

# **Elm\Sandies Creeks Bacteria Source Assessment**

**Total Maximum Daily Load Program  
Water Programs  
Texas Commission on Environmental Quality**



# Potential Sources

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## Point Sources

Wastewater

Regulated Stormwater

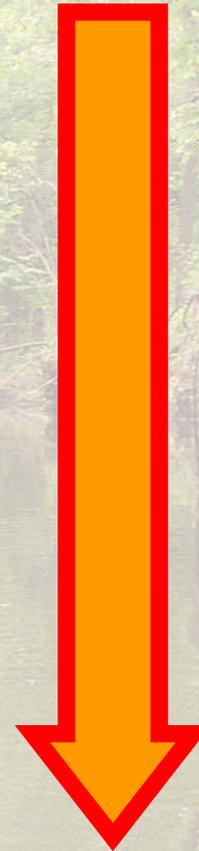
## Nonpoint Sources

Septic system

Agricultural\Urban runoff

Wildlife\Natural Sources

Highly controllable



Less Controllable



# Facility Inspections

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**TCEQ Office of Compliance and Enforcement**

**Inspections of TCEQ permitted discharges**

**Elm\Sandies Creek Discharge Inspections**

**City of Nixon – January 2008**

**City of Smiley – January 2008**

**Holmes Foods**



# Source Identification

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## Load Duration Curves (LDC)

**Analysis of bacteria samples at all flows**

**Graphic presentation of bacteria contamination**

**Can separate point and nonpoint sources**



# Load Duration Curves

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## Advantages

**Lower data requirements**

**Simple graphical presentation**

**Can guide implementation efforts**

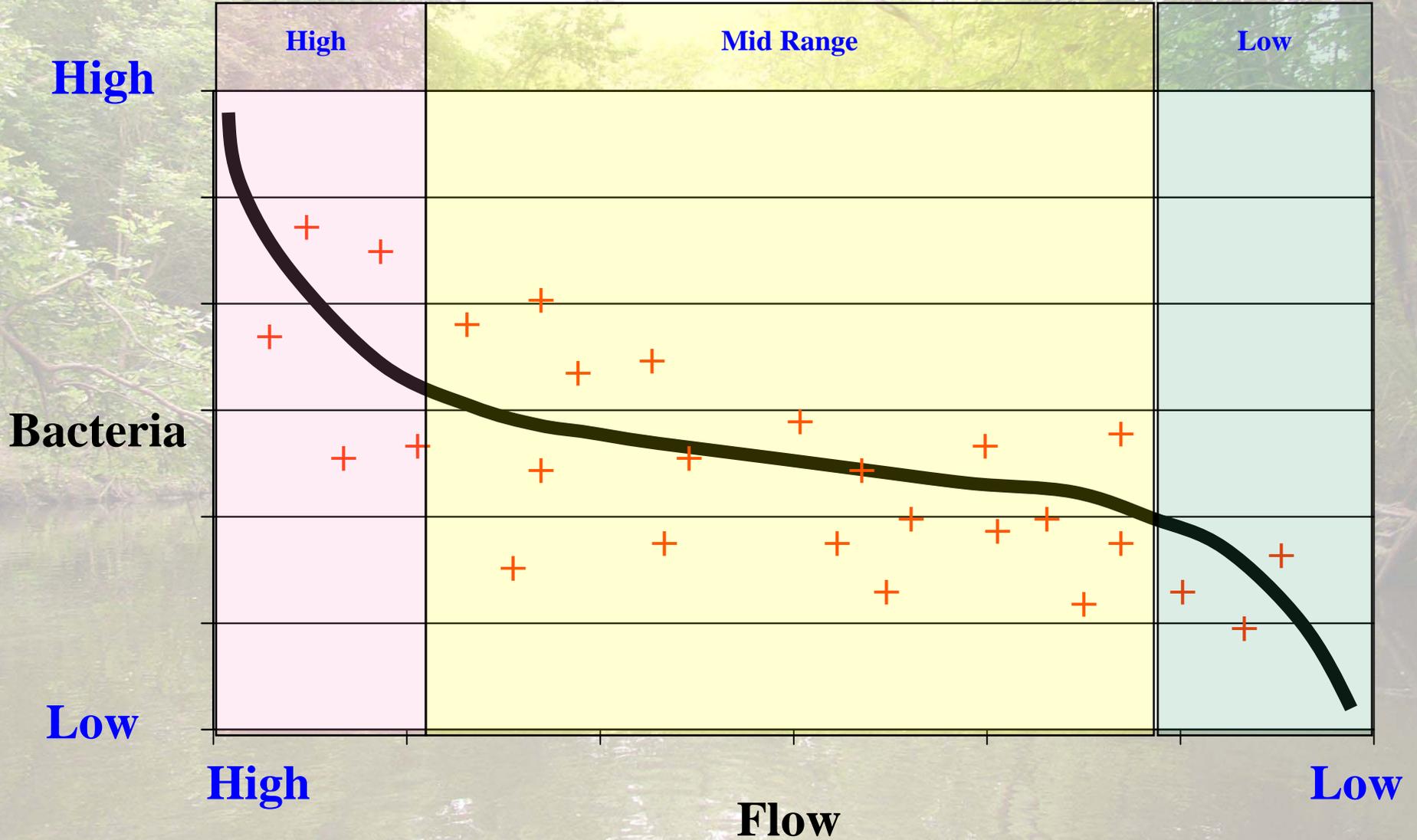
## Disdvantages

**Separates only point and nonpoint sources**

**Only works in flowing waters**



# Load Duration Curve



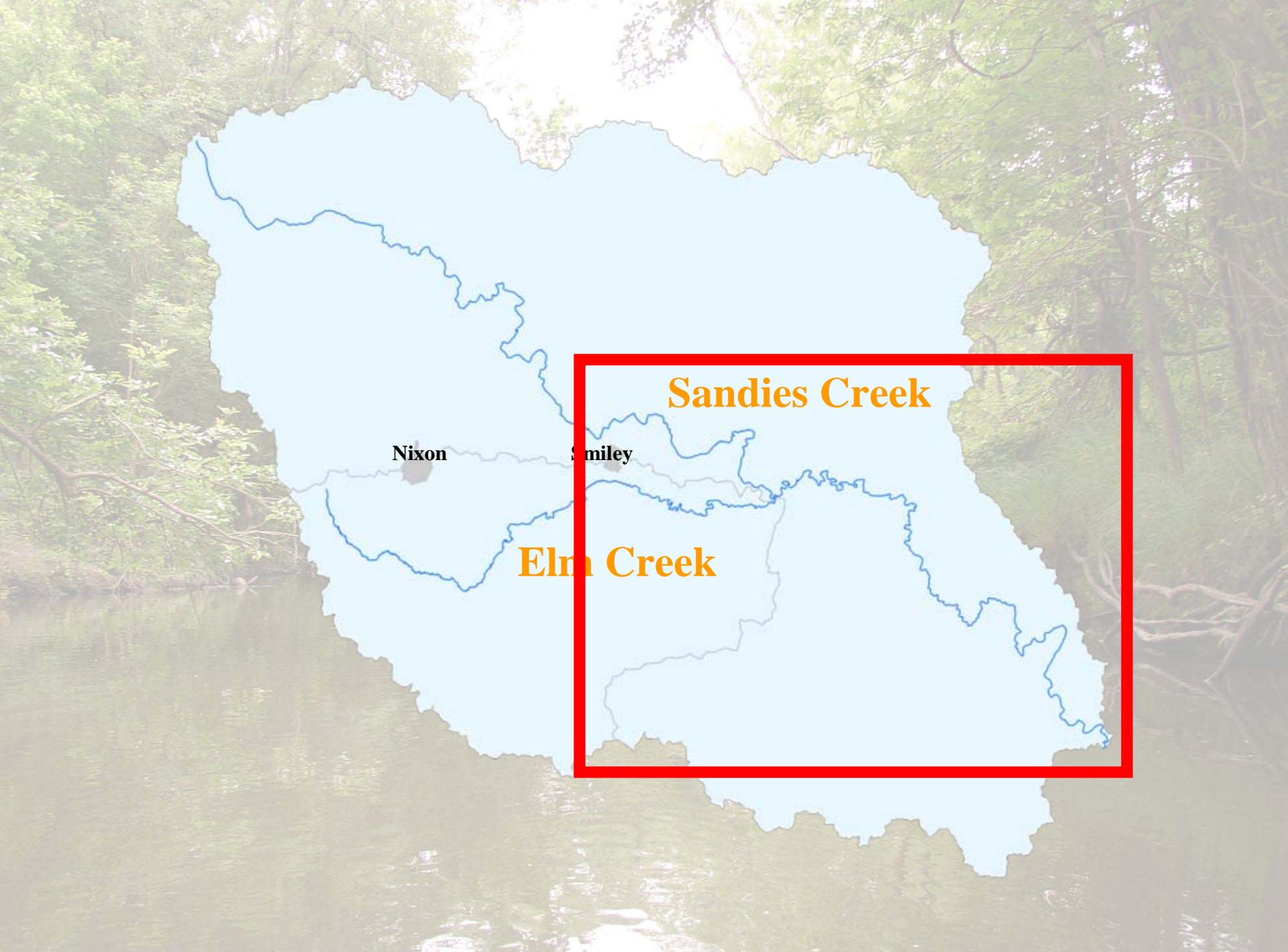
# Targeted Monitoring

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**Sample near suspected sources of bacteria**

**Assess bacteria in smaller areas**



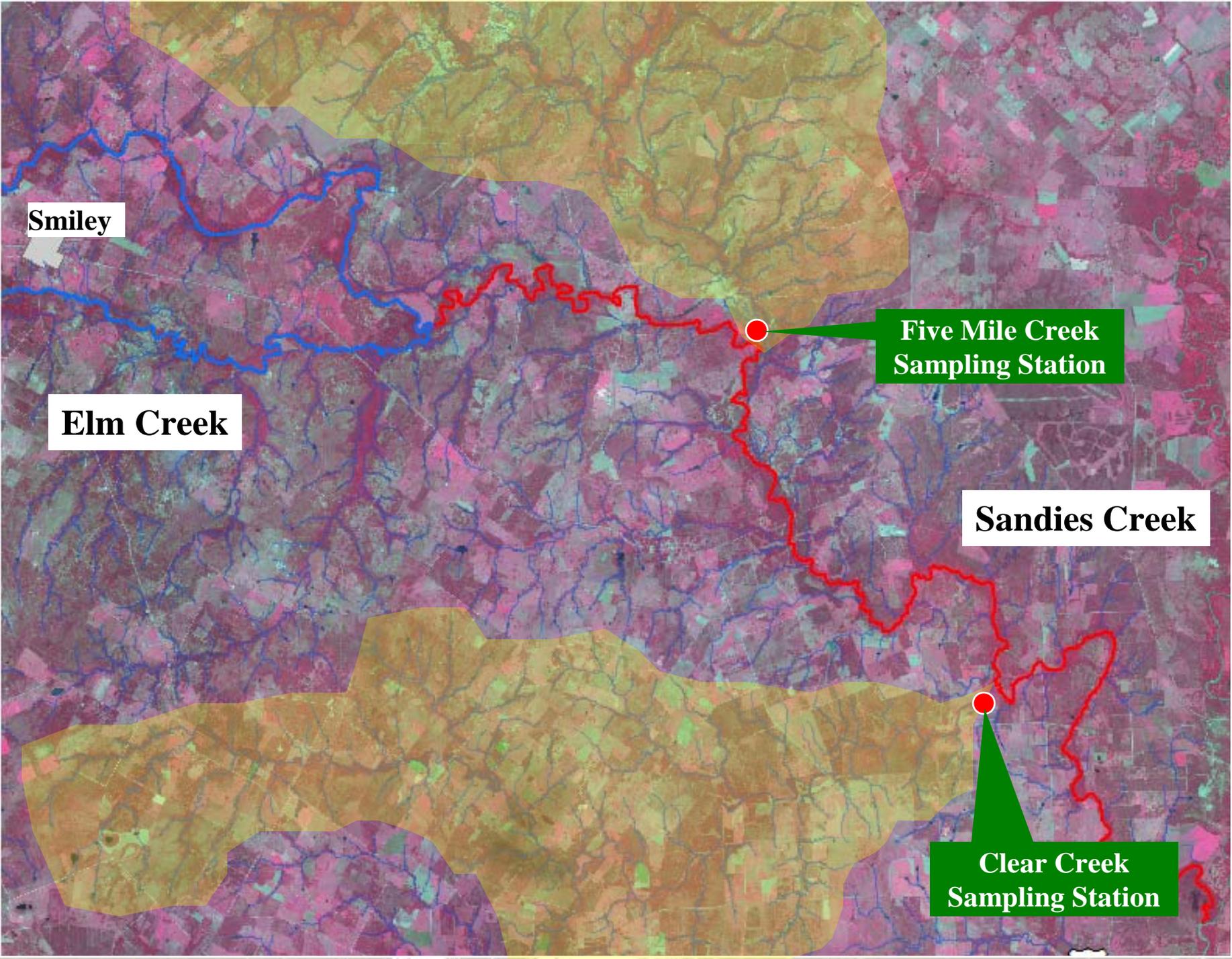


**Sandies Creek**

**Nixon**

**Smiley**

**Elm Creek**



**Smiley**

**Elm Creek**

**Five Mile Creek  
Sampling Station**

**Sandies Creek**

**Clear Creek  
Sampling Station**

# **Watershed Survey**

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**Tool to identify sources of pollution**

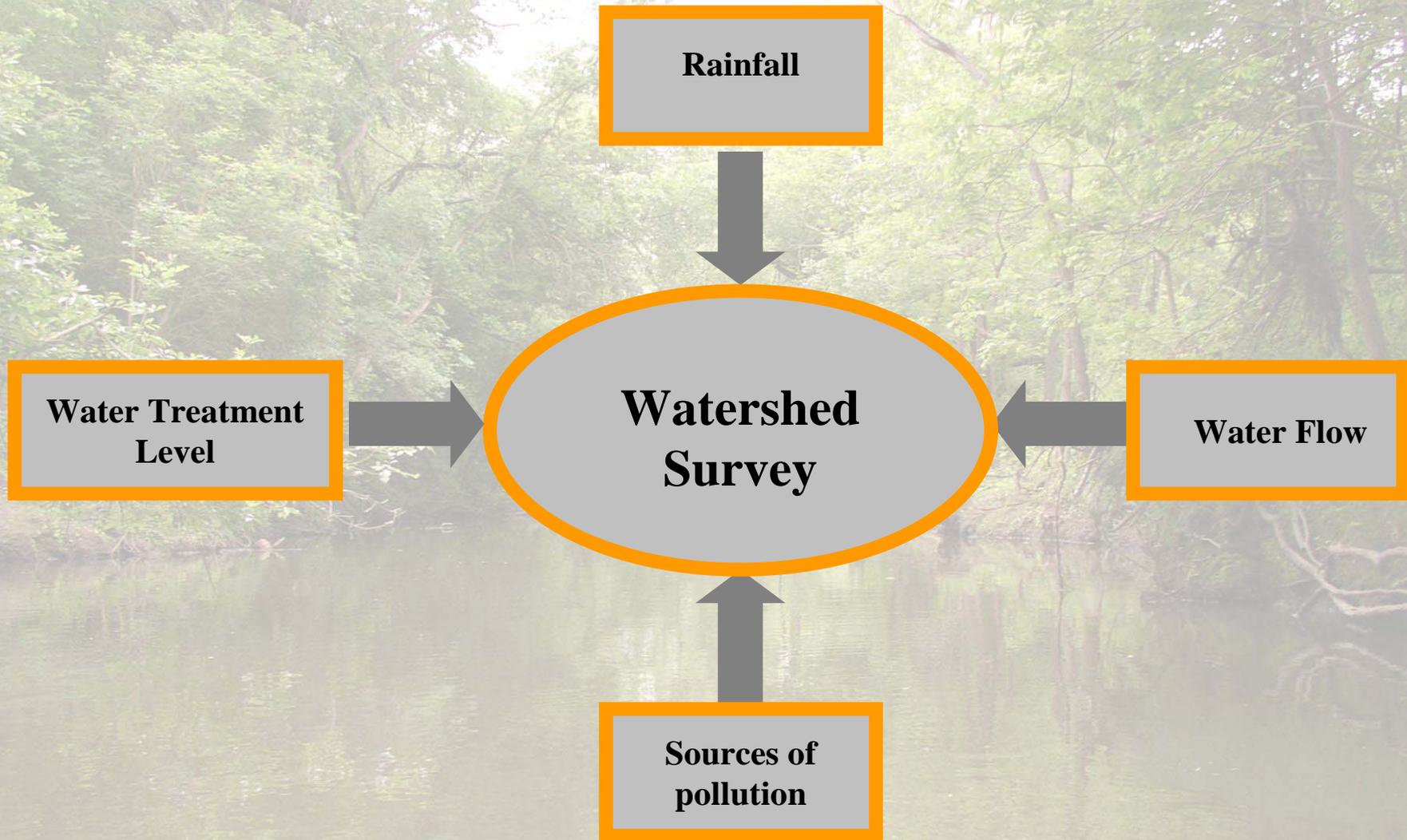
**Provide information on:**

**Source controls and identification**

**Persistent problems**

**Management actions**





# **Bacteria Source Tracking**

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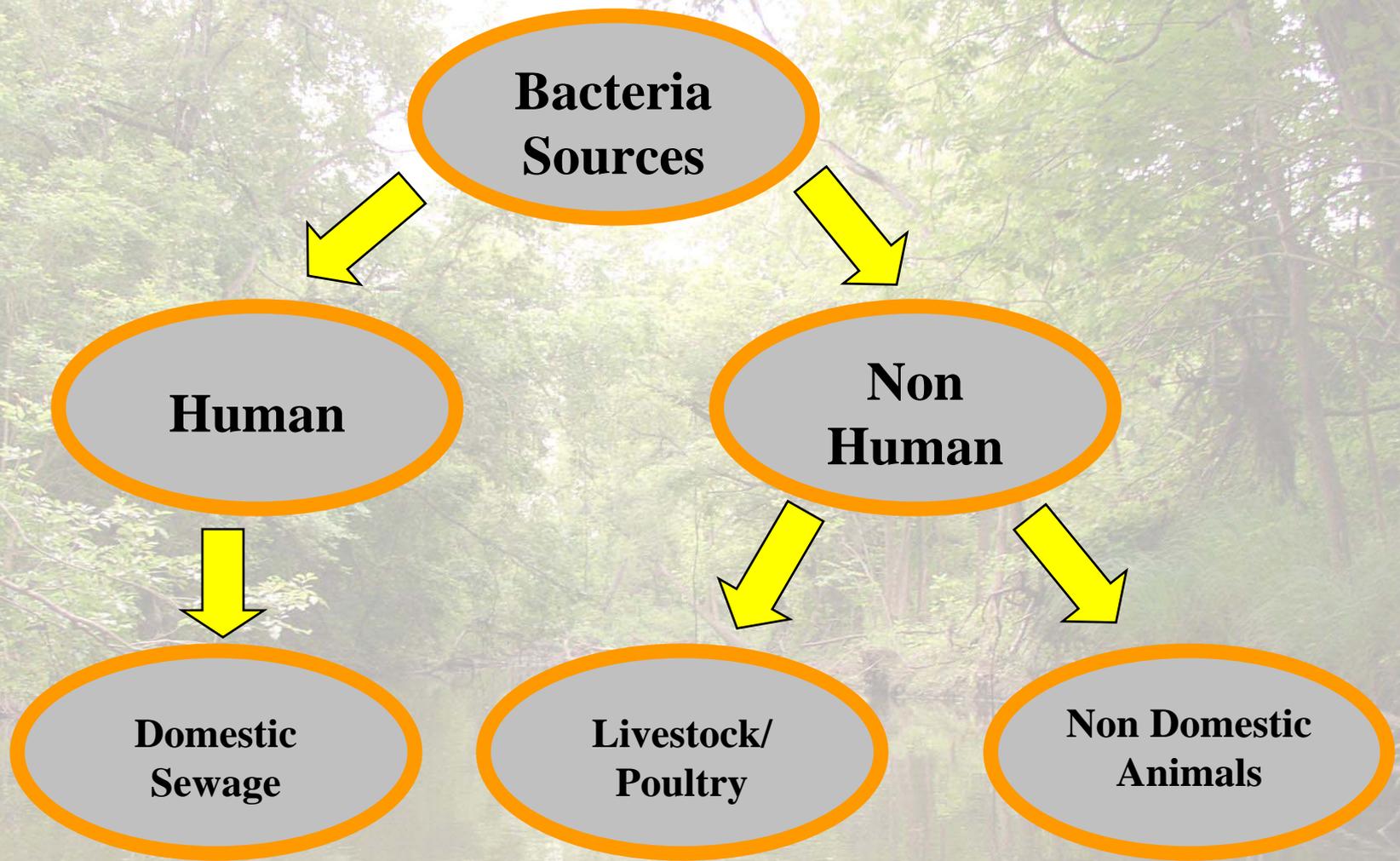
**DNA fingerprinting methods**

**Library dependent vs independent methods**

**Genotypic vs phenotypic methods**

**Multimethod approaches**





**Texas Bacteria Task Force indicates these 3 groups to be more scientifically justified**

# “Toolbox approach”

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**Bacteria  
Source  
Tracking**

**Load  
Duration  
Curves**

**Targetted  
Monitoring**

**Facility  
Inspections**

**Watershed  
Survey**



# Project Status

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## Verified Impairment

Targetted data collection

Water quality assessment

Past

## Evaluating Potential Sources

Load duration curve development

Additional sampling \ Inspections

Watershed Surveys

Bacteria Source Tracking

Present

## Plan Development

Water Quality Standards Revision

Future