

APPENDIX A

Examples of Sanitary Survey Checklists From States and EPA Regions

**(Taken from the *1995 EPA/State
Joint Guidance on Sanitary Surveys*)**

EPA/STATE JOINT GUIDANCE ON SANITARY SURVEYS

DECEMBER 1995

A sound sanitary survey program is an essential element of a State's drinking water program. Sanitary surveys provide a first line of defense in helping public water systems protect the public health.

EPA recognizes that the quality of sanitary survey programs has suffered due to competing resource requirements associated with new drinking water regulations. The draft revised State Programs Priorities Guidance places renewed emphasis on the importance of sanitary surveys and identifies this activity as a high priority.

EPA recommends that the States work with Regions in using this guidance to improve their sanitary survey programs into State-specific programs that are tailored to meet each State's needs. Improving these programs may not happen immediately, depending on the current status of the program. States therefore need to negotiate with their respective Regions to determine appropriate timeframes for program improvements.

PART I. INTRODUCTION

A. DEFINITION OF A SANITARY SURVEY

A sanitary survey, as defined in CFR 141.2 (Definitions), means 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.

B. PURPOSE OF A SANITARY SURVEY

The purpose of a sanitary survey is to evaluate and document the capabilities of a water system's sources, treatment, storage, distribution network, operation and maintenance, and overall management to continually provide safe drinking water and to identify any deficiencies that might adversely impact a public water system's ability to provide a safe, reliable water supply.

Sanitary surveys also provide an opportunity for State drinking water officials or approved third party inspectors to establish a field presence with the owners and operators of water systems in order to educate them about proper monitoring and sampling procedures, provide technical assistance, and inform them of any upcoming changes in regulations.

They also aid in the process of evaluating a public water system's progress in complying with Federal and State regulations promulgated to protect public health. A survey can significantly reduce the potential risk of consumers ingesting contaminated drinking water. Sanitary surveys also aid in assessing a system's capacity and provide an opportunity to evaluate whether operators are adequately trained to test for water quality parameters, and are properly reporting water quality data to the State primacy agency.

C. POTENTIAL BENEFITS OF A SANITARY SURVEY

Sanitary surveys play an essential role in ensuring safe drinking water. Some of the many benefits of conducting sanitary surveys are:

- operator education;
- source protection;
- risk evaluation;
- technical assistance and training;
- sampling plan evaluation;
- independent, third party system review;
- information for monitoring waiver programs;
- identification of factors limiting a system's ability to continually provide safe drinking water;
- provision of updated water system information to State program personnel;
- provision of useful information for planning and capital improvements to system owners/operators;
- reduction of monitoring requirements;
- reduction of formal enforcement actions in favor of more informal actions;
- reduction of oversight by State monitoring and enforcement personnel;
- increased communication between State drinking water personnel and public water system operators;
- provision of contact person to notify in case of emergencies or for technical assistance;
- improvement of system compliance with State drinking water regulations;
- identification of candidates for enforcement action;
- identification of candidates for Comprehensive Performance Evaluations;
- verification of data validity;
- validation of test equipment and procedures;
- reduced risk of waterborne disease outbreaks;
- encourage disaster response planning; and
- improved system security.

PART II. GUIDANCE ON SANITARY SURVEY IMPLEMENTATION

A. FREQUENCY IN CONDUCTING A SANITARY SURVEY

Under 40 CFR, 142.10 (Requirements for a determination of primary enforcement responsibility), each State, pursuant to appropriate State legal authority, must establish, as a requirement for primacy, a systematic program for conducting sanitary surveys of public water systems in the State, with priority given to sanitary surveys of public water systems not in compliance with State primary drinking water regulations.

EPA recommends that the frequency with which a State conducts a sanitary survey of a water system be based on, but not limited to, a negotiated State/EPA number per year, or based on a state sanitary survey plan completed by the State. System selection can be based on a number of factors, including the following: source type, treatment technology(ies) used, the type of system, system size, date of last survey, whether the system has any violations, whether the system is a new system, whether the system has added a new source, whether the system has a new operator, whether the system has a waiver program, and whether the system has had a prior sanitary survey based on the minimum requirements of the Total Coliform Rule. This rule allows sampling to be reduced for small groundwater systems if the system undergoes a sanitary survey every five years and is certified to be free of sanitary defects.

B. QUALIFICATIONS FOR SANITARY SURVEY INSPECTORS

All sanitary survey inspectors should possess certain baseline qualifications to ensure both their own safety and the quality of the inspection itself. An inspector's technical background and experience should qualify him/her to assess the types of systems being surveyed. At a minimum, these qualifications should include appropriate health and safety training and an understanding of basic water supply operation and treatment processes where applicable. Other means of assessing inspector qualifications include whether the inspector has attended formal training sessions, whether he/she has documented on-the-job-training, whether the training received is appropriate for the type and size of the system being surveyed, and whether the inspector is knowledgeable about State and Federal SDWA regulations.

C. ASSESSMENT CRITERIA

States, as part of their sanitary survey program, should develop assessment criteria for each of the minimum elements recommended for review during a sanitary survey. These criteria are needed to ensure that deficiencies are evaluated consistently among the various inspectors in a State. As part of this effort, States should identify the types of deficiencies that are considered to be significant and the appropriate follow-up actions. The criteria should also discuss appropriate follow-up actions for lesser deficiencies.

D. MINIMUM ELEMENTS OF A SANITARY SURVEY

Prior to the survey, the inspector should review pertinent files relating to the system being inspected. Particular attention should be focused on information regarding past sanitary surveys the system might have had, any changes or improvements made to the system, as well as files relating to the system's compliance and enforcement history.

A review of the eight elements listed below is considered essential for the proper conduct of a thorough sanitary survey. States should, however, have some flexibility to tailor minimum elements based on system type, size, and complexity. Included below with each main element are examples of areas that should be addressed:

Element 1. - Source

Protection, including:

- watershed protection program, including physical and hydrogeological description of watershed, land use and topography, and identifying potential contamination sites
- wellhead protection program
- verification and reevaluation of vulnerability assessment
- waiver from filtration
- well sites and impoundments
- water quality/quantity
- security measures
- spring sites

Physical Components and Condition, including:

- wells, including both construction information and sanitary conditions
- surface intakes
- infiltration galleries
- springs
- catchment and cistern
- raw water storage and transmission
- adequacy of source capacity, present and future
- backup source capacity
- interconnection with existing supplies (emergency)
- emergency power generation

Element 2. - Treatment

- schematic diagram of treatment process
- appropriateness of current treatment, given water quality
- adequacy of current treatment, including the adequacy of:
 - aeration equipment, chemical addition (control and automation potential), chemical mixing process, type and effectiveness of clarification, sedimentation, filtration, disinfection, monitoring equipment, controls, as well as use of test results in process control, on-site sample results by surveyor to establish treatment efficacy, and adequacy of treatment capacity, both present and future
- treatment enhancements
- O&M of treatment facility
- condition of equipment
- process control, including standardization, calibration and sample analysis procedures
- record keeping
- use of approved chemicals (e.g., NSF-approved)
- chemical storage/spill containment
- cross-connection program
- operator qualifications
- CT assessment where applicable
- security measures
- rated capacities of treatment processes
- operational flows versus treatment process rated capacity
- epichlorohydrin/acrylamide certification
- treatment and equipment reliability
- ability to respond to changes in raw water fluctuations
- redundancy
- emergency power

Element 3. - Distribution System

- overall distribution system map and plan
- overall condition of the system
- materials and construction of distribution system
- cross-connection control *inspection* program
- installation and repair procedures for water mains
- flushing schedule and procedure
- pressure controls (e.g., for adequate fire protection)
- corrosion control program
- leak detection/unaccounted water (including meter replacement)

- maintenance schedule and procedure
- disinfectant residuals
- condition of system components
- proper separation from sewage system components
- valve exercise/replacement program

Element 4. - Finished Water Storage

- contamination prevention
- O&M of facilities
- water use demands and storage capacity
- condition of system components
- condition of facilities
- use of NSF approved coatings
- assessment of CT where applicable (at plant)
- security measures
- overflow piping

Element 5. - Pumps/Pump Facilities and Controls

- types and capacity
- condition of pumps including reserve pumps
- condition of pump facilities
- emergency power
- flooding potential
- NSF approved lubrication oils
- security measures
- vulnerability assessment
- pumping capacity with largest pump out of service
- pumping controls

Element 6. - Monitoring/Reporting/Data Verification

- sample plans for appropriate rules (e.g., TCR, L&C Rule, etc.)
- verification of validity of data reported to State through comparison of logbook data to data submitted to State
- review of bench sheets, on-site logs, and monthly operational reports
- waivers
- monitoring schedule and history, including an assessment of compliance with State and Federal monitoring requirements
- appraise current water quality vs. historical data
- verification that required monitoring is being conducted accurately

- calibration of process control and compliance equipment, including review of QA/QC procedures
- determine if primacy agency information is accurate and complete
- review of overall past/present practices
- review of cross-connection control inspection logs
- review of annual cross-connection control test reports
- a summary of water quality data, including raw, treated and distribution system data

Element 7. - Water System Management/Operations

- basic information on system and system operator
- emergency contingency plans
- staffing
- review of past survey results
- review of compliance with regulations
- operator support/training
- O&M plan and manuals
- cross-connection control plan
- water loss/conservation program
- safety program, including verification of safety strategy
- facility security
- basic information on equipment
- public notification plan
- review of standby and redundant capability
- condition of facilities
- sample siting plan
- adequacy of revenues/budget

Element 8. - Operator Compliance with State Requirements

- certification requirements
- qualifications
- training
- competency (on-site observations of performance)
- cross-connection inspector certification

E. DOCUMENTATION

Each sanitary survey should be documented by having the inspector prepare a final written report of the survey on a format used consistently within the State. The final written report should be used to notify water system owners and operators of the system's deficiencies and to encourage them to take corrective actions where deficiencies are noted.

The report will provide a written record for future inspectors as well as information that is useful during emergency situations. It will also provide a reference as to the need for technical assistance and training. Information contained in the report should be used to update records in the State's database management system. The following should be included in the report:

1. The date the survey was conducted and by whom;
2. The name(s) of those present during the survey besides the inspector;
3. A schematic drawing of the system and, where appropriate, photographs of key system components;
4. The findings of the survey, along with the signatures of the survey team members; and
5. Recommendations for improvement and a timeframe for compliance.

The written final report must have a more substantial and descriptive explanation when a system is determined to have a significant problem that could affect human health. Any differences between the findings discussed at the conclusion of the on-site survey and what is included in the final report should be discussed and clarified with the water system operator and management prior to becoming a part of the survey's official documents.

F. FOLLOW-UP AFTER SURVEY

The findings of the inspector should be transmitted to the system owner or operator soon after completion of the inspection. The report should identify, at a minimum, the deficiencies noted during the inspection and should also request that the system provide its recommendations for corrective action and a timetable for the completion of such action. The report should also notify the system of the actions that the State will take if the deficiencies that require action by the system owner/operator are not corrected.

G. TRACKING AND ENFORCEMENT

For sanitary surveys to be effective in ensuring that public water systems provide safe drinking water, the deficiencies disclosed in a survey must be followed up to ensure that timely corrective action is taken, especially to correct deficiencies that have the potential to significantly affect public health. States should develop a program for following up on recommendations made in their sanitary surveys. A computer tracking system of deficiencies may be a useful tool to assist states in tracking follow up actions.

UTAH

- **Sanitary Survey Guidance Document**
- **Sanitary Survey Form**

SANITARY SURVEY
UTAH

UTAH DIVISION OF DRINKING WATER

March 1994

SANITARY SURVEY GUIDANCE DOCUMENT

This document provides general information on conducting sanitary surveys along with new guidance on issues that need to be addressed during a sanitary survey as a result of the Federal Safe Drinking Water Act Amendments (SDWA). These new issues include, for example: monitoring waivers, source protection issues, surface/groundwater determinations, and source locations. If we continue to conduct sanitary surveys as we have in the past, without collecting the additional information required of us, we will be ill prepared to implement the provision of the Federal Safe Drinking Water Act Amendments in Utah.

The purpose of this document is to provide information to those conducting sanitary surveys so that they, in turn, will ask the right questions and perform the necessary investigations. Such front line activities will promote: 1) safe drinking water, 2) informed water system management, and 3) smooth implementation of changing federal regulations.

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A. The Need for Sanitary Surveys

Sanitary Surveys provide a means for the exchange of information. For example, the operator is informed of monitoring and reporting requirements, efficiencies that can be gained and deficiencies that need correcting. The surveyor is informed of the existence and status of physical facilities and evaluates the external influences that may effect water quality. The findings of the survey can and will have a direct bearing on subsequent monitoring requirements for the surveyed system.

B. Who Can Conduct Sanitary Surveys

As provided in Section R309-101-4 of the Utah Public Drinking Water Rules, the following groups of individuals may, under varying conditions, conduct Sanitary Surveys.

- a. Division of Drinking Water
- b. Utah Department of Health District Engineers
- c. Local Health Officials
- d. Forest Service Engineers
- e. Utah Rural Water Association
- f. Consulting Engineers
- g. Other qualified individuals authorized in writing by the Drinking Water Board, Executive Secretary

C. Preparing for a Sanitary Survey

Coordination and communication between State Department of Environmental Quality, District Engineers, local health department, and water system management is essential in preparing for a Sanitary Survey. Preliminary discussions should include: a review of the system's historical records including chemical and bacteriological data, correspondence, engineering studies, and past violations. Through these preparations one will be able to assemble and evaluate all the proper information during the survey and make sound recommendations.

D. The Prescribed Content of the Sanitary Survey

A. Sanitary Survey and its associated report must include:

1. The name, address and phone number of the person legally responsible for the water system.

2. A visual inspection and written description of the water system's physical features from the source through the distribution system. The physical facilities include:
 - a) Description of each source (wells, springs, intake structures).
 - b) Description of any treatment or disinfection facility, including type, capabilities, flow treated, associated source, etc.
 - c) Number of storage reservoirs, size, construction type and sanitary aspects.
 - d) Description of the transmission and distribution system, as well as each pump station, etc.

*Note: If the physical facilities are adequately described by an earlier report, the earlier report can be referenced in the text of the new report, but a copy of the earlier report must be attached to the new report and the new report must contain a statement identifying the facilities that were inspected during the more recent survey.

3. Establish an exchange of information between the operator and the surveyor. This should include:
 - a) Discussion of proposed, pending as well as anticipated, EPA regulations and encourage the operator to offer comments to EPA as appropriate.
 - b) Discussion of the water system's sampling site plan for Lead/Copper and for bacteriologic samples. Each utility is required to have a written sampling site plan (see Appendix B for bacteriologic guidance and Section E Lead/Copper evaluation questions on page 7).
 - c) Discussion of and report on the system's planning and budgeting efforts to keep abreast of water demands and regulatory demands.
 - d) Discussion of a report on the system's emergency response capability as well as its cross connection control program.
 - e) Discussion of the status of certified operators. Also describe the services available to operators seeking certification and the need to obtain CEUs.

4. Computer information should be discussed and/or verified with the operator. This includes the information contained on three computer reports (see Appendix E) as follows:
 - a) The water system inventory (Report 3.1.02).
 - b) Water system/source chemical monitoring (Report 3.1.09).
5. Waiver eligibility determinations for Phase II & V contaminants (See items F and G below for a more detailed explanation of waivers).
6. Surface/Groundwater assessment (see item H below for a more detailed explanation of Surface/Groundwater assessment).
7. Drinking Water Source Protection Plan.
8. Debrief the operator/owner following the survey.
9. The report must provide formal notification of deficiencies.
10. The report should give appropriate time tables if necessary.
11. Report historical facts as appropriate.
12. The report should be completed and sent within four weeks of the survey, with a transmittal letter to the appropriate representative of the water system. Copies of the report should be sent to coordinating agencies.

E. Lead/Copper Rule

Action Levels

0.015 ppm for lead

1.3 ppm for copper

The Environmental Protection Agency's lead and copper regulations require all community and non-transient non-community water systems to collect tap water samples to determine lead and copper levels to which customers may be exposed. By the applicable date for monitoring, each applicable water system shall complete a material evaluation of its distribution system in order to identify a pool of targeted sampling sites that meet the requirements for sample site locations. All sites from which first draw samples are collected, must be from this pool. The pool must consist of tier 1 sites. If there is an insufficient number of tier 1 sites, then tier 2 sites may be added to the pool. If there is still an insufficient number of sites then tier 3 may be added to the sampling pool.

- Tier 1. single family structures that contain lead pipes, or copper pipes with lead solder installed after 1982, and/or are served by lead service lines.
- Tier 2. buildings and multiple-family residences served by lead service lines, or that contain lead pipes, or copper pipes with lead solder installed after 1982.
- Tier 3. single family structures that contain copper pipes with lead solder installed before 1983.

If you're surveying a non-transient non-community water system, lead and copper tap water samples must be collected from sampling locations that meet one of the following criteria:

- Tier 1. buildings that contain copper pipes with lead solder installed after 1982 and before 1986, and/or are served by lead service lines.
- Tier 2. buildings that contain copper pipes with lead solder installed before 1983 and before 1986.

To identify enough sites that meet the targeting criteria the water utility personnel should survey all records documenting the materials used to construct and repair your distribution system, buildings connected to your distribution system.

It is recommended that a system identify more sampling sites than the number of samples you are required to collect during each monitoring period in case volunteers drop out.

During the sanitary survey, the surveyor must review with the water utility personnel their criteria for selecting sites and procedures for collecting samples.

Evaluation Questions:

1. Has your water system completed a sampling site plan?
2. What methods were used to identify the sampling sites?
 - a. Plumbing Code - Construction date of the house between 1982 and 1986.
 - b. Plumbing Permits - Records of remodeling which would include the plumbing between 1982 and 1986.
 - c. Existing sample results - previous monitoring which may indicate problem areas.
 - d. Community survey - questionnaire mailed to water consumers asking about the plumbing materials as well as gaining consumer cooperation with the sampling.
3. Was the system able to identify a sufficient number of "Tier 1" sites?
4. How did the system handle the required sampling procedures (first draw water, and bathroom or kitchen sinks only)?
 - a. If consumers collected the sample, how was the training on the sampling methods provided?

A written narrative of the system's methods in identifying the lead and copper sampling sites must be included in the sanitary survey.

F. Waiver Eligibility Determinations

The Phase II & V Rules allow the Executive Secretary to issue monitoring waivers. These waivers are issued to specific sources and can significantly reduce the amount of samples that a system must take on that individual source. Three types of waivers are offered, each type must meet certain criteria before it can be issued. Each waiver will affect the monitoring frequency for a specific contaminant group. **Verification of certain elements of the waiver(s) program must occur during a sanitary survey, without this verification, the existing waiver(s) will not be considered verified and will be revoked.** The system must then begin monitoring that source at the base monitoring frequency. All waivers must be periodically renewed. After 1999, waivers will only be renewed if there is in place a source protection plan and it verifies the waiver.

Type of Waivers:

1. "Reliably and Consistently" Waiver (R): The source water quality is reliably and consistently below the MCL.
2. "Use" Waiver (U): Contaminants are not used, manufactured, and/or stored in source area.
3. "Susceptibility" Waiver (S): Source is not susceptible to contamination based on an evaluation of: prior analytical data; vulnerability assessment results; environmental persistence and transport of the contaminant; construction of the source; the extent of the protection area around the source; the movement of the groundwater and the geology of the area; and the proximity of contaminants to the source combined with appropriate management practices associated with such contamination. **This type of waiver will only be issued in conjunction with the Drinking Water Source Protection Plan for a particular source and only if deemed appropriate with regard to the susceptibility waiver criteria listed in section G.**

Contaminant Group	Waiver Yes/No	Waiver Types	Basis of Waiver
Asbestos	Yes	U, S	No asbestos cement pipe and no asbestos geology
Nitrate/Nitrite	No		
Inorganics & Heavy Metals	Yes	R	Evaluation of last 3 cycles of monitoring
VOCs	Yes	U, S	Presence of contaminants and/or susceptibility of source to contamination
Pesticides/PCBs/SOCs	Yes	U, S	
Unregulated Organics	Yes	U, S	

State Implementation:

1. "Reliably and Consistently" Waiver (R): Computer code will be written to search the state database for previous analytical results on these specific contaminants, the code would then compare the results to see if they are reliably and consistently below the MCL. Sources eligible for the monitoring waiver would be automatically flagged on the inventory and the system would be notified by direct mail. The computer routine could be executed periodically as new data is received.
2. "Use" Waiver (U): A questionnaire has been sent to the operators of every community and non-transient non-community water system asking specific and general questions about each of their sources. The Division will also gather data from different segments of the federal

government which will focus on the different land use practices of each of the agencies involved, both current and historical.

3. **"Susceptibility" Waiver (S):** Systems with sources not eligible for a use waiver have been notified. If the system wishes to pursue the possibility of a susceptibility waiver, a Drinking Water Source Protection Plan will need to be in place before the source will be evaluated for waiver eligibility.

Perform by Persons Conducting Sanitary Surveys:

1. **"Reliably and Consistently" Waiver (R):** No involvement is anticipated.

2. **"Use" Waiver (U):** Assist water utility managers in filling out questionnaires and latitude/longitude of existing sources during the next sanitary survey of the water system. Adjustments to any waivers would be made at that time. As source protection areas are delineated for the Drinking Water Source Program, the inventory of potential sources of contamination will need to be verified in place of the questionnaire information.

3. **"Susceptibility" Waiver (S):** Initially no involvement is anticipated, however, as source protection areas are delineated for the Drinking Water Source Program, the inventory of potential sources of contamination will need to be verified.

G. Waiver Verification Procedures

As can be seen, the above criteria are rather easy to assess, provided the operator is familiar with the nature and extent of man's activities around the system's sources and the surveyor has access to past analytical results. It is imperative that the surveyor comment on the above aspects of the water system in the Report of Survey. However, it must be recognized that the above outlined approach is rather simplistic because it does not take into account special construction methods or mitigating geologic conditions.

In order for mitigating circumstances to be taken into account the water system must document to the satisfaction of the Executive Secretary that a source is not susceptible to a potential contamination site within the area. Only sources that have completed a Drinking Water Source Protection Plan will be evaluated for "susceptibility" waivers.

The Executive Secretary may issue a susceptibility waiver based on an evaluation of the following criteria:

1. Previous analytical results.
2. The proximity of the source to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or

- from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources for Pesticides/PCBs/SOCs include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.
3. The environmental persistence and transport of the contaminants.
 4. How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing and sanitary seal.

In the case of Pesticides/PCBs/SOCs the following would also apply:

5. Elevated levels of nitrates at that particular source.
6. Use of PCBs in equipment used in production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

Required Verification Elements that must be included in the Report

These elements must be addressed within the body of the sanitary survey report. Any potential site of contamination in the area around each source must be listed in the report. The exact area of concern will vary depending upon the type of source and whether or not there is a source protection plan in place for each individual source.

1. Once a Drinking Water Source Protection Plan is in place, the area that need to be looked at is the actual geographic area scientifically delineated for each individual source.
2. Protection zone delineation and inventories of potential contamination sources are integral parts of the new Drinking Water Source Protection (DWSP) rule which became effective on July 26, 1993. However, since this rule will not be fully implemented until 1999, the Division of Drinking Water allows waivers to be based on a 1500-ft radius until December 1995. And from January 1996 until December 1999, a one-mile radius will be used in conjunction with a sanitary survey. If a system's DWSP Plan is due prior to December 1999, its waivers must be based on this plan. After December 1999, all waivers will be based on DWSP plans. Additionally, since waivers must be reevaluated every three years, systems may delineate a three-year ground-water time of travel protection area around their sources on which to base their waivers.

The purpose of the inspection is to look for potential sources of organic contamination, the following is a partial list of contaminants or potential sources of contaminants. This list is just for illustration purposes and by no means reflects a complete list of the items of concern.

1. Volatile Organic Chemicals (VOCs): Dry cleaners, landfills, any industry that uses chemicals, gas stations, oil wells, etc.

2. Pesticides/PCBs/SOCs: agricultural fields, transformers, golf courses, residential areas with large areas of lawn, etc.

H. Surface Water/Ground Water Determination

Recent amendments to 40 CFR Parts 141 and 142 of the National Primary Drinking Water Regulations commonly called the "Surface Water Treatment Rule" define "ground water under direct influence of surface water," as:

Any water beneath the surface of the ground with (i) significant occurrence of insects or other microorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or (ii) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Part of these amendments require that the "State" classify all ground water sources as to whether or not they are influenced by surface water. These classifications will be made by the Executive Secretary and state staff.

Previously, R309-106-1 of the Utah Administrative Code made the following statement:

R309-106-1 SURFACE WATER

A surface water source is defined to mean tributary systems, drainage basins, natural lakes, artificial reservoirs, impoundments or low quality springs. Surface water sources will not be considered for culinary use unless they can be rendered acceptable by complete treatment (chemical coagulation, sedimentation, filtration and disinfection) or other equivalent treatment acceptable to the Executive Secretary.

Part of the amendments published in the federal register of Thursday June 29, 1989 require that "direct influence must be determined for individual sources in accordance with criteria established by the State" and that "the State determination of direct influence may be based on an evaluation of site-specific measurements of water quality and/or well construction characteristics and geology with field evaluation." Further clarification in part III, Response to Major Issues; states, "It is important to note that the intent of this rule is not to regulate viral and bacterial contamination in systems using ground water, unless *Giardia* cysts are also associated with such occurrence. Thus, if there is little likelihood for *Giardia*

cysts to occur in a system using ground water, but there is potential for bacterial and viral contamination, EPA does not expect the State to classify this source as a ground water source under the direct influence of surface water."

The State of Utah intends on following EPA's recommendation not to regulate viral and bacterial contamination in systems using ground water sources via this rule and intends to classify only those ground water sources which clearly indicate a likelihood for *Giardia* cysts to occur in a system using ground water, but there is potential for bacterial and viral contamination, EPA does not expect the State to classify this source as a ground water source under the direct influence of surface water."

The State of Utah intends on following EPA's recommendation not to regulate viral and bacterial contamination in systems using ground water sources via this rule and intends to classify only those ground water sources which clearly indicate a likelihood of contamination by *Giardia* cysts as "under direct influence of surface water."

We request the aid of surveyors in identifying those sources which are influenced by surface water. In order to do this we recommend that the following questions should be reviewed and answered for each source inspected:

1. Is it clear that the source is obviously a surface water, i.e. pond, lake, stream, etc., or does the utility have open storage facilities that furnish water for human consumption without additional treatment.
2. If the source is a well, does the system have a copy of the "Report of Well Driller" as required to be filed with the State Engineer's Office, and does the report and the well itself indicate the following:
 - a. a casing that penetrates a confining strata of clay, shale, or otherwise impervious material,
 - b. the annulus between the drilled hole and the casing is sealed using bentonite clay, cement slurry, sand-cement grout or other acceptable material; and this seal extends from the surface down and into the confining strata mentioned above,
 - c. any perforations of the casing or placement of screens are below the confining strata mentioned above,

- d. the well is drilled to a depth greater than 50 feet,
- e. the well is located at a distance greater than 200 feet from any surface water,
- f. the well has been pump tested in accordance with a reviewed and approved yield/drawdown test and results clearly determine the porosity and transmissivity of the aquifer materials, and
- g. water quality records indicate that there is no record of total coliform or fecal coliform contamination in untreated samples collected over the past three years; no history of turbidity problems associated with the well; and no history of known or suspected outbreaks caused by Giardia or other pathogenic organisms associated with surface water and attributed to the well.

If the above conditions are met, then the well is probably not influenced by surface water.

- 3. If the source is a spring, does the spring indicate any of the following:
 - a. a variable discharge; especially one which exhibits increased discharge coinciding closely with snowmelt runoff or periods of precipitation,
 - b. periods of increased turbidity that; if not measured, are clearly visible as either cloudiness or discoloration; or if measured, approach or exceed the maximum level of 5 NTU,
 - c. standing or running surface water within 50 feet of the collection devices,
 - d. located within a broad flood plane, meadow or stream/drainage bottom,
 - e. water quality records indicate that there has been total coliform or fecal coliform contamination in untreated samples collected over the past three years, or there is a history of known or suspected

outbreaks caused by Giardia or other pathogenic organisms associated with surface water and attributed to the spring.

If any of the above conditions exist, then the spring may be influenced by surface water and further tests will be necessary.

Those tests may involve one or more of the following:

- 1.) Temperature, pH, Conductivity, and turbidity monitoring and recording.
- 2.) Microscopic Analysis (MPA) - Consensus Method for Determining Groundwaters under the direct influence of Surface Water (refers to Sampling Water for Detection of Waterborne Macroorganisms such as Giardia).
- 3.) Dye Testing
- 4.) Hydrogeologic investigation by one trained to perform such

I. Source Location

to facilitate: a) computer based geographic information system (GIS) mapping, b) emergency response, c) computer aided determination of contaminating entities and many other GIS uses involving integration of numerous environmental factors, it is necessary to accurately locate each drinking water source. This is done by accurately identifying each source by latitude and longitude.

Essentially all community drinking water sources have already been located by latitude and longitude. This information should be field verified and additional information involving non-community and non transient-non community water system sources should be obtained.

The following procedure should be used to determine the latitude/longitude of sources.

1. Obtain and use a U.S.G.S. quad map to plot sources in the field.
2. Extract the latitude and longitude off the quad map using a georuler.

3. Enter the exacted latitude and longitude data onto the computer data base. Note the extracted latitude/longitude information will appear on the "water source citing, treatment and vulnerability" computer printout if it has been entered. (Report 3.2.04 - Section D - Item 4 above, or Appendix D-3 below).

APPENDIX A

Suggested References

1. National Primary Drinking Water Regulations, Code of Federal Regulations, Part 141, (1986).
2. A Manual for the Evaluation of a State Drinking Water Supply Program, U.S. Environmental Protection Agency, Washington, D.C. (1974).
3. Sanitary Survey Training Student's Text, U.S. Environmental Protection Agency, Washington, D.C. (1983).
4. Manual for Evaluating Public Drinking Water Supplies, U.S. Environmental Protection Agency, Washington, D.C. (1971).
5. Karalekas, P.C., Jr., "Watershed Management and Water Quality", Journal of New England Water Works Association, March, (1977).
6. Reilly, J. Kevin, Steppacher, Lee, et al., "Water Supply: Surface and Groundwater Applicability", Merrimack River Geographic Initiative, U.S.E.P.A., Boston, MA (1986).
7. Woodruff, Lee, "Watershed Control Program", Guidance Document, EPA, Washington, D.C. (1986).
8. Moore, E.W., "Sanitary Analysis of Water", in Preventive Medicine and Public Health, 10th ed., Sartwell P.E., Ed., Appleton-Century Crofts, New York, (1973).
9. Hibler, Dr. Charles P., "Hibler Test For Giardia", C.H. Diagnostic Incorporated, 2012 Derby Courts, Fort Collins, Colorado, 80526.
10. Manual of Water Utility Operations
Available from: Texas Water Utilities Association
6521 Burnet Lane
Austin, TX 78757

11. Water Systems Handbook
Available from: Water System Council
221 North LaSalle Street
Chicago, IL 60601

12. Environmental Engineering and Sanitation
- by Joseph A. Salvato
Available from: John Wiley & Sons, Inc.
Somerset, NJ 08873

13. "How to Conduct a Sanitary Survey" Procedures Manual
Available from: New Mexico Health and Environmental Department
Environmental Improvement District
P.O. Box 968
Santa Fe, NM 87504-0968

APPENDIX B

Suggested List of Things to Look For

Well and Spring Information

1. Is there a sanitary seal on the well, and is it properly installed?
2. Does the casing extend at least 12" above the floor or 18" above ground?
3. Is the top of the well protected so that foreign matter or surface water cannot enter the well?
4. Is the site protected against flooding?
5. Does the well site and well pump house have proper drainage?
6. Is the well vent properly constructed including a screened end which terminates in a downturned position at least 18" above ground level or above the maximum flood level?
7. If a pitless adapter or well pit is used, are all entry points to the casing tightly sealed?
8. Are the check valves, water meters, and other well system appurtenances maintained and operating properly?
9. If standby power is available, is it in operable condition and well maintained?
10. Is direct surface drainage and contamination diverted around or away from the spring?
11. Is the area around the spring properly fenced?
12. What are the depth and extent of spring collection facilities?
13. Is there adequate soil cover over the spring collection system?

Surface Water Source

1. Is the source subject to industrial, domestic, or other types of pollution?
2. Have the intakes been properly protected from silt buildup?
3. Are there multiple intake locations?
4. Is human activity restricted in the watershed?
5. Is the raw water pumping capacity adequate?
6. If standby or auxiliary power is available, is it operable and well maintained?
7. Are chemicals properly stored and handled?
8. Is chemical feeding adequate to produce a visible and settleable floc?
9. Is jar testing routinely performed to optimize chemical feed?
10. Are the necessary treatment plant report forms properly completed and reported to the State on time?

Vulnerability of Source

1. What is the nature of potential sources of contamination and how far are they located from drinking water source sites?
2. Is the source within a known or potential VOC/SOC contamination area?
3. What physical/geological conditions exist to protect drinking water sources?
4. Is the source drawing from a confined or unconfined aquifer?
5. What is the proximity to stored chemicals, pesticides, industry, mining, septic tank and drain fields, land fills, fuel storage and feed lots.
6. Is there nearby use of possible VOCs and SOCs? If so, how far away?
7. Are intakes properly located, protected and in good working condition?

8. Is the source collection point located in a metropolitan area?
9. Does the water system have adequate control over watershed areas?
10. What is the proximity to drainage areas - can the pattern of drainage be determined?

Source Location

1. Has each source been correctly plotted on U.S.G.S. quad maps?
2. Has all the latitude/longitude information on each source been verified?
3. Has the extraction of the latitude and longitude off the quad map by a georuler been completed?

Surface/Groundwater

1. Is the source subject to contamination as evidenced by past chemical and/or bacteriological history?
2. Is there relatively rapid shifts in water quality parameters such as turbidity, temperature, conductivity and pH?
3. Is the well or spring properly constructed?
4. Is the source susceptible to contamination by surface water via infiltration, underground channeling, lakes, streams, rivers, canals, lagoons, etc.?

Disinfection

1. Is the disinfection equipment being operated and maintained properly?
2. Are critical repair tools and spare parts on hand?
3. If gas chlorination is used, are adequate safety precautions being followed (exhaust fan with intake near floor, gas mask with positive pressure system used, an ammonia leak bottle available, tanks chained to wall or otherwise secured)?
4. If hypochlorite is used, are dilutions being made in a proper manner?

5. Are chlorine residual measurements being made and recorded?
6. Is a free chlorine residual being maintained throughout the water system?
7. Is there sufficient contact time (at least 30 minutes) between the chlorination point and first point of use?
8. Are the necessary report forms being completed and properly reported to the State?

Other Treatment

1. Is chemical storage adequate?
2. Are chemical feeders and pumps in operation, good condition and being properly maintained?
3. Are instrumentation and controls for the process being utilized and in proper working order?
4. Are accurate records being maintained (amount of water treated, amount of chemical usage, etc.)?
5. Are adequate safety devices available and precautions observed (dust mask, safety goggles, gloves, protective clothing)?

Storage

1. Is there adequate storage capacity?
2. Is the storage reservoir properly coated to reduce flaking and corrosion? Is an approved coating material used?
3. Does surface run-off and underground drainage drain away from the storage structure?
4. Are the storage reservoir protected against flooding?
5. Are overflow lines, air vents, and clean out pipes turned downward or covered, screened and terminate a minimum of 18 inches above the ground or storage tank surface?
6. Are the storage reservoirs clean and free from contamination?

7. Is the reservoir structurally sound?

Distribution System

1. Are pressure and flows adequate throughout the system at all times of the year?
2. Are all services metered?
3. Are plans of the water system available and current?
4. Are there multiple pressure zones?
5. Are valves and hydrants routinely exercised?

Management

1. Are personnel adequately trained? For those community systems serving a population above 800, is the responsible charge operator properly certified?
2. Is the emergency plan available and workable?
3. Are supplies and maintenance parts inventories adequate?
4. Are sufficient operation and maintenance records being kept?
5. Are routine maintenance schedules established and adhered to for all components of the water system?
6. Are all facilities and activities free from safety defects?
7. Are the necessary operational reports completed and submitted on time to the State?

Cross Connections

1. Does your system have a Cross Connection Control Program?
2. What are the basic components of your program?
 - a. Does your system have an ordinance, bylaw or policy regarding cross connection control in place? If yes, what are the basic requirements?

- b. Has your system distributed public awareness information? If yes, what type and how was it distributed? What follow up information do you plan to provide and when?
- c. Has the water system personnel been trained in the area of backflow prevention and cross connection control?
- d. Where are your records for the program stored?

What do your records consist of (assembly test reports, assembly location forms, copies of public awareness information, copies of written notice given for dual check installation if required)?

How is the system tracking and ensuring that the required annual test of backflow assemblies is completed?

- e. How is the program being enforced?

What type of protection strategy is the water system using containment or isolation?

Is the enforcement procedure outlined within the ordinance, policy or bylaw?

Are the procedures clearly understood by all water system personnel?

- 3. Has the water system been separated into areas of high and low hazards?

Have hazard assessments been performed on all high hazard connections?

Has the appropriate protection been installed?

A written narrative of the system's cross connection control program must be included in the sanitary survey. The narrative must include a complete discussion of the issues outlined above.

APPENDIX C

Guidance For the Preparation of

SAMPLING SITE PLAN

On June 29, 1989, the Environmental Protection Agency finalized the Total Coliform Rule (TCR) under the Safe Drinking Water Act. The TCR applies to all public water systems (PWS) and becomes effective on January 1, 1990. Under the TCR, all routine bacteriological samples must be collected according to a written sample site plan. The intent of the plan is to assure that all required routine samples are collected at sites which are representative of the entire water distribution system.

The following criteria have been established to assist PWSs in developing a sampling site plan. By January 1, 1991, each community and applicable non-community PWS must have a written plan on file and are required to sample according to the sample sites identified.

Sampling Site Plans - content and use

Sampling site plans should consist of:

- A map of the water distribution system showing the location of each sampling site.
- A complete description of each sampling site (i.e., address and specific sampling point).

Beginning January 1, 1991

- All required routine bacteriological samples must be collected from the sites identified in the approved plan.
- Required routine samples cannot be collected from the same site more than once during the month unless all remaining sites have already been sampled.

Number of Sampling Sites

The number of sampling sites is recommended, based on the population served as shown below:

Population	Minimum Number of Sampling Sites
1000	5
1001-2500	8
2501-3300	10
3301-4100	12
4101-6700	15
6701-21500	20
21501-59000	30
59001-70000	40
70001	50

This chart indicates the minimum number of sample sites recommended. You may designate more if desired. Sample sites should be rotated on a regular basis.

Systems using groundwater as the sole source of their water supply and serving less than 4901 people may take all samples in one day. Other systems should indicate a time table during a month when samples will be taken.

Location of Sampling Sites

Criteria to use when choosing sampling sites are as follows:

1. Accessible at reasonable times of the day for sampling
 2. Available during the entire year
 3. Located throughout the entire distribution system
 4. Not the last service site on a dead end line
 5. Has a tap suitable for sampling; preferably a single cold water non-swivel and non-aerated tap.
- Sampling must be possible from a tap within five service connections upstream and downstream of each sampling site (to meet the repeat sampling requirements).
 - Sampling sites cannot be located any closer than two service connections upstream of dead ends in the water distribution system.
 - Small systems with few service connections may need to appropriately adjust the location of repeat samples.

Selection of Sampling Taps

- The plumbing should be inspected to assure that no cross-connections exist with nonpotable water sources.
- The sampling tap must be free of any aerator, strainer, hose, or water treatment devices
- Outside sampling taps should be avoided.

Each plan will be reviewed when a site visit, sanitary survey, or construction inspection is made. Sampling site plans should be reviewed each year by the public water system to insure that the plan is current.

APPENDIX D

REPORT OF SURVEY

Utah Department of Environmental Quality
Division of Drinking Water

LOGAN CITY WATER SYSTEM

On Thursday, June 17, 1993, a sanitary survey of the Logan City Water System was conducted by Dennis Corbridge, operator of the Logan City Water System along with Grant Koford and Leonna Lundstrom of the Bear River District Health Department and David F. Hansen of the Division of Drinking Water. The following report describes the physical features of the system and offers conclusions and recommendations regarding deficiencies noted during the survey.

General Description

The Logan City Water System serves about 30,000 people through approximately 11,500 connections. Residents receive their water from four well sources, a spring source, three booster stations, and six storage reservoirs with a total capacity of 7,500,000 gallons. The spring source is the only source that is chlorinated.

Sources

Dewitt Spring:

The Dewitt Spring area is located approximately five to six miles east of Logan in Logan Canyon. It consists of a very large concrete junction with feeder tile extending into the spring collection area. In the collection area three boxes gather surface water and distribute into the overflow area of the spring. The spring area sits at the base of Logan Canyon, water collects into the feeder tiles and then into the junction box which was properly gasketed and locked. It is then properly chlorinated. The spring area is properly fenced with a chain link fence and secured with a locked gate. The fenced spring area is approximately 3 1/2 acres and well drained. It has been raised by fill dirt which protects it to some extent from flooding by the Logan River. The immediate area around the spring has been landscaped, and planted with grasses.

Well No. 1:

Well # 1 is located on Canyon Road and Crockett Avenue. It is 12 inches in diameter approximately 990 feet deep with the top of the bowls located at 210 feet. It is equipped with a 700 Hp Johnston vertical turbine pump with a I.D. Electric motor capable of delivering 4,600

gpm. Each well house is constructed of concrete block and is properly equipped with a sampling tap, check valve, pressure gauge, flow meter and air relief valve although not properly screened. There is a bypass line from the wells to an adjacent canals. The buildings was properly heated, lighted, vented, and properly locked during the time of the inspection.

Well No. 2:

This well is located on 2nd East and Center Street. It is 10 inches in diameter approximately 1,000 feet deep with the top of the bowls set at 200 feet. It is equipped with a Fairbanks Moose 200 Hp pump with a Fairbanks Moose 400 booster pump capable of delivering 3,800 gpm when in operation.

Well No. 3:

Well # 3 is located on 6th East and 7th North. It is 12 inches in diameter approximately 1,000 feet deep with the top of the bowls set at 170 feet. It is equipped with a Johnston pump with a U.S. Electric 200 Hp motor capable of delivering 3,400 gpm.

Willow Park Well:

This well is located on the west side of Willow Park next to the canal. It is 12 inches in diameter approximately 990 feet deep with the top of the bowls set at 220 feet. It is equipped with a Johnston pump with and U.S. 500 Hp motor capable of delivering 3,600 gpm. This well was used only once during the last eight years.

Booster Stations

Golf Course Booster Station:

This pumping station is well constructed from concrete, and has two 75 Hp motors with four Auora pumps which alternate depending on the load. The pump station serves the bench area north and east of Utah State University.

Cliff Side Drive Pump Station:

There are two Cliff side booster stations with station # 1 being the older of the two and is currently used as a standby station. The standby station or Cliff side # 1 has two 60 Hp marathon motors. Cliff side # 2 is equipped with two U.S. Electric 125 Hp motors which are sensor probed two the Cliff side 1,000,000 gallon reservoir which kicks the booster on at 7.5 and turns off at 14.5 .

Storage

Golf Course Reservoirs:

Logan City has 5 different reservoirs located on the hillside next to the golf course. Two of these tanks are rectangular in shape concrete and buried. The one nearest the golf course booster station is 1,000,000 gallons and the other has 2,000,000 gallons in storage. The other two reservoirs are circular concrete buried tanks. Each of these tanks have a storage capacity of a 1,000,000 gallons. In addition Logan City has contracted with Utah State University and is using a 1,000,000 gallon reservoir. They were all properly locked and screened.

Cliff Side Reservoir:

The cliff side reservoir is the newest of Logan City reservoirs and has a 1,000,000 gallons storage capacity.

Castle Hills Reservoir:

The castle hills reservoir is a 500,000 gallon concrete circular reservoir, about a mile north of the college reservoir.

Chlorination Facilities

The new chlorination facility for the Logan City water system is housed in a building located just north of Dewitt Springs. The vacuum operated chlorinator is operated by dual alternating 1 1/2 H p Lesson motors powering Jaczzi booster pumps located in an adjacent underground vault. The chlorinator is a Wallace and Tiernan V-notch chlorinator. The chlorinator was set a 53 pounds per day. Water flow is measured through a transducer and indicated the spring water is being chlorinated at the rate of 0.3 ppm. The building was state of the art with chlorine leak detectors, digital scales etc. The chlorination building had separating rooms for the cylinders and the digital read outs for chlorine and flow. There were no gas maks but we were told at the time of inspection they were on order. The only thing noticeable wrong was that the chlorine vent tube should be screened.

Distribution System

The City of Logan serves approximately 30,000 people through 11,500 connections. There are approximately 610 fire hydrants. The distribution system is made up of 8, 6, and 4 pvc, steel and asbestos line. Logan's water works is connected to a telemetry system which maintains pressure, activates wells, points out terrible spots, maintains reservoir levels and records the day to day operation of the system. Even with the heavy loads during the last few years water pressure seems to adequate in all areas of the City.

Waiver Assessment

Although the well sources are deep in nature, properly grouted and equipped with a sanitary seal Use Waivers cannot be granted because of the close proximity of the homes, parks, canals etc.. The Dewitt Spring, however, due to its remote location does qualify for a Use Waiver. Source protection plans must be developed for these sources.

Sampling Site Plan

Logan City currently has a bacteriological and Lead/Copper site plan in place.

Cross Connection

Logan City cross connection program consists of dual checks at the meter and required annual testing of double checks and RP devices.

Source Location

The latitude and longitude of each source has previously been determined by the Division of Drinking Water.

Recommendations and Conclusions

1. Remove the deep rooted vegetation in and around the spring area.
2. Screen all reservoirs and tank overflow pipes with non-corrodible, # 4 mesh screen.
3. The new chlorination building apparently was developed without review and approval of plans and specifications for its construction. As-built plans must be submitted to this office for review and approval. Therefore, you must provide as-built plans and the documentation outlined in R309-106-5 of the Utah Public Drinking Water Rules.
4. All the wells air relief valves were not properly screened with a No. 14 non-corrodible mesh screen.
5. The chlorine vent tube must be screened with a No. 1 non-corrodible mesh screen.
6. Once the gas masks arrive they should be mounted in a properly area for convenient access.

UTAH DIVISION OF DRINKING WATER

PUBLIC WATER SUPPLY INFORMATION SYSTEM

02/28/94

Water System Number: 03010

Name: LOGAN CITY WATER SYSTEM
 Owner: LOGAN CITY CORP
 Address: P. O. BOX 527 84321
 Area: LOGAN, UT
 County: CACHE
 Type: COMMUNITY-POLITICAL, SURDIV
 Manger.: ROBERT LAURSEN
 Phone: 750-9936
 Oper.: STEVE LIMEBACK
 Phone: 750-9956

Rating: APPROVED
 Rating Assigned: 09/21/63
 Inventory Reviewed: 02/01/94
 Last Surveyed: 07/17/93
 Surveyed By: HANSEN
 Last Plan Appr.: 04/20/87
 System Engineer: R HUGIE
 Begin Operation: 01/01
 End Operation: 12/31

Population: 26,871
 Residential Conn.: 4,800
 Other Connections: 40
 Total No. Connections: 7,174
 Type Other Conn: COMMERCIAL
 Outside Use Permitted: YES
 Calc Peak Demand (GPD): 7,600,800
 GPD/1440 = Demand (GPM): 5,333
 Peak Hourly Demand: 9,600

-BACTERIOLOGIC QUALITY-
 Samples Req/Month: 30
 Month Insuf. Sampls: 0
 Month Unsaf Result: 0
 Record Satis.: YES
 12 Mos End.: 09/30/93

-STORAGE-
 Number of Units: 5
 Material: CONCRETE
 Capacity: 4,000,000
 Adequate: YES

-TREATMENT-
 Type: CHLORINATION
 Plant: Capacity (MGD): .00
 Installed: 19

-DISTRIBUTION-

Pump/Gravity: BOTH
 Fire Hydrants: YES
 Pressure Adeq.: YES
 PCT Metered: 100
 Master Meter: NO

* No.	Source Type	Source Name	Type	Dia	Yield (GPM)	Adeq. Prot.	Type of Treatment	SOURCE LOCATION	
							-Latitude -	-Longitude-	
							Deg Min Sec	Deg Min Sec	
01	SPRING	DEWITT			7,000	YES	CHLORINATION	41 45 31.0	111 49 26.0
02	WELL	CROCKETT AVE.#1	DEEP		5,400		NONE	41 44 18.5	111 48 44.0
03	WELL	200 EAST CENTER			3,800		NONE	41 43 54.0	111 49 40.0
04	WELL	700 N 600 E			3,400		NONE	41 44 42.5	111 49 08.0
*N05	WELL	WILLOW PARK	DEEP	20	4,000	YES	NONE	41 43 11.0	111 50 55.0
*N06	WELL	1000 N 300 EAST		18	4,500		NONE	41 44 59.5	111 49 35.5

N MEANS THIS SOURCE IS CURRENTLY NOT USED

UTAH DIVISION OF DRINKING WATER

02/28/94

- - SOURCE INFORMATION - -
 SOURCE TYPE: WELL
 SOURCE CAPACITY: 5,400 GPM
 LATITUDE: 41° 44' 18.5"
 LONGITUDE: 111° 48' 44.0"
 TYPE OF TREATMENT: NONE
 PERIOD OF OPERATION: JAN 01 TO DEC 31
 USE: IN USE

WATER SYSTEM NUMBER: 03010
 WATER SYSTEM NAME: LOGAN CITY WATER SYSTEM
 SOURCE NUMBER: 02
 SOURCE NAME: CROCKETT AVE#1

SOURCE MONITORING

CHEMICAL GROUP DATE LAST SAMPLED DATE NEXT SAMPLE DUE THEREAFTER WAIVER ISSUED VIOLATION INFORMATION

CHEMICAL GROUP	DATE LAST SAMPLED	DATE NEXT SAMPLE DUE	THEREAFTER	WAIVER ISSUED	VIOLATION INFORMATION
INORGANIC & METALS:	06/18/92	06/18/95	EVERY 3 YEARS		
NITRATE:	06/18/92	06/18/93	EVERY YEAR		
NITRITE:	06/18/92	06/18/93	EVERY YEAR		
VOC's:	07/03/90	07/03/93	EVERY 6 YEARS	USE WAIVER	
PESTICIDES:			NOT REQUIRED	USE WAIVER	
RADIONUCLIDES:	12/17/90	12/17/94	EVERY 4 YEARS		
UNREGULATED ORGANIC:	07/03/90		NOT REQUIRED	USE WAIVER	

NOTE: It is the water utilities responsibility to forward results of analysis to the State. Some laboratories do not automatically forward results to the State, therefore, please specifically instruct the laboratory to forward the results to the state, or forward the results yourself. All results of analysis should be sent to:

The Compliance Section
 Utah Division of Drinking Water
 P O Box 144830
 Salt Lake City Utah 84114-4830
 PHONE: (801) 530-6159

UTAH DIVISION OF DRINKING WATER

02/28/94

- - SOURCE INFORMATION - -
 SOURCE TYPE: WELL
 SOURCE CAPACITY: 3,000 GPM
 LATITUDE: 41° 43' 54.0"
 LONGITUDE: 111° 49' 40.0"
 TYPE OF TREATMENT: NONE
 PERIOD OF OPERATION: MAY 01 TO SEP 30
 USE: IN USE

* * * * *
 WATER SYSTEM NUMBER: 03010
 WATER SYSTEM NAME: LOGAN CITY WATER SYSTEM
 SOURCE NUMBER: 03
 SOURCE NAME: 200 EAST CENTER
 * * * * *

SOURCE MONITORING

CHEMICAL GROUP	DATE LAST SAMPLED	DATE NEXT SAMPLE DUE	SAMPLING FREQ.	THENCEAFTER	WAIVER ISSUED:	VIOLATION INFORMATION
INORGANIC & METALS:	06/18/92	06/18/95	EVERY 3 YEARS			
NITRATE:	06/18/92	06/18/93	EVERY YEAR			
NITRITE:	06/18/92	06/18/93	EVERY YEAR			
V O C 's:	07/03/90	07/03/93	EVERY YEAR			
PESTICIDES:		07/03/93	QUARTERLY			
RADIONUCLIDES:	12/17/90	12/17/94	EVERY 4 YEARS			
UNREGULATED ORGANIC:	07/03/90	03/31/93	QUARTERLY			

* * * * *
 NOTE: It is the water utilities responsibility to forward results of analysis to the State. Some laboratories do not automatically forward results to the State, therefore, please specifically instruct the laboratory to forward the results to the state, or forward the results yourself. All results of analysis should be sent to:
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 Utah Division of Drinking Water
 P O Box 144030
 Salt Lake City Utah 84114-4030
 PHONE: (801) 530-6159
 * * * * *

UTAH DIVISION OF DRINKING WATER

02/28/94

DRINKING WATER SAMPLING REQUIREMENTS FOR: LOGAN CITY WATER SYSTEM

WATER SYSTEM NAME: LOGAN CITY WATER SYSTEM
WATER SYSTEM MANAGER: ROBERT LAURSEN
ADDRESS: P. O. BOX 527
CITY, STATE: LOGAN, UT 84321
PHONE: 750-9936
POPULATION: 26,871
TYPE OF SYSTEM: COMMUNITY-POLITICAL SUBDIV

DISTRIBUTION SYSTEM MONITORING

BACTERIOLOGIC MONITORING: 30 SAMPLES PER MONTH FOR THE ENTIRE YEAR

If a bacteriologic sample is unsatisfactory, you must collect at least 3 "REPEAT" samples. One of the "REPEAT" samples must be collected at the same location as the original unsatisfactory sample. The second and third "REPEAT" samples must be collected within five service connections on both sides of the original unsatisfactory sample site.

LEAD & COPPER MONITORING: 30 SAMPLES ANNUALLY

All samples must be "FIRST DRAW" from either kitchen or bathroom taps. "FIRST DRAW" means the water has not been used in the building for at least 6 hours prior to sample collection. Be sure to record the results of analysis on forms provided by the Division of Drinking Water, following the instructions on the back of the forms (the forms are colored grey for lead and yellow for copper).

TOTAL TRICHALOMETHANE: FOUR SAMPLES MUST BE TAKEN FOR EACH CHLORINATED SOURCE AT AREAS IN THE DISTRIBUTION SYSTEM FURTHEST FROM THE CHLORINATION FACILITY AND AT LOCATIONS WHERE A CHLORINATION RESIDUAL OF AT LEAST 0.2 MG/L IS MEASURED

NOTE: It is the water utilities responsibility to forward results of analysis to the State. Some laboratories do not automatically forward results to the State, therefore, please specifically instruct the laboratory to forward the results to the state, or forward the results yourself. All results of analysis should be sent to:

The Compliance Section
Utah Division of Drinking Water
P O Box 144030
Salt Lake City Utah 84114-4030
PHONE: (801) 538-6159

UTAH DIVISION OF DRINKING WATER

02/28/94

- - SOURCE INFORMATION - -
 SOURCE TYPE: SPRING
 SOURCE CAPACITY: 7,800 GPM
 LATITUDE: 41° 45' 31.0"
 LONGITUDE: 111° 49' 26.0"
 TYPE OF TREATMENT: CHLORINATION
 PERIOD OF OPERATION: JAN 01 TO DEC 31
 USE: IN USE

WATER SYSTEM NUMBER: 03010
 WATER SYSTEM NAME: LOGAN CITY WATER SYSTEM
 SOURCE NUMBER: 01
 SOURCE NAME: DEWITT

SOURCE MONITORING

CHEMICAL GROUP	DATE LAST SAMPLED	DATE NEXT SAMPLE DUE	SAMPLING FREQ. THEREAFTER	WAIVER ISSUED:	VIOLATION INFORMATION
INORGANIC & METALS:	06/18/92	06/18/95	EVERY 3 YEARS		
NITRATE:	06/18/92	06/18/93	EVERY YEAR		
NITRITE:	06/18/92	06/18/93	EVERY YEAR		
V O C 's:	07/03/90	07/03/93	EVERY 6 YEARS	USE WAIVER	
PESTICIDES:			NOT REQUIRED	USE WAIVER	
RADIOCLIDES:	12/17/90	12/17/94	EVERY 4 YEARS		
UNREGULATED ORGANIC:	07/03/90		NOT REQUIRED	USE WAIVER	

NOTE: It is the water utilities responsibility to forward results of analysis to the State. Some laboratories do not automatically forward results to the State, therefore, please specifically instruct the laboratory to forward the results to the state, or forward the results yourself. All results of analysis should be sent to:

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