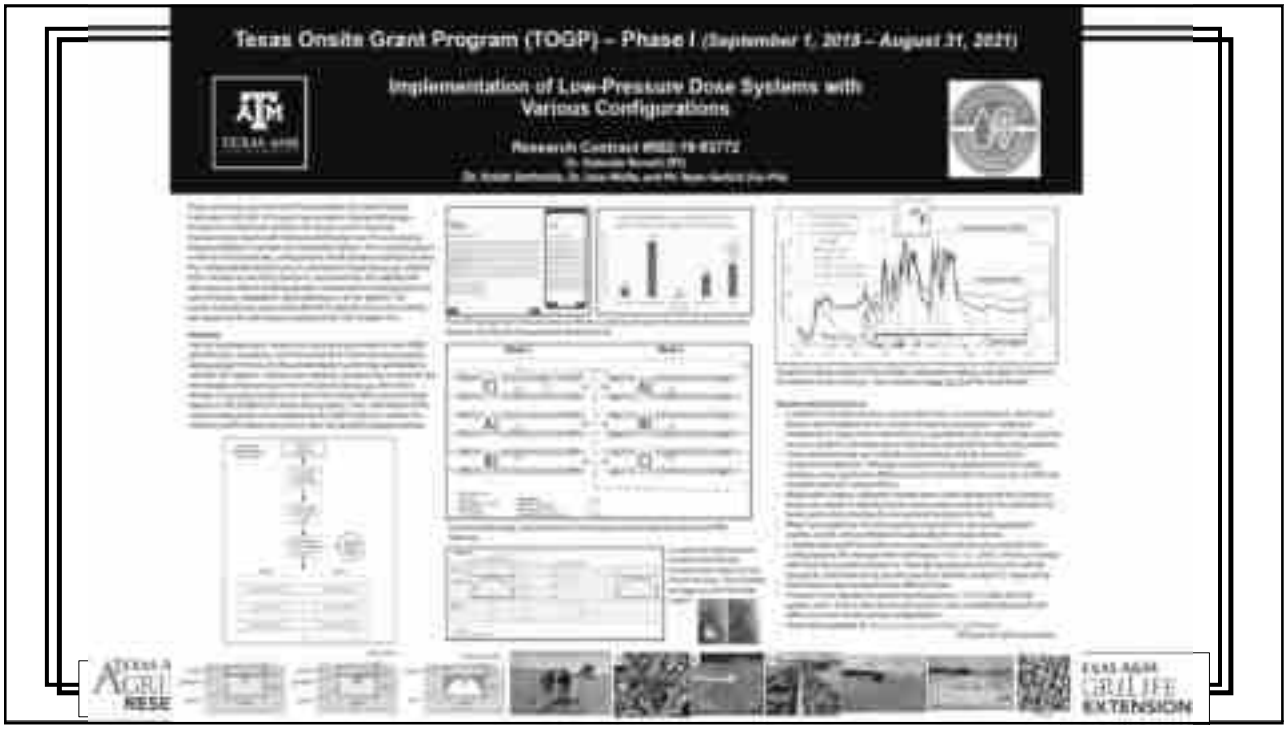
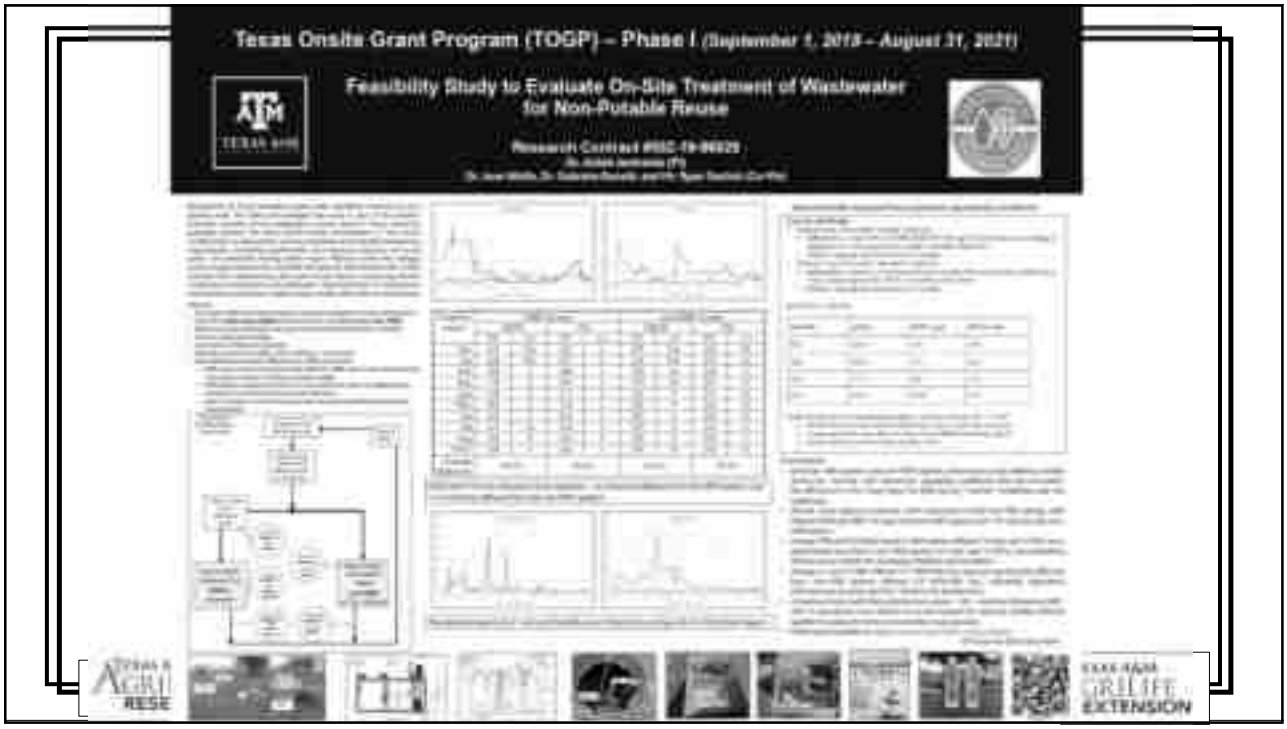
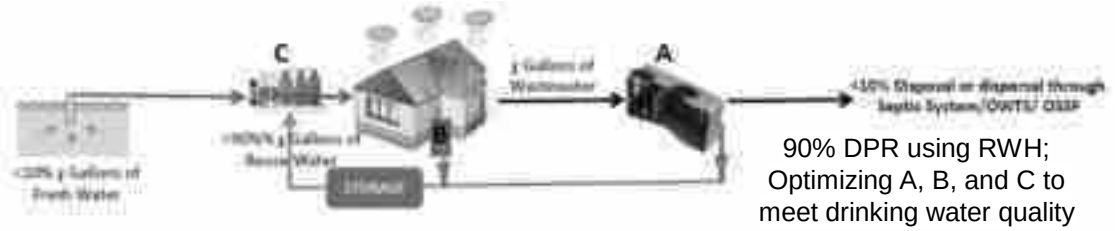



Texas Onsite Grant Program (TOGP) – Phase I (September 1, 2019 – August 31, 2021)
Implementation of Low-Pressure Dose Systems with Various Configurations
Research Contract #582-19-83772


Texas Onsite Grant Program (TOGP) – Phase I (September 1, 2019 – August 31, 2021)
Feasibility Study to Evaluate On-Site Treatment of Wastewater for Non-Potable Reuse
Research Contract #582-19-86629

Future of OSSF research in Texas from OSSF to OWRF



90% DPR using RWH; Optimizing A, B, and C to meet drinking water quality

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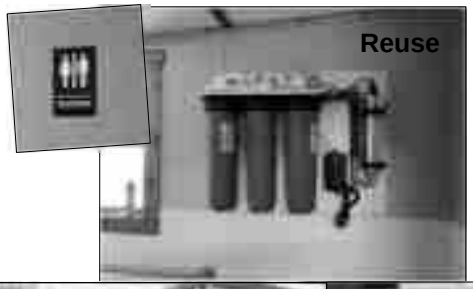
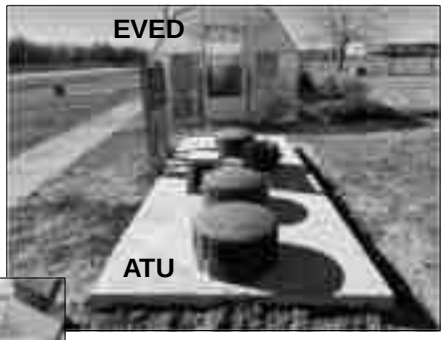
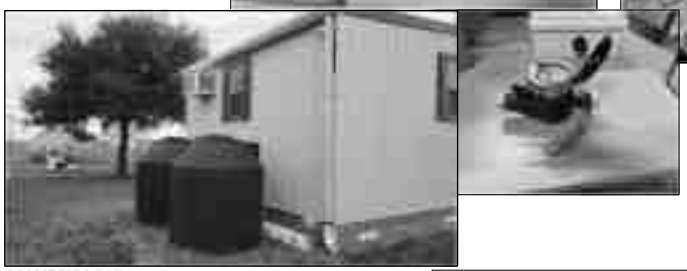
RELLIS Experimental Reuse Facility







New OSSF Design
EVED + Reuse

Data collection to start soon to study water quality and discharge quantity reduction….

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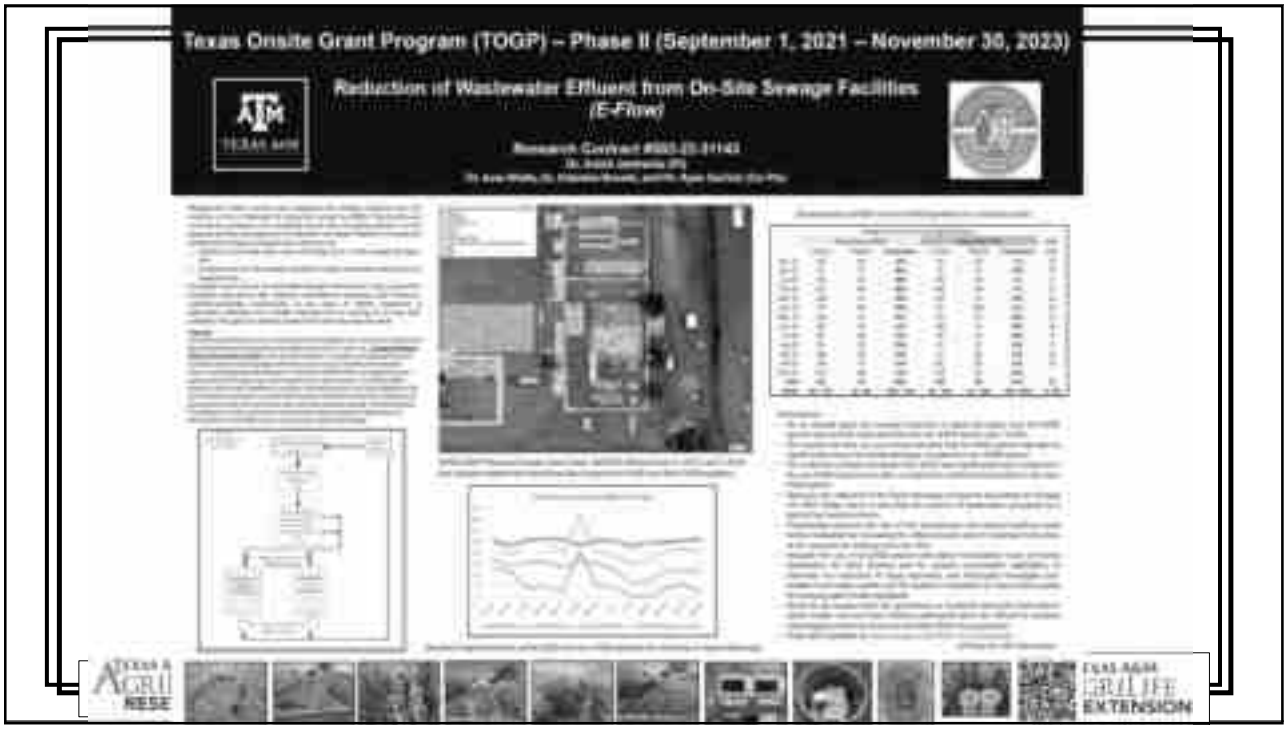
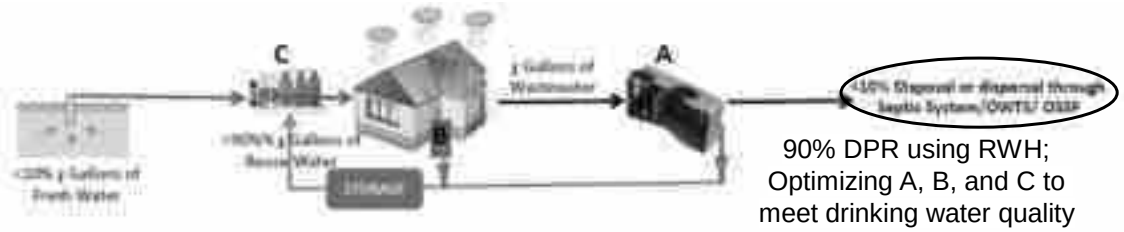


Future of OSSF research in Texas from OSSF to OWRF



90% DPR using RWH; Optimizing A, B, and C to meet drinking water quality
& Reduced Discharge

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Texas Onsite Grant Program (TOGP) – Phase II (September 1, 2021 – November 30, 2023)
Wastewater Treatment Challenges at RV Parks
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Texas Onsite Grant Program (TOGP) – Phase II (September 1, 2021 – November 30, 2023)
Understanding Problems and Identifying Solutions for Texas OSSFs using Drip Irrigation
EXTENSION

USDA-NIFA Funded REEU Program

- Phase-1 2017 and 2018, and renewed as Phase-II in 2019 for five years… https://reeu.baen.tamu.edu/

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Sustained Funding Needed to Support TAMU's OSSF Research and Extension Center….

- There is still need for improvements at the Center, which requires sustainable financial support ~$250K/year…
- $10 Fee set in 1990s worth <$5 now (Inflation calculator), should the Fee be increased starting FY26?
- TAMU-OSSF Team has been selected for the first two rounds of TOGP funding, can it be the "sole-source"?…
- <$0.50/$ collected for the research program is "allocated" to TOGP funding, can that be increased?

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On-Site Wastewater Training Center (before)

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On-Site Wastewater Training Center (now)

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In Summary…

- Texas A&M AgriLife OSSF team is actively engaged in meeting the current needs for research and extension programs in Texas;
- We are also developing new programs and exploring new funding resources at local, state, and federal levels;
- Small-scale decentralized i.e., Onsite Water and Wastewater systems are integral part of Water Infrastructure in Texas and in the country;
- Our Center has potential to grow to become a workforce development center along with the research and education center, for which we need sustained financial support mechanism.

Questions / Discussion…

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