

## Sanitary Surveys: Facility Surveys LA DHH/OPH

### Purpose of Sanitary Surveys

- Identify at – risk systems
  - Ensure operational, monitoring, reporting and recordkeeping practices are in compliance with drinking water regulations
  - Identify any significant deficiencies
  - Better ensure safe drinking water is distributed to the public
- Review of water source, equipment, facilities, and treatment procedures

## Survey Types

- Sanitary Survey
- Enforcement Survey
- Physical Inspection – Site Visit
- Capacity Development
- Engineering Survey

## Sanitary Survey

- A complete fact finding, information gathering and physical inspection of a public water supply
- Referred to as a Class I Sanitary Survey

## Enforcement Survey

- Can be requested by the State or EPA
- A Class I Sanitary Survey conducted in response to an uncorrected significant deficiency, violation, or a series of violations
- Post Order Investigation is conducted after the violation(s) or significant deficiency has been corrected by the water system

## Physical Inspection

- An information gathering and inspection tour of the physical facilities of a water supply only
- Referred to a Class II Sanitary Survey

## Capacity Development

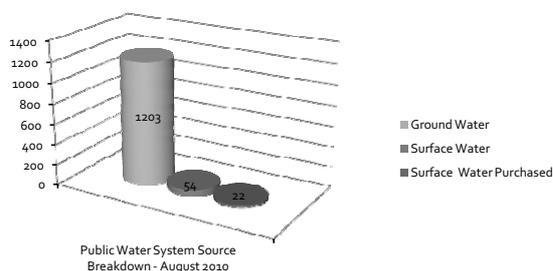
- A physical inspection and fact finding tour of a water system supply's facilities in order to make financial and managerial recommendations or findings
- Looks more at income/expense records and managerial procedures
- State Revolving Fund (SRF) Department
  - Low -interest loan program

## Engineering Survey

- A physical inspection and fact finding tour of a water system supply's facilities in order to make engineering recommendations or findings

## Sanitary Survey Frequency

- Surface Water – Every year
- Ground Water Under the Influence – Every year
- Ground Water Systems – Every 3 years



## Regulations

- Safe Drinking Water Act Code of Federal Regulations
- Louisiana Administrative Code
  - Title 51 Part XII – Water Supplies
  - Title 56 Part I – Water Wells

<http://doa.louisiana.gov/osr/lac/books.htm>

- Louisiana State Plumbing Code, 2000 Edition
- Recommended Standards For Water Works – Ten State Standards, 2003 Edition

[www.hes.org](http://www.hes.org)

## 8 Elements-Class I Sanitary Survey

- 1) Source
- 2) Treatment
- 3) Distribution system
- 4) Finished water storage
- 5) Pumps, pump facilities & controls
- 6) Monitoring, reporting, & data verification
- 7) Water system management and operation
- 8) Operator compliance with State requirements

### 1) Sources

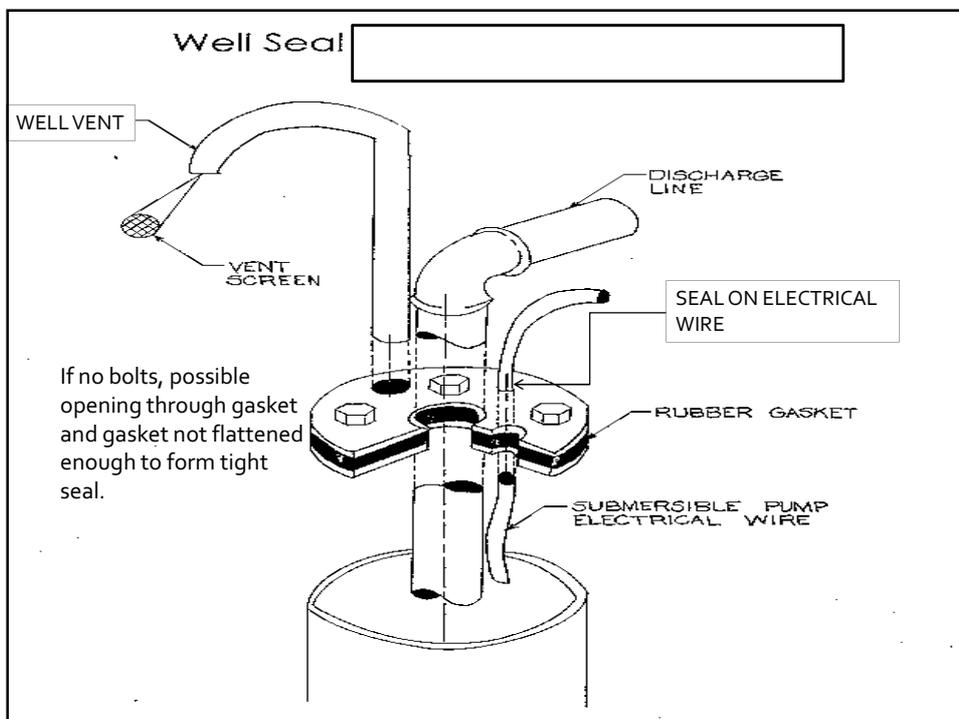
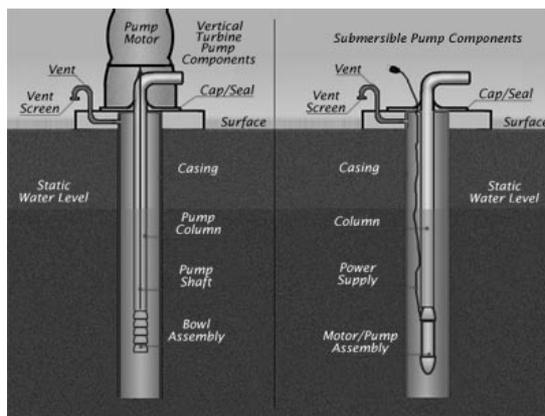
**Protecting the Source prevents contaminants and pathogens from reaching consumers**

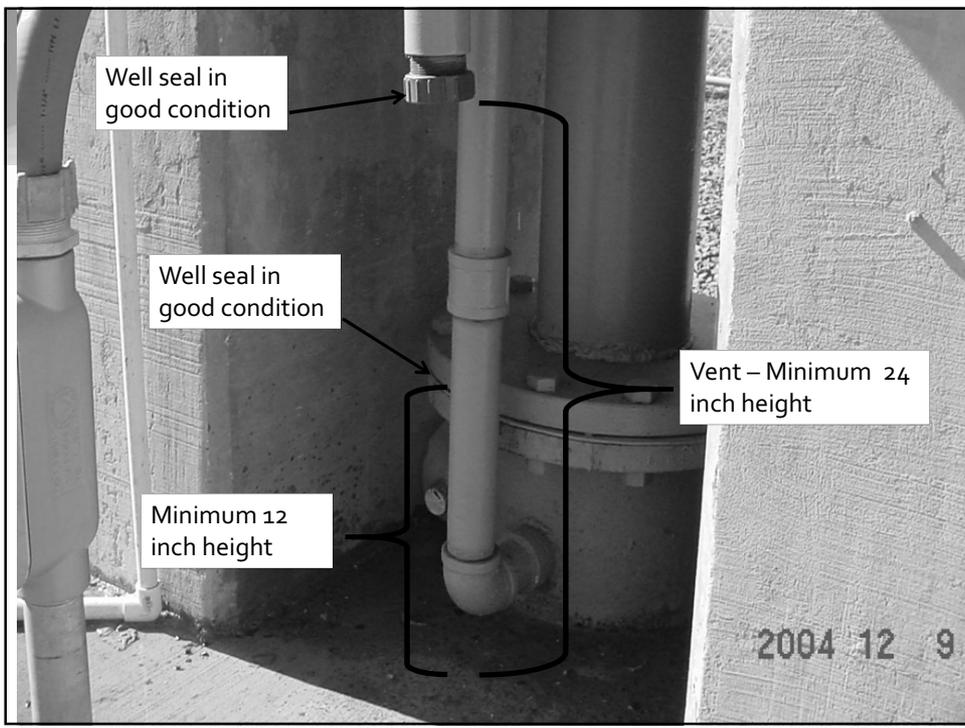
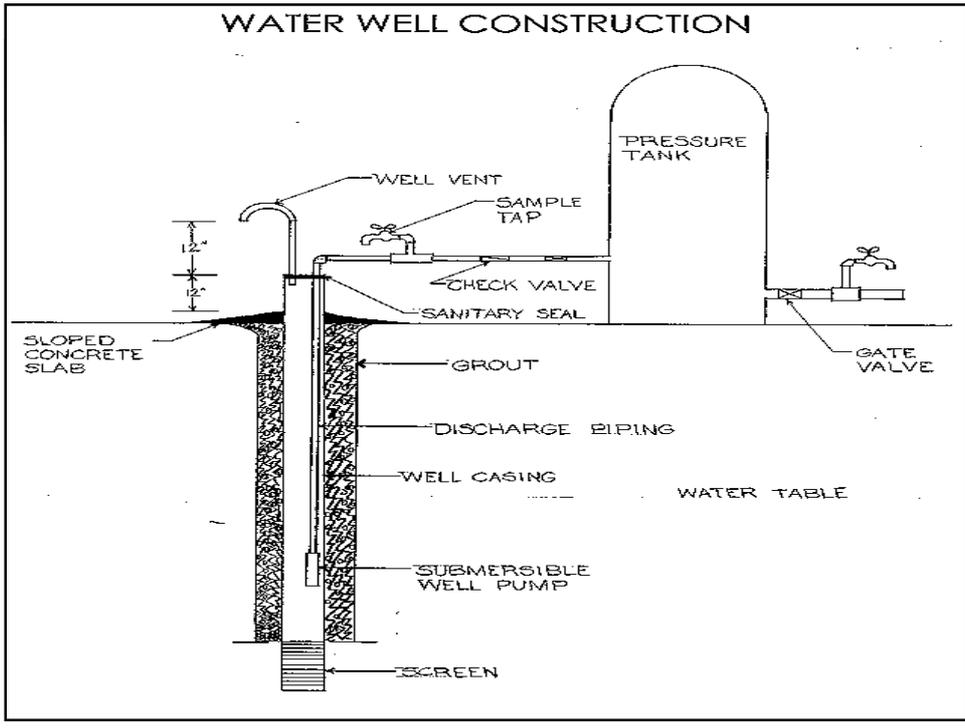
- Source Water Quality and wellhead protection
- Source quantity and capacity
- Well construction
- Well locations
- Potential sources of contamination
- Source water transmission mains
- Setback Distances
- Site Security & General housekeeping

# Water wells

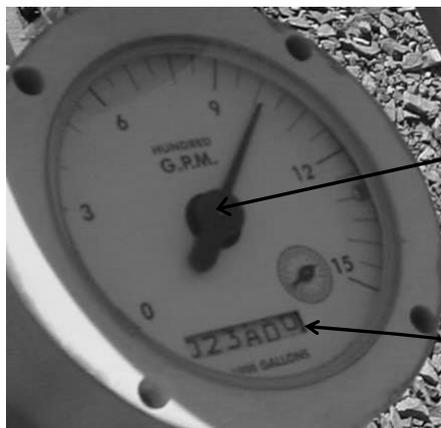
## Vertical Turbine

## Submersible



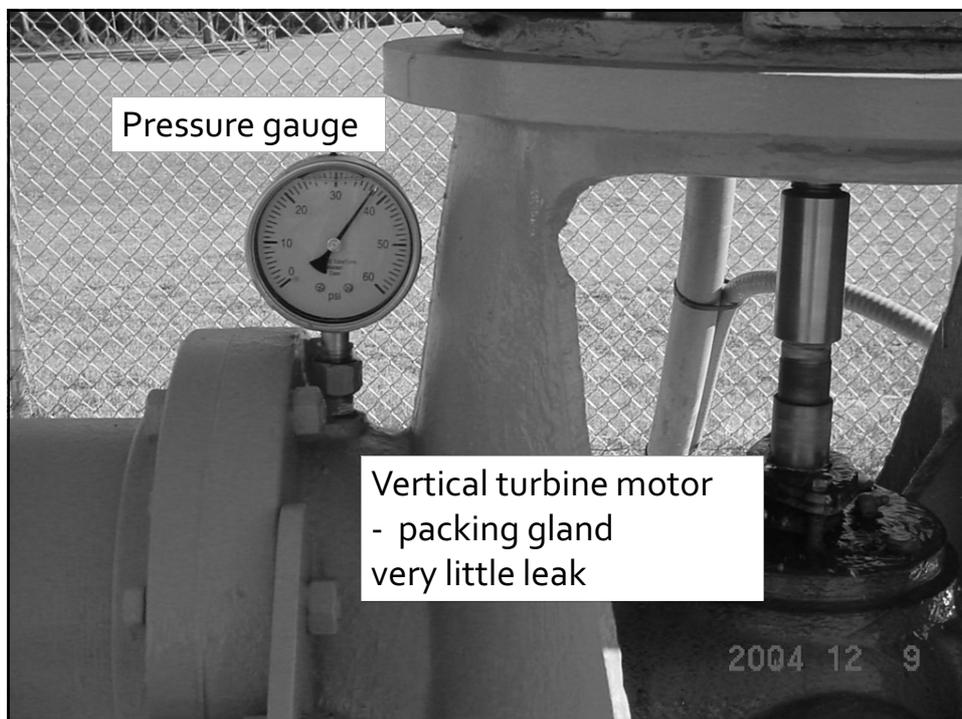


## Flow Meter



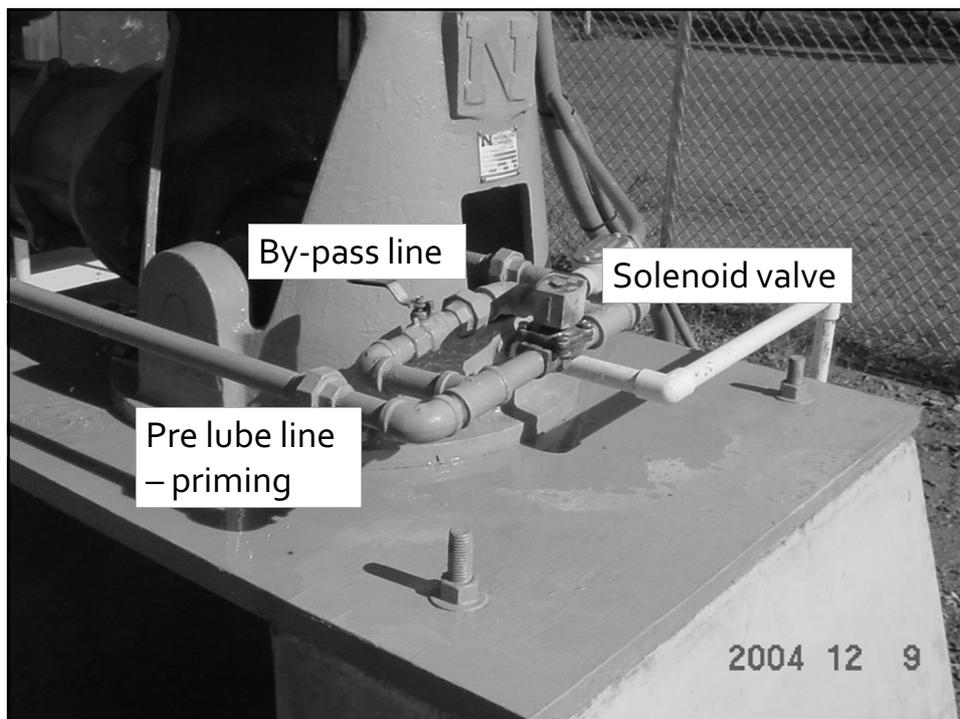
Indicating –  
flow rate

Totalizer – number of gallons per day



Pressure gauge

Vertical turbine motor  
- packing gland  
very little leak



## Raw Water Collection Point

- Smooth nozzle tap
- Installed prior to the required check valve
- Primary Drinking Water Regulations

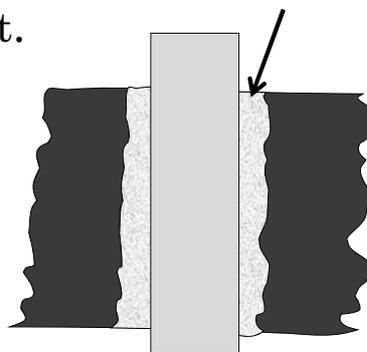


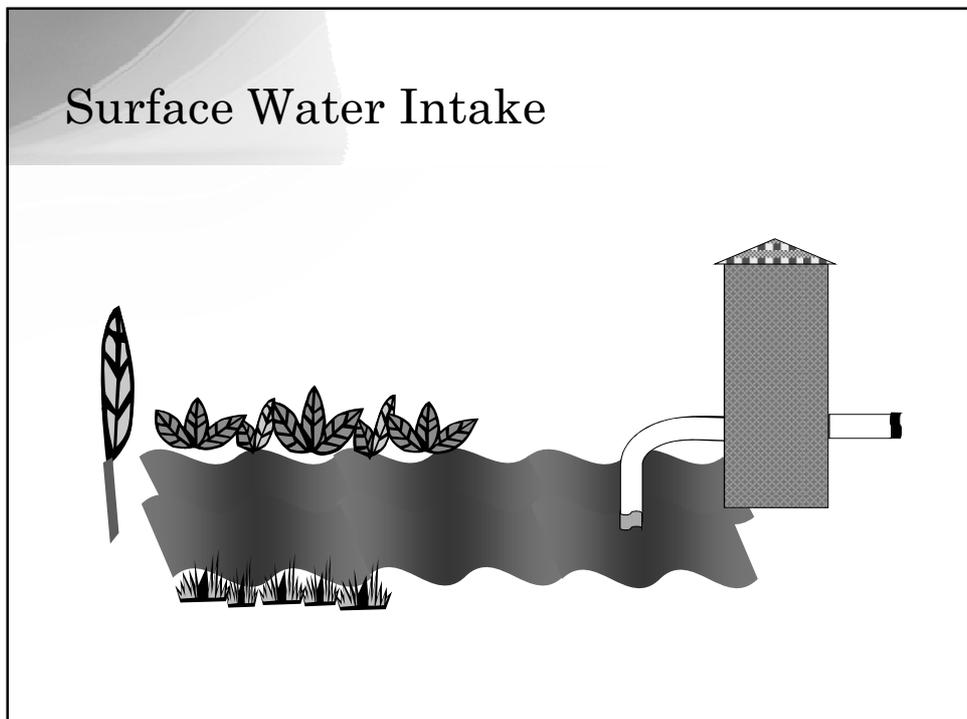
## Well Review

- Well log and characteristics
  - Flow and well yield
  - Depth
  - Material
- Aquifer protection
  - Sanitary seal
  - Secure casing
  - Grouting
- Security
  - Fencing, locks, *etc.*
  - Contamination
- Well Maintenance
  - Casing condition
  - Site maintenance
- Electrical
  - Secure
  - Organized

## Grouting Of Wells

The Annular Space Between The Well Casing And The Bore Hole Shall Be Sealed With Cement-Bentonite Slurry Or Neat Cement.





## Source Information

- Water body (flowing vs. not-flowing)
- Basic make-up of the water
  - Turbidity
  - pH
- Pumps
  - How many?
  - Types
  - Capacity

## Intake Pipe

- Where is Intake
  - Near shore or middle of reservoir
  - Near surface or bottom of reservoir
  - Multiple intakes
- Is Pipe Screened
  - Intake pipe screened
  - Area around pipe screened
- Where are sources of contamination

## Pumping Facilities at Intake

- Fenced / Protected
- Pumping Equipment
- Operator accessibility
- Maintained



## Purchase

- Master Meter where connected to Seller
- Booster pumps
- Post treatment (chlorination boost)
- Storage
- Written contract with Seller
- **Operator certified Production and Distribution**

## 2) Treatment

- Varies based of water quality of the source
- Application of treatment chemicals
- Redundant mechanical components where treatment is required
- Cross-connections with treatment systems
- Monitoring of treatment systems



## Records

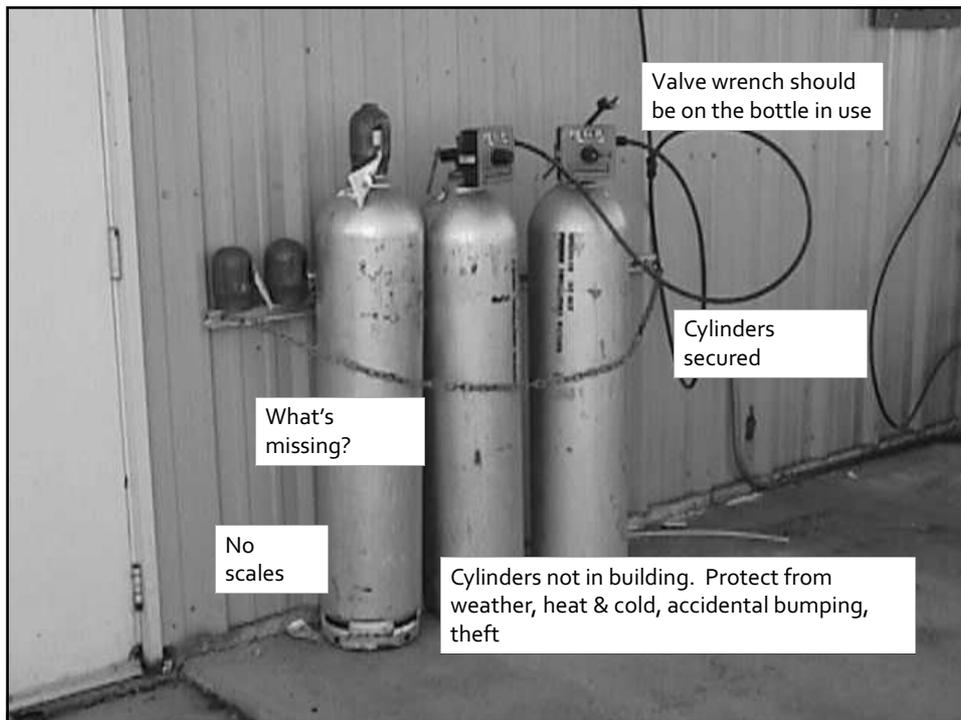
- Amount of chemicals used
- Which chemicals used
- Injection rates
- Amount of water treated
- Water quality before and after treatment
- Flow rate through plant
- Diary of all procedures used
- Any unusual incidences

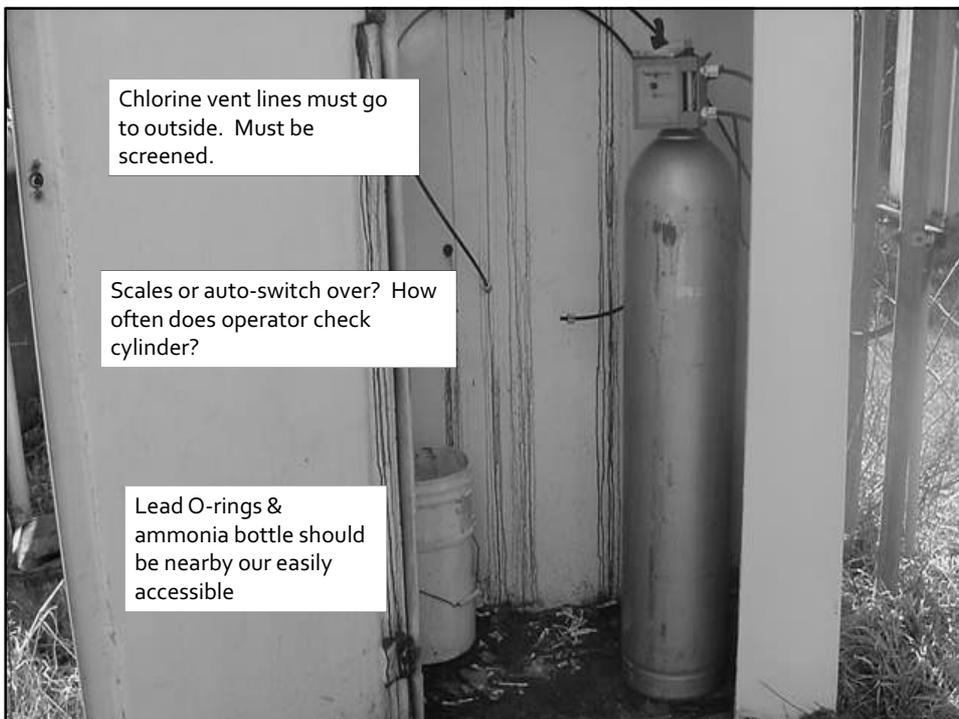
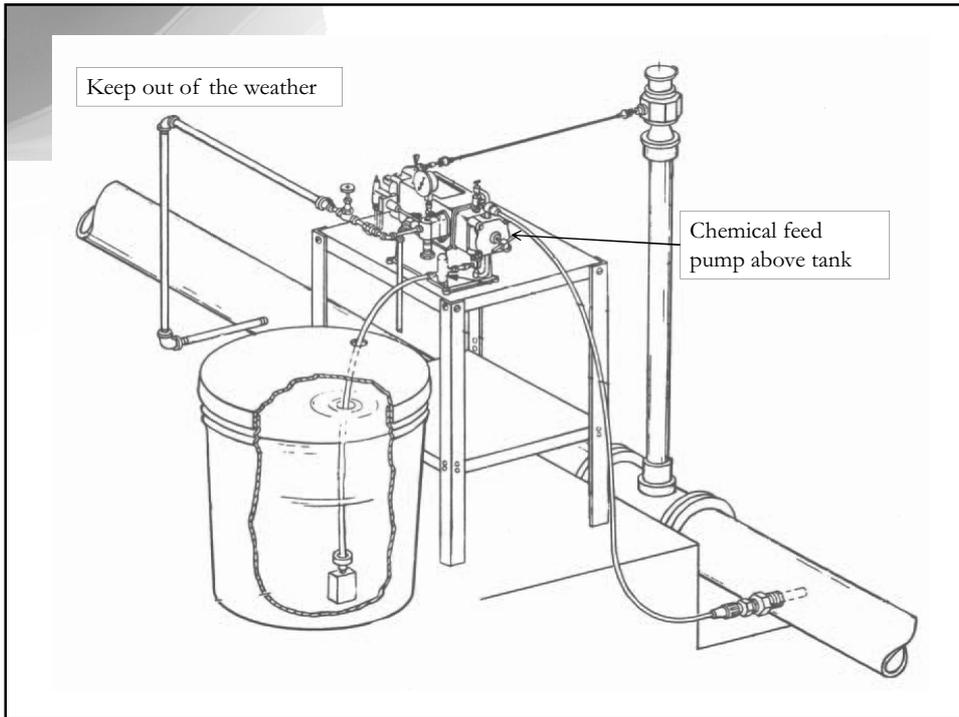
## Chlorine Residual Reports

- Free chlorine residual tested every day: weekends, holidays, vacations, etc.
- Daily residuals kept on approved form
- Maximum chlorine residual tested monthly with Routine bacteriological samples.

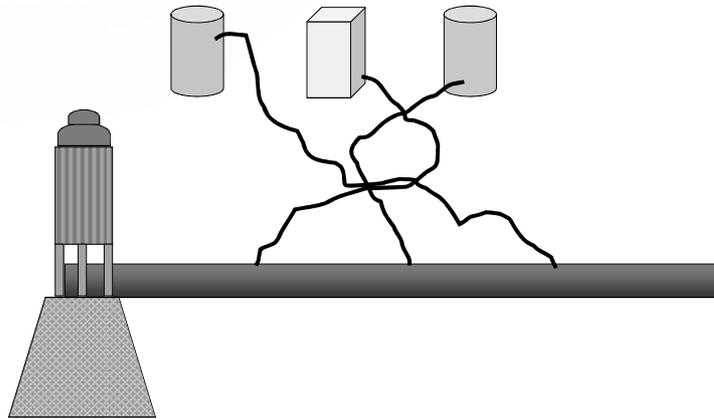
## Chemical Addition





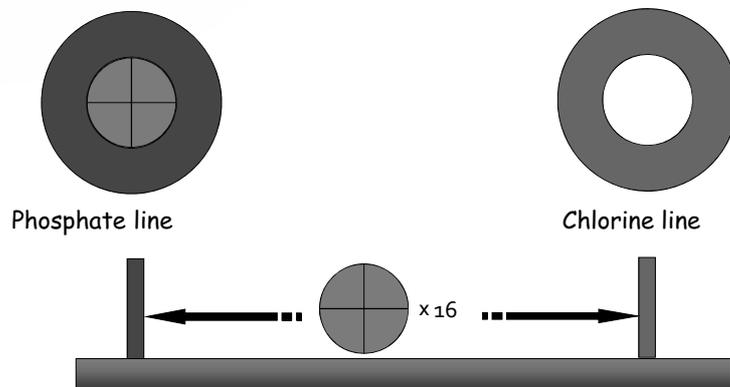


## What Goes Where? When?



## Chemical Feed Requirements

### Phosphate and Chlorine



## Chemical Labels



## Pipe Labels



## Chemicals and Pumps

- Are they compatible?



## 3) Distribution System

- Upkeep and maintenance of pipes
- Paper review of schematics
- Operation and maintenance records
- Operating Procedures, construction standards
- Distribution system water quality data



## Records

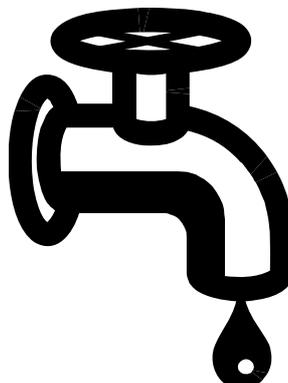
- Pipe sizes
  - Plan documents
  - Locations
- Pipe Material
  - Asbestos Cement
  - PVC (poly-vinyl chloride)
  - PE (poly ethylene)
  - Cement
- Distribution components
  - Valves (Gate, Flush, *etc.*)
  - Fire Hydrants
  - Sample Taps
  - Dead-ends
- Data
  - Chemical data (Chlorine)
  - Pressure data

## Distribution Review

- Maintain proper pressure and flow
  - The minimum for the State is 15 psi
  - Maintain adequate flow to reduce buildup in pipes
- Elevations
  - Pressure inversely proportional to Elevation
  - If terrain varies greatly, test psi at highest / lowest areas served.
- Flushing Program

## Sample Taps

- Source of your bact. samples
- Choose sites wisely
- Secure sites
- Maintain the sample taps



## Unapproved Sample Taps

- Swing-neck tap
- Mixing faucets
- Vacuum breakers
- Leaking faucets
- Fire hydrants/flush valves
- Upstream of treatment devices



## Approved Sample Taps

- **Smooth-Nozzle tap**
- **12 inches above any surface**
- **Located away from potential exterior contamination**



## Cross-Connections

A connection between a supervised potable water supply and an unsupervised supply of unknown quality



## Cross Connection Protection

⊗ <b>Back flow</b>	<b>Air Gap</b>
	<b>Reduced Pressure Principle Backflow Preventers</b>
⊗ <b>Back Siphonage</b>	<b>Double Check Valve Assembly</b>
⊗ <b>Back pressure</b>	<b>Atmospheric Vacuum Breakers</b>

## Likely Places For Cross Connections

- **Hospitals and Medical Bldg**
- **Mortuaries and Morgues**
- **Sanitariums and Nursing Homes**
- **Laundries and Dye Works**
- **Waste Water Treatment Plants**

## Cross Connection Protection

- **Back-flow and back siphonage protection devices shall be tested annually**
  - Louisiana licensed plumber certified in BFP device testing
  - Records of the results of the testing shall be kept by the water system
- **Components shall not be placed below grade**

## 4) Finished Water Storage

- Access tank integrity
- Access ways and safety
- Screens, overflow and bypass piping
- Site security
- Maintenance Checks
- Operation & Maintenance Procedures
  - Internal cleaning
  - Disinfection of tanks



## Storage tanks

- Capacity – usable volume
  - External gauge
  - SCADA system
  - Water age and
- Inlet and Outlet Orientation
  - Single inlet/outlet
  - Separate inlet/outlet
- Structural Integrity
- Material and painting (internal & external)



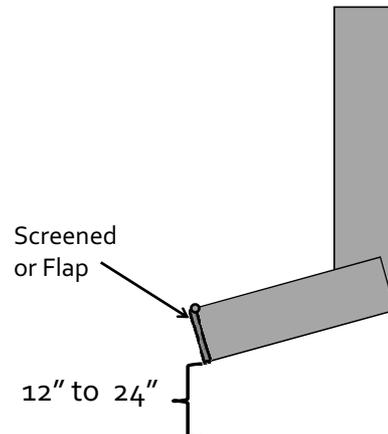
## Tank Vents and Manholes



- Vents
  - Prevent the entrance of surface water and rainwater
  - Shall prevent the entrance of birds, animals, insects and dust
  - Shall be installed at least 24 inches above the roof and covered with a mesh non-corrodible screen
- Manholes
  - Shall be framed at least 4" above the roof at the opening and fitted with a solid watertight cover which overlaps down around the frame at least 2"
  - Shall have a locking device

## Tank Overflow

- Recommended that overflow diameter be one size larger than inlet and outlet of the tank
- Not acceptable as the vent for the storage tank
- No overflow may be connected to a sewer or a storm drain



## Hydropneumatic Tank

- Hydropneumatic tanks combine energy from a pump with the principle of air pressure to force water into the distribution system.
- Not recommended for fire protection
- Size limits number of customers you can serve



## Hydropneumatic Tank

- Cut-in Pressure vs. Cut-out Pressure
- Cycle Repeats
- Air:Water = 1/3 air to 2/3 water
- Cycle Rate - Number of times the pump starts and stops in one (1) hour
- Sight tube
  - **Protect from freezing**
  - **Clean, not clogged**

## 5) Pumps, Pump Facilities & Controls

- Proper working order and best fit
- Pump information
  - Pump tests
  - Pump capacity
  - Maintenance schedule
- Emergency Power
- Remote monitoring controls and alarms



## Pumps

<b>Types</b>	<b>Uses</b>
Centrifugal	Intake
Hand pump	Transfer
Jet pump	Service
Positive Displacement	Booster
Submersible	Chemical Feed
Vertical Turbine	

## Generators



## 6) Monitoring, Reporting, & Data Verification

- Chemical Data
  - Organic Data
  - Inorganic Data
- Radiological Data
- Lead and Copper
- D/DBP
- Total Coliform Rule
- CCR
- LAC 51:XII
- Variances
- Plans Current
- Inspection Reports
- Violation
  - Actions to Correct Violations
  - Public Notification Verification
- Responses
- Chlorine Residual Reports
- Calibration Tests
- Backflow Device Test Results
- Chlorine Dioxide Residuals

## Record Keeping

- Chlorine Residuals - 3 years



## Record Keeping

- Bacteriological Results - 5 years



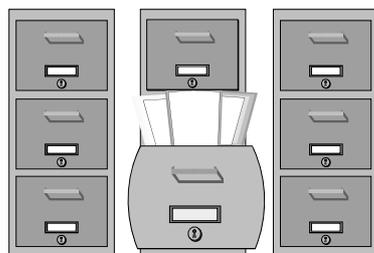
## Record Keeping

- Chemical Analysis - 10 years
- Chemicals used for treatment



## Record Keeping

- Your Lab Reports - 10 years
  - Iron / Manganese Removal
  - pH / Corrosion Control
  - Surface Water Treatment Rule



## Record Keeping

- General Correspondence - 10 years
- Survey Letters, Plans Approvals
- Requests For Information
- Your Letters to DHH



## 7) Water System Management and Operation

- Administrative Contacts
  - Owner / President / Mayor
  - Boardmembers / Aldermen
- Contact information
- Has any attended management class?

## POC Sample Site Plan

Point of Collection  
Bacteriological (Bact.) Sample  
Sites

Lead and Copper

D/DBP Plans

## Amend Contact Info

- Update legal contacts
  - Addresses
  - Phone numbers
- Update population
- Sufficient staffing
- Contacts
  - Administrative contact
  - Designated operator
  - Certified operator
  - Legal contact
  - Emergency contact



## 8) Operator Compliance with State Requirements

- Have certifications displayed
- Must be properly trained based on system type, size and treatment
- Properly certified for roles and responsibilities
- Certifications are current and properly maintained
  - Training Hours
  - Experience



## SWIFT – Safe Water Information Field Tool

- Electronic sanitary surveys
- Allows the State to more effectively track deficiencies/observations identified during the survey
- Allows State to provide a more uniform approach to conducting surveys across Louisiana
  - Required fields
  - Better reporting to the system
- Allows the State to maintain schedules for follow-up activities

## Survey Outcome

- Identify deficiencies/observations and determine their severity
- Provide written notification to the system of the issues and may specify corrective action(s) needed to be completed by the system
- Outline timeline in which the system has to take corrective actions and notify the State that action has been completed
- Failure to comply with the required corrective action will result in a Treatment Technique Violation

## Engineering Services



Metro Region I – New Orleans  
504-599-0101

Central Region VI – Alexandria  
318-487-5262

Capitol Region II – Baton Rouge  
225-925-7230

Northwest Region VII –  
Shreveport  
318-676-7470

Teche Region III – Thibodaux  
985-447-0920

Northeast Region VIII – Monroe  
318-361-7201

Acadian Region IV – Lafayette  
337-262-5311

Southeast Region IX -  
Mandeville  
985-871-1300

Southwest Region V – Lake  
Charles  
337-475-3200