The Sanitary Survey

TCRDSAC Meeting

October 18, 2007

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This Meeting's Presentations

Objectives

Provisions

System compliance

Implementation of Sanitary Surveys

Improvement

Research

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FAC Questions to be Addressed

- What is a Sanitary Survey?
- What specifically is done?
- What does it take to perform one?
- How long do they take?
- How they are implemented under different rules?

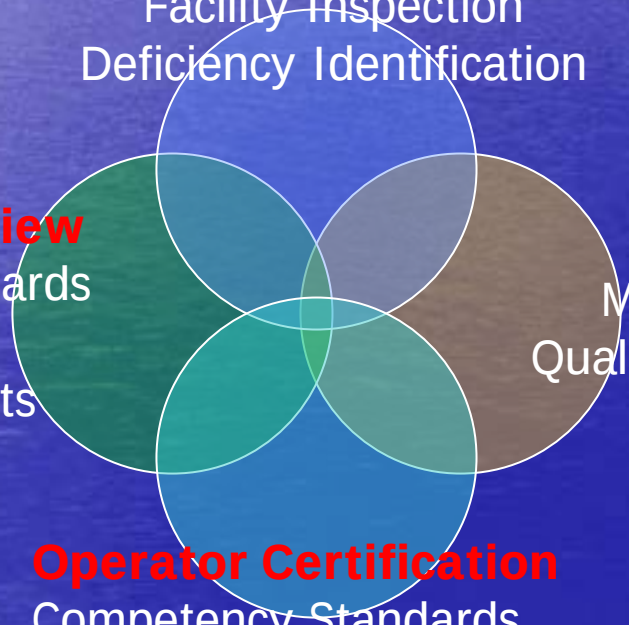
State Variability

- Enabling Legislation
  - Utah – Title 19 Chapter 4 Utah Safe Drinking Water Act
- Location of State Drinking Water Program
  - Departments of Health
  - Departments of Environmental Quality
  - Other (Natural Resources)
- Sister Agencies

State Variation

- Geographic
- Geologic
- Demographic
- Political
- Resources
  - Determine frequency of surveys
    - Category of PWS

Intersecting Programs



Sanitary Surveys
Sanitary Hazards
Facility Inspection
Deficiency Identification

Engineering Review
Construction Standards
Plan Review
Operating Permits

Process Control
Monthly or Quarterly Reports
Quality measures (NTU, MRDL, etc)

Operator Certification
Competency Standards
Expertise
On-going Training

Depth of Survey

- Facility / Component Driven
- DW Program coordination
  - Monitoring Plans
    - Bacteriological Sample Site Plans
    - Lead Copper Sample Site Plans
  - Cross Connection Control Program
  - Training
  - Security
  - Capacity Development
  - Source Protection Review (SWAP & WHPP)
- Other Facility Review
  - Forest Service – roads, campsites, toilets
  - Restaurants – Food service inspections

CFR defined MINIMUM Sanitary Survey Elements

1. Monitoring, reporting & data verification
2. System Management and operation
3. Operator Compliance with State Requirements
4. Source
5. Treatment
6. Pumps, pump facilities & controls
7. Finished Water Storage
8. Distribution System

Element #1
Monitoring, Reporting & Data Verification

- Review System Records
  - Inventory information
  - Monitoring schedules
  - Sample history

Element #2
System Management & Operation

- Management Programs
  - Cross Connection Control
  - Emergency Response
- Operational issues
  - Turbidity, pressure, taste and odor, service interruption, waterborne disease outbreaks
- Customer Complaint Response

Element #3
Operator Compliance with State Requirements

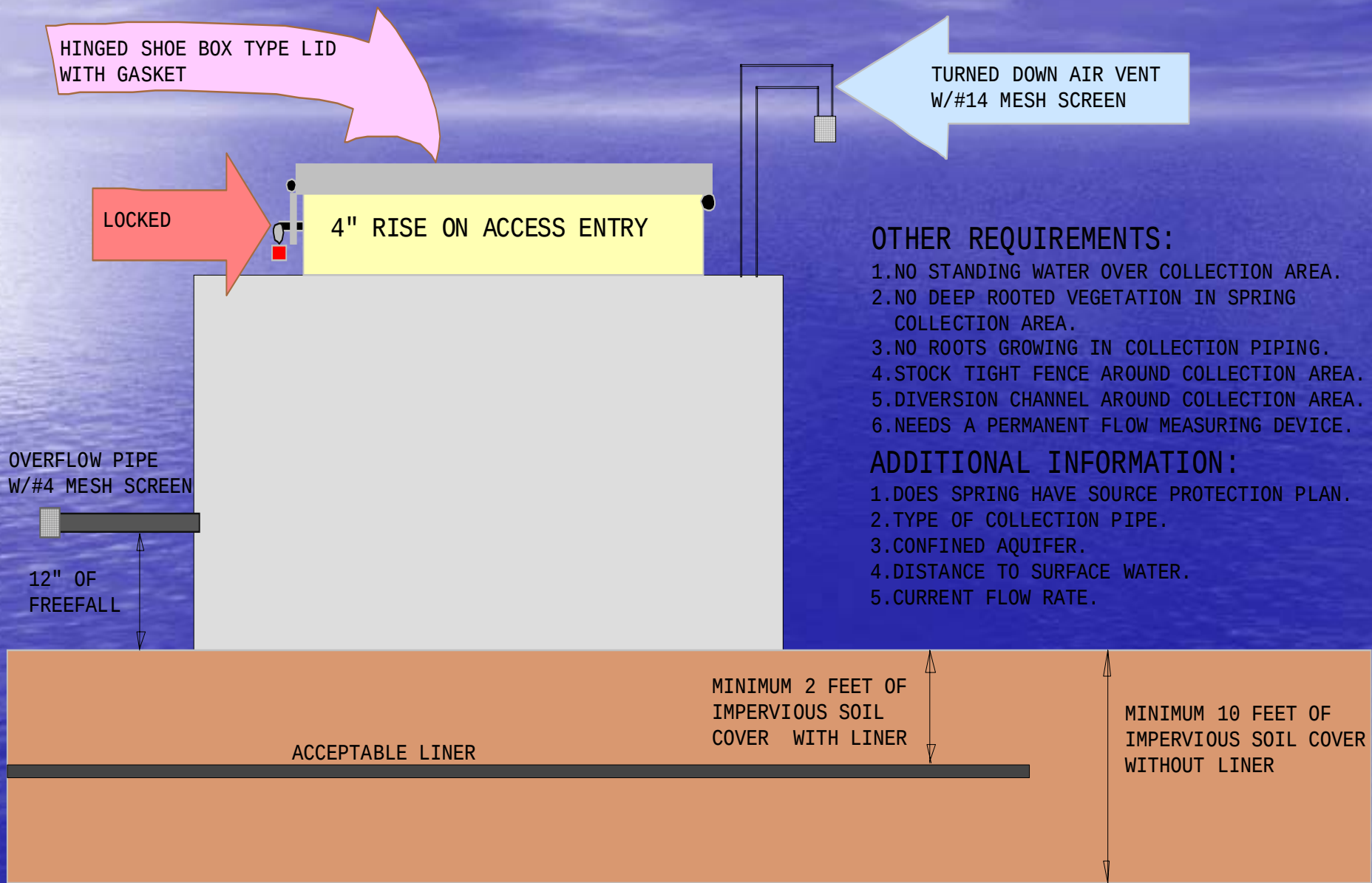
- Verify current system Operator
- Check the level of certification required by the State for the system
- Update system records

Element #4
Sources - Wells

- Sanitary seal
  - All openings, cracks, etc., must be sealed
  - Food grade mineral oil lubrication
- Casing 12” above floor or 18” above ground

Element #4
Source - Springs

- Water ponding over collection area
- Impervious soil cover or liner
- Deep rooted vegetation Roots in collection pipes
- Opening in the Collection Box



OTHER REQUIREMENTS:

1. NO STANDING WATER OVER COLLECTION AREA.
2. NO DEEP ROOTED VEGETATION IN SPRING COLLECTION AREA.
3. NO ROOTS GROWING IN COLLECTION PIPING.
4. STOCK TIGHT FENCE AROUND COLLECTION AREA.
5. DIVERSION CHANNEL AROUND COLLECTION AREA.
6. NEEDS A PERMANENT FLOW MEASURING DEVICE.

ADDITIONAL INFORMATION:

1. DOES SPRING HAVE SOURCE PROTECTION PLAN.
2. TYPE OF COLLECTION PIPE.
3. CONFINED AQUIFER.
4. DISTANCE TO SURFACE WATER.
5. CURRENT FLOW RATE.

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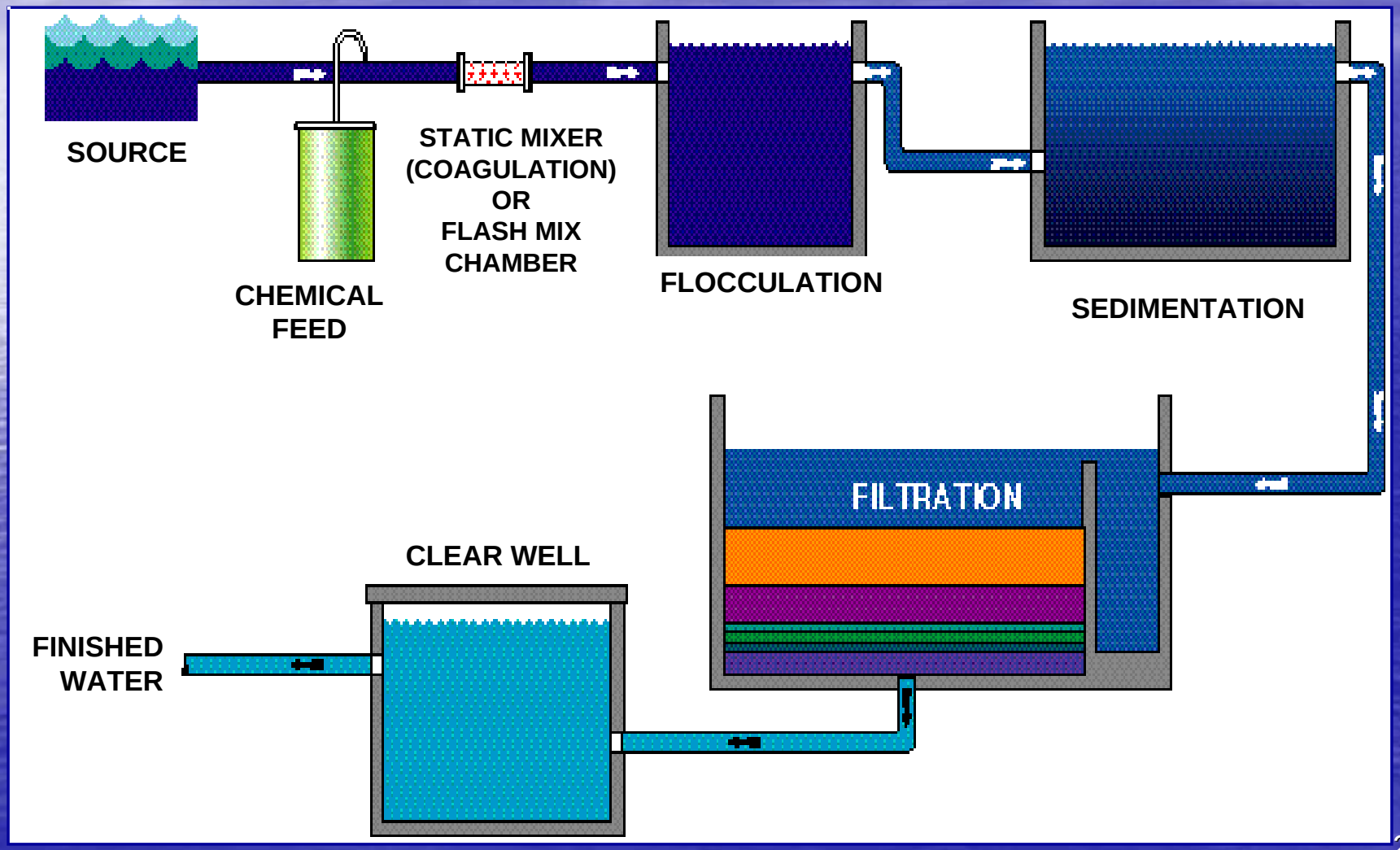
Element #4
Source – Surface Water Intakes

- 10 States Standard
  - … a diversion device capable of keeping large quantities of fish or debris from entering an intake structure
  - Withdrawal of water from more than one level if quality varies with depth
  - Adequate protection against rupture by dragging anchors
  - Protection from ice and fouling (zebra mussels

Element #5
Treatment

- Surface Water Treatment Plants
- Disinfection Facilities
- Fluoridation Facilities
- Other Treatment
  - Corrosion Control
  - Arsenic Removal
  - Taste & Odor Control
  - Iron & Manganese Removal

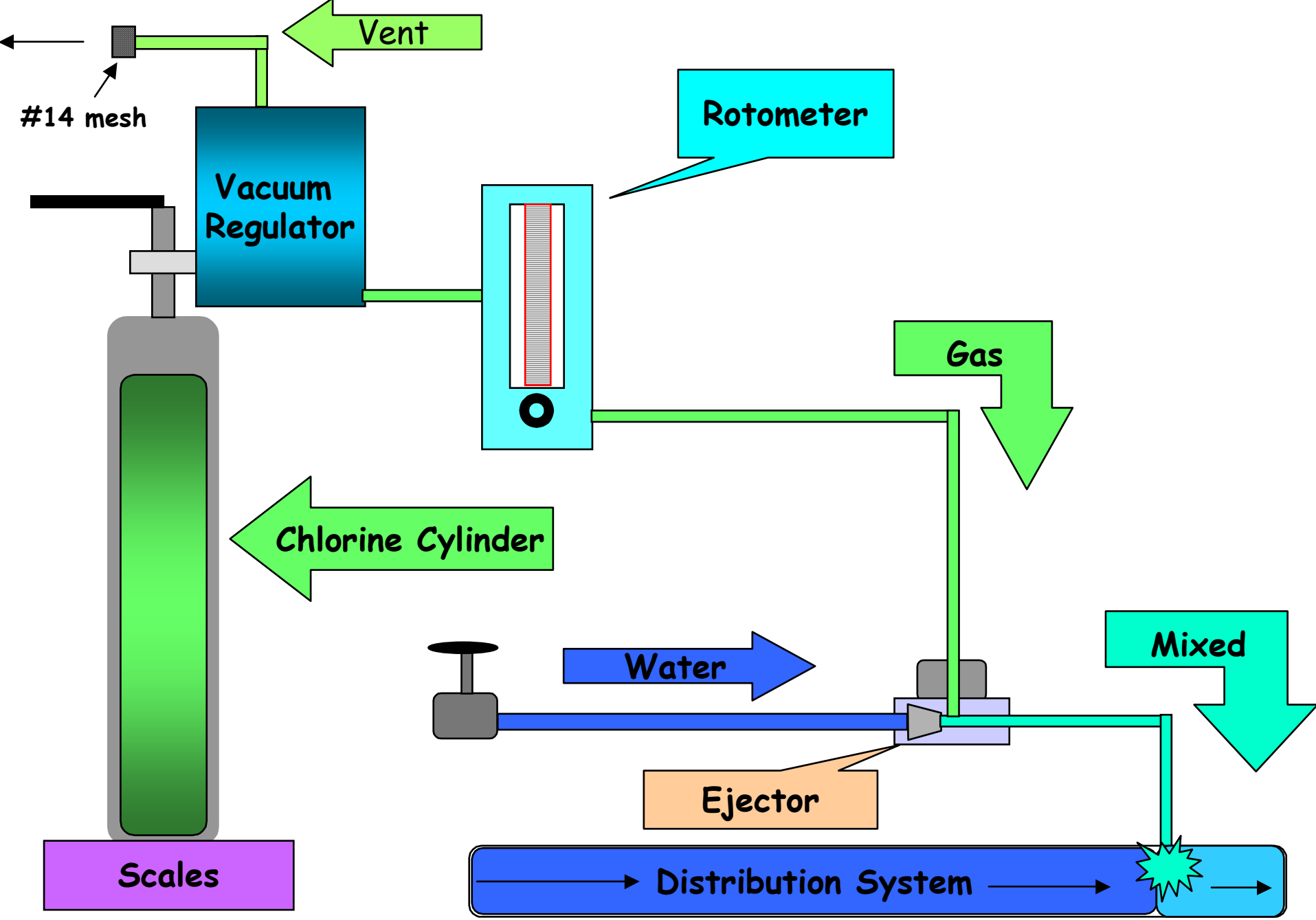
Water Treatment Processes



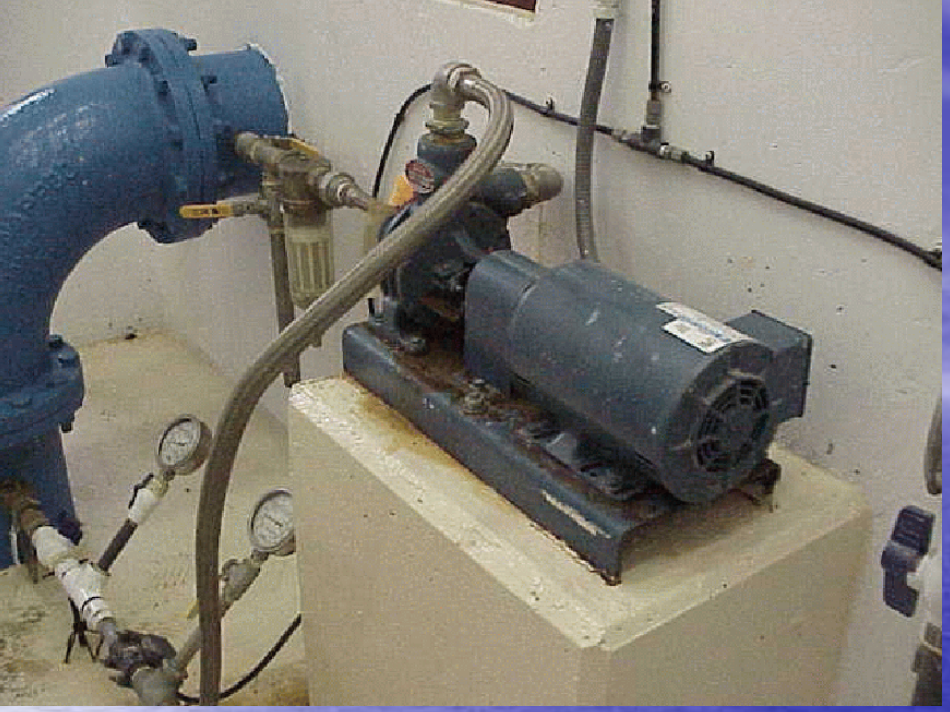
SHALL RF-35
ATEX R-180-PE SR 25/50 RATED A22 18

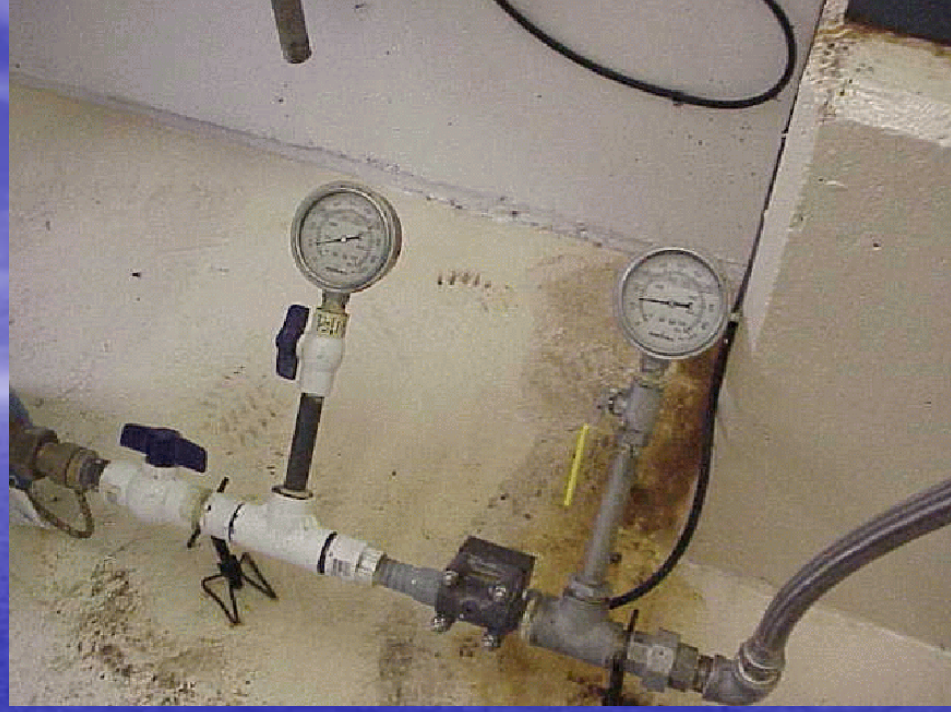
Element #5
Treatment -Disinfection Facilities

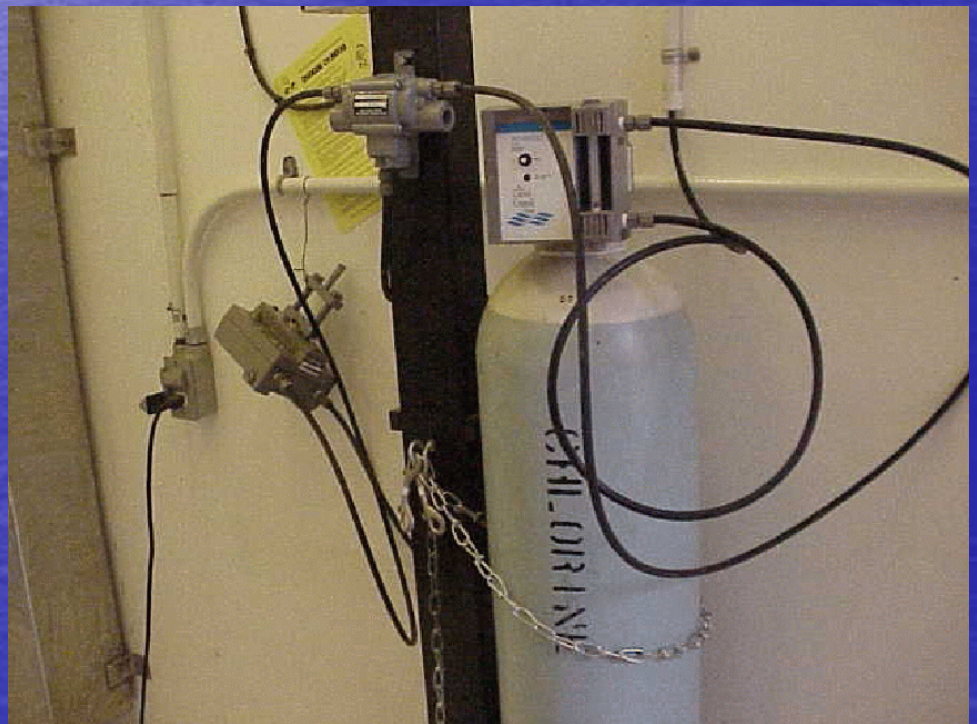
- <u>Both gas and liquid chlorination:</u>
  - Detectable residual
  - Chlorine building
    - Lighting, heating and ventilation
  - Chlorine residual test kit
  - Flow measurement


Vent
#14 mesh
Vacuum Regulator
Rotometer
Gas
Chlorine Cylinder
Water
Mixed
Ejector
Scales
Distribution System

FULL CL2
CHLORINE
UN 1017 RQ
INHALATION HAZARD
PB S CHEMICAL
CHLORINE
CHLORINE
UN 1017 RQ
INHALATION HAZARD
PB S CHEMICAL



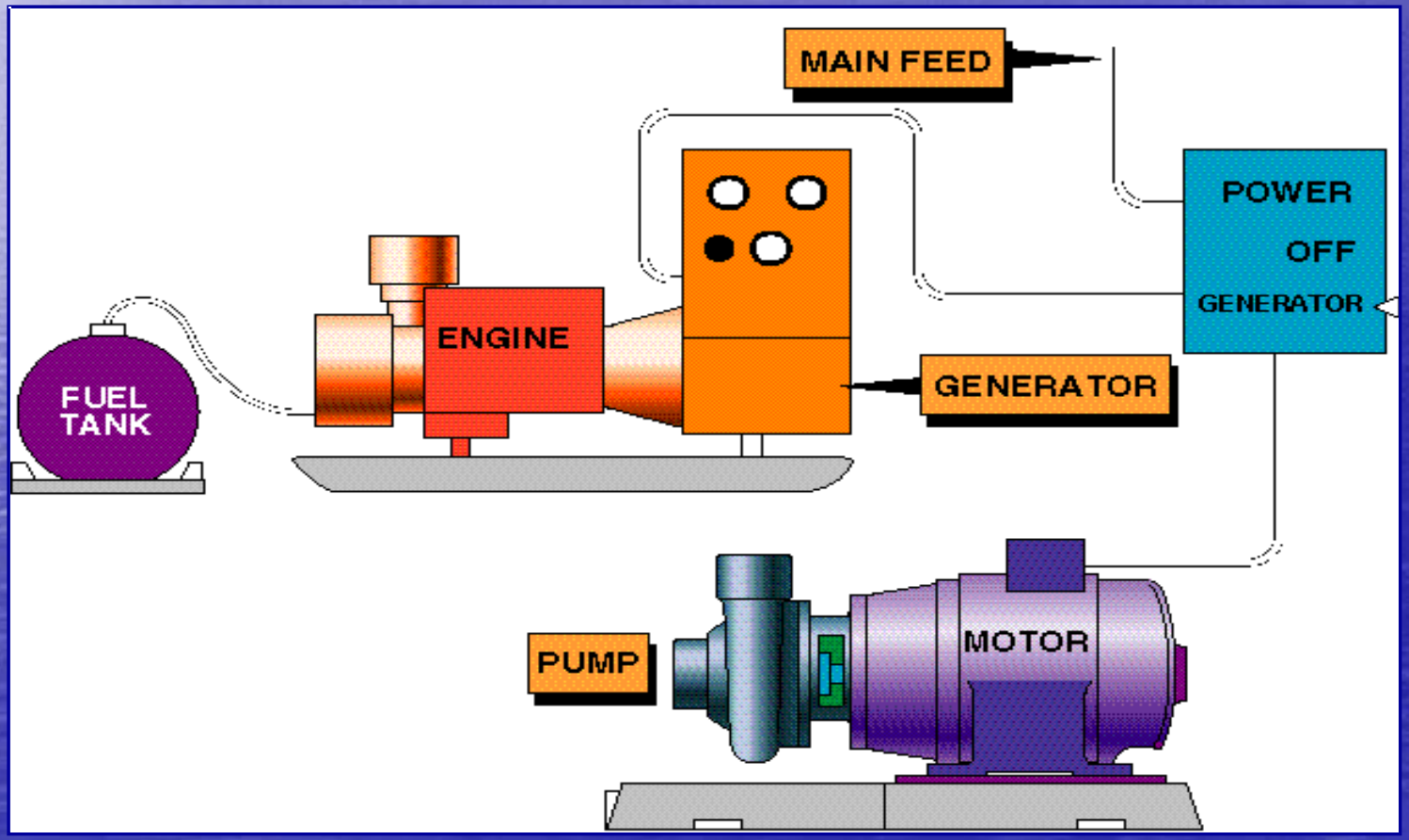




Element #6
Pump Stations

- Number of pumps
  - Accessible/serviceable
  - Equipment:
    - Pressure gauge
    - Air/vacuum valve
  - Surge protection
- Standby power
- Firm capacity

Pump Stations



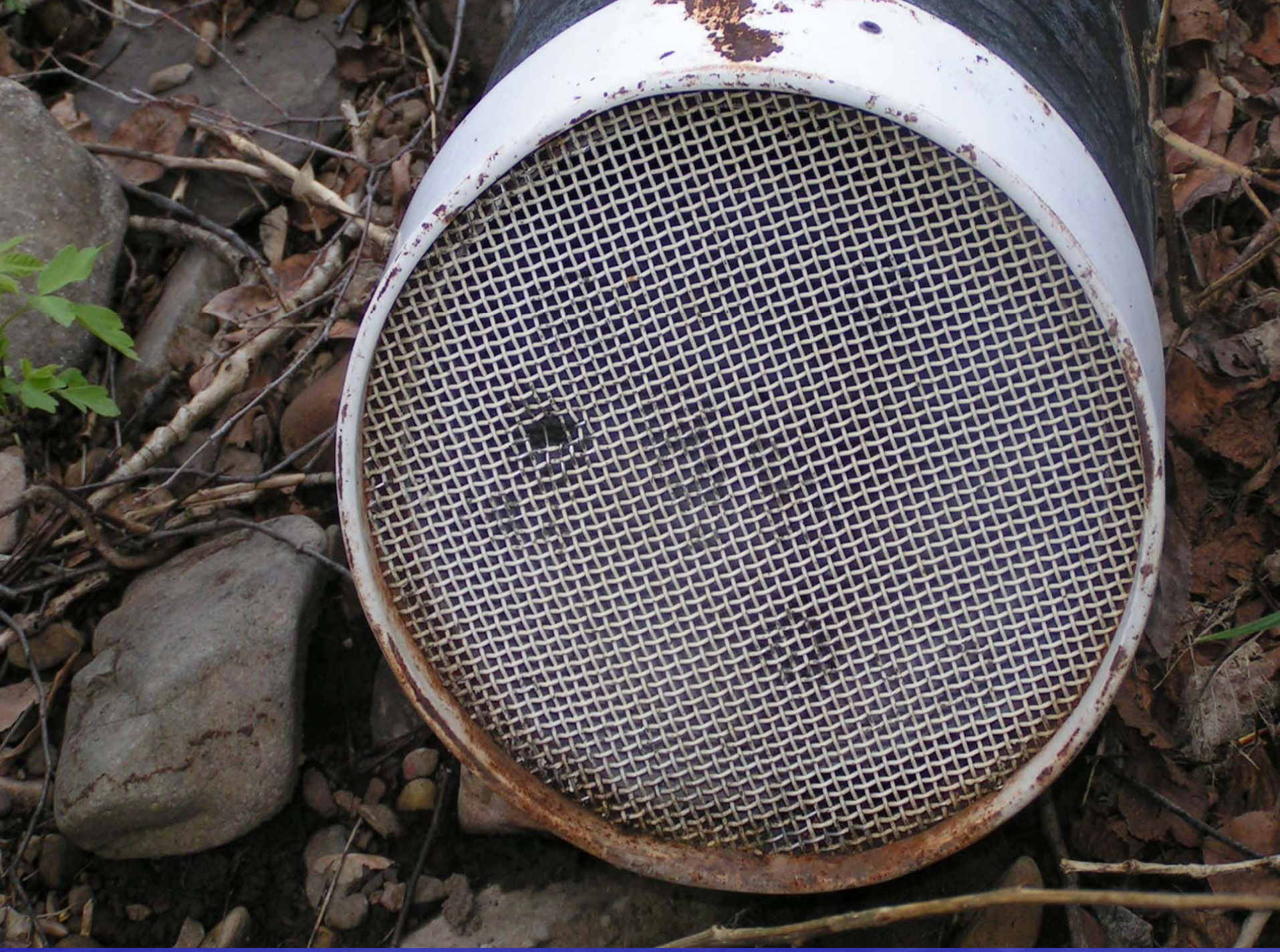
Element #7
Finished Water Storage Tanks

- Shoebox type access, 4” above the top of the tank, gasketed, locked
- Reservoir air vent down-turned and screened #14 mesh
- Overflow piping

  A) #4 screen b) adequately sized c) proper slope d) 12” free fall

The lid for the underground storage tank
Notice the opening that must be sealed

Opening around this area
must be sealed



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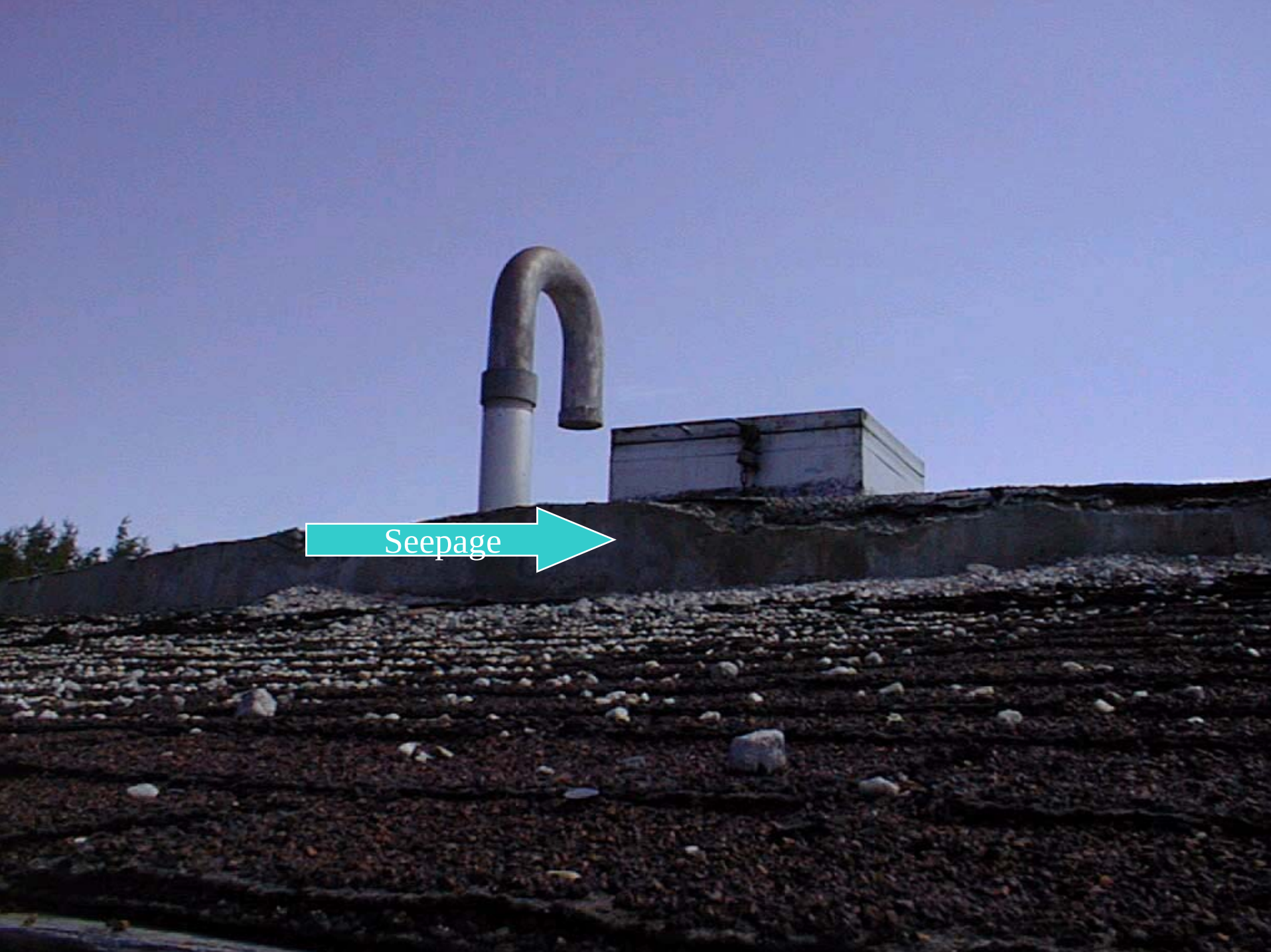
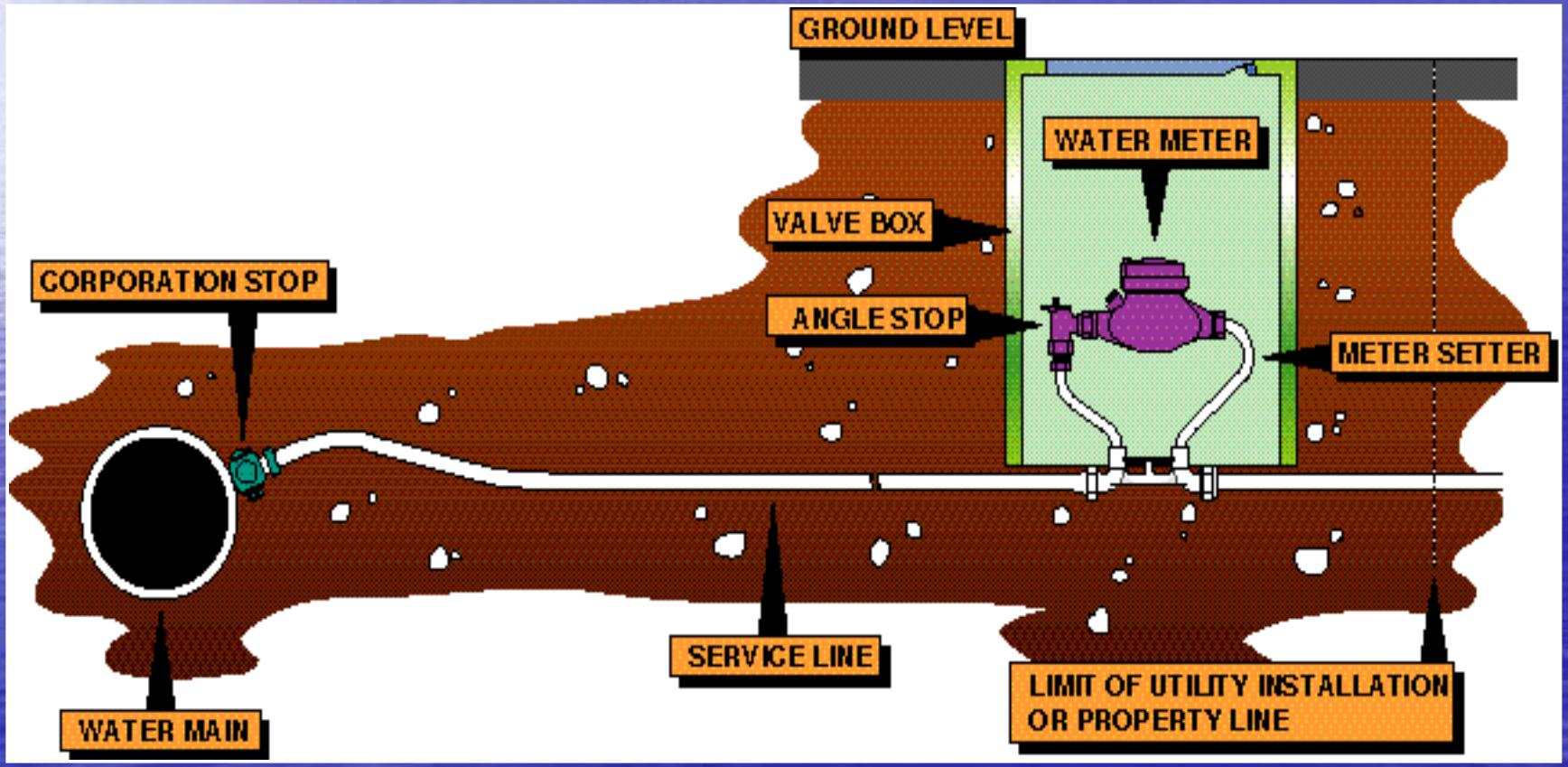

Seepage

Element #8
Distribution System

- System pressures – minimum pressure
  - Utah 20 psi
- Piping materials
- 10 foot separation from sewer lines
- Air/vacuum valves down-turned discharge, screened #14 mesh
- Flooded air/vacuum stations, possible submerged discharge

Distribution Systems



Water System Security

What are the common deficiencies identified during a survey?

Utah's Top 25 Deficiencies in order of most frequent occurrence

- CCC-LACKS WRITTEN RECORDS
- CCC-LACKS ON-GOING ENFORCEMENT PLAN
- CCC-NO ANNUAL PUBLIC EDUCATION OR AWARENESS
- NO SMOOTH NOSED SAMPLING TAP ON DISCHARGE PIPING
- CCC-LACKS LOCAL AUTHORITY
- CCC-LACKS OPERATOR TRAINING
- NO FLOW MEASURING DEVICE ON DISCHARGE PIPING
- STORAGE FACILITY ACCESS LACKS PROPER GASKET
- NO PRESSURE GAUGE ON DISCHARGE PIPING
- LACK OF DRAIN TO DAYLIGHT FLOOR DRAIN

Utah Top Deficiencies – cont.

- INADEQUATE BACTERIOLOGICAL SAMPLING SITE PLAN
- NO MEANS TO RELEASE TRAPPED AIR FROM SOURCE PUMP

- DEEP ROOTED VEGETATION IN SPRING COLLECTION AREA

- STORAGE FACILITY OVERFLOW PIPE IMPROPER SCREEN

- STORAGE FACILITY LACKS ADEQUATE DRAIN LINE
- STORAGE FACILITY OVERFLOW PIPE LACKS FREEFALL
- STORAGE FACILITY VENT NOT PROPERLY SCREENED
- SPRING BOX LACKS A GASKET ON LID
- NO CHECK VALVE ON DISCHARGE PIPING
- STORAGE STRUCTURE MISSING A PROPER ACCESS HATCH

- ELEVATION OF WELL CASING INADEQUATE
- SPRING BOX LACKS PROPER OVERFLOW
- WELL LACKS A MEANS TO MEASURE DRAWDOWN
- SPRING BOX LACKS PROPER DRAIN

What is the life cycle of addressing a Deficiency by the Primacy Agency?

- Active Follow-up by Primacy Agency
  - Significant or Critical Deficiencies
- Written report – filed
- Database – warehoused

What is the life cycle of Addressing a Deficiency in Utah?

- Survey report mailed to system within 30 days
  - Time table to fix deficiencies
  - Points assigned to each deficiency
- Site visit & deficiencies migrated electronically to SDWIS
- Quarterly meetings to address Utah's Worst 25 systems (total points) & EPA's Significant Non-compliers List (SNC)
- Annually mail out to each system a IPS Report (Improvement Priority System) listing all compliance issues with the system (monitoring, quality, operator certification, physical facility deficiencies, etc.)

Challenges

- Surveyor Safety
- Who is the Surveyor?
- Significant Deficiency Identification
  - State Defined
- Data Tracking
  - Automated vs. Manual
- Willingness of System to make Corrections
  - Operator vs. Management

End of October presentation

Appendix 1

Additional Utah deficiency statistics

Utah Statistics

Storage Tank Related Deficiencies in order of occurrence

Percentage of Overall Deficiencies=21.33%

Code	Deficiency Description
V009	STORAGE FACILITY ACCESS LACKS PROPER GASKET
V012	STORAGE FACILITY OVERFLOW PIPE IMPROPER SCREEN
V015	STORAGE FACILITY LACKS ADEQUATE DRAIN LINE
V011	STORAGE FACILITY OVERFLOW PIPE LACKS FREEFALL
V007	STORAGE FACILITY VENT NOT PROPERLY SCREENED
VL02	STORAGE STRUCTURE MISSING A PROPER AIR VENT
V030	SYSTEM LACKS 10% OF REQUIRED STORAGE CAPACITY
VL01	STORAGE STRUCTURE MISSING A PROPER OVERFLOW
V004	STORAGE FACILITY INADEQUATE LADDERS OR RAILINGS
V029	STORAGE FACILITY IS NOT SECURE