WELCOME "2015 – Q3
SC Small Water Systems Forum

- Opening Topics
  - Drought/Water Conservation- Update & Sustainable GW Mgm't Act
  - Metering Ordinance & Reporting – Update, Funding, & Backflow Prevention
  - Chrom VI Update- Treatment & SB 385
- New Topics
  - **Total Coliform Rule** & **Water Rates**: **Guest Speaker, *Ralph Bracamonte***
- Closing Topics
  - Water Rights, eARs, Oct 22nd Winter Preparedness Workshop
- Next Meeting
  - Problem Well Diagnosis, _____?

Sustainable Groundwater Management Act

Small Water System Forum – September 30, 2015

John Ricker, Water Resources Division Director

SGMA

- Most significant state water action in 100 years
- Effective January 1, 2015
- Achieve groundwater sustainability by 2040
- Supports local management
- State will step in if needed

SGMA – Key Provisions

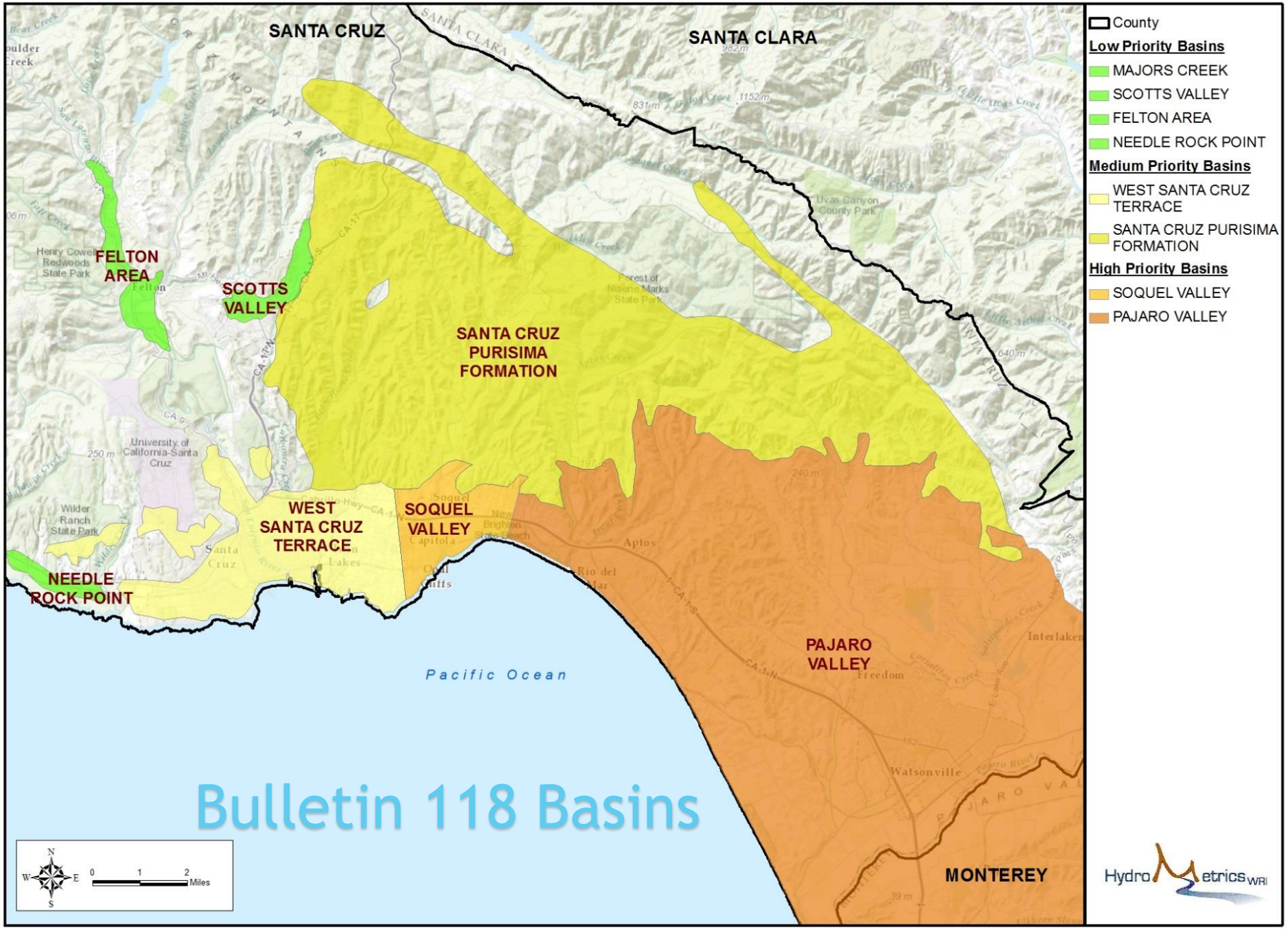
- Develop and implement a plan the will prevent undesirable results:
  - Chronic lowering of groundwater levels
  - Significant, unreasonable reductions in storage
  - Significant , unreasonable degradation of water quality, seawater intrusion
  - Significant, unreasonable depletion of surface water
- Local agency or combination of agencies may form Groundwater Sustainability Agency (GSA)
- GSA may measure and limit extraction, impose management fees, enforce the terms of the groundwater sustainability plan
- Requires involvement of Stakeholders
- Coordination with land use agencies
- State may provide funding and technical assistance
- State oversight and action if locals fail to act

SGMA – Key Dates

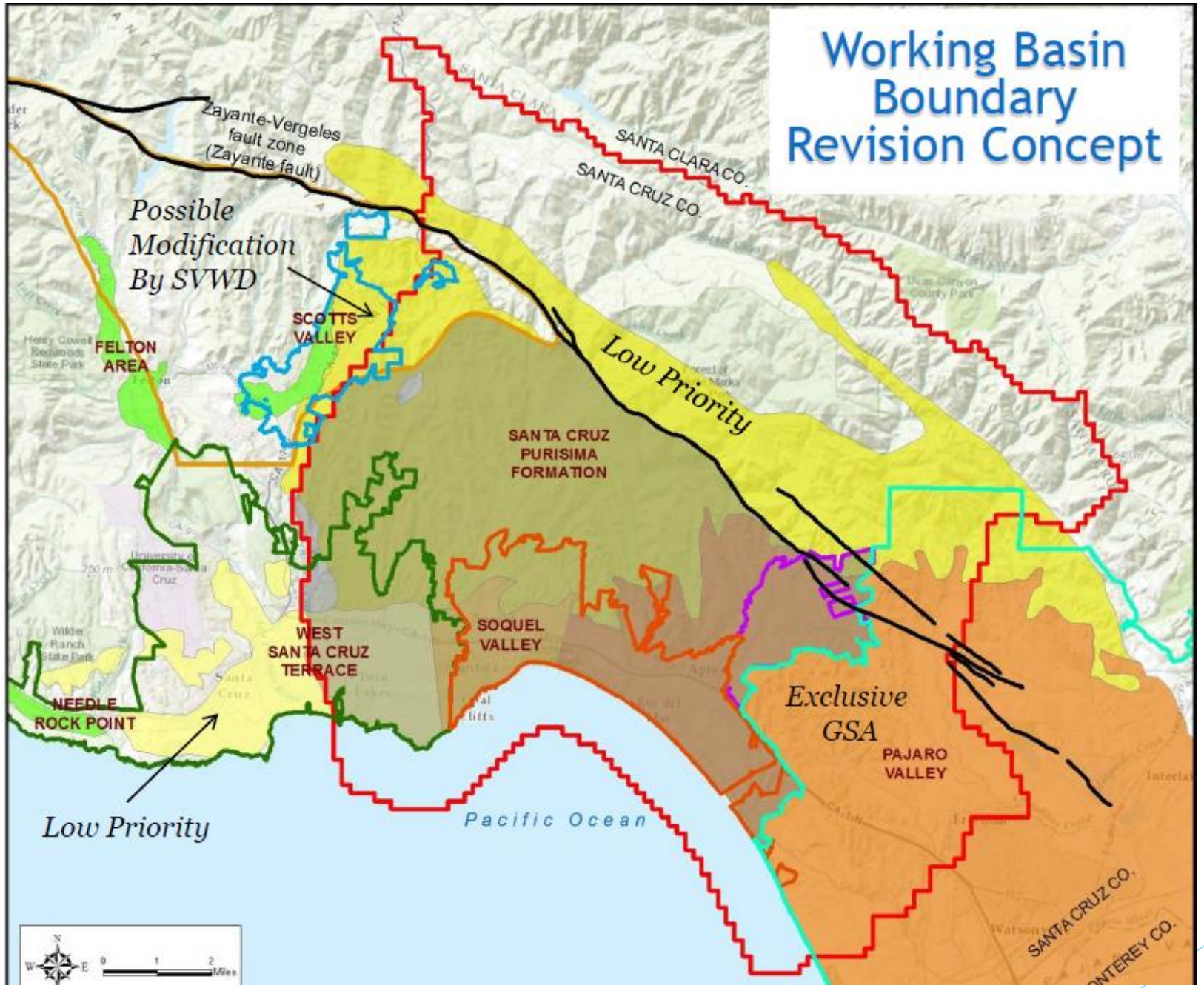
- January 1, 2015 – Legislation goes into effect
- January -June, 2016 – Basin Boundaries updated
- January 1, 2015-June 30, 2017 – Local GSA's must be formed
- January 31, 2020 – GSP's completed for basins in critical overdraft
- Annually – GSA submits report on elevation, extraction, storage
- 2040 – 20 years after plan adoption: sustainability achieved

Medium and High Priority Basins

Critically Overdrafted Basins



Bulletin 118 Basins


Working Basin Boundary Revision Concept
Zayante-Vergeles fault zone (Zayante fault)
SANTA CLARA CO.
SANTA CRUZ CO.
Possible Modification By SVWD
SCOTTS VALLEY
FELTON AREA
Low Priority
SANTA CRUZ PURISIMA FORMATION
SOQUEL VALLEY
WEST SANTA CRUZ TERRACE
NEEDLE ROCK POINT
Low Priority
Exclusive GSA
PAJARO VALLEY
Pacific Ocean
SANTA CRUZ CO.
MONTEREY CO.

SGMA Efforts in Santa Cruz County

- Work with State on basin boundaries and priorities
  - Soquel-Aptos
  - Santa Margarita/Scotts Valley
  - Pajaro
- Form local groundwater sustainability agencies – JPA
  - PVWMA
  - Soquel-Central-County-City of Santa Cruz
  - Scotts Valley-San Lorenzo-County- City of Santa Cruz
- Engage with other stakeholders, users
- Assess groundwater use and model groundwater basin conditions
- Update Groundwater Plans to meet requirements of a Groundwater Sustainability Plan
- Implement Plans

Role of Small Water Systems
Private Pumpers

- Consider and comment on Basin Boundary modifications
- Attend meetings of Groundwater Sustainability Agencies
- Comment on development of Groundwater Sustainability Plans
- Measure and report water use
- Ensure water use efficiency
- Potential eventual payment of water management fees if needed and if approved by basin users.

Metering Ordinance & Reporting

- Update

Assistance & Funding

- State TMF - http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/TMF.shtml
  - FAAST Application
- RCAC - http://www.rcac.org/home
- CRWA - http://www.calruralwater.org/
- USDA - http://www.rd.usda.gov/programs-services/water-waste-disposal-loan-grant-program

Chrom VI- SB 385 (Hueso) PASSED!

- Does- 5 yr variance, work toward compliance, Compliance Plan, & must inform customers and provide them w/ info re other sources of DW.

- Does Not- Delay compliance efforts, exempt from compliance w/ MCL, or modify MCL of 10 ppb.

Hex Chrom VI

- New Source
- Blending
- Ionex SG Ion Exchange Treatment – not feasible for small systems yet, trying to scale down, can be used for Nitrate removal as well (BAT for NO3's) – POU may be more of a realistic alt treatment (RO ✓, Ion Exchange ?)
- Co-contaminant – Nitrate ✓ , Iron/Manganese ?
- Biological Treatment – still experimental, cost and space restrictions

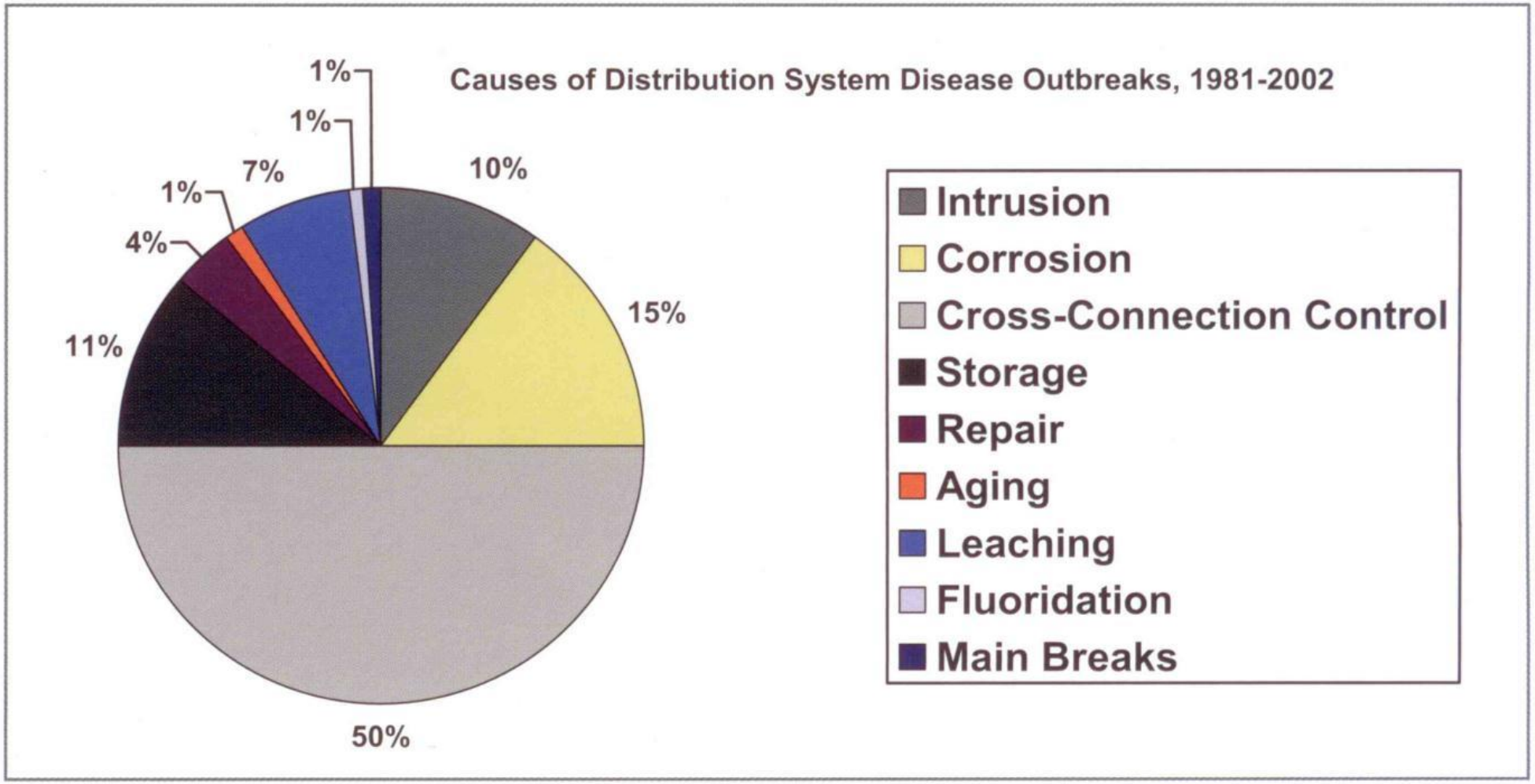
Principles of Backflow Prevention

Troy Boone – Environmental Health

- CDC Report on Waterborne Illness
- American Water Works Association Research Foundation (AWWARF) Study
- EPA Funded Study Performed by USC

Centers For Disease Control study found that half of all Distribution System disease outbreaks were attributable to cross connections

Figure 1: Causes of Distribution System Disease Outbreaks



Cross-Connection & Backflow Prevention

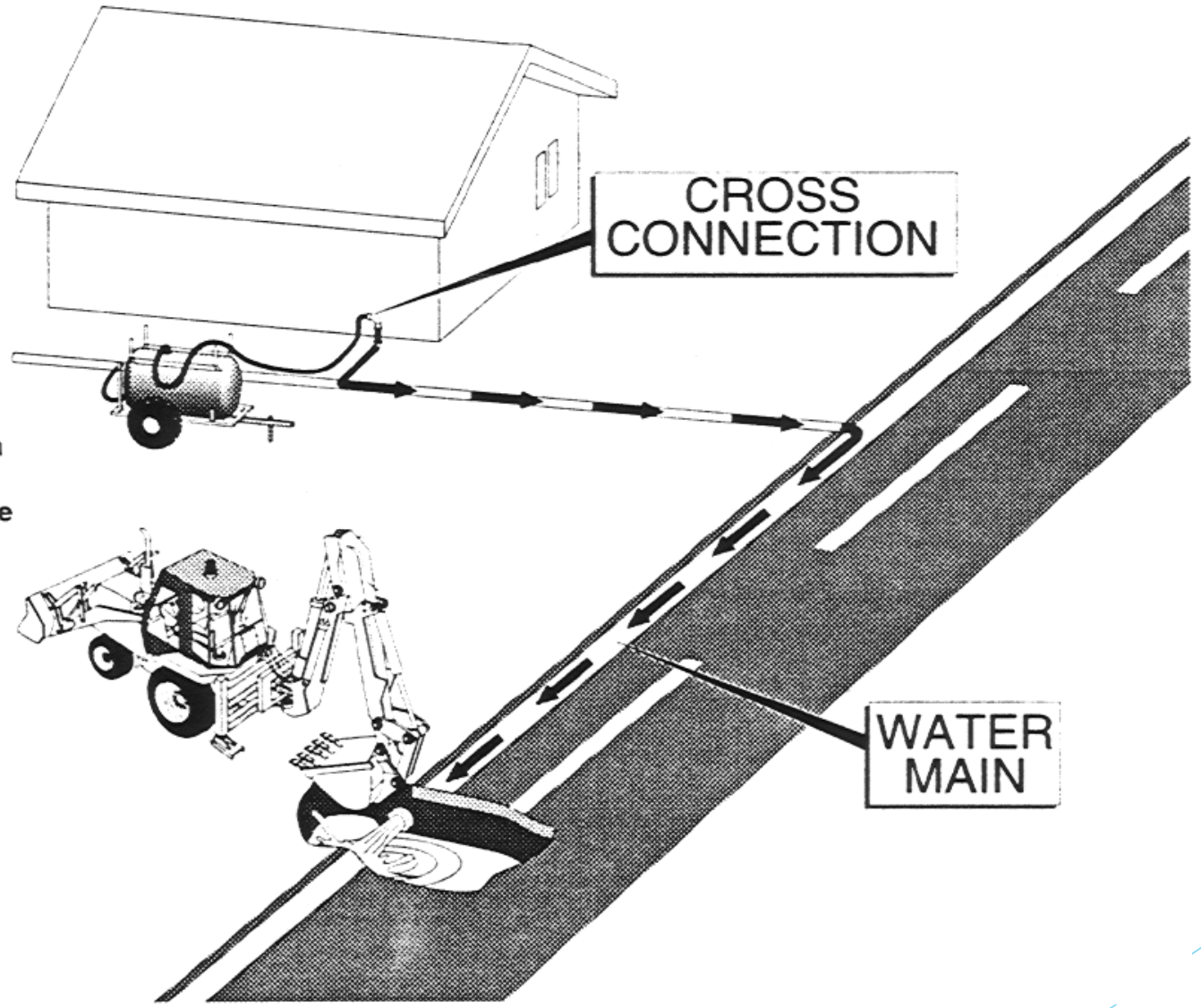
- Cross connection = any connection to a public water supply through which a contaminate could enter

- Contaminants enter the potable water system through backflow:
  - **backsiphonage**
  - **backpressure**

Backflow Types

- Backsiphonage – When pressure is lost in distribution system a siphon condition can occur
  - Broken water line
  - High hydrant flows
  - High water demand

Backflow Example



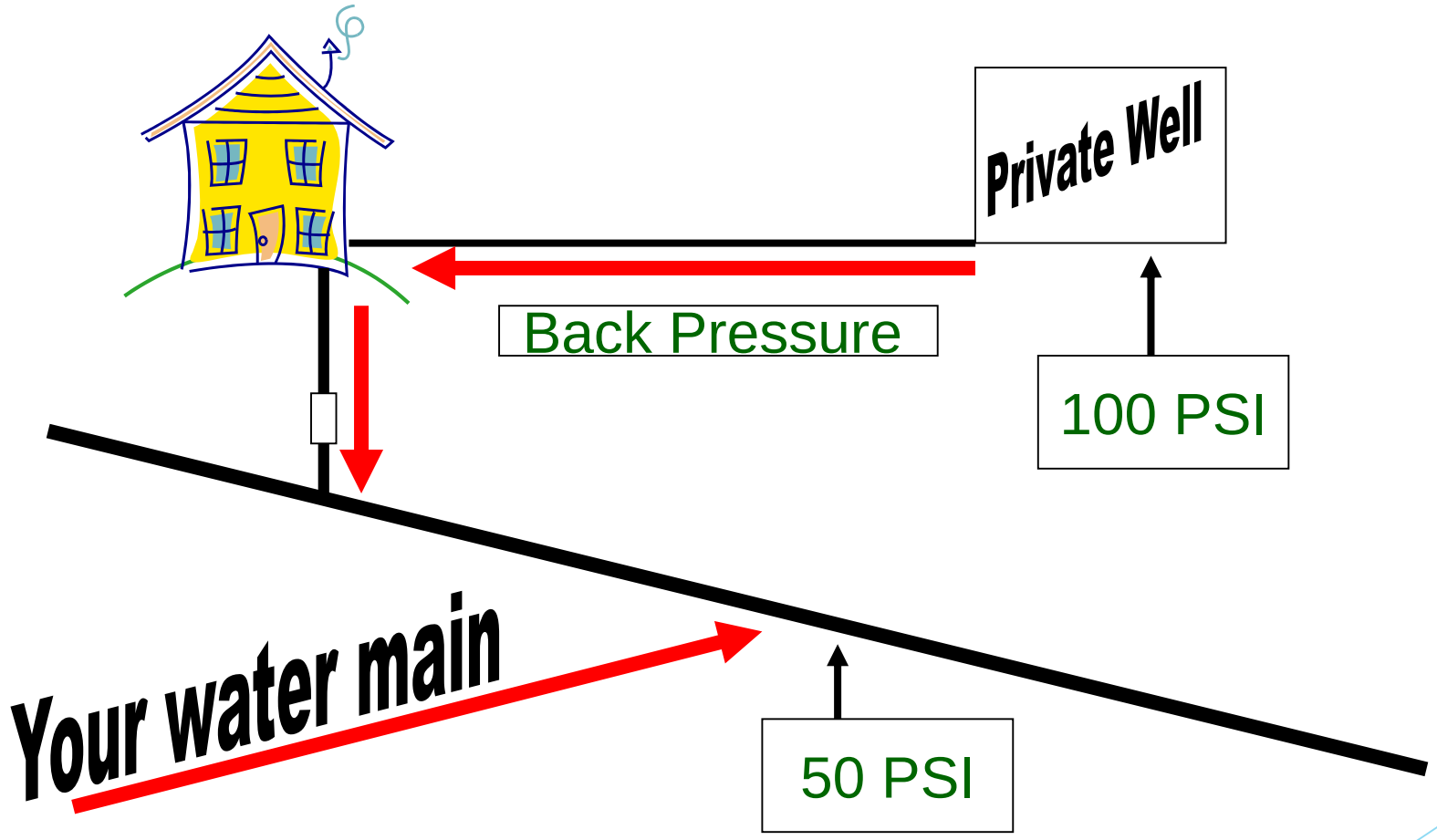
Backflow as a result of backsiphonage

*Courtesy AWWA

Backflow Types

- Backpressure – conditions that produce higher pressure than that in the public water system
  - Storage tanks at higher elevation
  - Auxiliary pumping facilities

Back Pressure Example

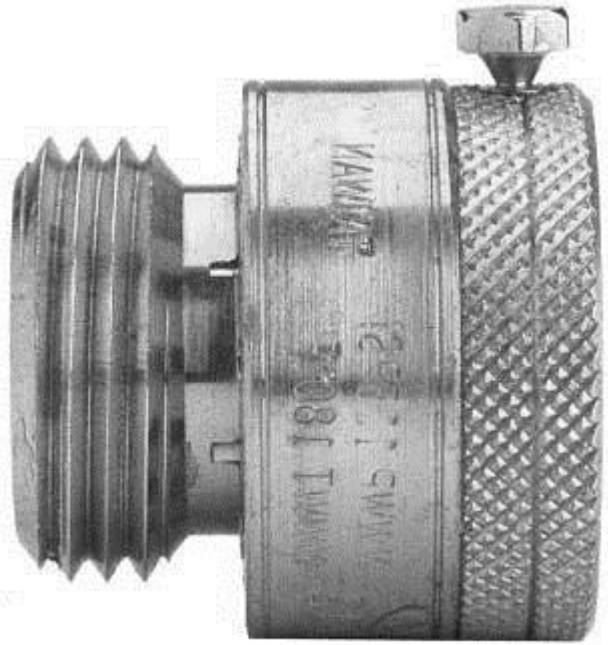


Cross-Connection Programs

- All public water systems should have cross-connection control programs (Required by some regulators)
- Do not rely on federal, state or local statutes
- Enforcement usually accomplished via ordinances, resolutions etc.

Cross-Connection Programs

- Regular system inspections
  - Cross connections
  - Potential contaminants
  - Auxiliary water sources
  - Inspection of backflow devices
  - Control use of fire hydrants



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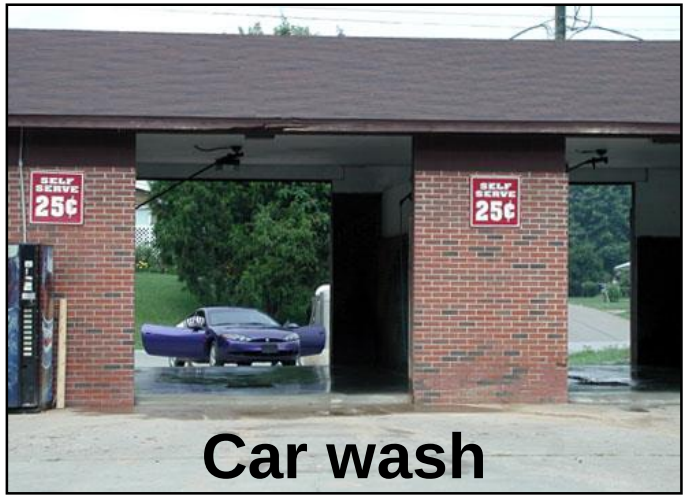
Back Flow Example


Wimmore

Cross-Connection Inspections

- Backflow prevention dependent on severity of possible contaminants
  - Wastewater plant = high
  - Swimming pool = moderate
  - Private well = low (or high)

Potential Backflow Sources



What is this thing?

Potential Backflow Sources II

Funeral home

Hospital

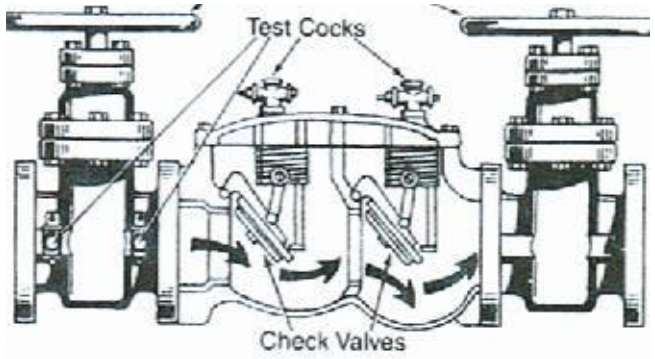

Water plant

Cross-Connection Prevention

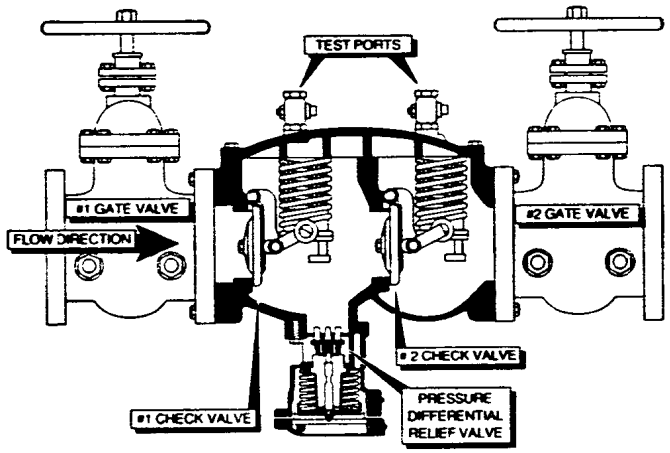
- Install mechanical devices
  - Double check valve assemblies
  - Reduced pressure principle devices
  - Vacuum breakers - both atmospheric and pressure
- Or, separate to remove risk
  - Air gap

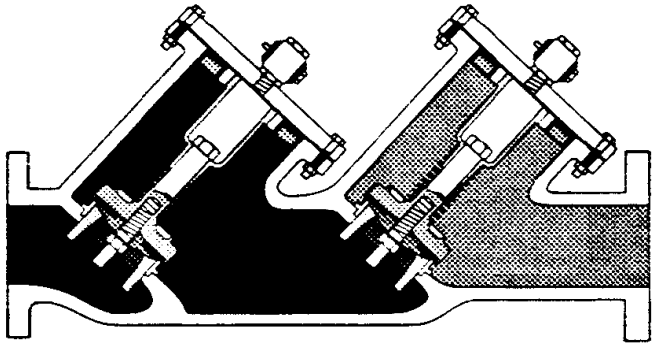
Backflow Valves – Description

- Backflow valves prevent unsafe water from entering potable water system



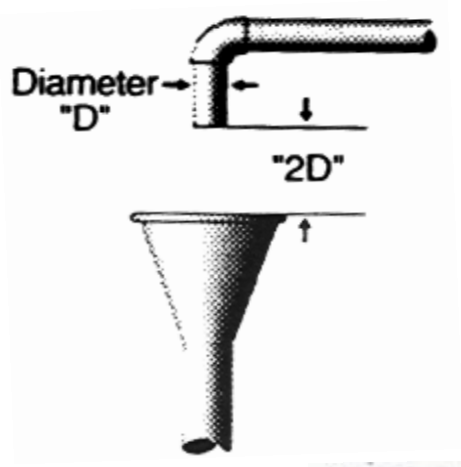
Double-check-valve assembly

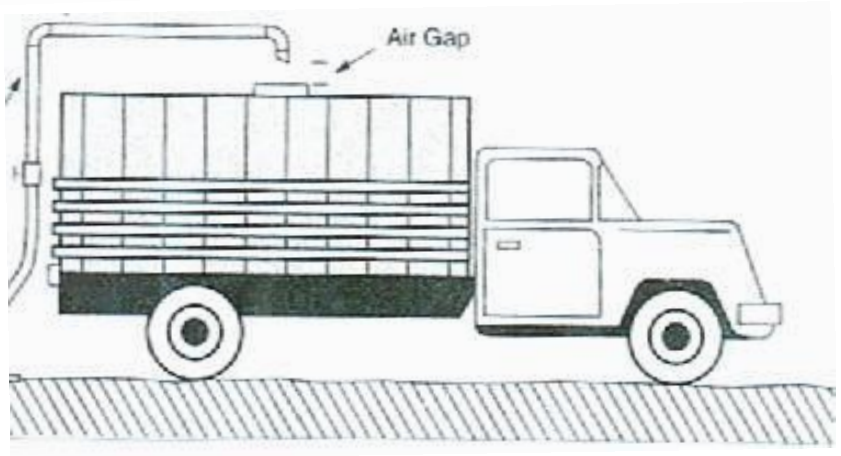




*Courtesy AWWA

Air Gap





*Courtesy AWWA

Cross-Connections

- Backflow devices should be inspected and tested by certified technicians

- Water purveyor is responsible for water meeting National Primary Drinking Water Standards

In Closing

- Have cross connection program and use it
- Eliminate cross connections at treatment facilities
- Test devices at treatment plants
- Eliminate cross connections in distribution systems
- Control fire hydrant use

Coliform Sampling

Total Coliform Rule (TCR)

- TCR approved by Congress, enacted in 1992
- The TCR **helps** protect water systems from microbial contamination
- TCR requires the water system to monitor for total coliform and fecal coliform bacteria
- TCR applies to all community and non-community water systems
- Total coliform = indicator organism

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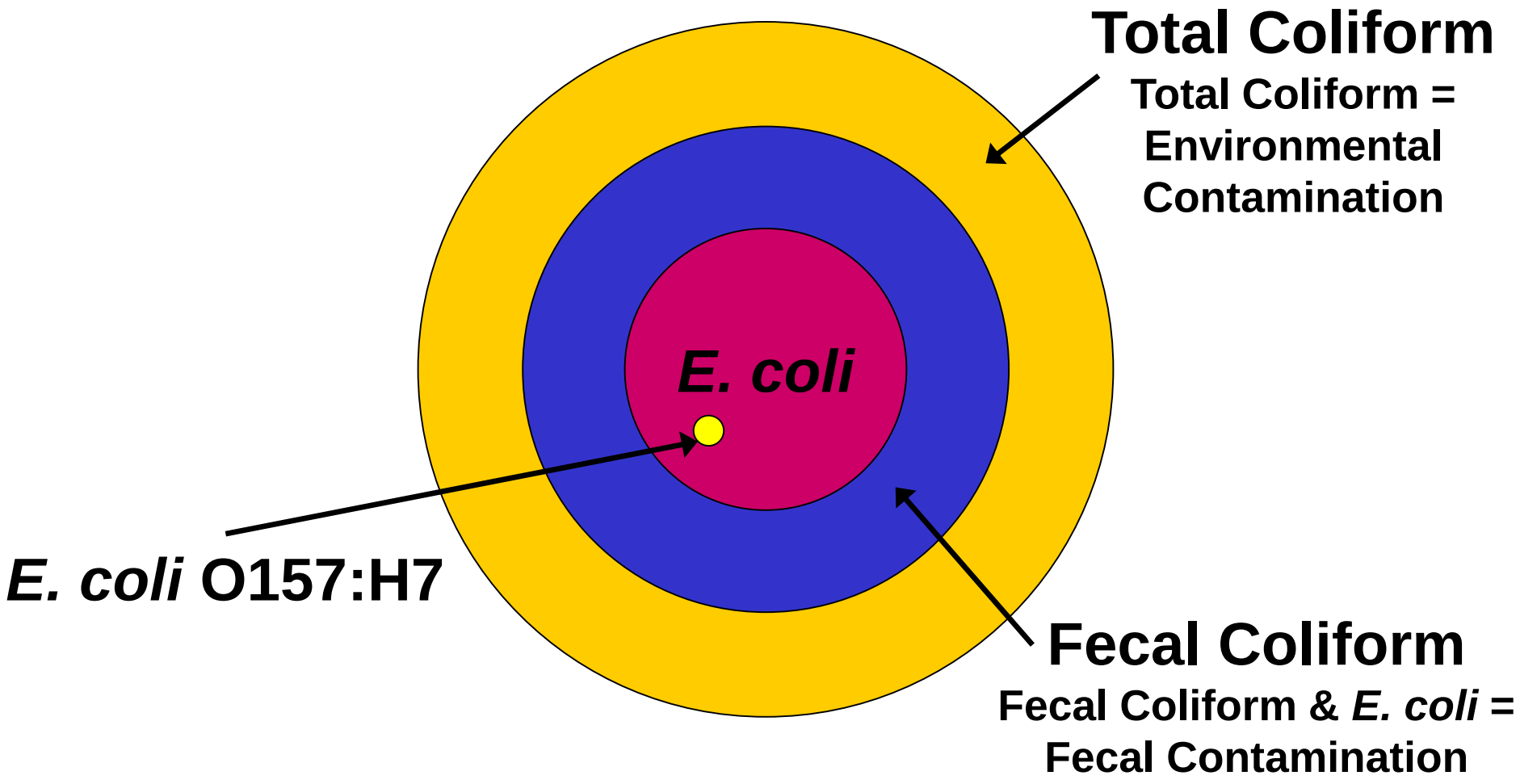
What is a Coliform?



The Coliform Sample

- What is a coliform sample?
  - A 100 mL sterile sample bottle
  - Fill to fill line
  - Contains sodium thiosulfate
  - Bottle provided by the laboratory
  - Taken/mailed to lab with chain of custody
  - Lab results reported as present or absent
  - Sample taken by trained personnel

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Site Sampling Plans: Routine Sampling Sites

- Identify representative sites
- Include locations along dead ends
- Do not use the last connection on dead end
- Do not use the source(s)
- Rotate sampling sites by each month
- Provide description of sample site rotation
- Consider repeat sampling locations [upstream & downstream locations]

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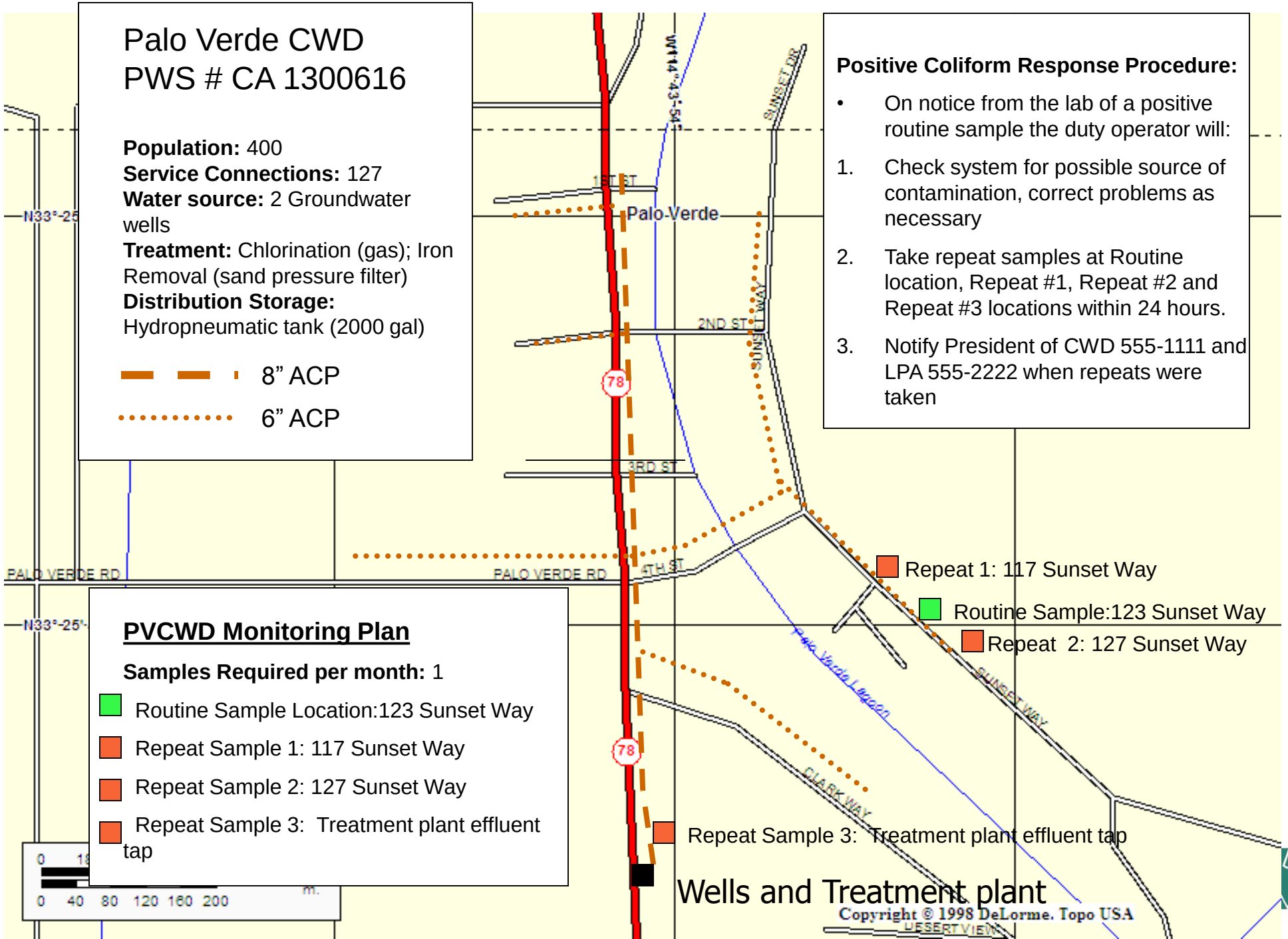
Palo Verde CWD
PWS # CA 1300616
Population: 400
Service Connections: 127
Water source: 2 Groundwater wells
Treatment: Chlorination (gas); Iron Removal (sand pressure filter)
Distribution Storage: Hydropneumatic tank (2000 gal)
8" ACP
6" ACP
Positive Coliform Response Procedure:
• On notice from the lab of a positive routine sample the duty operator will:
1. Check system for possible source of contamination, correct problems as necessary
2. Take repeat samples at Routine location, Repeat #1, Repeat #2 and Repeat #3 locations within 24 hours.
3. Notify President of CWD 555-1111 and LPA 555-2222 when repeats were taken
PVCWD Monitoring Plan
Samples Required per month: 1
Routine Sample Location:123 Sunset Way
Repeat Sample 1: 117 Sunset Way
Repeat Sample 2: 127 Sunset Way
Repeat Sample 3: Treatment plant effluent tap
Repeat 1: 117 Sunset Way
Routine Sample:123 Sunset Way
Repeat 2: 127 Sunset Way
Repeat Sample 3: Treatment plant effluent tap
Wells and Treatment plant
Palo-Verde
1ST ST
2ND ST
3RD ST
4TH ST
SUNSET DR
SUNSET WAY
CLARK WAY
PALO VERDE RD
N33°-25'
W114°43'-54"
78
0 40 80 120 160 200
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Repeat Sample Site Locations if Total Coliform Sample is Positive

- 1st Repeat site is the original location
- Site 2 & 3 must be within 5 service connections upstream & downstream from original location. #4 from wellhead.
- Choose repeat sites using the same criteria as routine sites
- System taking one sample or less must take a 4th repeat sample at a location acceptable to primacy agency

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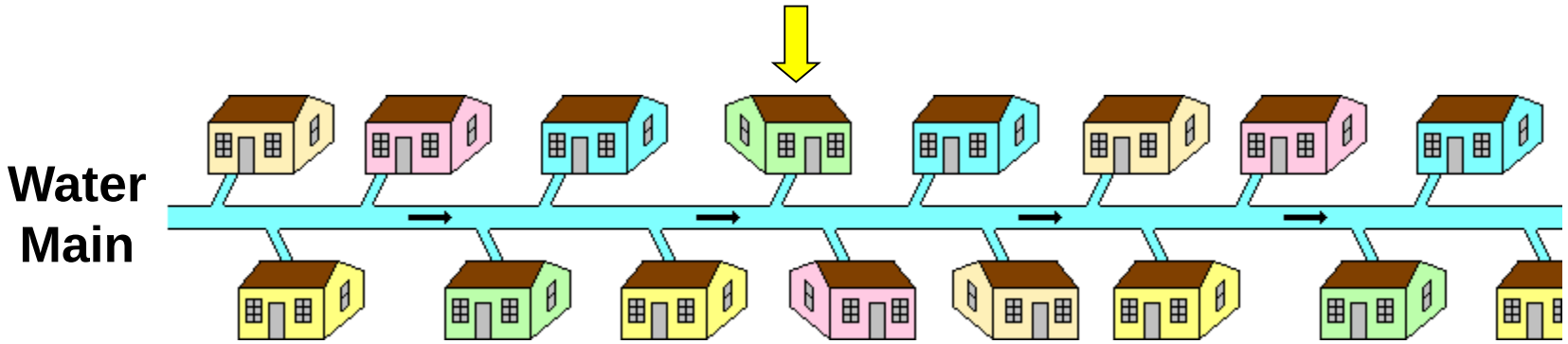
Repeat Sample Locations

Original routine sample site

(Coliforms Present TC+)



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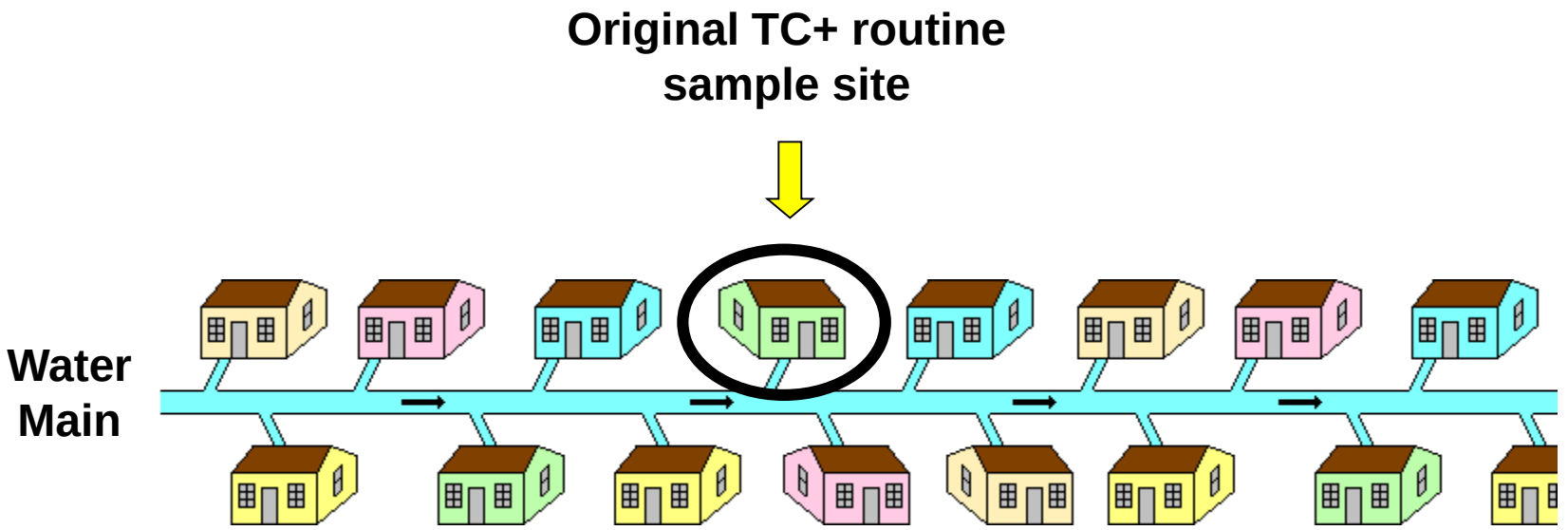
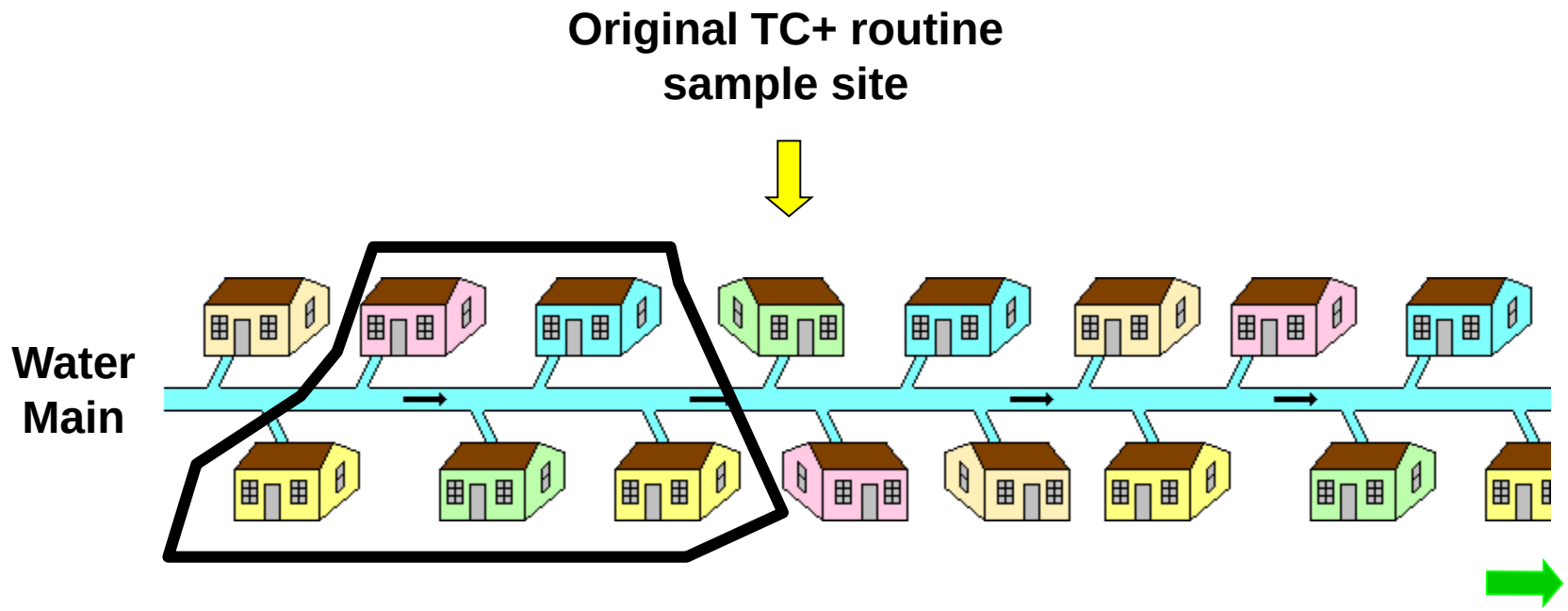
Repeat Sample Locations

One repeat sample must be collected from the same site as the routine sample which was analyzed as total coliform-present…



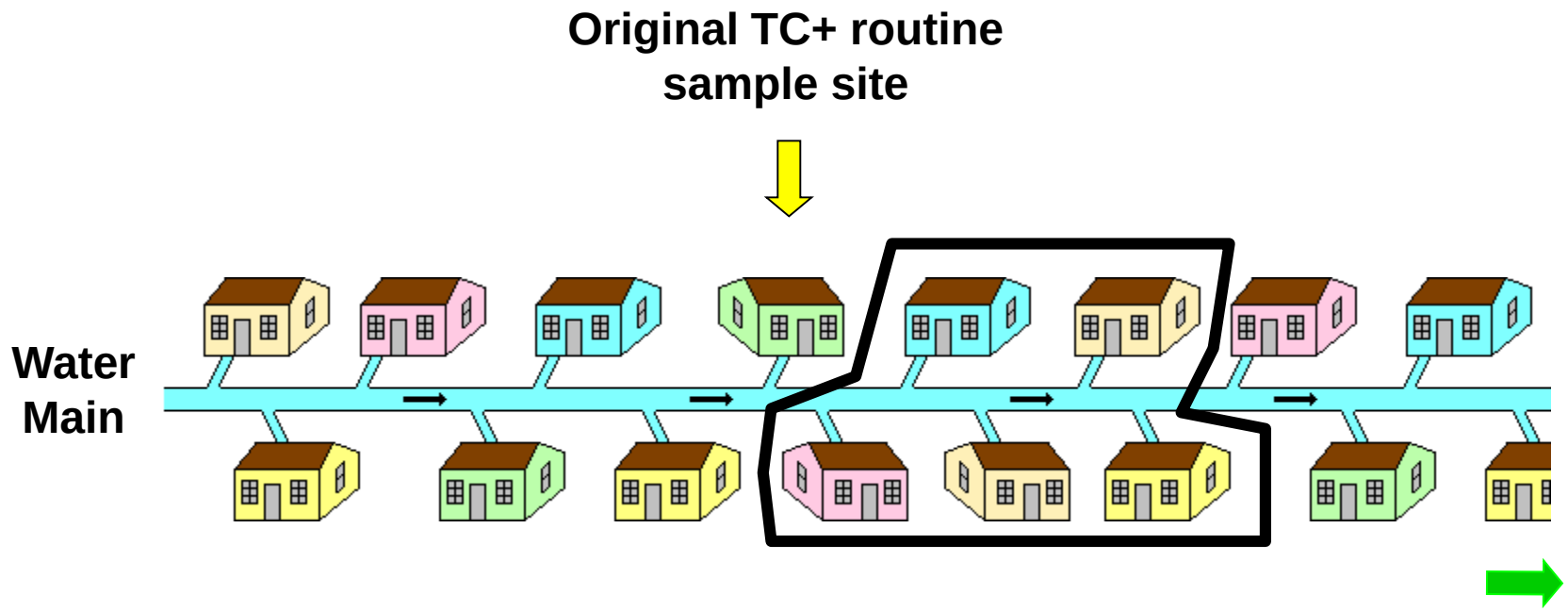
Repeat Sample Locations

one from within 5 service connections upstream of that site…



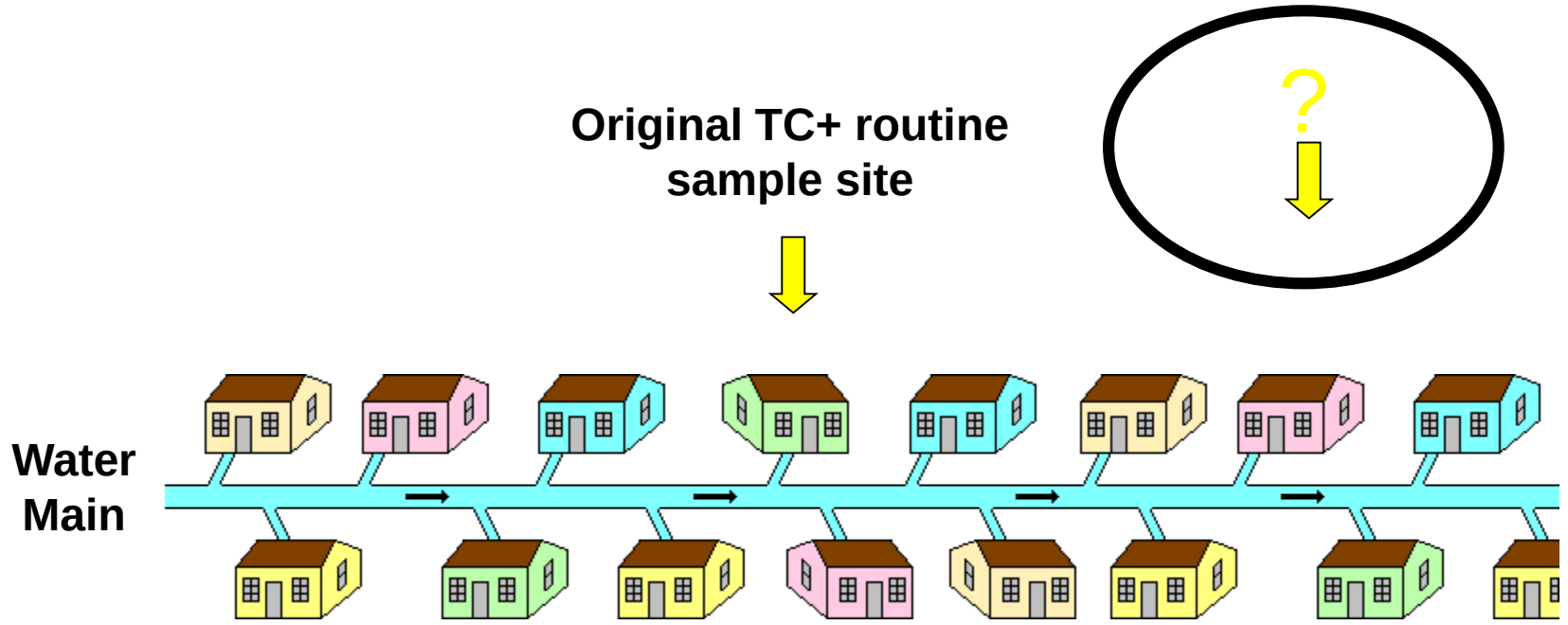
Repeat Sample Locations

…and one from within 5 taps downstream.



Repeat Sample Locations

If a fourth repeat sample is required the system may collect the sample wherever it could help identify the area of contamination.



What is Triggered Source Water Monitoring?

- If TCR sample is positive:

- Within 24 hours (48, State Small), collect sample from each ground water source used when the routine TCR sample was collected

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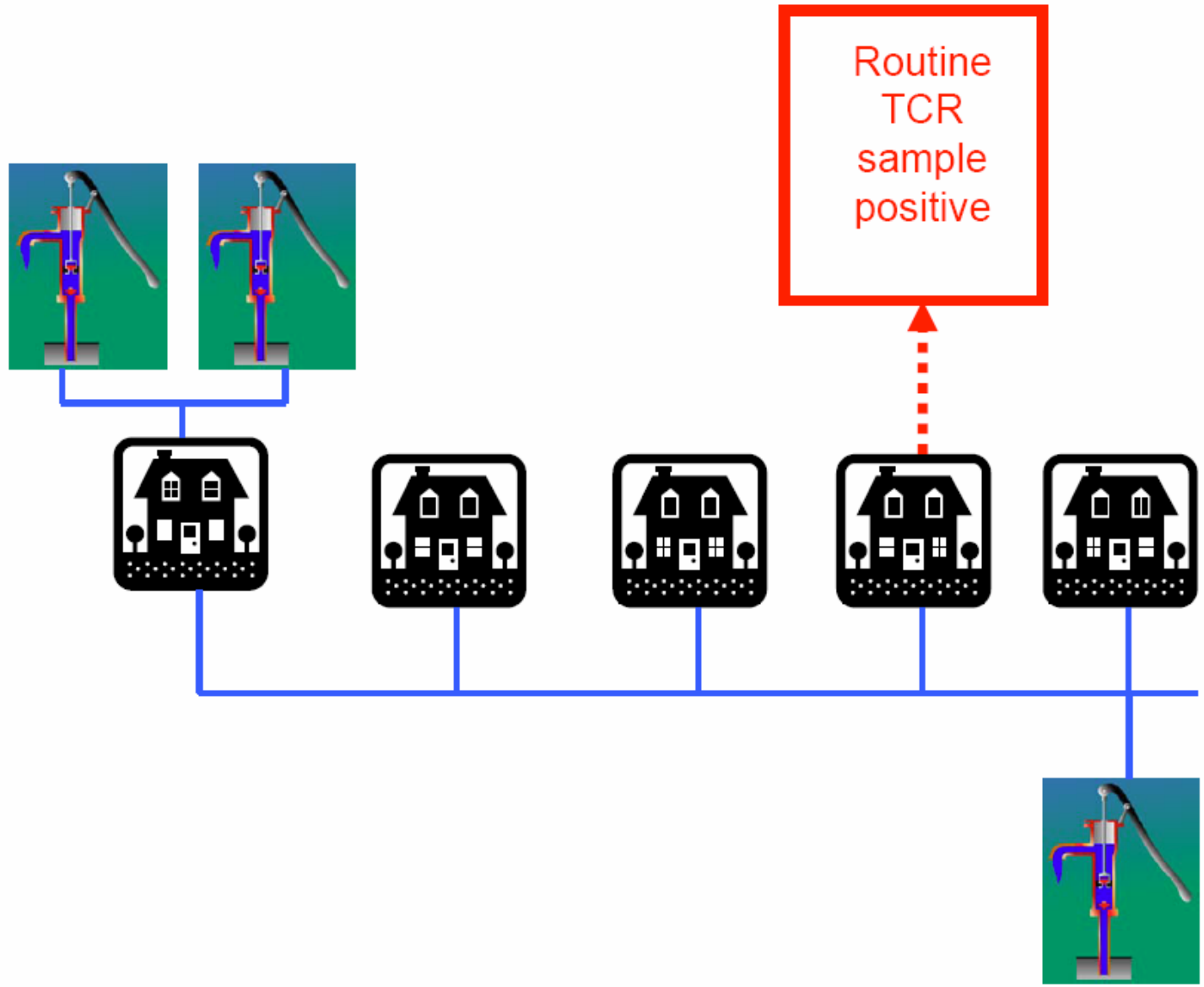
Triggered Source Water Sampling



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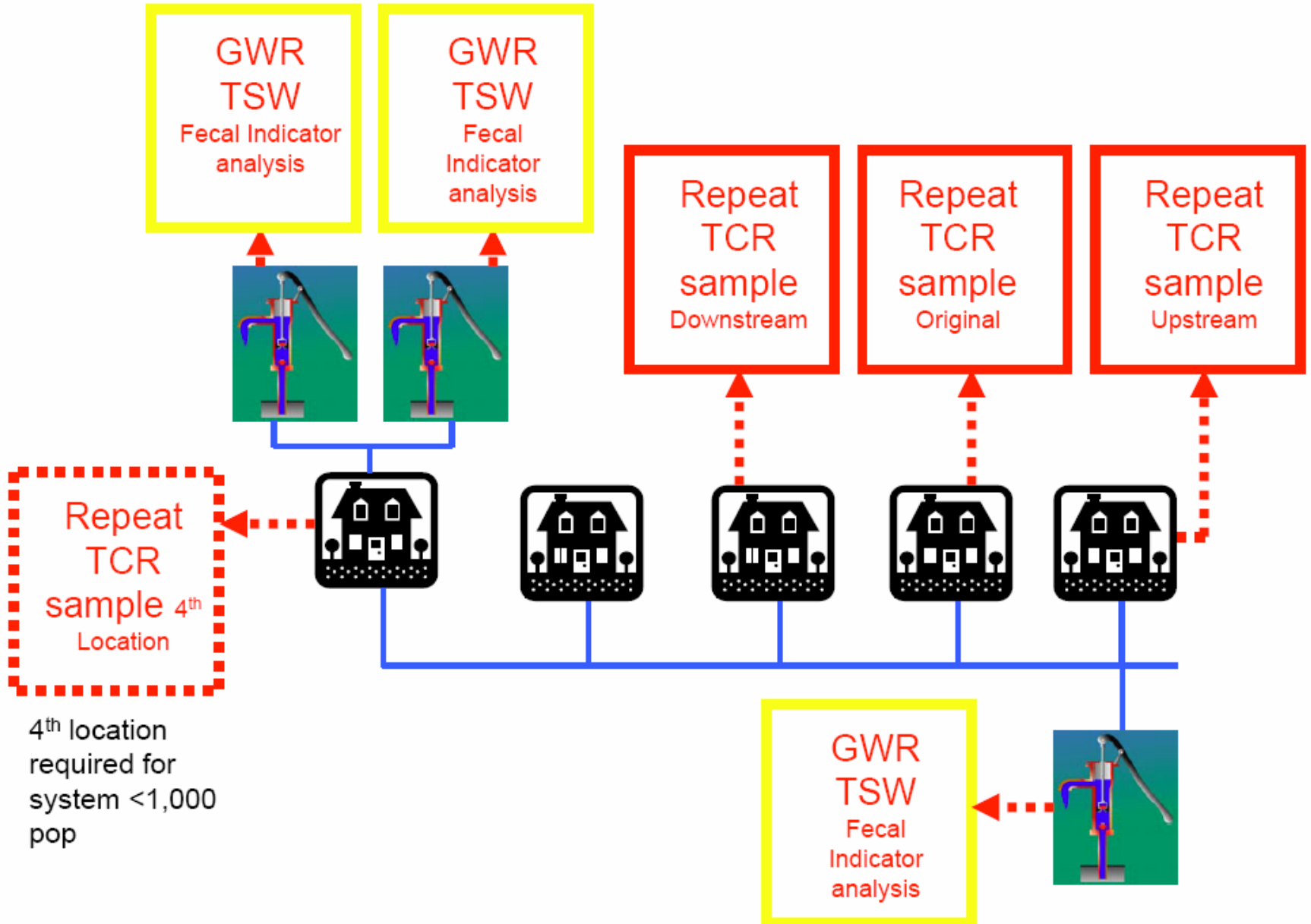
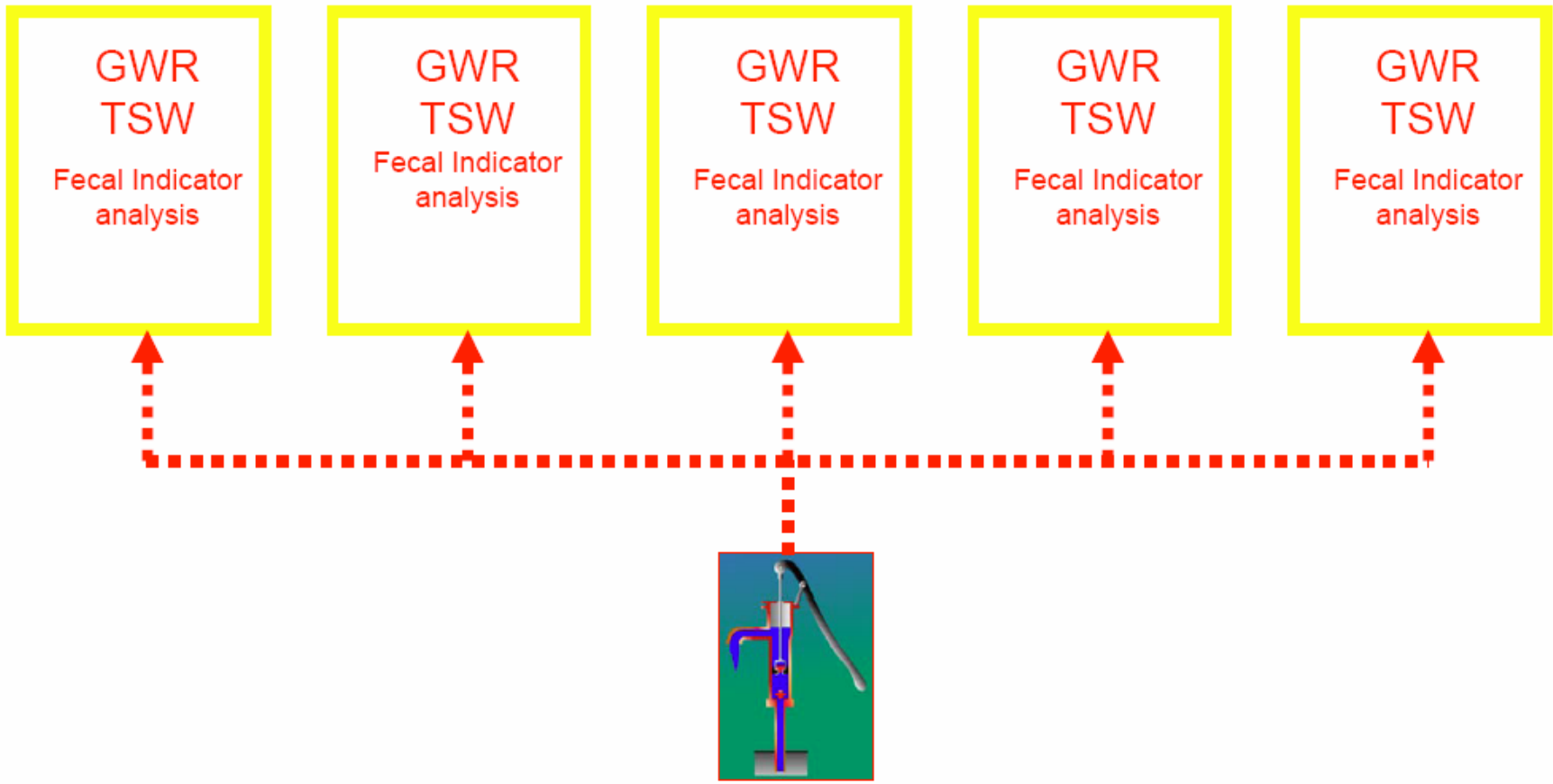
Sampling required within 24 hours



If Initial TSW sample is positive, Within 24 hours



GWS must collect 5 repeat samples at each source that tested positive

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Tips for Selecting Sample Sites

- Accessible
- Above “big dog” height
- Consider dedicated sample taps
- No leaking valves or packing
- No threaded hose bibs (when possible)
- Good flow control
- No bushes or vegetation
- Can be flushed vigorously

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Find an acceptable, accessible sampling point. (Location, location, location)

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And a non-swivel faucet…

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Carefully remove the aerator

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You may desire to disinfect the site with some chlorine

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Open faucet to full flow until temperature of the water changes

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A free chlorine residual should be measured and recorded

1.11 Free Residual

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Reduce flow to take the sample. A pencil stream is desired

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Label the bottle. Site, date, time, sampler name…

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Be very careful with the following.
Cap off – Don't set it down

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Fill the bottle to the line, but don’t overfill. Do not touch the bottle’s rim to the faucet

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Immediately but carefully cap the sample bottle. Watch those fingers

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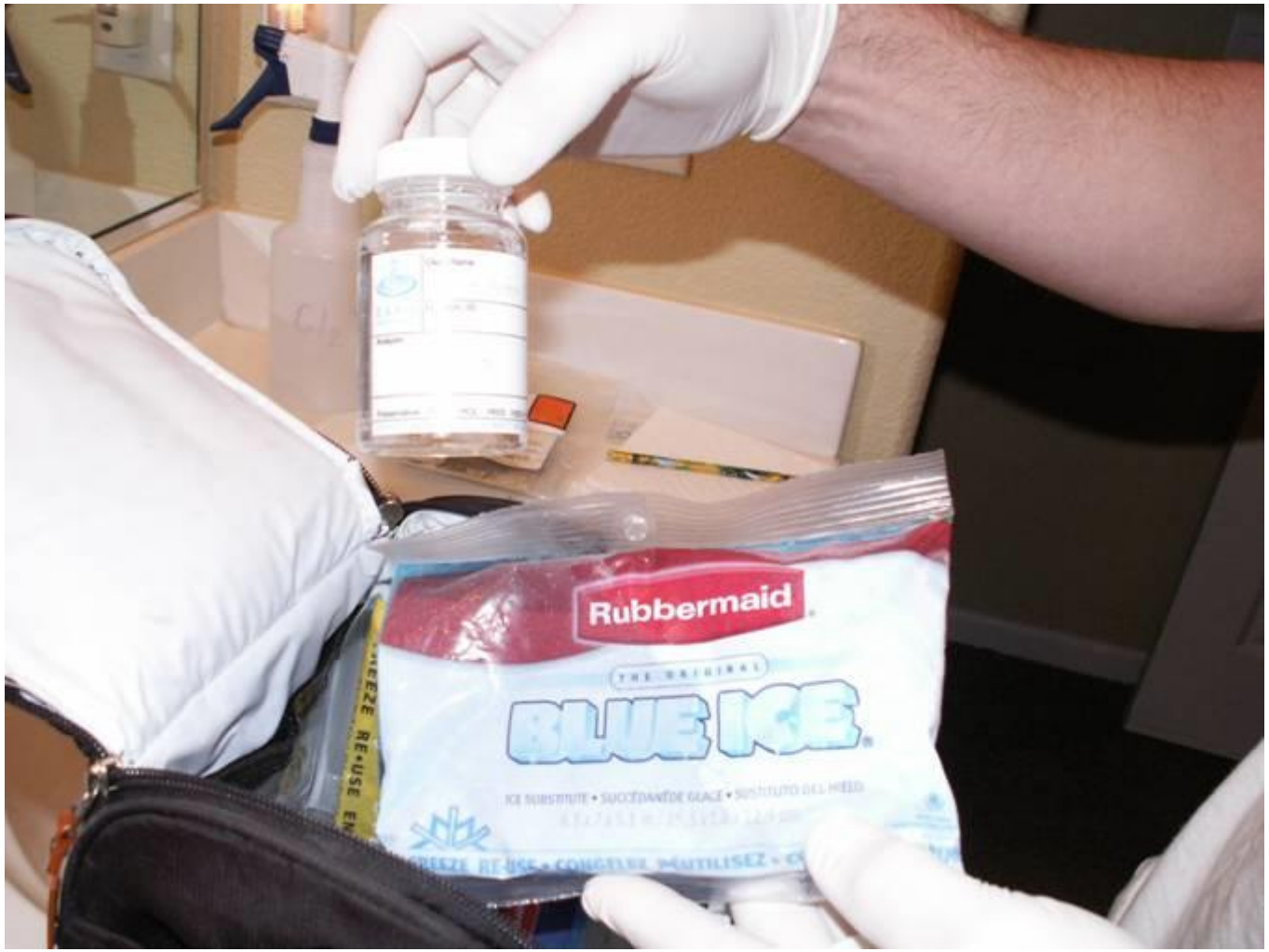
Place the sample in a proper container with ice



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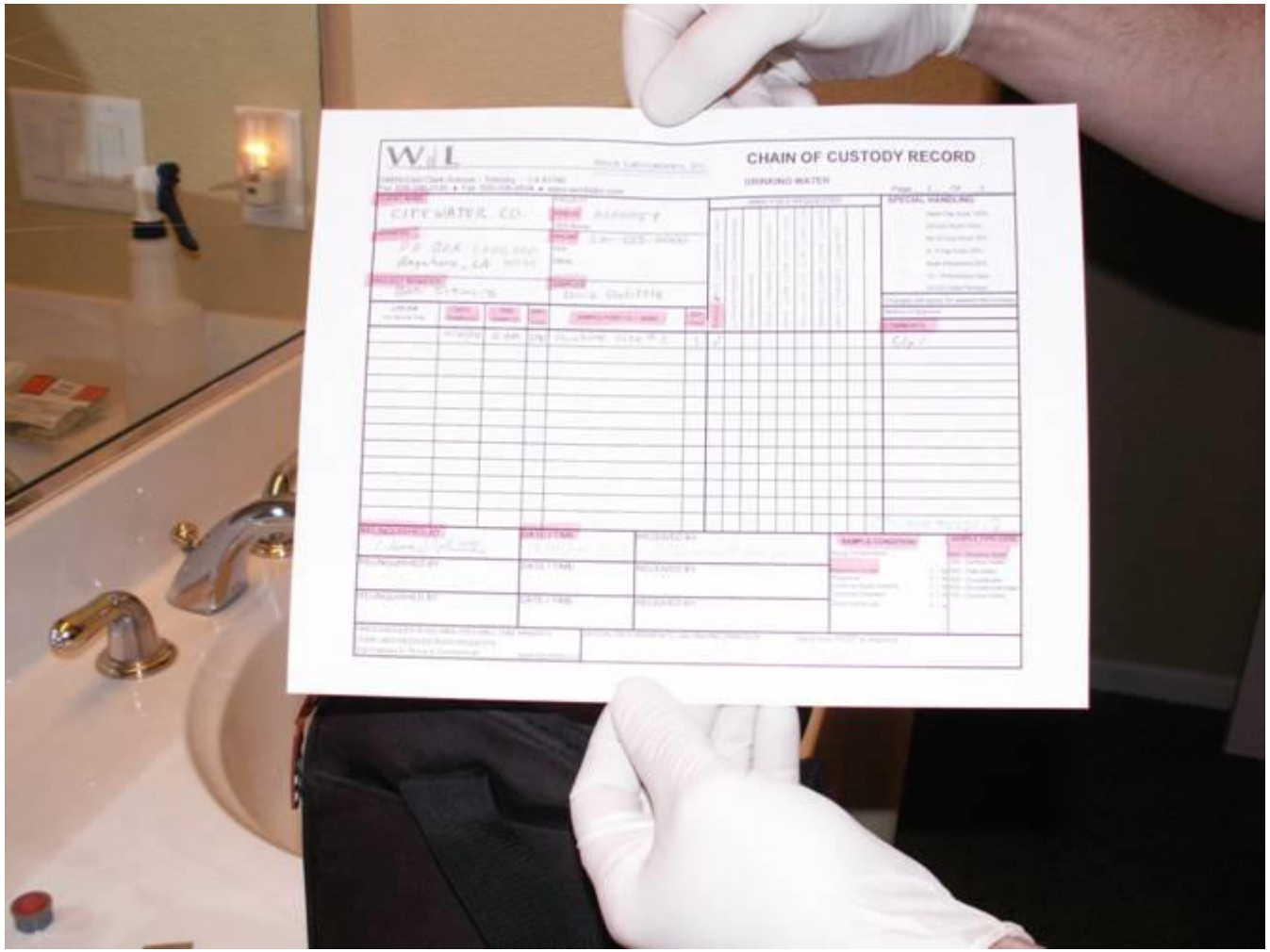
Fill out the chain of custody



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What is wrong with this picture?

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This one?

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And this one?

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Can you hear me now?

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Is this a good sampling site?

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How about this one?

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Wrap it up…

- Replace cap securely on sample bottle
- Place in sealed plastic bag (optional)
- Place in ice chest
  - Ice should be in bag, or
  - Ice packs
- Ship to lab as needed, or
- Drive to lab
- Within 30 hours!

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When the results are in

- If the results are negative;
  - It is your responsibility to send a copy to primacy agency. Don't depend on the lab
  - It is your responsibility to place the results in safe storage for 5 years

- If the results are positive…

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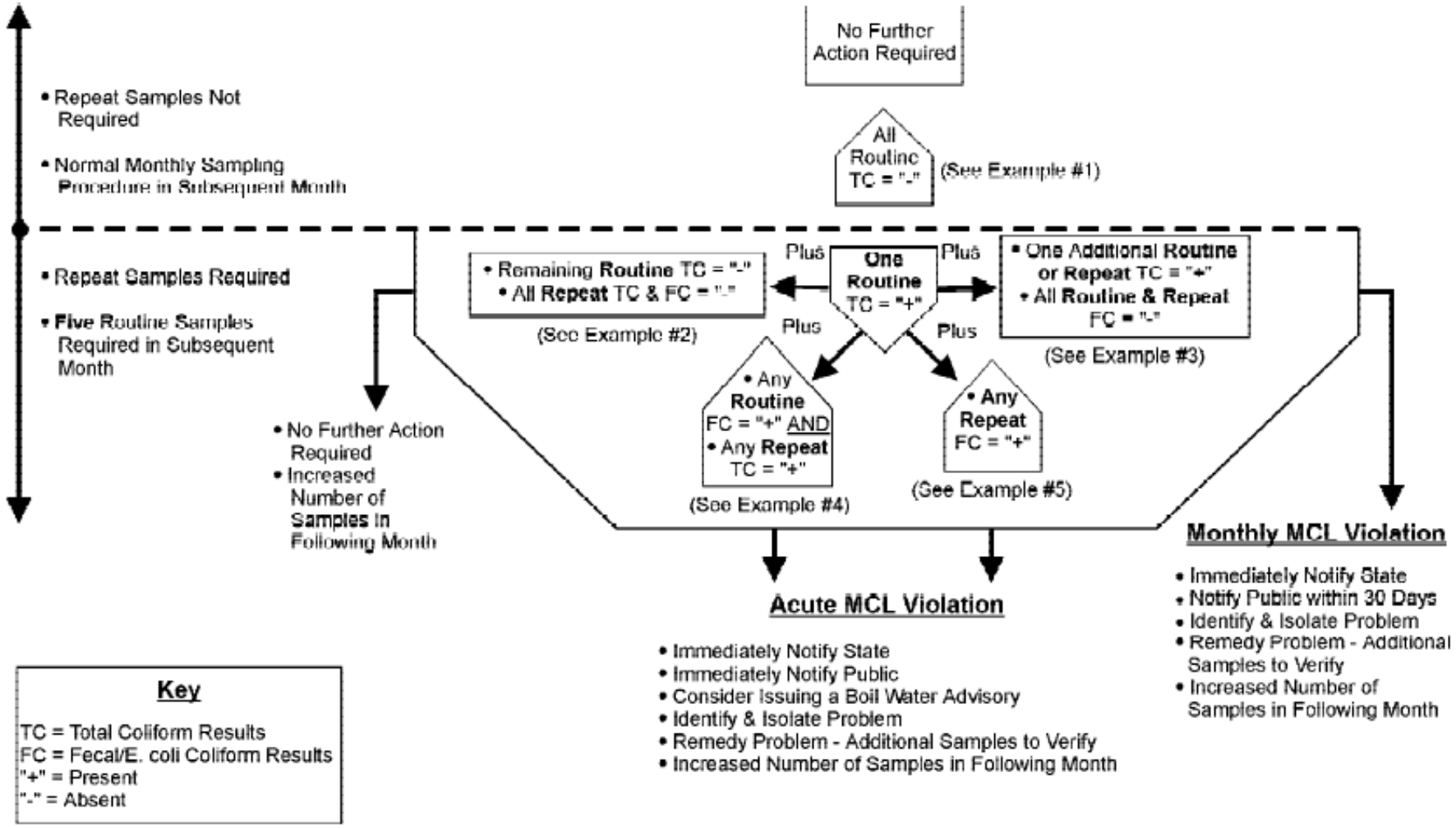
The results are + Now What?

The sample monitoring result diagram below illustrates the possible results of total coliform sampling. As mentioned previously, a possible result of total coliform testing is the violation of MCLs, either monthly or acute. The examples in the following section should be used with the sample monitoring diagram as a guide to how to interpret the results.



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Revised Total Coliform Rule (RTCR)

- EPA published a proposed RTCR based on Advisory Committee recommendations
- Involved States and other stakeholders in the rule development process

Proposed Changes - RTCR

- The MCL and MCLG for *E. Coli* will remain
- All fecal coliform provisions will be removed
- The MCL and MCLG for total coliform will no longer exist

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Proposed RTCR - 8 Core Elements

1. Requires systems to investigate and correct any sanitary defects found whenever monitoring results show a system may be vulnerable to contamination

2. Establishes a Treatment Technique in place of MCL / MCLG for TC, with PN only for Treatment Technique violations (failure to conduct a required assessment or fix an identified sanitary defect)

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Proposed RTCR

3. Keeps *E. coli* as health indicator with an MCLG of zero and MCL similar to current TCR
4. Provides criteria that well-operated ground water small systems must meet to qualify and stay on reduced monitoring
5. Requires increased monitoring for high-risk small ground water systems with unacceptable compliance history

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Proposed RTCR

6. Monitoring requirements:

- Keeps routine monitoring requirements for PWSs serving more than 4,100 people

- For systems serving between 1,001 and 4,100 persons, reduces the required number of additional routine samples

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Proposed RTCR

6. Monitoring requirements (cont):
   - For systems serving ≤ 1,000 persons
     - Reduces the required number of repeat and additional routine samples
     - Eliminates additional routine for PWSs monitoring at least once/month
   - Provides flexibility in the location of sites for repeat samples, and allows the use of dedicated sampling stations

Proposed RTCR

7. Defines “seasonal systems”, requires start-up procedures and sampling during high vulnerability

8. Allows systems to transition at their current monitoring frequency
   - For GW systems serving ≤ 1,000 people, the State is to re-evaluate the frequency during each sanitary survey cycle

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Closing Topics

- Water Rights
- eARS
- Oct 22nd, Winter Preparedness Workshop

Thank You!