

Petronila & San Fernando Creeks WPP: *Septic System Workgroup*

Texas Water Resources Institute

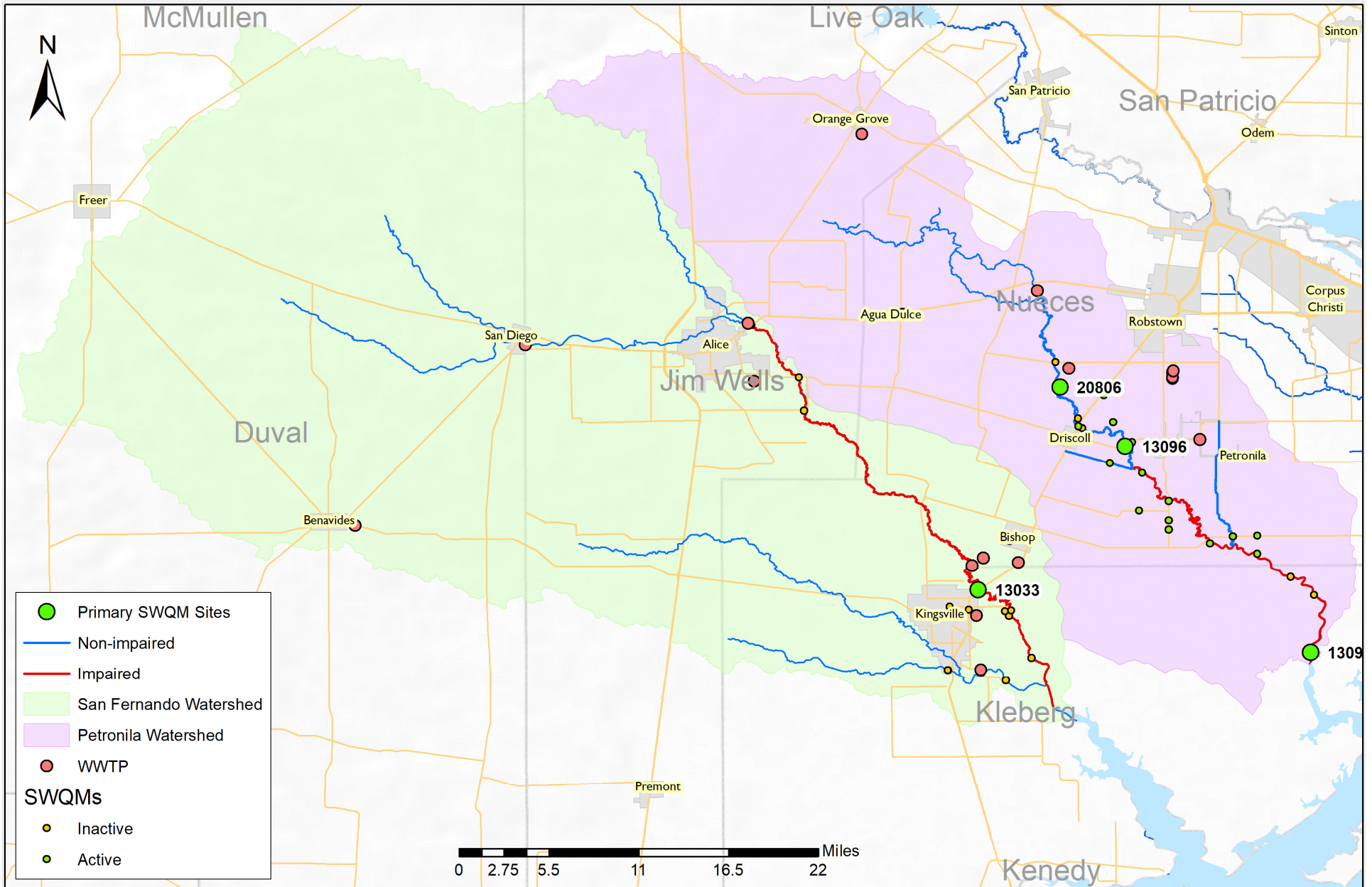
May 27, 2021



Meeting Outline

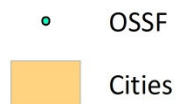
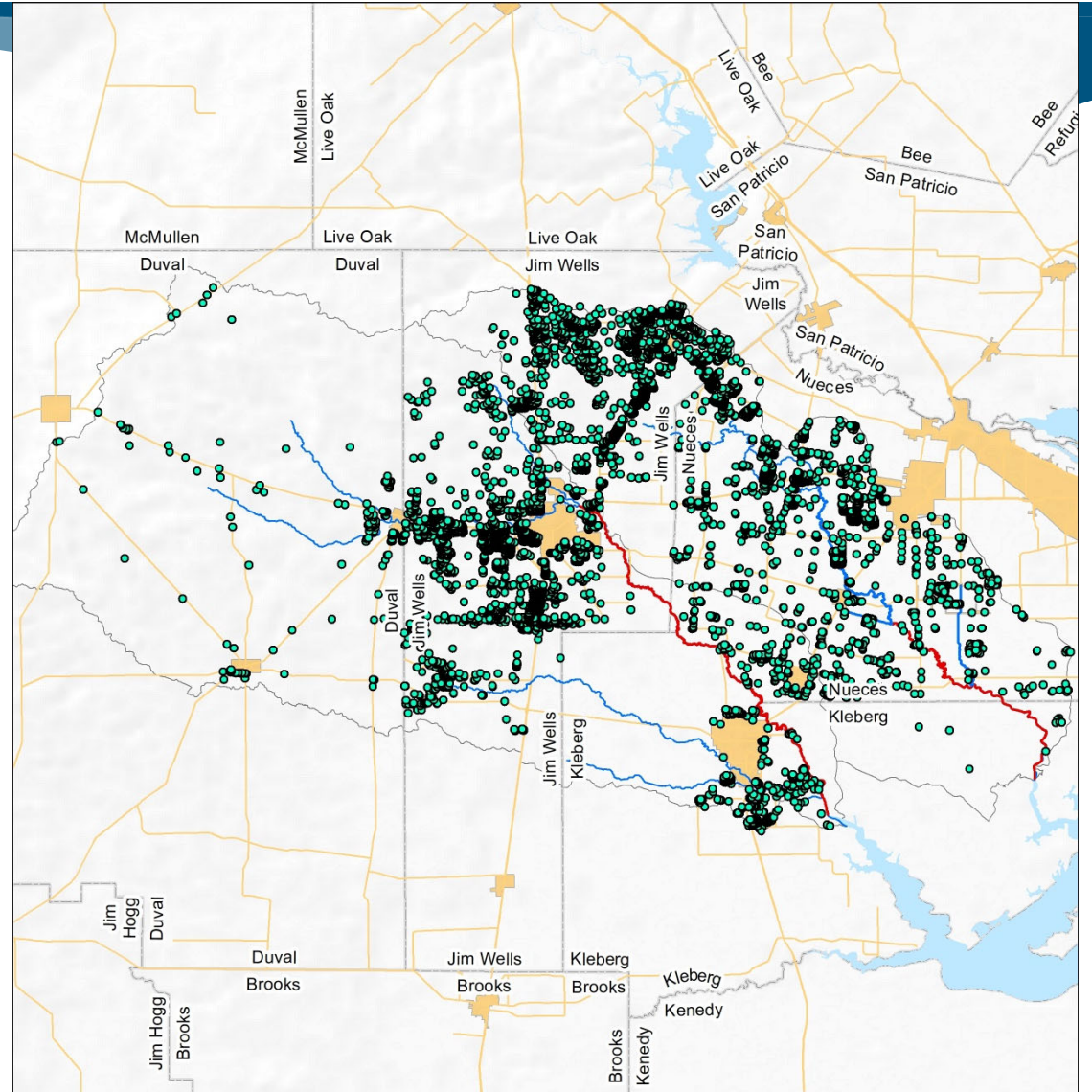
- ⦿ Present and discuss septic systems estimates in the watershed and updated maps
 - ⦿ Soil Suitability
 - ⦿ OSSFs in Floodplain
- ⦿ SELECT output map for septic systems
- ⦿ Discuss potential septic system related management measures

Petronila & San Fernando Creek



OSSF Point Map

- Estimated using
 - Coastal Zone OSSF dataset
 - 911 address points
- 9,086 OSSFs estimated in watershed**



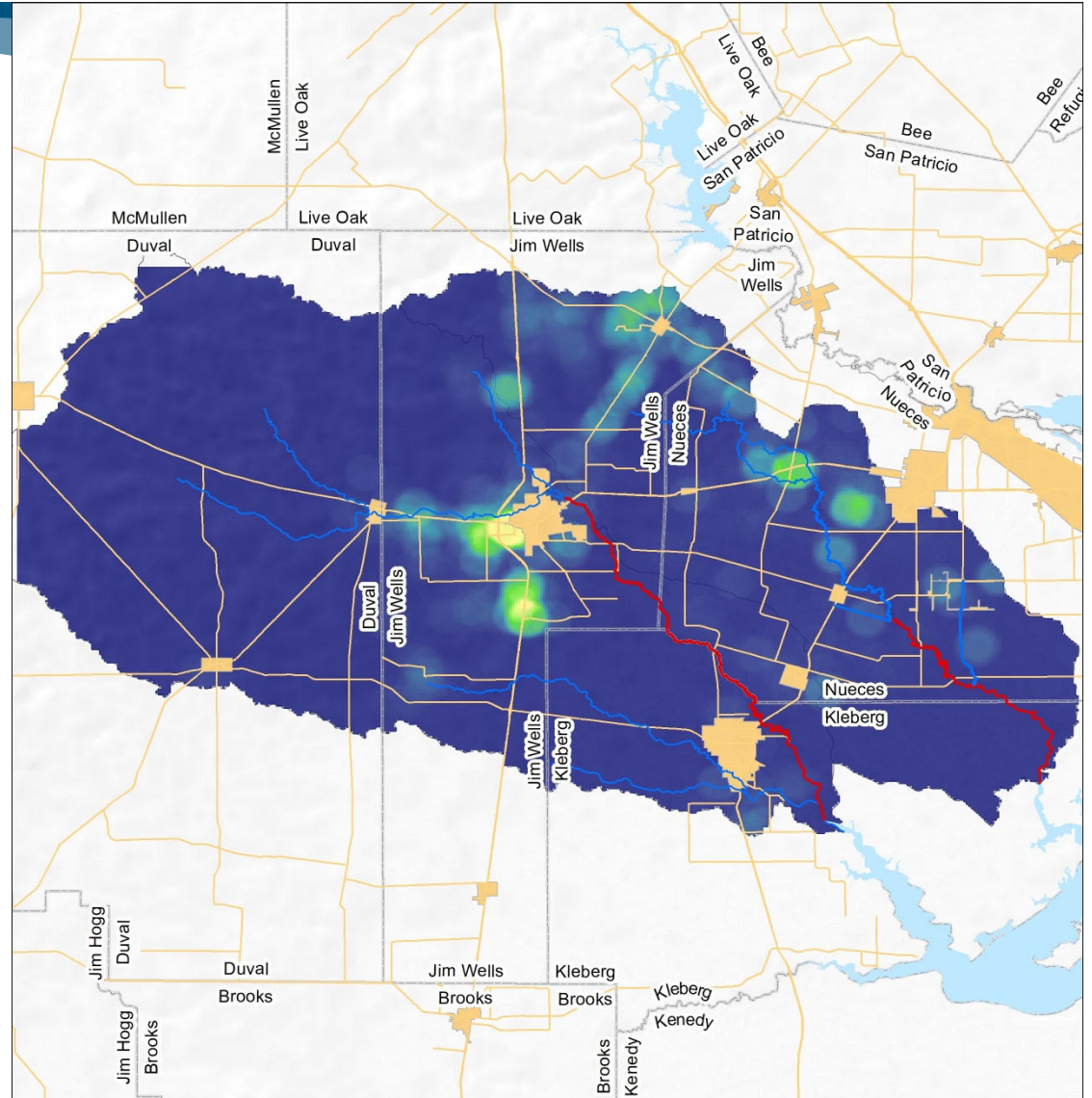
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Sources:
OSSF Density - Derived from 911 Address Data
Stream Segments - TCEQ
Counties, Cities, Roads - TNRIS

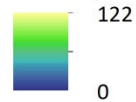


OSSF Density Map

- ⦿ Estimated using
 - ⦿ Coastal Zone OSSF dataset
 - ⦿ 911 address points
- ⦿ **9,086 OSSFs estimated in watershed**



OSSF per square mile



Cities

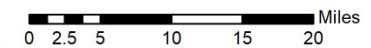
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Sources:

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Stream Segments - TCEQ

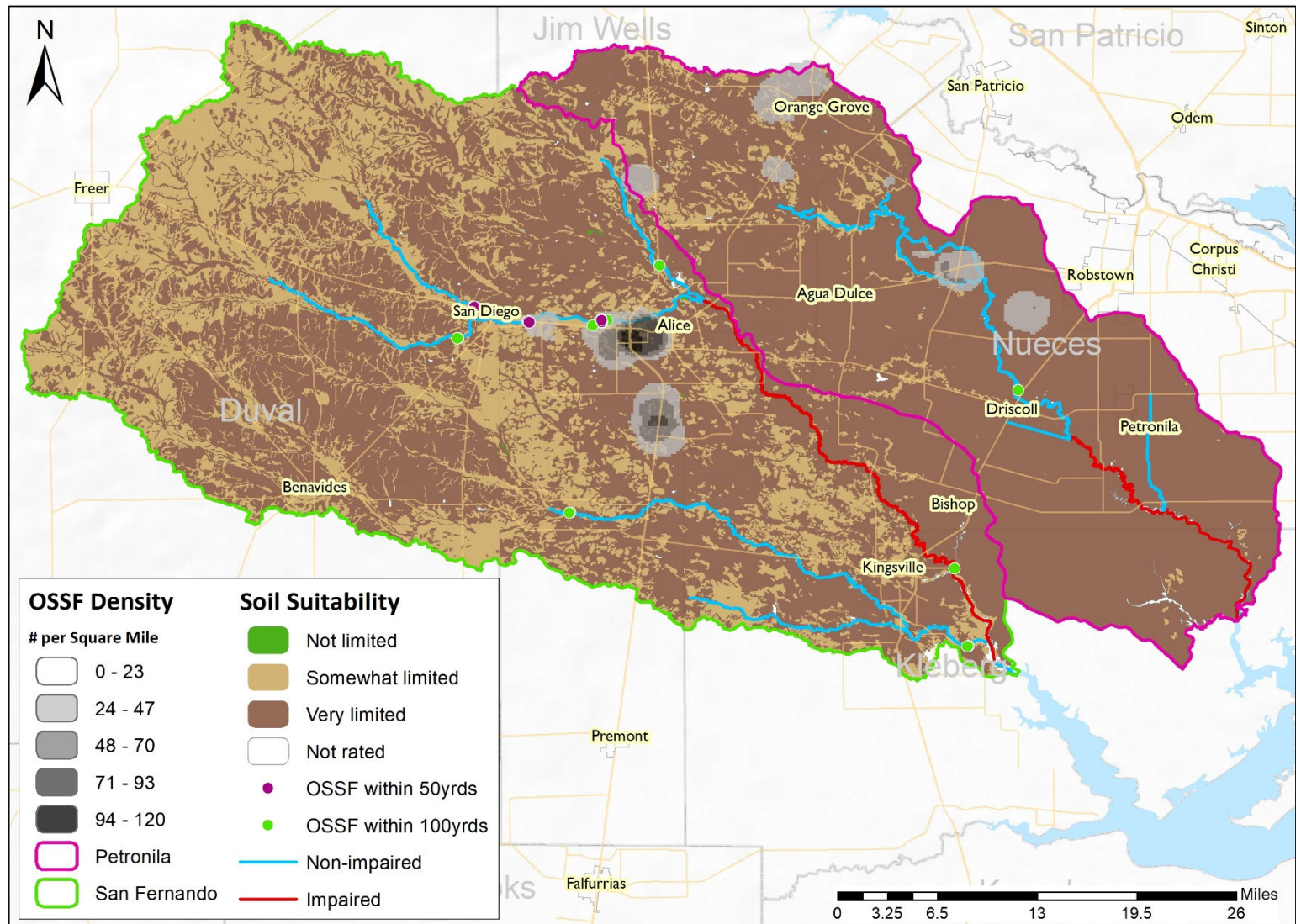
Counties, Cities, Roads - TNRIS



OSSF Density and Soil Suitability

Petronila & San Fernando Creek Soil Suitability

- 20 OSSFS within 100 yards of creeks (5 within 50 yards)
- 76% of watershed in very limited soils.

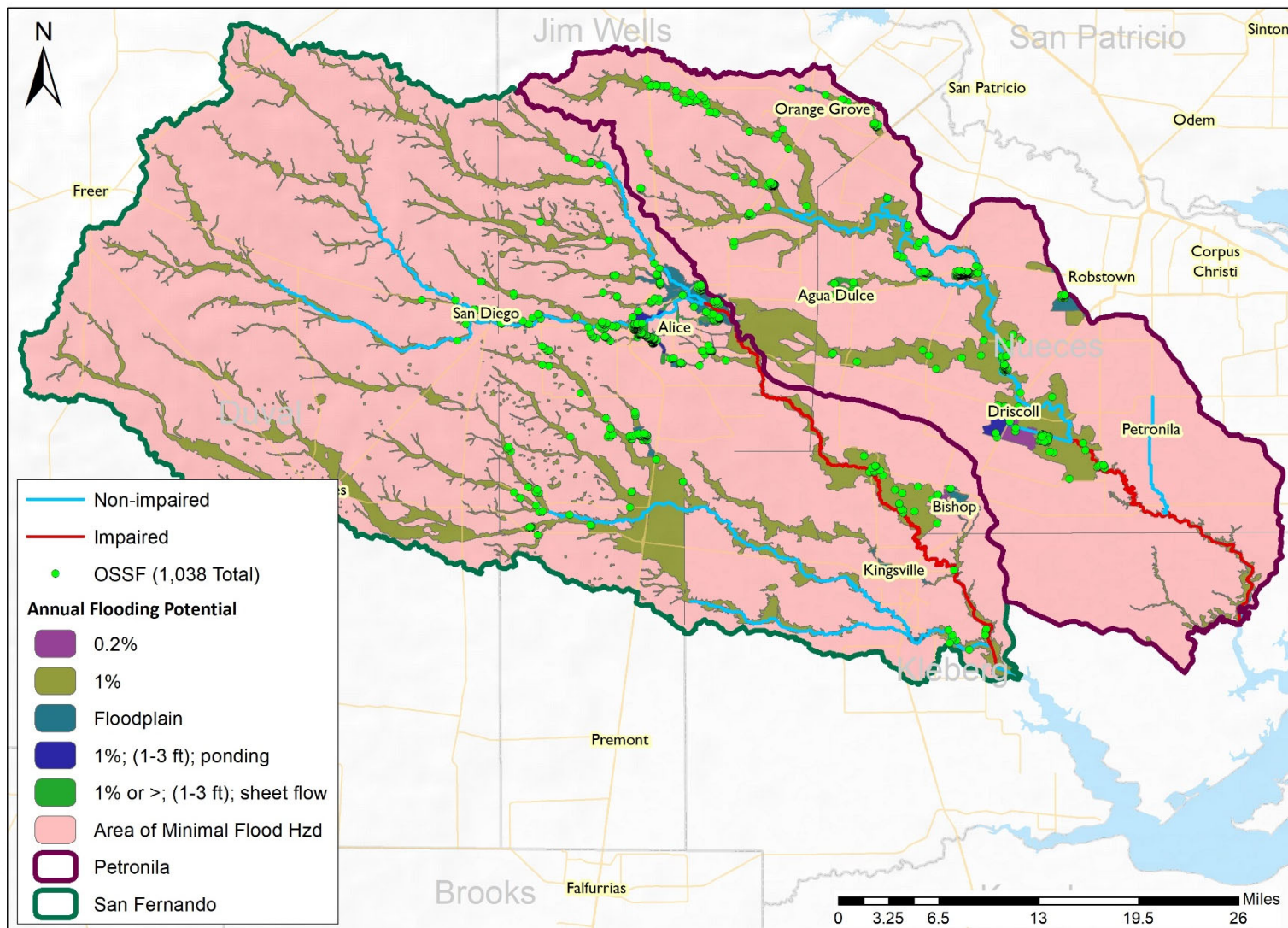


OSSFs in FEMA Flood Zones

OSSFs Within FEMA Flood Zone Designations

1,038 OSSFs within Flood-prone areas

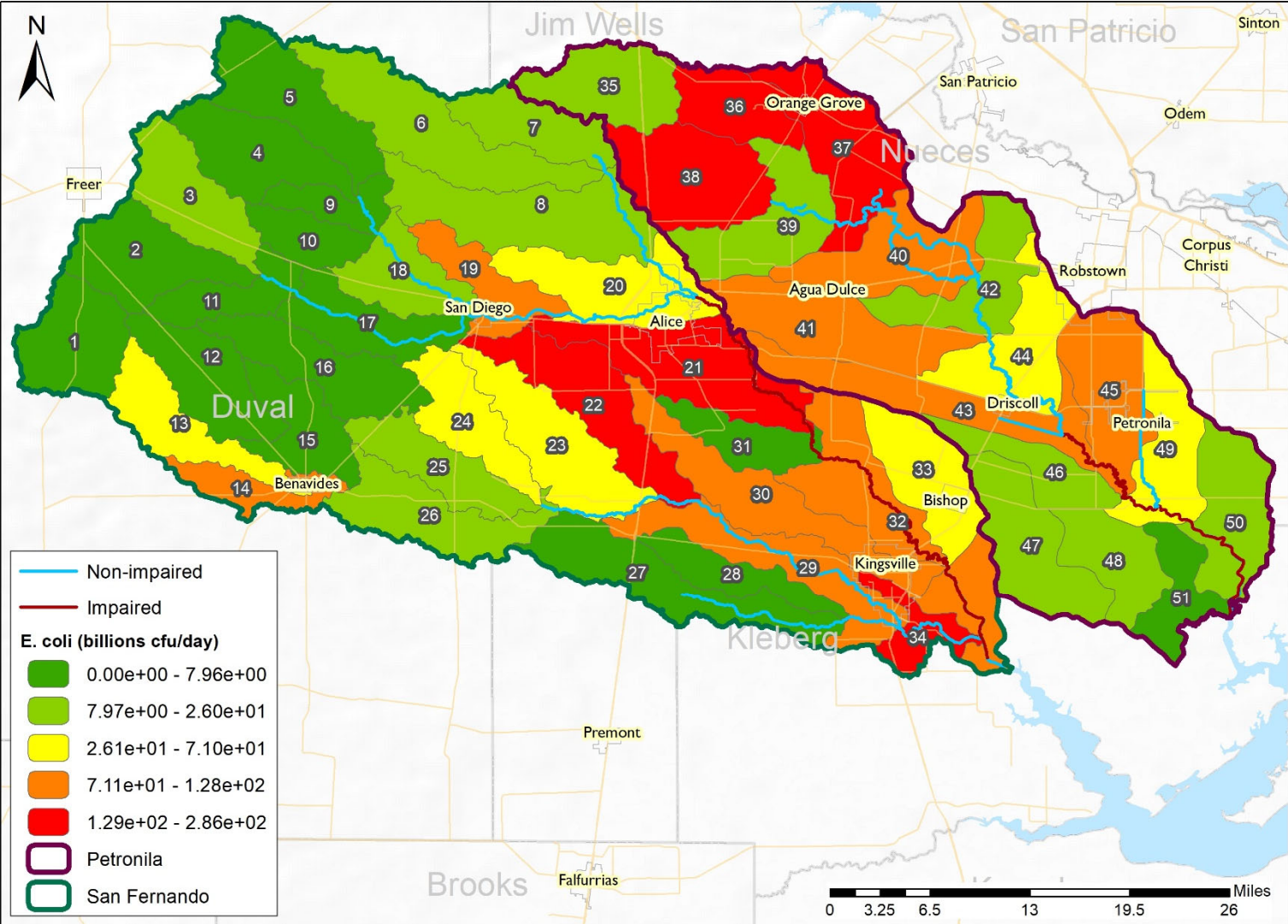
Mapping not consistent across county line



SELECT Results for Septic Systems

Potential E. coli Loading from OSSFs

Petronila & San Fernando Creek Subwatersheds



What Do SELECT Results Tell Us?

- ⦿ Results demonstrate a ‘worst-case’ *E. coli* loading scenario
- ⦿ Shows relative ‘potential’ for *E. coli* loading from smaller subbasins within the larger watershed
- ⦿ Information can help prioritize where management practices are recommended for implementation

Potential Management Measures

Potential Management Measures	Description
Inspect and repair OSSFs	Develop a program to work with county designated reps and local stakeholders to identify, inspect and repair failing OSSFs.
Create and distribute OSSF educational materials	Develop and deliver materials (postcards, websites, handouts, etc.) to educate homeowners on proper OSSF operation and maintenance.
Education program delivery	AgriLife Extension currently operates an OSSF education, outreach, and training program for installer, service providers, and homeowners.
Decommission priority OSSFs and connect to wastewater treatment plant	In certain communities, especially those near existing wastewater lines, stakeholder might be interested in connecting to existing infrastructure.

Table 25. Management measure 3: OSSF management.

Source: Failing or Non-Existent On-Site Sewage Facilities (OSSFs)			
Problem: Pollutant loading reaching streams from untreated or insufficiently treated household sewage			
Objectives: <ul style="list-style-type: none"> • Inspect failing OSSFs in the watershed and secure funding to promote OSSF repairs. • Repair or replace OSSFs by working with counties and communities. • Educate homeowners on system operations and maintenance. 			
Location: Entire watershed			
Critical Areas: Primarily subwatersheds 1, 2, 3, 6, 7, 8, 9 and 11 and system within 150 yards of a perennial water body			
Goal: Identify, inspect and repair or replace 50 failing OSSFs in the watershed, especially within critical areas.			
Description: Expanded education programs and workshops will be delivered to homeowners on proper maintenance and operation of OSSFs. Failing or non-existent systems will be repaired or replaced as appropriate and as funding allows.			
Implementation Strategy			
Participation	Recommendations	Period	Capital Costs
Counties, contractors	Identify, inspect and repair or replace OSSFs as funding allows	2019–2029	\$8,000-\$10,000 per system (estimate)
Counties, Municipalities Districts, Homeowners, SARA	Inspect and identify the possibility in connecting to existing infrastructure	2019–2029	N/A
SARA, AgriLife Extension, TWRI	Operate an OSSF education, outreach, and training program for installer, service providers and homeowners	2020, 2024, 2028	N/A
AgriLife Extension, TWRI	Develop and deliver materials (postcards, websites, handouts, etc.) to educate homeowners	2019–2029	N/A
Estimated Load Reduction			
As planned, 50 OSSFs will be repaired or replaced throughout the watershed. It will result in a potential load reduction of 4.04×10^{15} cfu <i>E. coli</i> per year. Nutrients and BOD5 will be reduced as well. Due to the differences of onsite conditions and type of system installed, the reduction rates are not consistent. However, they generally range from 10-40% for nitrogen, 85-95% for phosphorus and 90-98% for BOD5 (EPA 2003).			

Questions?

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