



LOUISIANA  
**DEPARTMENT OF HEALTH**  
*Safe Drinking Water Program*

# DRINKING WATER

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# Safe Drinking Water

- Infrastructure Challenges
  - U.S. vs Louisiana
- Water Quality Challenges
  - U.S. vs Louisiana



# Safe Drinking Water Program

- LDH has primacy from EPA ~ 1320 public water systems (PWS)
  - Community vs. Non-Community
- Staff comprised of engineers, sanitarians, and other professionals
- Drinking Water Revolving Loan Fund
  - 2.45% over 20 years
  - Changes to come this year
- Operator Certification
  - ~4500 operators in LA

2017

# INFRASTRUCTURE REPORT CARD



## Drinking Water

**90% OF AMERICANS**

receive their drinking water from a

**PUBLIC DRINKING WATER SYSTEM**



# 1.2 million miles



0.24 million miles



5X





# **\$US 1 Trillion**

**(over the next two decades)**

REPORT CARD FOR  
**LOUISIANA**  
INFRASTRUCTURE  
2017



AVIATION  
**C**



BRIDGES  
**D+**



COASTAL  
**D+**



DAMS  
**C+**



DRINKING  
WATER  
**D-**



INLAND  
WATERWAYS  
**D-**



LEVEES  
**C**



PORTS  
**C-**



ROADS  
**D**



SOLID WASTE  
**C+**



WASTE WATER  
**C-**



**G.P.A.**

**D+**



# **\$LA 5 billion**

**(over the next two decades)**

> 50% of water systems are 50+ years or older





**88%**

**(4.12 M people on public drinking water)**

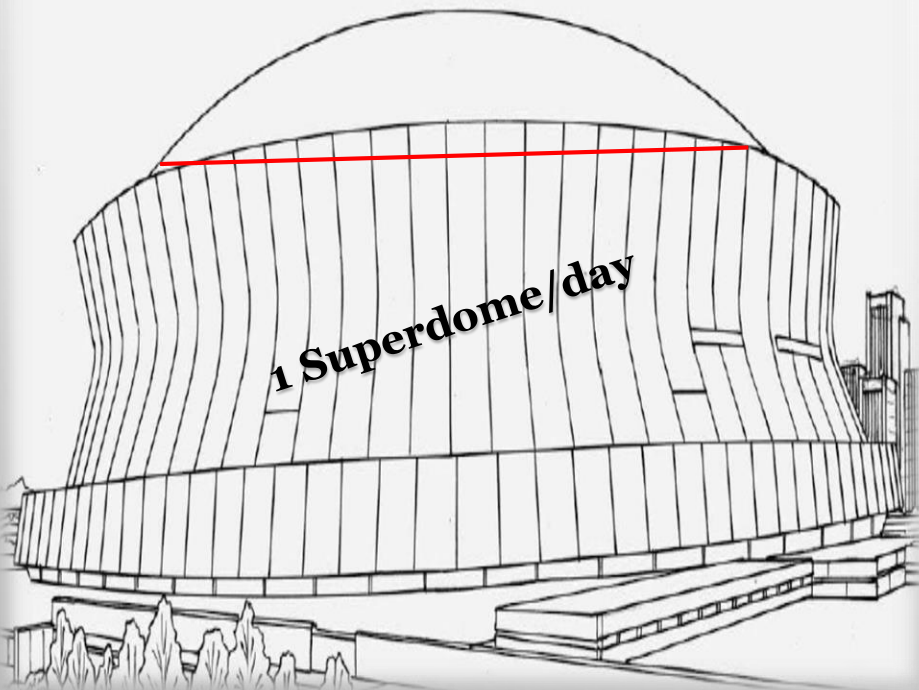
93% - groundwater  
7% - surface water

**746,000,000 gal/day**

**31,000,000 gal/hr.**

**1,295,139 gal/min.**

**21,585 gal/sec.**



# Rural Water Infrastructure Committee (RWIC)

- Governor's initiative to address failing water systems
- Committee includes all funding agencies
- Other members: LMA, police jury, Gov office, GOHSEP
- Initially looked at 10 most distressed systems
- SB 170 (2019) proposed to formalize the RWIC
- Fiscal administrators

# ACT 292 (2013)

## New Design Standards

- Water committee (WC) public meetings was created; info posted at: [www.dhh.la.gov/watercommittee](http://www.dhh.la.gov/watercommittee)
- Comprised of LDH staff, stakeholders and design professionals from the drinking water community
- December 2016, WC (using 2012 ten-state standards) finalized the LA design standards
- August 1, 2018 - Effective date of design standards

# Design Standards for Water Works

Changes for new construction of PWS infrastructure:

- Standby power for any community and NC system serving a hospital
- 2 sources (interconnections count) for community and NC systems serving a hospital
- MPA testing for new ground water sources
- Weighing scales for chlorine gas
- 10-day chemical supply
- Overfeed protection in lieu of day tanks (except for fluoride)
- Housing of chlorine gas feed and storage
- Pressure tanks must meet ASME or LDH-approved alternate
- 20 PSI minimum pressure
- Pressure filters filtration rate up to 6 gal/min/sqft.

# What about Existing Systems?

- ~657 Sans Surveys in FY18
- Significant deficiencies - noted problem with a pathway to contamination, adversely affect water quality, etc.
- Examples:
  - Holes in casing
  - Chemicals do not meet standards (NSF/AWWA)
  - Physical connections with non-potable sources
  - No cross connection control program
  - Not using a certified lab or correct test method for sample testing
  - Lack of permit prior to constructing or modifying infrastructure
  - Operating without a duly certified operator
  - Unlocked gate/fence around facilities
  - Critical system component in poor condition or defective and indicative of failure or imminent failure
  - Leaks due to defective materials, improper jointing, corrosion, settling, impacts, freezing, etc.

# New Significant Deficiencies

## Effective 8/1/18

- Standby power – required for community and NC serving a hospital; a dedicated portable or in-place auxiliary source is acceptable
- Flood protection - critical community water supply facilities shall be protected to the 100-year flood elevation;
- Secondary source - required for community and NC serving a hospital. Connection to another public water supply of sufficient capacity or providing an LDH-approved annual public notice to customers may be acceptable
- Minimum system pressure to 20 psi.

<b>Deficiencies</b>	<b>2017 Citations</b>	<b>2018 Citations</b>
Pathway for Contamination/Water Source	108	249
Cross Connection Control/ Backflow Protection	61	139
Maintenance or Repair	57	77
Security	49	65
Sample Tap	23	64
Cross Connection/ Non-potable Source	20	47
Pathway for Contamination/ Water Storage	24	46
Critical System Component Failure/Defective	17	34
Leaks in System Components	11	34



# Contaminant Regulations

## Primary MCLs

- Enforceable
- Limits contaminants that adversely affect public health
- Includes bacteria (*E. Coli*) and chemicals (arsenic, atrazine, benzene, uranium, etc.)
- Acute vs. Chronic

## Secondary MCLs

- NOT Enforceable
- Refers to aesthetic quality (taste and odor)
- Includes iron, pH, corrosivity, total dissolved solids, manganese, etc.
- Most water complaints are due to SMCL exceedances

**2018 Violation Breakdown for Community Water Systems (~1,000)**

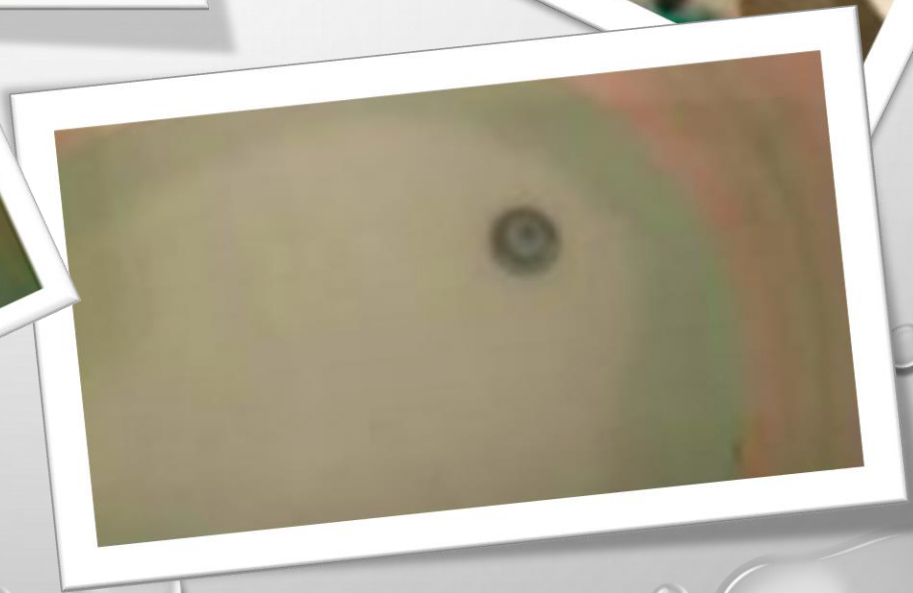
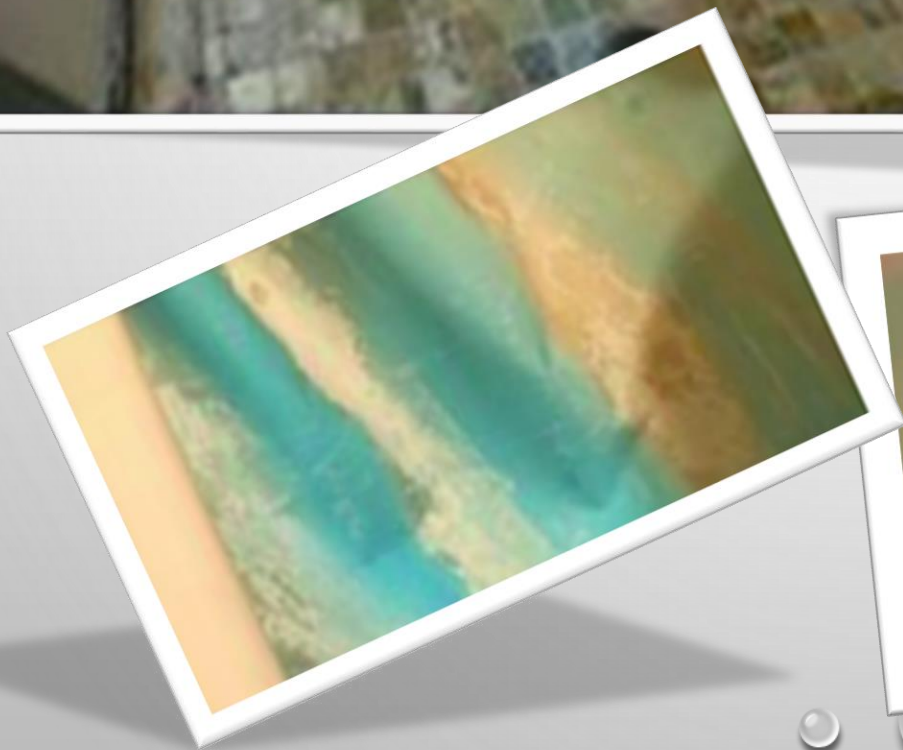
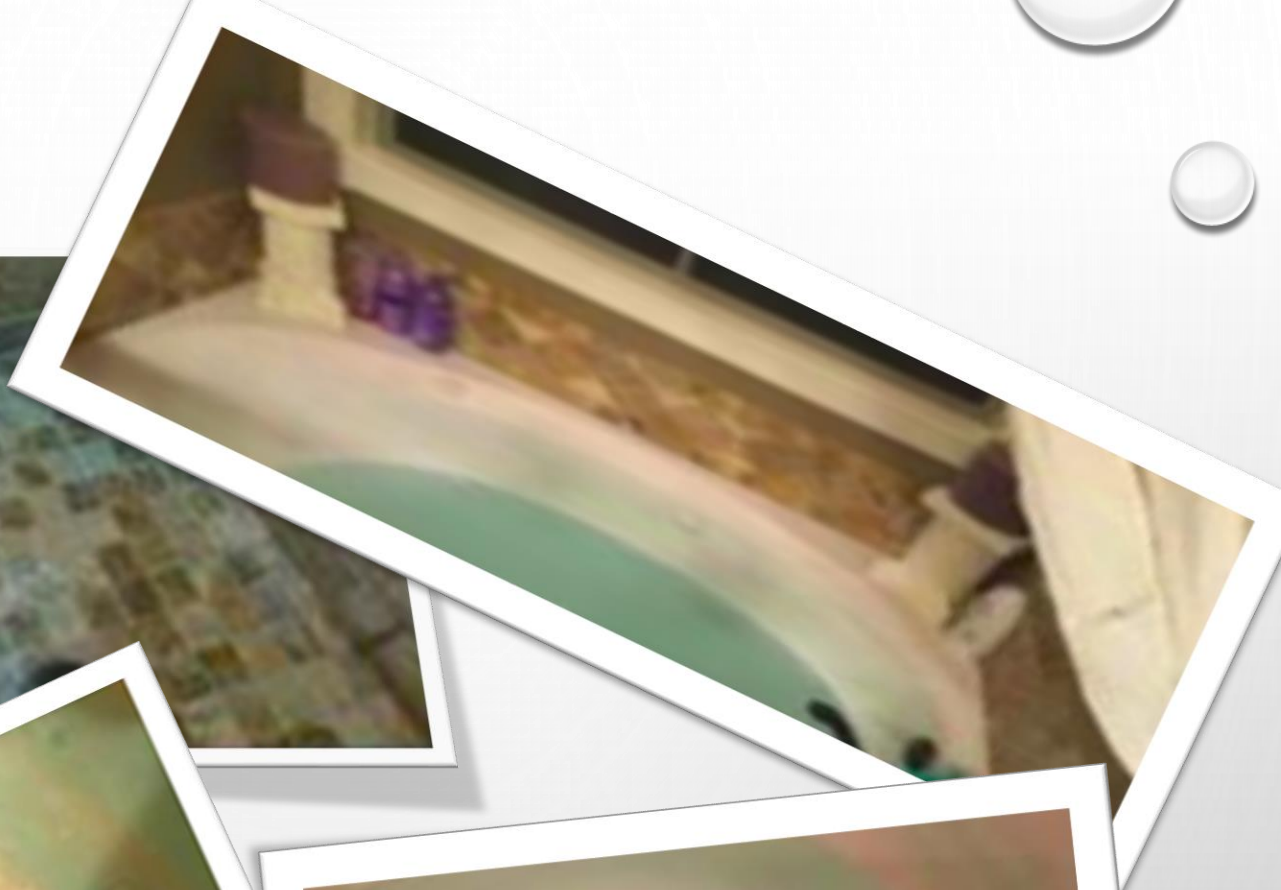
COUNT	VIOLATION CODE	VIOLATION	PARAMETER
638	02	MCL, LRAA	TOTAL TRIHALOMETHANES (TTHM)
208	02	MCL, LRAA	TOTAL HALOACETIC ACIDS (HAA <sub>5</sub> )
100	CT	5% DS BELOW MIN 0.5 - 2 MONTHS CONSEC (GW)	CHLORINE
19	02	MCL, AVERAGE	ARSENIC
12	CT	5% DS BELOW MIN 0.5 - 2 MONTHS CONSEC (GW)	CHLORAMINE
8	46	INADEQUATE DBP PRECURSOR REMOVAL	CARBON, TOTAL (TOC)



# Iron And Manganese Control

Fe & Mn Levels	> SMCL & <= 3xSMCL	> 3xSMCL	Total
# PWS	156	301	457
# PWSs with treatment	69	102*	171
# PWSs without treatment	87	126	213
*sequestration not included (73 PWS sequester)			
Cost Estimate Scenarios	> SMCL & <= 3xSMCL	> 3xSMCL	Total
Removal Costs - All PWS*		\$1.1B*	
Removal Costs - PWSs without removal treatment	\$465M**	\$571M	\$1.04B
Removal Costs - PWSs with removal treatment	NA	\$586M	
Sequestering Costs – PWS without treatment	\$185K	NA	\$185K
*Regardless of PWS current treatment			
**If removal is required (due to customer complaints and/or ineffective chemical treatment.			

Monitoring equipment - water systems will be required to monitor for iron and/or manganese at the system. The estimated cost for the equipment to monitor is \$1,400.00.





# FLINT, MICHIGAN

- April 2014 – changes source from Detroit to Flint River
- August 2014 – E. Coli/boil advisory
- October 2014 – Flint General Motors stops using water due to rusting car parts
- December 2014 – disinfection byproducts violation
- February 2015 – EPA informs Michigan officials of lead problem
- August 2015 – 20% of 120 samples exceeded 15 ppb
- October 2015 – purchase from Detroit again
- Late 2016 – lead 90<sup>th</sup> percentile is below 15 ppb

# ST. JOSEPH, LOUISIANA



- December 2016 - Governor proclaimed emergency
- LDH tasked with collecting lead and copper from every home
- 438 samples collected from homes, businesses and schools
  - 23.1% exceed AL for lead
  - Highest value was 1810 ppb
  - 38 sites > 50 ppb; 101 sites > 15 ppb
  - 90+% collection rate
- Water system completely reconstructed ~\$9M
  - Do not drink - water hauled for several months
  - Distribution and treatment plant; zinc orthophosphate
  - Currently system on increased monitoring

# Lead And Copper Rule

- Rule sets action levels (AL); not mcls
- Most systems monitor every 3 years
  - New source or treatment changes prompts increased monitoring.
- Sampling kits are provided. First draw samples collected by customers from **INSIDE** taps (kitchen or bathroom sinks).
- Systems with  $\geq$  90<sup>th</sup> percentile AL exceedances required to install corrosion control treatment.



# Lead And Copper Rule cont.

- Exceeding the lead and copper ALs requires system to:
  - Monitor every 6 months
  - Monitor source water for lead and copper;
  - Monitor water quality parameters
  - Issue public education lead materials
- Systems must notify customers of their lead results within 30 days of receipt regardless of system level.
- Flint incident elevated concern of lead in drinking water; increased EPA, media and activist attention; EPA is asking states to re-evaluate rule implementation.
- LCR - long term revisions expected in 2019.



# ACT 632 (2018)

- Requires lead testing of 12 public primary schools constructed prior to 1986. Effective 8/1/18

2018 Schools Tested	2019 Schools Tested
<b>Barkdull Faulk Elem, Monroe</b>	<b>Roseland Montessori, Roseland</b>
<b>Bayou Blue Elem, Houma</b>	<b>Tallulah Elem, Tallulah</b>
<b>Bernard Terrace Elem, BR</b>	<b>Palmetto Elem, Palmetto</b>
<b>Cherokee Elem, Alexandria</b>	<b>Live Oak Elem, NOLA</b>
<b>Covington Elem, Covington</b>	
<b>Creswell Elem, Shreveport</b>	
<b>Drew Elem, West Monroe</b>	
<b>Dwight Eisenhower, NOLA</b>	
<b>Harahan Elem, Harahan</b>	
<b>Loranger Elem, Loranger</b>	
<b>Prairie Elem, Lafayette</b>	
<b>Prien Lake Elem, Lake Charles</b>	

\*No Lead Exceedances to date

\*WIIN Act – voluntary testing for daycares and schools statewide in 2019

# *Naegleria fowleri* (Nf) Amoeba

2011: 2 people died from *Naegleria fowleri* (Nf) in DeSoto Parish and St. Bernard Parish. (Both cases-adult using a neti-pot)

- Nf was not detected in samples collected from water distribution systems.
- Nf was detected in samples from plumbing fixtures (*i.e.* household taps, shower, bathtub faucet, etc.).

2013: 2<sup>nd</sup> death in St. Bernard Parish from Nf infection. (Case - child using a slip-n-slide)

- New sampling method used.
- CDC tests confirmed presence of the Nf amoeba in water distribution systems.
- Nf detected in areas with low to no chlorine residuals.

# Minimum Disinfection Rule

Develop/maintain a monitoring plan for TC/Chlorine sites using the MPP

- Effective 2/1/14 PWS must:
  - Maintain levels in storage tanks and at all points in the distribution system at all times:
    - 0.5 mg/l of free chlorine; or
    - 0.5 mg/l of chloramine residual (measured as total chlorine) for systems that use chloramines
  - Monitor:
    - 25% more monitoring required for disinfectant residual concentration (chlorine or chloramine).
    - 50% more sites required for total coliform and chlorine monitoring.
- Effective 3/1/14 PWS using Chloramine systems must have a Nitrification Control Plan

# Final Rule – Minimum Disinfection

- By March 20, 2016, systems must issue public notice when disinfectant residuals  $< 0.5$  mg/L in over 5% of measurements taken each month for 2 consecutive months.
- By January 1, 2017, chloramine systems must submit a revised nitrification control plan that includes:
  - Measure/record free ammonia weekly at point of entry
  - Measure/record nitrite quarterly and in response to an action level trigger within the distribution system at sites prone to nitrification (storage tanks, low flow areas)
  - Report monitoring results if system fails to meet the minimum disinfectant level.

# *Naegleria Fowleri* Surveillance Program

- LDH conducts sampling during the warm water months for Nf amoeba in drinking water.
- Target PWS based on compliance history with the minimum disinfection standard.
- Other factors considered include source water type (ground water vs. surface water), disinfection type (chloramines vs. free chlorine) and total coliform bacteria compliance history.
- Amoeba sampling has confirmed the Nf amoeba in **9** PWS, several with multiple occurrences.

Naegleria fowleri amoeba Detections in Louisiana Public Water Systems*		
Sample Date	Public Water System	Parish
9/6/13, 6/24/15, & 7/24/15	St Bernard Parish Waterworks	St. Bernard
9/27/13	Desoto Parish Water Works District 1	Desoto
8/12/14	St John Water District 1	St. John
8/25/14	Ebarb Wwks Dist # 1 - Aimwell Area	Sabine
7/14/15	Ascension Consolidated Utility District 1	Ascension
8/5/15, 6/20/17, 5/29/18**	Schriever Water Treatment Service Area	Terrebonne
8/19/15, 6/20/17	North Monroe Et Al Water System	Ouachita
9/19/2018	Sligo Water System Incorporated	Bossier
10/2/2018	City Of Bossier Water System	Bossier
*Does not include detections in raw (untreated) water.		
**Samples collected by the PWS		

# Unregulated Contaminant Monitoring (UCMR)

- Detections must be reported in the CCR.
- Large PWS (>10k pop) and a selected group of small PWS (≤10k pop) will conduct assessment monitoring:
  - 10 cyanotoxins for 4 consecutive months during March 2018 - Nov 2020 (SW systems only)
  - 20 chemical contaminants: SW 4 consecutive quarters and GW 2 quarters during MP of Jan 2018 - Dec 2020 for:
    - 2 metals (germanium and manganese); 8 pesticides and 1 pesticide manufacturing byproduct; 3 brominated haloacetic acids (HAAS) & TOC and bromide; 3 alcohols; and 3 semivolatiles.
- Samples collected at entry point(s) to the distribution system (EPTDS) for all contaminant except for the HAAS taken in the distribution system and toc and bromide taken at the source.
- EPA is notifying PWS when MN >300 ppb (10-day HA for infants).

# Per- And Polyfluoroalkyl Substances (PFAS)

- Over 4,000 PFAS may have been manufactured and used in a variety of industries worldwide since the 1940s (OECD 2018, *guelfo et al.* 2018). PFOA and PFOS - 2 of the most well-known and prevalent PFAS chemicals.
- Under UCMR3, 87 PWSS monitored for PFAs in LA from 2013-2015.
  - No detections above minimum reporting limits (below) in LA
  - However, eurofins reported that LA had 1-9 PWSS with 1 PFAs detection > 5 ng/l (ppt)
- EPA set a lifetime health advisory (HA) for PFPs and PFOA at 70 ng/l (individual and combined).
- Will be monitored again in ucmr5. EPA will move forward with the maximum contaminant level (MCL) process for PFOA and PFOS; may regulate a broader class.
- At least 5 states have a PFOA/PFOS standard lower than the ha. ~12 states use the HA.

PFAS Compounds		MRL <sup>1</sup> ug/L (ppt)	HA ug/L (ppt)	California & New Jersey*	Massachusetts & Vermont	Minnesota
perfluorobutane sulfonic acid	PFBS	0.09 (90)				
perfluoroheptanoic acid	PFHpA	0.01 (10)				
perfluorohexane sulfonic acid	PFHxS	0.03 (30)				
perfluorononanoic acid	PFNA	0.02 (20)		13*		
perfluorooctanoic acid	PFOA	0.02 (20)	0.07 (70) <sup>2</sup>	14	20	35
perfluorooctane sulfonic acid	PFOS	0.04 (40)	0.07 (70) <sup>2</sup>	13	20	27
<sup>1</sup> EPA Method 537		<sup>2</sup> Combined		Units are ppt (ng/L) unless indicated otherwise.		

# 2018 Regular Session

**ACT 292** - (eff. 8/1/18) requires community systems to:

- Maintain record of complaints and associated corrective actions for 5 years
- Attend a training course for customer/public service/ relations as required by LDH
- Implement a flushing program as directed by LDH

**ACT 590** - (eff. 8/1/18) retail food establishments are not required

to meet part XII unless they meet the PWS definition.





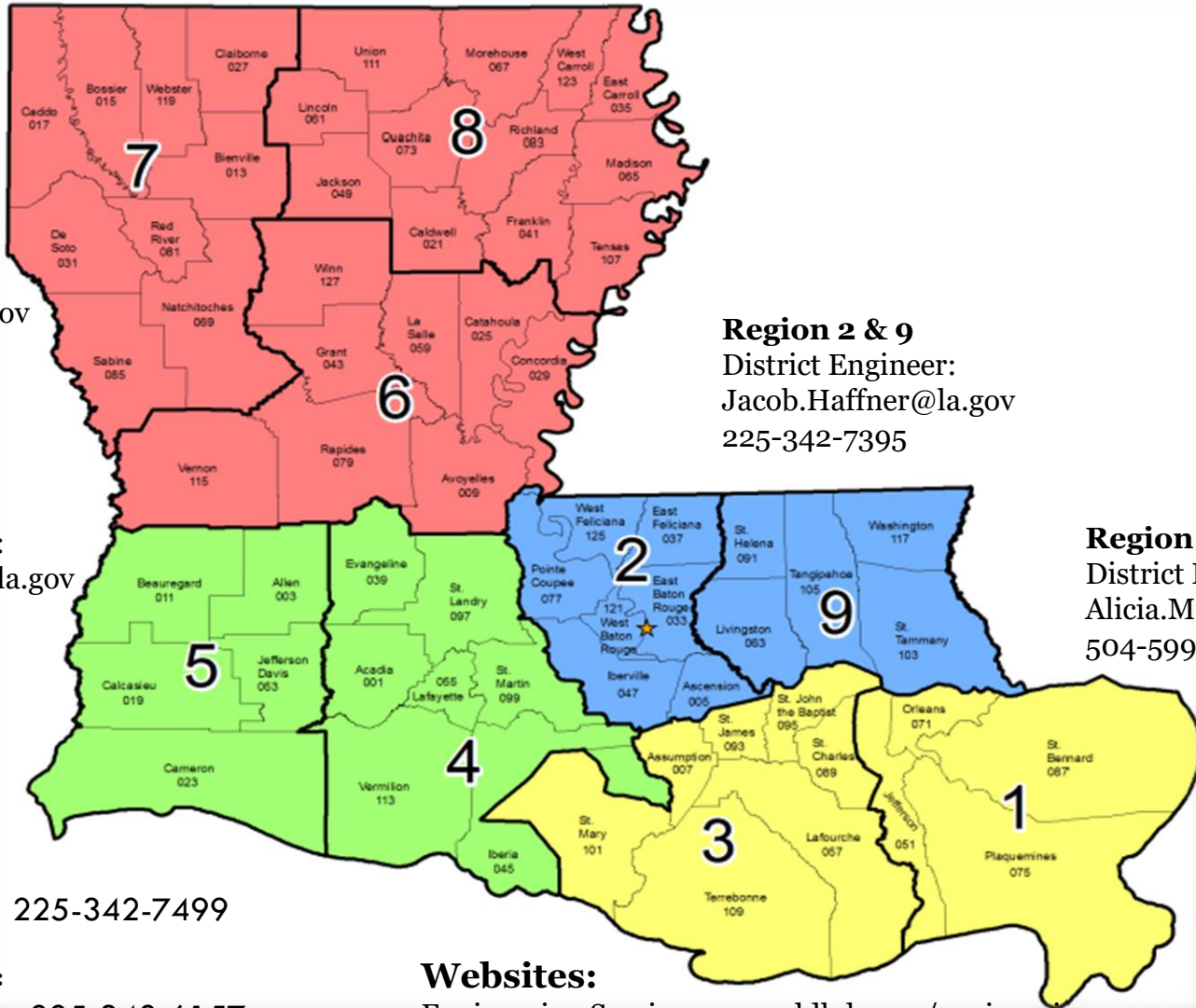
The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it, primarily concentrated in the top-left and bottom-right corners.

# WHAT ABOUT MY WATER QUALITY???

[www.ldh.la.gov/SafeDrinkingWater](http://www.ldh.la.gov/SafeDrinkingWater)

[www.ldh.la.gov/drinkingwaterwatch](http://www.ldh.la.gov/drinkingwaterwatch)

# Questions??



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Drinking Water Watch: [www.ldh.la.gov/drinkingwaterwatch](http://www.ldh.la.gov/drinkingwaterwatch)