




Sanitary Survey Preparation

RCAC 2016 Online Training Series



BACKFLOW
CLASSIFICATION
COMMUNITY
CONTAMINATION
CONTROLSYSTEM
CORRECTIVEACTIONS
DEFICIENCY
DISINFECTION
DISTRIBUTION
EMERGENCY
EPA
FLOODING
FLUSHING
HATCH
INSPECTION
MAINTENANCE
MULTIPLEBARRIER
OPERATION
PRIMACY
PUMP
QUALITY
RAW
REVIEW
SANITARYSURVEY
SDWA
SEAL
SECURITY
STORAGETANK
TESTING
TRAINING
TREATMENT
VENTING
VERIFY
WATER

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L V M Z C W A T E R O P E R A T I O N C
F W W D B S G G X U M P B W E I V E R Y

WELCOME!

This training is presented by RCAC with funding provided by the California State Water Resources Control Board Division of Drinking Water (DDW)





Your Moderators Today...

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Your Moderators Today



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The Rural Community Assistance Partnership



RCAC Programs

- Affordable housing
- Community facilities
- Water and wastewater infrastructure financing (Loan Fund)
- Classroom and online training
- On-site technical assistance
- Median Household Income (MHI) surveys

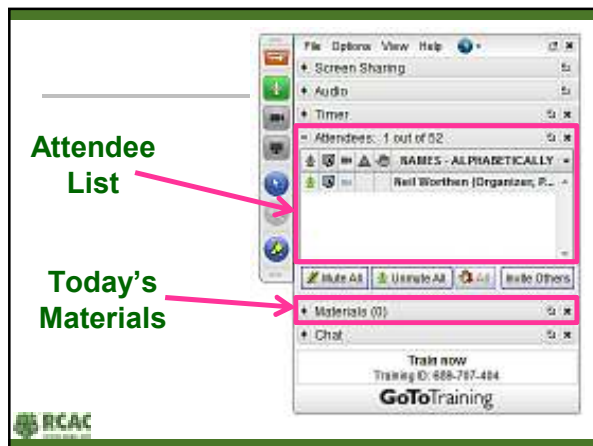


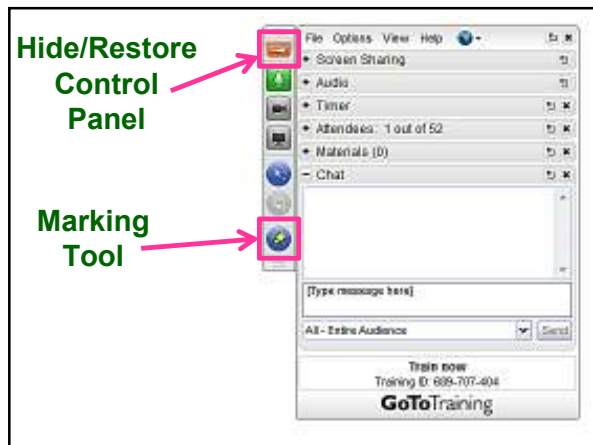
Control Tabs



Audio Controls









Performance Assessment Rating Tool (PART)



- 4 to 6 weeks from today
- Email w/ today's workshop in subject line
- 3 questions – 3 minutes maximum
- How did you use the information that was presented today?
- Funders are looking for positive changes
- Help us continue these free workshops!



Where is my Workshop Brochure?

- If you registered for a training in the last two years **no action is required**
- If you have not registered via RCAC's website for a training in the last two years go to:
www.rcac.org/trainings/registration-help
and set up an account
- It's easy!



Where is my Certificate For Contact Hours?

- Certificates for training hours can be downloaded and self-printed
- Go to www.rcac.org/trainings/registration-help and set up an account
- ➔ It's easy!
- Starting in 2016 certificates for **online** training hours will not be mailed



Questions / Discussion



Your Presenter Today...



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Sanitary Survey Preparation

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Practice Polling Question

- During a sanitary survey the area that gets the least amount of review/deficiencies is....



- A. Storage Tanks
- B. Finances
- C. Distribution System
- D. Recordkeeping



Practice Polling Question

- During a sanitary survey the area that gets the least amount of review/deficiencies is....



- A. Storage Tanks
- B. **Finances**
- C. Distribution System
- D. Recordkeeping



Objectives



- Understand the basics of SS Inspection for all areas of a PWS
- Be able to complete basic sanitary evaluations of PWS's
- Know where to obtain more information on SS process



What are some problems that might show up during a Sanitary Survey ?



What Is a Sanitary Survey?

- (CFR 141.2) an on-site review of the water source, facilities, equipment, operation, maintenance, and monitoring compliance of a public water system for the purpose of evaluating the adequacy of such, source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.



What is a Sanitary Survey? (cont.)

- An inspection of records and facilities of a PWS to ensure public health.
- An opportunity to establish a "field presence" for education and assistance
- Assess system capacity/Personnel



Sanitary Surveys:

Evaluation of 8 water system components

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



Match the Problem to the Survey Element

- | | |
|---------------------------------|---------------------------|
| • No Emergency Plan | • Source |
| • Inadequate pump capacity | • Distribution System |
| • Well in cow pasture | • Treatment |
| • Unprotected cross connections | • Management & Operations |
| • Monitoring violations | • Pumps & Pumping |
| • Poor chemical mixing | • Monitoring & Reporting |

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Why is a S.S. Performed?

- (40 CFR 142.10) each state, pursuant to appropriate State legal authority, must establish...a systematic program for conducting sanitary surveys...the frequency with which a State conducts...be based on but not limited to a plan completed by the state, or a negotiated number per year



Why is a S.S. Performed? (cont.)

- Does system produce Safe Drinking Water
- "multiple barrier" protection
- Improve system Compliance
- Operator education
- Update system information
- Examine limiting factors
- Security/Risk Assessment



When is a S.S. performed?



- State regulations
- 3 Year routine cycle/SW
- 5 Year routine
- Complaint/Follow up
- Violation/Compliance Follow up



Activity– What areas do you inspect daily at your system?

Storage Tanks Distribution System

Source/Connection No idea

None

Wells Break Room Vents

Chemical Injection Pumps



Who can perform the Sanitary Survey?

- State agencies
- Private Vendors
- RCAP agencies
- Local Health Officials
 - In-house survey is always an option (RTCR)



System Classification

- **Community PWS**
serves 15 connections year round or;
25 year round residents
- **NTNC PWS**
serves 25 "same persons" over 6 months per year
- **Transient PWS**
Does not regularly serve 25 of the same persons



System Classification (cont.)

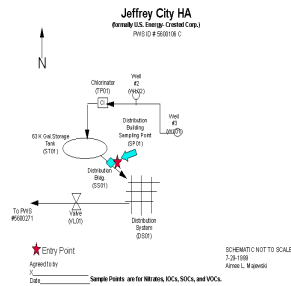


- Population Served
 - Source Water
 - Chemical Injection
 - Filtration Technique
- State Specific**



Setting up the Survey

- Review Records
 - System schematic/map
 - Previous reports
 - Source information
 - Compliance Information
 - Operator Records



Inspection Tools



- Pressure Gauge/Adapters
- Chlorine test kit
- Digital Camera
- Binoculars
- Flashlight

- Tape measure
- Thermometer
- pH meter
- Knife
- Mirror
- Various test kits
- Proper attire



Inspection

- Develop Inspection Timeline
 - Expectations
- Take nothing for granted
- Look for condition!
- Inspect with "new eyes"
- Use tools



Source Inspection

- Wells/Surface intakes etc.
- Raw water piping
- Emergency power
- Security/Safety concerns
- Control system
- Chemical feed systems
- *Adequacy of Source*



Source Inspection

- Fecal sources
 - Wastewater plant
 - Septic systems
 - Feed lots/animal pens
- Agricultural
- Fuel
- Chemical Sources ?

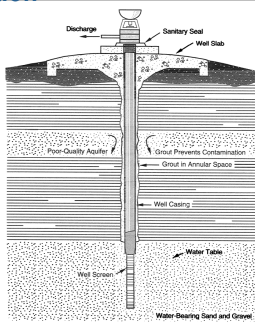


Source Inspection



Well Construction

- Hard to see!
- Check records
 - Geologic
 - When was it installed
 - Has it been inspected
 - Draw down tests
 - Chemical/mineral



Possible Defects

- Casing too low
- Improper well cap
- No sanitary seal
- Well not grouted properly
- Well not properly ventilated
- Well is in a pit



Pop Quiz

- What is the most cited well/source water deficiency according to EPA region 8?
 - A. Fecal Contamination
 - B. Missing/broken venting screens/Seals
 - C. Improper Chemical Injection
 - D. Missing/Broken Sanitary Seal
 - E. Located in Flood Zone



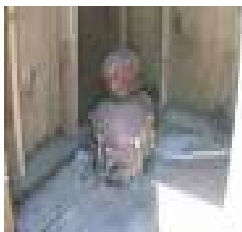
Polling Question

- Answer
 - A. Missing/Broken Screens and/or seals.
- Bonus Question-How can contamination happen because of a missing well vent screen?

Type answer in chat box.



Source Inspection (records)



- Historical data
- Protection Plan
- Quantity records
- Quality records
- Contingency plans
- Verify VA completion



Questions?



Use CHAT –
SEND A TEXT MESSAGE



Treatment Inspection

- Schematic
- Adequacy of treatment
- Test equipment
- Redundancy
- Chemicals/Feed sys.
- Emergency power
- Sanitary Conditions



Treatment in my system underline all that apply

- | | |
|--------------------------------|--------------------------|
| • Chemical Injection | • No Treatment |
| • Full Surface Water Treatment | • Iron/Manganese Removal |
| • Filtration | • Sequestration |
| • Ion-exchange | • Cartridge Filtration |



Water Treatment

- What is the Purpose?
- Process
- Chemical feed and amounts
- Daily operating records
- Disinfection



Source Treatment

Determining Treatment and Technique

- Water Quality Issues? Coliform/fecal/Giardia/nitrates etc.
- Influenced by surface water GWUDI
- Turbidity
- pH
- Iron and manganese
- SDWA requirements



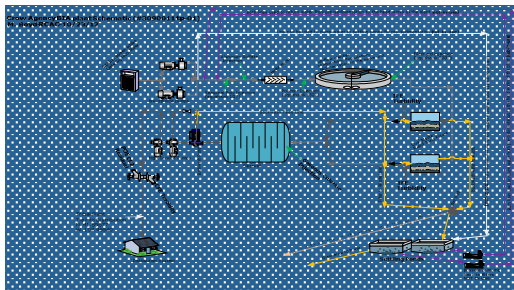
Treatment Considerations

Considerations to review treatment:

- Disinfection by-products
 - THM
 - Haa5
 - Bromate
- Groundwater Rule



The Treatment Plant – Need a Schematic/Site Plan



Capacity of Treatment Plant

- What is the design capacity?
- Is system verses connections reasonable?
- Is system meeting primacy agency capacity requirements?
- Can treatment plant meet requirements with largest unit out of service?



Adequacy of Treatment Plant

- CT/Log removal calculations SW/GWUDI
- Flow measurements
- Proper Sampling points/Lab testing
- Media or Cartridge replacement
- Backwash Procedures



Chemicals and Chemical Feed Systems

- What chemicals are used? Are they approved?
- Are chemicals appropriate for system?
- Chemical dosages (min, max, average)?
- Where are chemicals applied?
- What type of feed equipment is used?
- Is it calibrated?



Treatment Records

- MCL/Compliance data
- CCC program
- Operator training
- O&M records
- System Capacities
- Chemical Injection data
- Historical Treatment Technique records

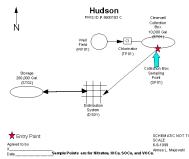


Common Defects

- Equipment Calibration
 - Scales, flow meters, feed pumps, turbidimeters, pH meters, chlorine meters and temperature gauges!!
- Non NSF chemical/Safety
- Adequate instrumentation and controls
 - Flow meters
 - Chlorine residual analyzers



Distribution System Inspection



Text Entry Question

What common “programs” are in place in your distribution system?



Distribution System Typical Components

- Water mains
- Control valves
- Service lines
- Meters
- Fire hydrants
- Pumping stations
- Booster stations
- CCC



Distribution System

- Map and expansion plan
- Materials
- Disinfectant residuals
- CCC Program
- Age/Condition
- Control System
- Procedures
 - Repair and installation
 - Flushing
 - Water audit findings
 - Valve program



Storage



- Condition of Storage
- Coating Data
- O&M records/program
- Overflow Piping
- Control System
- Security Measures
- CT Verification



Objectives of Storage Tank Inspection

- Review design to determine reliability, adequacy, quantity and **vulnerability**
- Evaluate O&M procedures
- Recognize any sanitary risks
- Determine potential for water degradation



Inspection



- Venting
- Overflow
- Drain/Cleanout
- Access
- Hatch
- Records

Pumping Facilities

- Overall Condition
- Type/Capacity
- Emergency power
- Flood potential
- Security
- Control System



Routine Maintenance, Lubrication and Exercise

- Is there a maintenance program?
- Are back up pumps exercised?
- Is there access to remove pumps if needed?
- Are food grade lubricants being used?
- Pump house?
 - Security
 - Housekeeping



Pumping Facilities (cont.)

- Records
 - O&M Program
 - Quantity data
 - Verify VA
 - NSF on all Chemicals
 - Emergency Plan

Confined Space Entry



Control Systems



- Type/Reliability
- Average Pressures
- Emergency Operation
- Call out procedures
- Backup Power
- Hand operation SOP
- Records??



Reporting/Data Verification

- Sampling plans
- Monitoring schedule
- Verify reporting vs. Agency information
- Water Quality/MCL Data
- On-site Operational Logs
- Accuracy of Monitoring/Sampling
- Record Keeping Timetable
- CCC Inspection logs



Questions?



Is your management in trouble?



Management/Operation



- Operator information
- Training/Support plan
- Emergency plan
- Conservation plan
- Safety program
- Public notification plan
- Revenue/Budget



Management Common Questions

- What is the management structure?
- What is their experience level with water systems?
- Does the system have a planning process?
- Is the process implemented?
- Is there good communication between management and staff?



Staffing

- Is there enough staff to get the job done?
- Is there enough staff if system alarms?
- Do variations in water quality occur when system is unattended?
- Does this indicate more staff is needed?
- Do staff have clear responsibilities and authority to carry out responsibilities?
- Is there cross training required and implemented?



In-House Evaluation

- Review Privacy Agency Regulations
- Take effective notes with pictures
- Will contractor be-needed?
- Develop timeline for repair
- Adequate programs in place?



In-House Evaluation

- Review with management
 - Significant deficiencies
 - Recommendations
 - Primacy agency actions
 - Timetable for corrective action
 - Agencies that can assist with corrective action



**If an SS were performed today,
what areas would be lacking in
your system?**



Violations vs. Significant Deficiency

- Violations or Significant Deficiencies
 - Only issues directly covered by regulation
- Recommendations
 - All other issues revealed by inspection
- Communication with Primacy Agency and knowledge of Specific State Regulation is a **Must** in this area



| Significant Deficiencies : | |
|----------------------------|---|
| Source | Well near a source of fecal contamination |
| | Well in a flood zone |
| | Well improperly constructed |
| | Spring boxes poorly constructed |
| Treatment | Inadequate application chemicals |
| | Lack of redundant disinfection equipment |
| | Unprotected cross-connections |
| | Inadequate treatment process monitoring |
| Distribution System | Negative system pressures |
| | Inadequate disinfectant residual monitoring |
| | Unprotected cross-connections |
| Finished Water Storage | Inadequate cleaning and maintenance |
| | Lack of proper screening |
| | Roofs or covers need repair |

| Significant Deficiencies : | |
|-------------------------------|---|
| <hr/> | |
| Pumps & Pumping Facilities | Inadequate pump capacity |
| | Inadequate maintenance |
| | Inadequate/inoperable control system |
| Monitoring & Reporting | Failure to properly monitor water quality |
| | Failure to meet reporting requirements |
| | Inadequate recordkeeping |
| System Management & Operation | Failure to meet water supply demands |
| | Lack of approved emergency response plan |
| | Inadequate follow-up to deficiencies report |
| Operator Compliance | Operator not certified as required by State |
| | Lack of operator training |

Review

- Review State Regulations
- Review Records
- Plan
- S.S. Inspection
- Reporting
- Documentation
- Follow Up/Assistance



Polling Question

Has any of this convinced you to perform a in-house sanitary survey on your water system?

- A. Yes
- B. Not really
- C. Maybe
- D. No-too time consuming!



Resources

Sanitary Survey Resources

EPA Website;

<http://www.epa.gov/ogwdw/dwa/resources.html>

Sanitary Survey Fundamentals Prep Course

EPA Small System Guidance Tools

Website;

<http://www.epa.gov/safewater/smallsys/ssiinfo.htm>

Sanitary Survey Significant Deficiencies (list of common deficiencies found in small systems)

<http://www.water.ky.gov/dw/profi/tips/Sanitary+Survey.htm>

EPA Drinking Water Academy Training Partners

<http://permanent.access.gpo.gov/ps21800/www.epa.gov/safewater/dwa/training.html>



Questions ?



Break Time