

## Silver Falls 2016

1. Flint MI Lead Crisis, Aftermath, and Ramifications

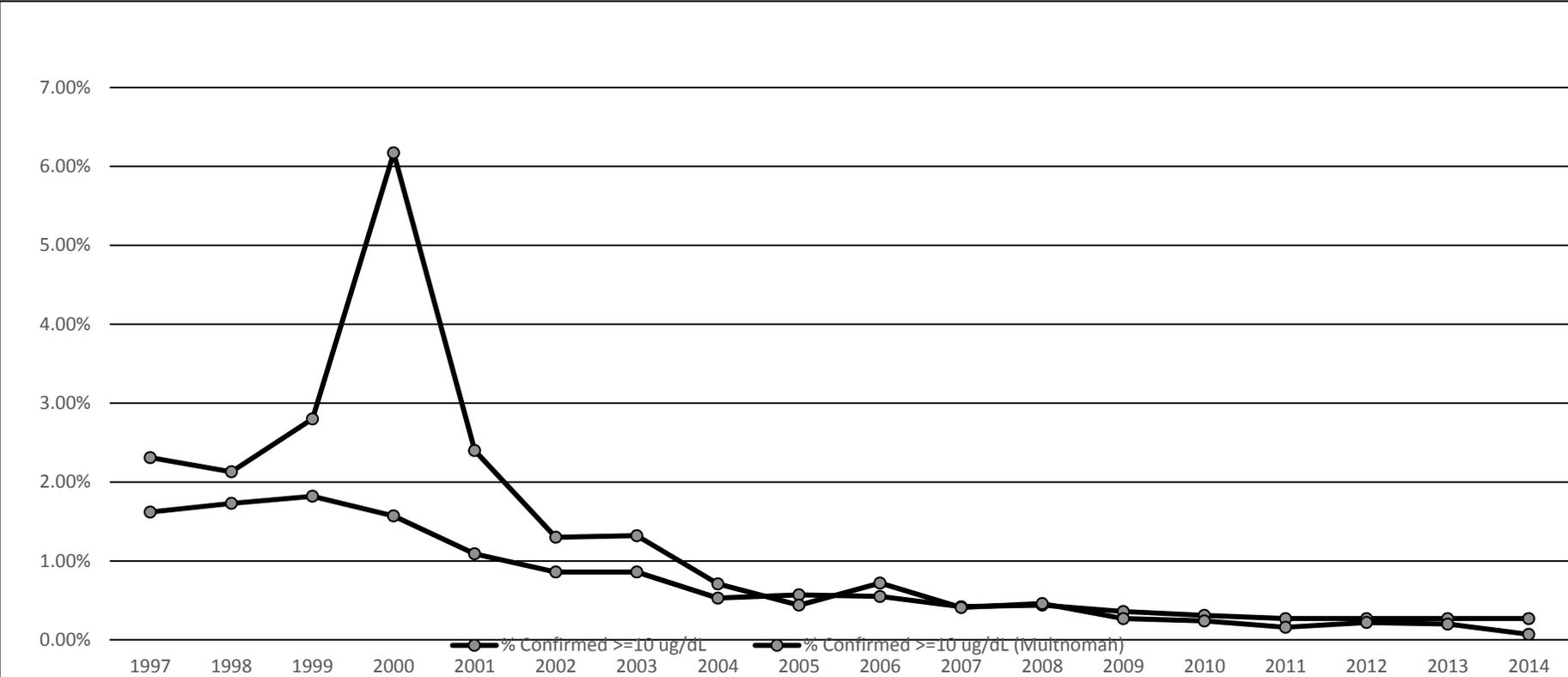
2. Program funding and priorities

# Why is lead bad?

- Potent neurotoxin
- More profound impacts on children, due to smaller body volume. Concentrates in brain cells.
- Once deposited in nervous system, can't be removed
- Increased blood lead levels associate with decreased IQ
- Known sources: paint and gasoline, but also water
- Follow-up to elevated blood lead in children:
  - Increase nutrition
  - Blood lead rechecks
  - In-home environmental assessments
- **Pollution control has been effective; child blood levels continue to decline, mostly due to reductions in lead paint in households**

# Oregon child blood lead levels 1997-2014

CDC recommended level <10 ug/dl



# Drinking water lead regulations

- 1975 - EPA Maximum Contaminant Level for lead: 0.05 mg/L
- 1985 – Oregon
  - Lead solder prohibited in plumbing and water systems
  - Lead pipes in water systems prohibited, water suppliers submit schedules to identify and remove any lead pipes
- 1991 – EPA Lead and Copper Rule
  - Tap monitoring at specified sites and schedules
  - Action levels for lead (0.015 mg/ L) and copper (1.3 mg/L)
  - Specific actions if lead AL exceeded: public education, corrosion control studies and treatment, water quality parameters
- 2000 & 2007 - Short-term revisions to EPA LCR
- 2012 – CDC lowers recommended blood-lead level
- 2018/19 - Final Long Term Revised LCR

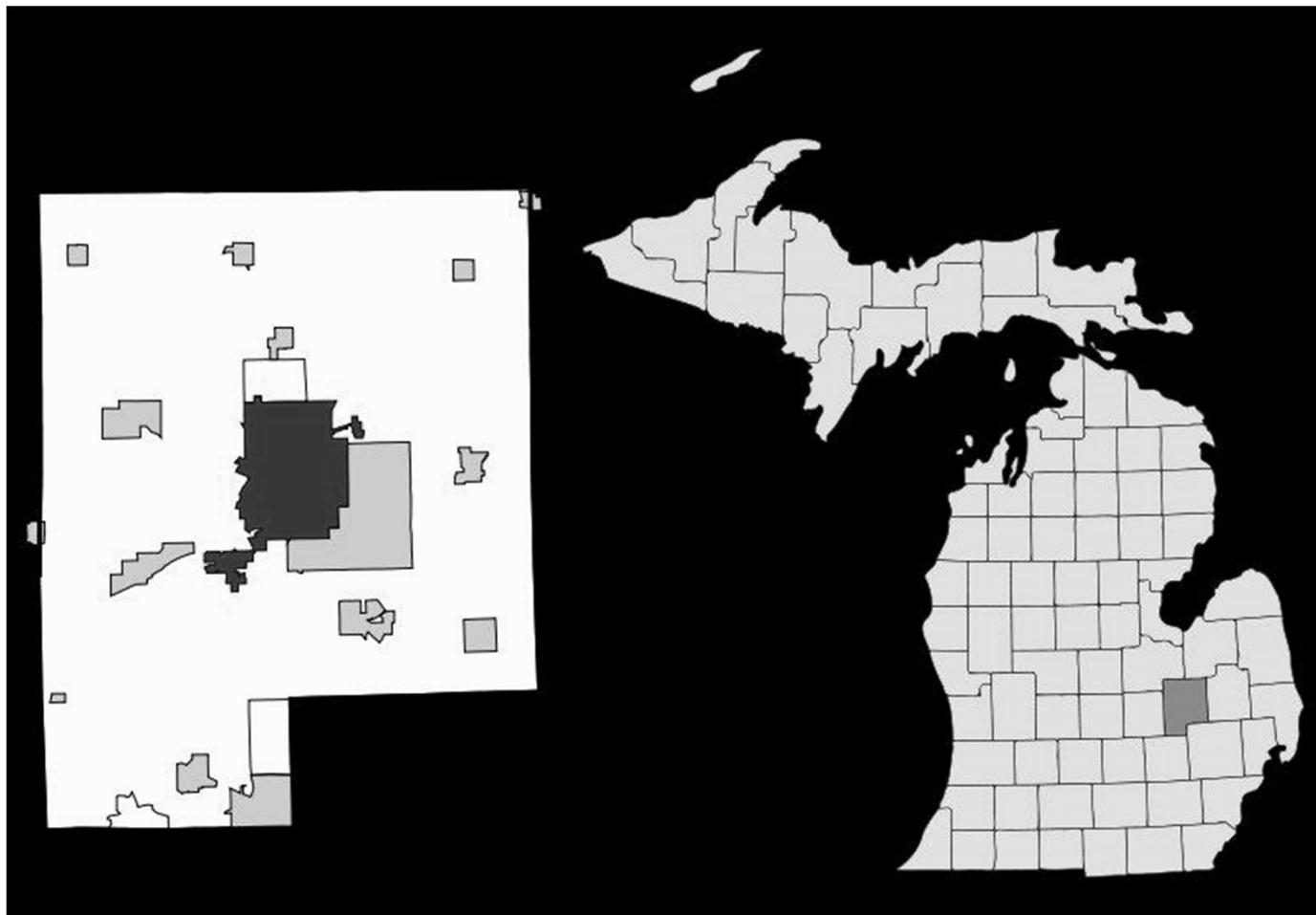
# Regulatory predictions (Jan. 2016, AWWA)

Rule	Proposal	Final
4 <sup>th</sup> Unregulated Contaminant Monitoring Rule (UCMR4)	2015	2017
<b>Long-Term Revisions to the Lead and Copper Rule</b>	<b>2017</b>	<b>2018/19</b>
Perchlorate?	2017?	2019?
Carcinogenic Volatile Organic Compounds (cVOCs)?	2018?	2020?
Strontium (if positive regulatory determination made)	2018	2019-20
Cyanotoxins	2023	2025

## NDWAC recommendations for LTRLCR – August 2015

- Proactively replace lead service lines (including “pigtails”!)
- More robust and targeted public education
- Strengthen corrosion control treatment criteria, increase water quality parameter (WQP) monitoring
- Modify sample site selection to include customer requests, establish household lead action level and follow up
- Separate requirements for copper, focus on copper corrosion

# Flint, Michigan



# The Flint MI community

- Dramatic population decline: 200,000 in 1960, <100,000 in 2014
- 57% African American
- 41.6% below federal poverty thresholds (2.8 X national ave.)
- Median occupied home value \$36,700 (20% of national ave.)
- 2013 crime index – 811 (national ave. 295)
- 2015 determinants of health rankings for Genesee County (out of 83 MI counties):
  - Health outcomes – 81<sup>st</sup>
  - Length of life - 78<sup>th</sup>
  - Quality of life – 81<sup>st</sup>
  - Health behaviors – 77<sup>th</sup>
  - Social/economic factors – 78<sup>th</sup>
  - Physical environment – 75<sup>th</sup>
  - Quality of clinical care – 22<sup>nd</sup>

# The Flint MI water crisis – the “what”

- Older housing, estimated 10-80% with lead service lines
- To save money, discontinued water purchased since 1967 from City of Detroit (with corrosion inhibitors). Original Flint River source put in use without corrosion control treatment (April 2014)
- LCR not followed properly, including sample site selection and procedure and need for immediate corrosion control
- Immediate impacts:
  - widespread “red water”, taste and odor complaints
  - *E. coli* detections, with boil water advisories
  - Elevated TTHMs due to increased chlorination
  - Spike in *Legionella* cases – possible outbreak?
- Lead levels at the tap rose rapidly, but obscured by sampling deficiencies and governmental indifference

# The Flint MI water crisis – the fix

- Genesee Co HD issues “do not drink” advisory (October 2015)
- City switches back to Detroit water (October 2015)
- City adds supplemental corrosion inhibitors to purchased Detroit water (December 2015)
- FEMA sends bottled water (December 2015)
- Governor declares emergency, activates EOC (January 2016)
- Bottled water and filter deliveries begin (January 2016)
- EPA SDWA emergency order (January 2016)
- Lead levels at tap start and continue to decline, but still too elevated for water use as of April 2016

# The Flint MI water crisis – the impact

- Incidence of tap water lead levels  $>0.015$  mg/L increased from 4% to 10.6% after source change, some very high
- Correspondingly, incidence of child blood levels  $>5$  ug/dl increased from 2.4% to 4.9% after source change, 6.6% where water lead levels were highest, no change outside city
- Impacts were entirely preventable, but for failures of established checks and balances at all levels
- Huge increase in public distrust of all levels of government, including public water suppliers and regulators
- Increased scrutiny of and attention to lead in drinking water nationwide by Congress, investigative media, EPA, State of Michigan
- Amongst the villains, there are a few heroes

## Media

- 2/25/14 – “Portland Water Bureau warns of high lead levels in sampling of homes” The Oregonian
- 12/30/15 - “Four takeaways from the Flint Water Advisory Task Force Report” (*MDEQ Director resigns*)
- 1/24/16 – “Could Flint’s Crisis Happen Here?” OR Statesman Journal
- 1/28/16 – “Lead in drinking water and Flint MI crisis” KGW-TV Live at 7
- 2/3/16 – “Why Cottage Grove is not like Flint” Cottage Grove Sentinel
- 2/5/16 – “Can lead contamination strike here? Unlikely.” Corvallis Gazette-Times
- 2/11/16 – “Lead not on tap for Medford’s water” Mail Tribune

# Media

- 3/4/16 – “Audit criticizes Mich. for lax water supply oversight”  
Detroit Free Press
- 3/17/16 – “Beyond Flint: Excessive lead levels found in almost 2,000 water systems across all 50 states.” USA Today
- 3/17/16 – “Lead taints drinking water in hundreds of schools, day cares across USA.” USA Today
- 3/17/16 – “Drinking water providers flagged for contamination: 46 systems in 15 counties exceed regulatory limits for lead.” OR Statesman Journal
- 3/18/16 – “Situation in Flint raises concerns about lead in OR”  
KOIN-TV
- 3/21/16 – “Lead found in drinking water in 10 Oregon schools.” OR Statesman Journal

# Media

- 4/6/16 – “In more than one city, the tap water is toxic. How about our water? - *Thirsty*” Dr. Know, Willamette Week
- 4/9/16 – “Lead in the water: Why Portland’s on wrong end of national list” The Oregonian
- 4/10/16 – “Schools are a special concern for lead risk” Associated Press

More to come....stay tuned

# Journals

- **12/21/15 – “Elevated Blood Lead Levels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response.”** Mona Hanna-Attisha MD, et.al. **American Journal of Public Health.**
- 2/25/15 – “Corrosive Chemistry: How Lead Ended Up in Flint’s Drinking Water.” Lydia Chain, Scientific American.
- 3/2/16 – Q&A: What Really Happened to the Water in Flint, Michigan?” Marc Edwards and Jayde Lovell, Scientific American.
- 3/22/16 – “Flint’s Lead-Tainted Water May Not Cause Permanent Brain Damage.” Ellen Ruppel Shell, Scientific American
- March 2016 – “The Failure of Cooperative Federalism in Flint, Michigan.” Brent Fewell, Journal American Water Works Association.

# EPA actions

- Issued Safe Drinking Water Act Emergency Order to State of Michigan and City of Flint
- Accepted Region 5 Administrator's resignation
- Issued staff policy on elevating critical public health issues
- Requested EPA Office of Inspector General review of Region 5's implementation of oversight of state primacy programs
- "Asks" to all states (Oregon is done):
  - Response from state primacy agency directors to EPA letter on activities in 5 specific areas
  - Follow up with Regions on state and water system actions on lead exceedences in past 3 years
  - Provide details on state's approach to LCR implementation

# Actions in Oregon

- OHA Director response to EPA HQ letter – 4/5/16
- OHA DWS response to EPA HQ on approach to LCR implementation – 4/18/16
- Follow-up with EPA Region X on recent Oregon lead action level exceedences – 4/18/16
- Meeting with Portland Water Bureau/EPA Region X/DWS on further optimizing corrosion control treatment – 4/21/16
- Governor's Office directive to OHA and OR Dept. of Education to review existing programs and provide assessment of lead in Oregon schools served by public water suppliers – 4/4/16
- Transparency - All above documents on DWS website, new data on-line posting of required follow-up action timelines and status after lead action level exceedence – 6/1/16

# Congressional oversight hearings, Feb-Mar 2016 “take-aways”

- Flint water crisis is a failure at every level of government
- EPA Region 5 aware in April, but failed to act until January
- EPA Region 5 Regulation Manager discredited, silenced, and retaliated against for advocating for EPA to take action
- Region 5 discussed internally whether “Flint is the community we want to go out on a limb for.”
- EPA refuses to take responsibility or hold people accountable for the tragedy in Flint.
- For more than 10 years, EPA has failed to meet important deadlines for finalizing regulations associated with the SDWA

# Flint Water Advisory Task Force

- Commissioned by the Governor
- Final Report – 3/21/16 (michigan.gov)
- Purposes:
  - Clarify/simplify narrative of roles of parties involved, assign accountability
  - Highlight causes of failures and suggest measures to prevent future failures
  - Prescribe ways to care for the community and use lessons to safeguard Michigan residents
- 36 findings, 44 recommendations, detailed timeline
- **“The Flint water crisis is a story of government failure, intransigence, unpreparedness, delay, inaction, and environmental injustice.”**

## Findings – MI DEQ

- Bears primary responsibility for the contamination in Flint
- Suffers from cultural shortcomings that prevent agency from serving and protecting health of Michigan residents
- Misinterpreted and misapplied the LCR resulting in under-reported water lead levels and prolonged lead exposure
- Waited months to accept EPA assistance, and staff were dismissive and unresponsive
- Failed to move swiftly to investigate connection of Flint River source to Legionellosis cases

# Findings – MI Governor' Office

- Ultimately accountable for executive branch
- Knowledge compromised by wrong information from MDEQ and MDHHS
- Continued to rely on agency information despite mounting evidence from outside experts and citizen complaints
- Suggestion to switch back to Detroit water in late 2014 disregarded due to cost and false assurance of water safety
- Over, maybe exclusively, relied on a few staff in 1-2 departments for information to base decision-making
- Official public statements and communication about the Flint water situation were at times inappropriate and unacceptable

# Findings – State-Appointed Emergency Managers

- Made the decision to switch sources
- Treasury officials precluded return to Detroit water, demanded by City and citizens, without state approval
- Role places responsibility for what happened with state government
- Lack expertise to manage non-financial aspects of municipal government
- Michigan's Emergency Manager Law and practices can be improved to ensure that public health and safety is not compromised in the name of financial urgency

# Findings – City of Flint

- Public works personnel ill-prepared to assume full-time operation of the Flint water treatment plant and distribution system
- WTP not adequate to produce safe drinking water at start-up. Lack of investment in distribution contributed to the crisis
- Failed to comply with LCR requirements including use of optimized CCTx and monitoring for lead (LSLs not identified, inadequate number of samples from high-risk homes, did not follow prescribed sampling practices for flushing and bottle size)
- Acted on inaccurate and improper MDEQ guidance
- MDEQ assistance deeply flawed and lax, led to myopic enforcement of health regulations
- Emergency manager structure overrode local input and complaints

## Findings – USEPA

- Failed to properly exercise its authority prior to Jan. 2016
- Conduct casts doubt on willingness to pursue enforcement in the absence of widespread public outrage
- Accepted differing LCR compliance strategies, serving to mute rule's effectiveness
- Hesitant and slow to insist on proper corrosion control in Flint
- Tolerated MDEQs intransigence, clarified LCR when not necessary

**“Though there may be some ambiguity in the LCR, none relates to what happened in Flint. There was and remains no justification for MDEQ not requiring corrosion control for the switch of water sources to the Flint River.”**

## The heroes

- LeeAnne Walters – Flint resident, widely and resolutely raised lead and other water quality concerns
- Miguel del Toral – EPA Region V, investigated Ms. Walters' concerns and reported on high lead levels
- Dr. Marc Edwards – Virginia Tech, investigated and demonstrated elevated lead levels at the tap and assisted and advised the city and residents
- Dr. Mona Hanna-Attisha – local pediatrician, recognized and demonstrated the connection between lead in water and child blood lead levels

# Why Oregon isn't Flint

- Urban development is much more recent, less use of lead service line materials (where used, primarily short “pigtailed”)
- Early prohibition of lead materials (1985)
- Good initial implementation of LCR, since corrosivity of Oregon water was well recognized as a potential problem
- 1,200 community and nontransient noncommunity systems have to monitor for lead at the tap. EPA sampling protocols were and are used
- Water suppliers installed appropriate corrosion control treatment and integrated it into everyday operations
- We are assuring that we are fully engaged with each water supplier exceeding the lead action level in recent years

# Take stock of your LCR compliance!

- Revisit your materials evaluation, update if needed, post on your website. Revisit status of lead pigtail removal, assure completion
- Revisit your sample site selection, be sure to include homes with lead pigtails if any remain
- Revisit sampling instructions for homeowners – no prestagnation flushing, no aerator removal or cleaning. Use wide-mouth bottles
- Sample invalidation is limited (lab error, bottle damage/tampering, did not meet site selection criteria)
- Revisit your corrosion control treatment, look for opportunities to optimize effectiveness
- **Assure all required follow-up actions taken timely following lead action level exceedence, assure public education is timely and complete, be transparent in all you do**



Questions?

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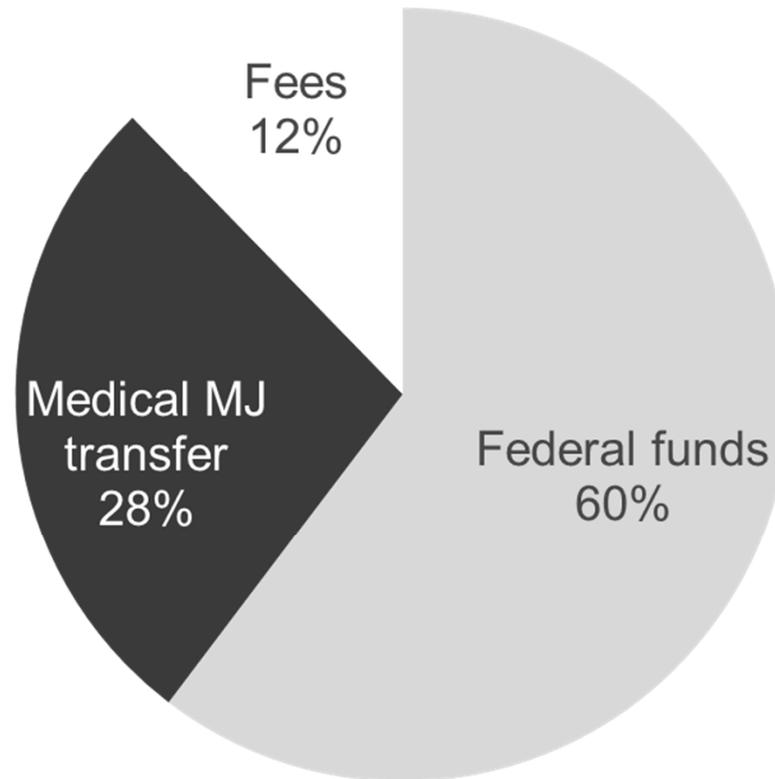
Oregon  
Health  
Authority

# The year – 2015

- Ebola outbreak
- New OHA Director, Lynne Saxton
- Gov. Kitzhaber resigned, Gov. Brown sworn in
- OHA restructured
- Legislature approved DWS fee increases
- Drought declared (25 of 36 counties)
- 6<sup>th</sup> SRF Needs Survey started
- CHP Administrator departed, Jere High appointed Interim
- **Fee increase final rule adopted**
- **Revised Total Coliform proposed rule filed, public comment received**

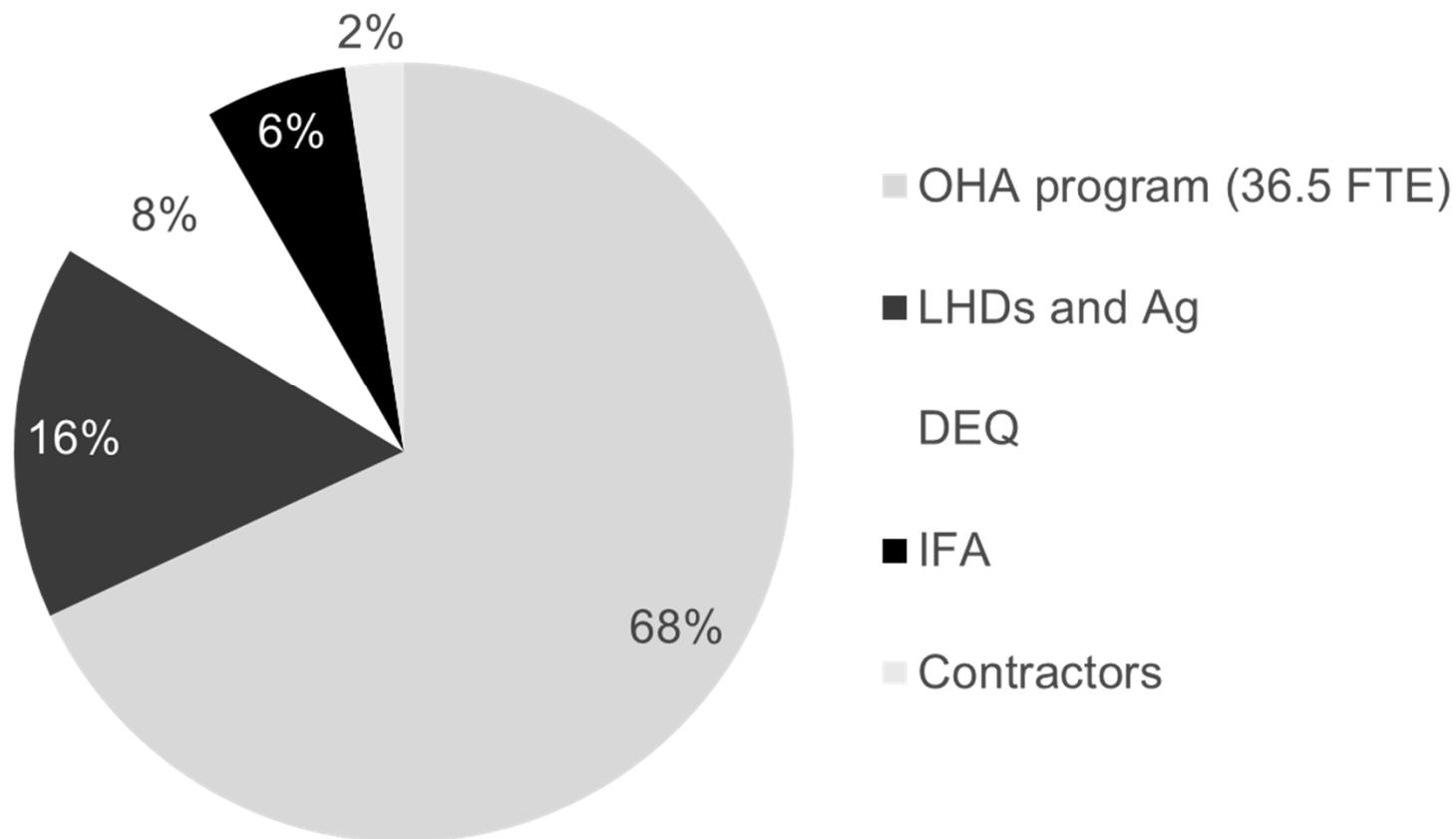
# Drinking Water Services revenue

2015-17 Revenue - \$17.9 M



# Drinking Water Services expenditures

2015-17 Expenditures - \$18.6M



# Balancing revenue/expenditures, 3-part solution

- Raise fees to cover full cost of fee-based services
- Use last remaining federal funds balance from prior grant year (SRF FFY 14 set-asides – source water assessment updates)
- **No state staff vacancies filled until revenues = expenditures! Increased federal revenue unlikely in near term.**

DWS is getting smaller to be sustainable (33 staff in 2003, 50 in 2008, 35 now. Contraction to continue).

**Program focus going forward is on essential functions that accomplish the most public health benefit.**

# Essential function priorities/ranking

1. Investigate reports of waterborne disease and reports from labs of contamination of public water systems, assure follow-up and public notice
2. Conduct on-site inspections of water systems, identify deficiencies, assure correction
3. Adopt and implement safe drinking water standards and regulations
4. Maintain statewide emergency response and respond to drinking water emergencies
5. Review and approve water system construction plans

## Essential function priorities/ranking

6. Receive and enter WQ tests, assure data quality, determine compliance, report to EPA
7. Certify water system operators
8. Investigate priority noncomplier water systems and certified individuals, conduct enforcement
9. Identify water systems and maintain inventory and information
10. Consult with and educate water suppliers on regulations, treatment options, operation practices

# Essential function priorities/ranking

11. Train water system operators
12. Conduct outreach to water suppliers and public through newsletters and website, coordinate with stakeholders and other agencies
13. Provide financial assistance to water suppliers for safe drinking water construction projects
14. Certify backflow testers and specialists, assure communities report on local backflow programs
15. Analyze compliance data to identify workload and compliance trends for program management and improvement

## Essential function priorities/ranking

16. Maintain, manage, and upgrade safe drinking water database
17. Provide technical assistance to smaller water suppliers with operational problems
18. Accredit drinking water laboratories
19. Update source water assessments
20. Regulate non-EPA water systems
21. Assure water systems have technical, financial, and managerial capacity to provide safe drinking water
22. Conduct oversight of domestic well testing

## 2016 outlook

- **State lead reduction initiatives coming on schools and daycares served by public water suppliers!**
- Fee increase implementation, RTCR implementation
- Source water assessment updates
- EPA Compliance Monitoring Data Portal pilot implementation – promote electronic reporting, other opportunities to streamline our activities and processes
- Stay engaged on national scene (ASDWA, EPA), stay engaged in our agency improvement efforts (OHA transformation, PH modernization)

**Tonight's discussion topic – How to focus available program and partner effort on highest priority functions in next biennium (2017-19 Program Element)? Get started tonight, work further next fall and spring.**