

Final Report

of the

SBREFA Small Business Advocacy Review Panel

on EPA's Planned Proposed Rule for

National Primary Drinking Water Regulations:

GROUND WATER RULE

June 9, 1998

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1. INTRODUCTION

This report is presented by the Small Business Advocacy Review Panel convened for the proposed rulemaking on the Ground Water Rule (GWR) that the Environmental Protection Agency (EPA) is currently developing. On April 10, 1998, EPA's Small Business Advocacy Chairperson convened this Panel in accordance with section 609(b) the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Flexibility Act of 1996 (SBREFA). Section 609(b) requires convening a review panel prior to the publication of the initial regulatory flexibility analysis that an agency is required to prepare under the RFA. The Panel met a total of seven times between April 10 and June 5, 1998. In addition to its chairperson, the Panel members are the Director of the of the Standards and Risk Management Division in the Office of Ground Water and Drinking Water (OGWDW) within EPA's Office of Water, the Administrator for the Office of Information and Regulatory Affairs of the Office of Management and Budget, and the Chief Counsel for Advocacy of the Small Business Administration.

This report provides the statutory background of the GWR, a brief description of possible rule components, a description of the number and types of entities potentially affected by the rule, a summary of OGWDW's outreach activities, and the comments and recommendations of the small entity representatives (SERs). In addition, section 609(b) of the RFA directs the review panel to report on the comments of SERs and make findings regarding the key elements of the initial regulatory flexibility analysis (IRFA) under section 603 of the RFA. The key elements addressed in an IRFA are:

- The number and types of small entities to which the proposed rule will apply;
- Possible reporting, record keeping, and other compliance provisions of the proposed rule, including the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the reports or records;
- Other relevant federal rules which may duplicate, overlap, or conflict with the proposed rule; and
- Any significant alternatives to the components under consideration which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

The completed Panel report is provided to the agency issuing the proposed rule and included in the rulemaking record. The agency is to make changes to the draft proposed rule, the IRFA for the proposed rule, or the decision on whether an IRFA is required taking into consideration information in the Panel report.

The Panel's findings and discussion are based on information available at the time this reported was drafted and EPA is continuing to conduct analyses relevant to the proposed GWR. The Agency expects additional information will be developed or obtained as part of the rule development process. It is important to note that the panel makes its report at an early stage in the rule development process. This is both a disadvantage and an advantage. On the one hand, it means that less information and analysis regarding possible regulatory options is available than

would be the case at a later stage in the process. On the other hand, it affords the Panel and the Agency a better opportunity to identify and address small entity concerns before the Agency focuses in on a relatively narrow set of regulatory options. Any options the Panel identifies for reducing the rule's regulatory impact on small entities may require further analysis and/or data collection to ensure that the options are practicable, enforceable, environmentally sound and consistent with the statute authorizing the proposed rule.

2. SCOPE AND STATUTORY BACKGROUND AND POSSIBLE RULE COMPONENTS

Ground water quality is influenced by natural factors, human activities, well construction, well location, and an aquifer's potential for contamination. Human sources of microbial contamination include septic systems, cesspools, leaking sewer lines, and cross contamination of well and distribution systems. The purpose of the Safe Drinking Water Act (SDWA) is to protect public health by ensuring that the tap water in the United States is safe for drinking and bathing. Section 1412(b)(1)(A) of the SDWA requires EPA to establish National Primary Drinking Water Regulations for contaminants that may have an adverse public health effect, are known to occur in public water systems with a frequency and at levels of public health concern, and that present a meaningful opportunity for health risk reduction. Congress also required under Section 1412(b)(8) that EPA develop regulations specifying the use of disinfection for ground water systems as necessary. Under these two provisions, EPA has the responsibility to develop a ground water rule which specifies where disinfection is necessary, and perhaps more importantly, addresses other components of a multiple barrier approach for ground water systems to assure public health protection.

EPA's Office of Ground Water and Drinking Water (OGWDW) has the responsibility to develop the GWR. To meet these requirements, OGWDW has undertaken a process of working with stakeholders to develop a proposed rule by March of 1999 and a final rule by November of 2000. Development and implementation of the rule will also involve public water systems, tribes, states, the Federal government and other interested stakeholders.

The Agency's goal in developing the GWR is to reduce the risk of illness caused by microbial contamination in public water systems relying on ground water. To achieve this goal, EPA is considering a multi-barrier approach that could include source water assessment and protection, identification and correction of system defects, proper maintenance of the well and distribution system, appropriate use of disinfection where necessary, and monitoring. It will address other components of ground water systems. This approach would establish a framework to identify public water supplies vulnerable to microbial contamination and develop risk control strategies that include best management practices, as well as disinfection. Options under consideration would give flexibility to primacy states to implement specific regulatory requirements appropriate to local conditions.

OGWDW has identified a number of general regulatory components that may be included in the proposed rule. It is anticipated that these general components will be developed in more detail in the course of discussions with states and other interested parties, including small entities. It is expected that a number of systems will be required to implement at least some of the barrier components as a result of the rule. The particular components a system may be required to implement will vary based upon conditions specific to a system and state requirements. The following is a brief description of each barrier component.

Ground Water Protection (Vulnerability Assessment)

The vulnerability assessment evaluates the vulnerability of a system's wells to microbial contamination. It is conducted by the agency with drinking water primacy, typically a state agency. The assessment consists of a review of system records that provide information on hydrogeologic conditions and an inspection to determine possible sources of contamination. If the inspection reveals a relatively high risk of contamination, the assessor may determine that certain wells are vulnerable. In this instance, the system may be required to implement specific barriers to contamination or install disinfection, where appropriate. The vulnerability assessment would require systems to prepare system records for review and it may be necessary for system operators to accompany the state assessor to wellheads.

System Integrity (Sanitary Survey)

The sanitary survey is conducted to determine if a system's wells, wellhead, and treatment processes are in proper working condition and whether there is adequate protection against microbial contamination. The survey is performed by the state agency with primacy and, therefore, the systems would only be responsible for preparing system records for review and possibly accompanying inspectors to the wells.

Distribution System Maintenance

Ground water systems may be required to perform distribution system maintenance as a barrier to prevent or minimize microbial contamination. The maintenance measures a system may be required to implement include a cross connection control program, a water main flushing program, or routine disinfection of pipes after repair or installation. Systems may be required to provide an annual report of flushing and cross connection prevention activities. Systems would also need to retain all maintenance and inspection records.

Monitoring

Monitoring which complements that required by the Total Coliform Rule may be required. The additional monitoring OGWDW anticipates as a result of the GWR could include raw water sampling at the system's wells. The frequency of monitoring may vary from once to four times per year, based upon the population served by the system. The samples would be analyzed for the presence of indicators of fecal contamination. In addition to the current indicator based on total coliform, other indicators under consideration include *E. coli* and male specific coliphage. The systems might be required to report the raw water monitoring results annually to the state agency with primacy. Systems would also be

required to maintain records of the monitoring results for a minimum of three years following the collection of the samples.

Disinfection Treatment

Disinfection is a means to ensure inactivation of microbial contamination. This barrier would be based on the vulnerability of systems to microbial contamination and whether the state has an alternative, effective, multiple barrier approach in place. The method of disinfection treatment would be determined by the system, subject to the approval of the state. Disinfection methods include chlorination, ozonation, and ultraviolet disinfection. Systems would not be required to provide annual reports but would need to keep records documenting monitoring efforts that ensure proper disinfection.

3. APPLICABLE SMALL BUSINESS DEFINITIONS

EPA's authority under SDWA extends to all "public water systems." The law applies the term "public water system" to water utilities and a wide range of businesses (e.g., campgrounds, factories, and schools). As part of the 1996 SDWA amendments, Congress expressly addressed the issue of system size and included several provision for small system regulatory relief for systems serving 10,000 or fewer people and/or systems serving 3,300 or fewer people. OGWDW believes it is appropriate to define a small system as one that serves 10,000 or fewer people. However, the Small Business Administration (SBA) regulations typically define a small business in terms of either total revenues or total employees. Under SBA's definition, a "small," privately-owned water utility would be one with revenues of less than \$5,000,000. Under the RFA, a "small" governmental entity is one with a jurisdiction of 50,000 or fewer people. Data from the Community Water System Survey (CWSS) indicate that the median revenue of a community water system serving between 3,300 and 10,000 people is \$605,000. Systems serving less than 10,000 people would actually have annual revenues well below \$5 million. The proposed definition of a small water system as one serving 10,000 or fewer people is therefore more narrow than the SBA definition for small business and the RFA definition of a small government entity. However, OGWDW believes the proposed definition is appropriate both because of the statutory provisions of the SDWA, and because it believes this definition appropriately distinguishes public water systems that have stronger technical expertise and revenue sources from those that do not.

4. PROFILE OF THE AFFECTED INDUSTRY

As noted above, EPA's authority under SDWA extends to all public water systems. A public water system provides water for human consumption through pipes and other constructed conveyances. Based on information in EPA's Safe Drinking Water Information System (SDWIS), there are 158,000 public water supply systems that use ground water. The term "public water systems" applies not only to water utilities, but also to a wide range of privately or publicly owned businesses and entities that provide drinking water (e.g., campgrounds, factories, restaurants, and schools).

Public water systems are classified as community (C), non-transient non-community (NTNC), or transient non-community (TNC) systems. Approximately 80% of all public community systems have primarily ground water as their source, while approximately 97% of all public non-community systems have primarily ground water as their source. Descriptions and statistics regarding each of these types of systems are given below.

Community Water Systems

Community systems provide drinking water to at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. Approximately 28 percent (44,000) of all ground water public systems are community ground water systems. These systems serve approximately 89 million people. A community water system that provides drinking water as a service that supports its primary business (e.g., a mobile home park) is referred to as an ancillary system. Approximately 25 percent (11,000) of all community ground water systems are ancillary systems. Approximately 98 percent (43,000) of community ground water systems are considered small systems and these serve approximately 37 percent (33 million) of the population served by community ground water systems. Data provided in the document *Ground Water Disinfection and Protective Practices in the United States* (EPA 1996) indicate that approximately 55% (27,000) of community water systems using ground water currently disinfect their water supply in some way.

Non-Transient Non-Community Water Systems

NTNC systems serve a least 25 of the same people at least six months of the year and include schools, factories, and hospitals. Approximately 13 percent (20,000) of all public ground water systems are NTNC systems and these serve approximately 5.3 million people. Approximately 99 percent of NTNC systems are considered small. These small systems serve approximately 94 percent (5 million) of the population served by NTNC systems. According to data in *Ground Water Disinfection and Protective Practices in the United States*, approximately 30 percent (8,000) of NTNC systems practice disinfection.

Transient Non-Community Water Systems

TNC systems, such as campgrounds and motels, serve transient populations. There are approximately 94,000 TNC systems serving approximately 15 million people. Approximately 99 percent of all TNC systems are considered small. These small systems serve approximately 73 percent (11 million) of the population served by TNC systems. Data in *Ground Water Disinfection and Protective Practices in the United States* show that just under 20 percent (18,000) of TNC systems practice disinfection.

5. SUMMARY OF OUTREACH ACTIVITIES

To facilitate regulation development, EPA has actively involved stakeholders in the development of the proposed rule. The first EPA sponsored Stakeholder Meeting was held in

Washington, D.C. on December 18 and 19, 1997. The purpose of the meeting was to provide stakeholders with summaries of the data that support rule development; engage stakeholders in analysis and discussion of the implications of the data; solicit additional data; discuss EPA's next steps for rule development, data analysis, and stakeholder involvement; and identify additional parties who may be interested in future meetings. A second meeting was held by EPA on May 5, 1998, in Portland, Oregon. The Portland stakeholder meeting was similar in scope to the first stakeholder meeting with the exception that EPA presented alternative regulatory approaches for discussion. OGWDW is planning two additional stakeholder meetings to collect additional information regarding the potential impact the GWR may have on regulated systems. The meetings will be held on June 9, 1998 in Madison, Wisconsin; and June 25 in Dallas, Texas.

EPA has also organized a Small System Data Needs Working Group. The group is comprised of representatives from the American Water Works Association, Association of State Drinking Water Administrators, National League of Cities, National Resources Defense Council, and National Rural Water Association. Established in the spring of 1997, the group held six meetings, from March through December, to discuss the availability of water quality and financial data for small systems that is needed to support the GWR and other drinking water regulations.

OGWDW believes that input from small entities is particularly important in the rulemaking process because so many systems are small. To develop a list of small entity representatives (SERs), who could provide input into a series of drinking water regulations that are currently under development, OGWDW consulted with trade associations, EPA regional offices, state drinking water programs, individuals who have attended stakeholder meetings, foundations, and the Small Business Administration. These efforts produced a list of representatives of small water utilities and businesses providing drinking water ancillary to their primary business, such as restaurants, mobile home parks, hotel/motels, factories, and campgrounds. The list also includes representatives from home-owner associations, investor-owned systems, purchased water systems, small local governments, and churches. OGWDW has also included "Drinking Water System Circuit Riders," i.e. individuals who do not directly own systems but provide technical and compliance assistance to small systems. EPA invited 23 SERs to participate in the GWR consultation process. **Table 1**, on the following page, lists the names of these SERs and the organizations that they represent.

Table 1. GWR Small Entity Representatives

Name	Organization
Bob Beaver	Adams Friendship Schools
Greg Bouc	Village of Valparaiso
Ken Bruzelius	Midwest Assistance Program Inc.
Bob Campbell	Wilson School
Cathy Ekendahl	New Concord Inn
Doug Evans	Salt Lake County Service Area #3
Paul Gardner	Queen Creek Water Company
Shirley Glynn	Bates Township Water Authority
L. E. Godwin, III	City of Plains
Sandy Graham	Clarkston United Methodist Church
J.D. Hightower	City of Escalon
Jonathan Hirst	Southeastern Rural Community Assistance Project
Michael Knox	Cherry Valley and Rochdale Water District
Paul Noran	Consumers Water Co.
Alan Ordway	Camp Winona
Ron Payne	Payne Utilities, Inc.
Albert Ricksecker	Brooklyn Tapline Co., Inc.
Jesse Royall	Sydnor Hydrodynamics, Inc.
Jim Sheldon	Cedar-Knox Rural Water Project
Rafael Terrero	Florida Water Services
Paul Torok	Seeley Lake, Missoula County Water District
Gary Walter	Tuolumne Utilities District
Wayne Weikel	Southeastern Rural Community Assistance Project

EPA convened a meeting of SERs including those listed above on March 4, 1998 in Washington, D.C. The purpose of the meeting was to discuss SDWA and SBREFA and

introduce upcoming rules that are relevant to public water systems. While the meeting focused on the GWR, the SERs also received a brief review of the Long Term Enhanced Surface Water Treatment Rule, Filter Backwash Recycling Rule, Radon Rule, and Arsenic Rule. The GWR discussion focused on possible components of the rule and the occurrence and public health data supporting the rule. EPA presented information concerning vulnerability assessments, sanitary surveys, distribution system maintenance, monitoring, and disinfection in connection to the GWR. EPA encouraged the SERs to ask questions and provide feedback and comments throughout the meeting as well as afterward. A summary of that meeting is included as **Appendix A**.

On May 5, 1998 the Small Business Advocacy Review Panel for the GWR distributed additional information to the GWR SERs for their review. The materials included a table developed by EPA describing regulatory approaches to the GWR and updated fact sheets. The SERs were asked to review the new materials and to provide any additional comments to the Panel in writing and at a May 18, 1998 conference call meeting with the Panel. The SERs were asked to comment specifically on the activities of the possible regulatory approaches which they felt were “most helpful” and those which they found to be “least helpful.” The Panel distributed another memo to the SERs on May 14, 1998 related to the occurrence information which had been provided previously by EPA. A list of all documents distributed to the SERs, as well as a copy of the table containing the regulatory approaches, is provided as **Attachment A**.

6. SUMMARY OF WRITTEN COMMENTS

The following is a summary of written comments received from the SERs, after the March 4, 1998 meeting, organized by the topic. OGWDW received 23 written comments from SERs. **Table 2** provides a record of the comments and the date received. The topic is listed in bold followed by a brief summary of the SERs written comments. The complete written comments received from the SERs after the March 4, 1998 are provided as **Attachment B**. Additional written comments received from the SERs based on information provided to SERs on May 5 and 14, 1998 are provided as **Attachment C**. Verbal comments made by the SERs in the March 4, 1998 meeting and May 18, 1998 conference call are summarized in the meeting summaries of **Appendix A** and **Appendix B**.

Table 2. Comments Received on the Development of the GWR

Comment Letter	Name	Date Received	Number of Pages
1.	J.D. Hightower	3/23/98	4
2.	Greg Bouc	3/24/98	2
3.	Sandy Graham	3/24/98	2
4.	Paul Noran	3/24/98	1
5.	Gary Walter	3/25/98	3

Comment Letter	Name	Date Received	Number of Pages
6.	Albert Ricksecker	3/25/98	4
7.	Doug Evans	3/26/98	2
8.	Michael Knox	3/26/98	5
9.	Rafael Terrero	3/26/98	4
10.	Cathy Ekendahl	3/26/98	7
11.	Wayne Weikel	3/26/98	3
12.	Alan Ordway	3/26/98	3
13.	Albert Ricksecker	3/26/98	1
14.	Jim Sheldon	3/26/98	6
15.	Shirley Glynn	3/26/98	4
16.	Bob Beaver	3/37/98	41
17.	Paul Gardner	3/27/98	3
18.	Jesse Royall	3/37/98	31
19.	Ron Payne	3/27/98	2
20.	Ken Bruzelius	3/27/98	2
21.	Bob Campbell	3/30/98	1
22.	L. E. Godwin, III	3/31/98	3
23.	Paul Torok	4/1/98	1

6.1 Number of Small Entities

The SERs did not provide comments addressing the estimates of the number of small entities which would be impacted by the rule.

6.2 Reporting, Record Keeping, and Other Compliance Requirements

Reporting and Record keeping

There was a diversity of opinions expressed regarding the potential requirements for systems to provide records to support vulnerability assessments and/or sanitary surveys. A few of the SERs indicated that many small systems do not have many of the records that could potentially be required readily available, while other SERs indicated that the records are

maintained at a central location or are maintained by the county or state. For example, one SER indicated that finding the records “will be a challenge,” while another SER felt it should be easy to locate drawings needed for a sanitary survey. A SER stated that the time and cost to compile records may be great when records do not exist or the system pre-dates the regulations. A SER suggested using questionnaires and combining the vulnerability assessment and sanitary survey to reduce the burden of providing records. Another SER commented that requiring annual reports would be an excessive burden to utilities as all reports are forwarded to state regulators.

Vulnerability Assessment

Many of the SERs expressed concern regarding the cost of the vulnerability assessment and suggested that the burden be minimized by either prioritizing the systems which will perform a vulnerability assessment or making the assessment as cost effective as possible. Several SERs commented that state source water assessment programs collect some of the information required for the vulnerability assessment, and, therefore, these could be used as a source to prevent redundant data collection. One SER also stated that, due to budget constraints, most states could not provide adequate technical assistance to support a rule relying heavily on information and assistance from small town water systems. Another SER stated that financial assistance should be provided to small systems to gather data, otherwise they may wind up being required to disinfect simply because they lack the data to demonstrate that disinfection is not necessary. Another SER expressed concern over the cost of system personnel accompanying state assessors on site visits, and the cost of obtaining permission to inspect neighboring property for sources of contamination. This SER also noted that many private operators and small municipalities lack the authority to deal with neighboring sources of contamination once they are identified.

Many SERs provided suggestions on how to prioritize the vulnerability assessment. For example, a SER suggested that the requirements for systems using filters be streamlined, possibly leading to exemption from the rule. Another SER recommended assessments be conducted only when “a problem exists,” and that the system be responsible for gathering necessary information. Another suggested that compliance history should be the “starting point for determining vulnerability” if violations occur then the next focus should be on the condition of the wellhead, followed by the distribution system if no problems with the wellhead are found. Several SERs suggested that EPA provide guidance on conducting assessments, perhaps including a checklist for use by both water systems and state assessors. One SER indicated that this guidance should be general, with states given flexibility to tailor it according to system size and risk. Other SERs also supported the idea of state flexibility in determining vulnerability assessment requirements. Regarding the frequency of assessment, the SERs suggested a range of possibilities. For example, one SER suggested that assessments need only be performed once followed by subsequent assessment if monitoring indicates a recurrent problem or if land use changes, while another SER recommended following the schedule for sanitary surveys (in his state), once every two years.

Sanitary Survey

Most comments expressed support for the use of sanitary surveys as a barrier to microbial contamination. Several SERs provided specific suggestions to improve their effectiveness. A SER stated that to avoid discrepancies, there should be only one definition of what constitutes an acceptable minimum sanitary survey that is accepted by all programs within the EPA. Another SER commented that state sanitary survey programs that include follow-up training and support are one of the best tools to prevent waterborne disease outbreaks. One SER concurred that sanitary surveys are important, but recommended that surveys only cite dangerous conditions. Many SERs indicated that not all defects identified by a sanitary survey needed to be corrected and provided suggestions for the definition of a significant defect requiring correction. A SER suggested using four categories to classify system defects based on the potential for contamination: 1) defect is currently allowing fecal coliform contamination, 2) defect has high potential for allowing fecal coliform contamination, 3) defect has lower potential for allowing fecal coliform contamination, 4) defect isn't representative of best system standards. This categorization scheme could then be used to prioritize correction of defects using available resources. The suggested frequency of surveys ranged from annually to once every five years.

Monitoring

SERs generally expressed support for existing monitoring requirements as a means for determining compliance, and some indicated support for increased requirements for total coliform monitoring. One SER stated that monitoring “must remain the foremost trigger for violation.” However, another SER noted that coliform bacteria and nitrate/nitrite monitoring are limited monitoring tools. Strong concerns were expressed that the costs of more expensive laboratory analysis for viruses would be too much of a burden on small systems. A SER stated that small systems do not have the staff or budgets to conduct additional, expensive monitoring for viruses. This was also noted by another SER who stated that monitoring for viruses is in the best interest of public health, but the costs will be a fiscal burden to small schools. SERs also expressed concern about the additional operator training that may be needed to conduct virus sampling, and the specialized laboratories required to analyze such samples. Many SERs emphasized that testing for viruses, if required at all, should be kept to a minimum.

It was also recommended that the test results of wells using the same aquifer be compared so that PWSs also using the aquifer can be notified of any detections. Another SER stated that if there are detections, then immediate testing should be conducted at the wellhead. Then, if testing does not indicate a problem with the source water, disinfection should not be required. One SER questioned the need for additional monitoring when the Total Coliform Rule (TCR) already addresses contamination of the distribution system, evaluation of the system, and frequency of testing. Two SERs indicated that training on proper sampling techniques is critical. The suggestions for monitoring frequency ranged from monthly to annually. However, one SER stated that frequency should be based on system compliance. To integrate wellhead protection and monitoring, a SER commented that Wisconsin uses wellhead protection information to increase or reduce system monitoring. *[EPA notes that Wisconsin's wellhead protection program is used to reduce monitoring for chemicals only.]* One SER also suggested that monitoring and reporting requirements should be reduced for systems that are less vulnerable based on other

factors (e.g., adherence to Uniform Plumbing Code, use of filtering, disinfection of new pipes). This SER also indicated that any requirement for system personnel to accompany contractors in the collection of samples would be an additional burden. Another SER suggested that point of use monitoring not be required, stating that "our financial and regulatory responsibility for microbial contamination must end when the water leaves the public system."

Distribution System

Many of the comments received from SERs regarding distribution system maintenance stressed that maintenance requirements vary from system to system. Many SERs stated that the frequency of water main flushing should be particular to each system. For example, one SER stated that flushing may be of limited value to very small systems that have only on-site plumbing, small diameter pipes kept clear through continuous use, or an active fire hydrant testing program. This SER also stated that flushing would be considered wasteful in areas where there is a premium on adequate water supplies. Another SER stated that checking fire hydrants in his system fulfills the intent and purpose of flushing the distribution system. However, this SER stated that dead end or infrequently used mains should be flushed weekly. Regarding water mains, several SERs stated that replacement or repairs should be on an as needed basis. A SER stated that replacement of worn out waterlines is more protective than cross-connection control programs for very small systems. Another SER stated that it cannot force compliance with cross connection control requirements by its customers. A SER recommended annual maintenance on all system valves and hydrants, but also noted the difficulties for small systems of performing maintenance on system components located underground or inside walls. This SER also suggested frequent inspection and operator training to ensure system integrity. A SER questioned why distribution maintenance should be included in the GWR given the wide variation in system needs and current industry practice. Several SERs stated that the GWR should exclude the distribution system, given that microbial quality within the distribution system is covered under other regulations (e.g., the Total Coliform Rule). One SER also noted that most aspects of distribution system maintenance and design are already covered by various professional codes and guidance which he believes are adequate. Another SER states that technical assistance from the primacy agency or others is imperative, to ensure proper maintenance of the smallest systems, which often have poorly trained, part-time operators.

Disinfection

Almost all of the comments submitted by the SERs expressed concerns regarding disinfection. Many indicated that disinfection should not be a substitute for proper engineering and maintenance and other "preventative" measures. Several stated that an occasional positive detection of microbial contamination should not result in mandatory disinfection and that the contamination history of the system should be considered. A SER stated that "triggers" for disinfection requirements should be clearly defined and should be based on an imminent public health threat; examples of such triggers included persistent TCR violations or refusal to correct dangerous deficiencies identified during a sanitary survey. Another SER stated that small system operators in his area believed that disinfection should not be required for systems with a

continuous history of no TC violations. Systems with a limited number of violations attributable to the distribution system should also not be required to disinfect if the problem is corrected. If disinfection is required, this SER stated that the rule should permit the use of all cost-effective commercial disinfection products, even those that do not have a detectable residual. Two SERs support the use of the multi-barrier approach as an alternative to disinfection. One SER recommended imposing a disinfection requirement only for systems that are classified as having “high” vulnerability. Several SERs indicated that a system should have the ability to cease disinfection if problems causing the contamination are corrected. At the same time that many SERs were concerned about mandatory, across-the-board disinfection requirements, however, a number of them stressed the importance of disinfection if contamination is found. Additionally, one SER supports disinfection of all water produced for public consumption.

SERs also commented on the implications of disinfection. They expressed concern regarding the costs potentially associated with chlorine disinfection (e.g., capital costs of corralling wells, providing additional storage capacity to ensure minimum contact times, adding tank fill lines, providing proper storage for chlorine gas and breathing apparatus for leak repairs, and installing filtration systems for source water with high iron and manganese content; engineering costs; additional costs for monitoring of residuals and disinfection byproducts, and costs of additional operator training and time). One operator of multiple systems that already disinfect noted that for systems without storage, it would be a great hardship to make the capital investment to provide the recommended contact time. A SER described his experience with local resistance to siting a new facility to comply with the Lead and Copper Rule and the significant resulting costs to the utility, and expressed concern that a similar problem could arise if a new facility for chlorination were required. Concern was also expressed about various negative aspects of chlorination, including undesirable water aesthetics (including color, odor, and taste); health risks due to chlorine byproducts, hazards of chlorine gas, and inadvertent chlorine slug loadings; and corrosion (leading to both reduced system life and possible elevations in lead and copper levels). One SER stated that disinfection can result in other water quality problems. As an example, the SER described the formation of ferric hydroxide solids that readily sorb and concentrate arsenic present in low levels in ground water into concentrations that exceed the MCL. *[EPA recognizes the problem but believes disinfection does not cause the formation of the ferric hydroxide solids, nor the adsorption of arsenic. A recent investigation of a ground water system in Fremont, Nebraska concluded that elevated arsenic levels in the system were due to the corrosion of arsenic containing ferric hydroxide particles which had accumulated over the years in the pipe lining. The corrosion of the pipe lining was attributed to the sudden introduction of chlorine residual to the water system. EPA believes that this problem could be prevented through the gradual introduction of chlorine to the system.]* Several SERs expressed concern over potential liability issues associated with storage and use of hazardous chemicals such as chlorine gas. One SER also mentioned the risk from high voltage associated with ozonation. Another SER suggested that mandatory continuous disinfection would mask system problems and likely result in decreased use of BMPs.

Compliance Cost Data

In addition to the comments summarized above, **Table 3** lists information regarding costs of the various components. The table reports the component and associated cost as provided by the SER.

Table 3. Component Cost and Burden Estimates Provided by SERs

SER	Component	Cost
Robert Beaver	Coliform Sampling	\$32.50 per sample (sampling conducted by contractor)
Cathy Ekendahl	Vulnerability Assessment	1 to 10 hrs (1.5 ave) per well to assemble records; Full time employee: \$50.00 per hour (includes wages, insurance, overhead, and travel)
	Sanitary Survey	1 to 10 hrs (1.5 ave) per well to assemble records; Full time employee: \$50.00 per hour (includes wages, insurance, overhead, and travel)
	Monitoring	Sample: \$20-50 (including transport) Virus sample: \$50-100 to \$500-\$800 per sample
Paul Gardner	Disinfection Treatment	Capital to establish contact time: \$90,000-100,000
	Lab Tests	E-coli: \$15-\$25 per sample; nitrate \$15 per sample
J.D. Hightower	Monitoring	Additional testing: \$23,680 annually (\$2.32 increase per billing cycle), based on quarterly monitoring for four wells at \$1,480 per well
Paul Noran	"Comprehensive" Vulnerability Assessment	\$10,000 - \$20,000
Albert Risksecker	Coliform Monitoring	1.5 hrs for collection, plus mileage costs to lab (16), plus \$10 lab sample fee
Jesse Royall	Vulnerability Assessment	Qualified consultant: \$75.00 per hour Phase 1 Site Analysis: \$5-10,000 Hydrogeologist site visit: \$1,000 plus travel/expenses Determination of well depth: \$250 (for wells less than 200 ft deep) Determination of unsaturated soil depth: \$500-2,000 Pump test to determine drawdown: \$2,000-4,000 plus engineering analysis
	Sanitary Survey	Average survey cost in Michigan for NCWS: \$122-163/year (based on 1989-1990 & 1994) Cost for annual survey in California: \$200/system .
	Disinfection Treatment	Installation of simple hypochlorination: \$2,500-4,000 plus annual maintenance of \$1,000-10,000 Construction capital to establish contact time: \$15,000-75,000
Jim Sheldon	Disinfection Treatment	Simple chlorination at the well: \$130,000 for a 100-300 gpm well and \$320,000 for a 1,000-2,000 gpm well Iron and manganese removal: \$6,000 for a system serving 750 plus O&M costs of \$5,000-10,000
	Vulnerability Assessment	\$10,000 and up for detailed evaluation
Wayne Weikel	Disinfection Related	Breathing apparatus for gas system leak repair: \$1,000 - \$2,000

6.3 Relevance of Other Federal Rules

OGWDW received several comments on the potential overlap or conflict between the GWR and other regulations. A SER noted that the Total Coliform Rule (TCR) already addresses contamination of water in the distribution system. Another SER stated that the introduction of chlorine into distribution systems that have not been exposed to oxidants for prolonged periods can cause corrosion. This could affect compliance with the Lead and Copper Rule and the TCR. DBP formation (and compliance with current and future standards) will also be a significant issue for systems with TOC in their groundwater, a problem that has already been documented in Florida, North Carolina, and parts of the Midwest. This SER also stated that the storage and use of disinfectants at certain businesses could require compliance with OSHA, CERCLA and EPCRA, and local ordinance provisions.

6.4 Suggested Regulatory Alternatives

SERs suggested a number of potential modifications or regulatory alternatives for consideration under the GWR. A suggestion was made by a SER that implementation criteria for the GWR be determined based upon the system size and type. Another SER suggested the implementation of BMPs as an alternative to system-wide, mandatory disinfection. A SER recommended that if a jurisdiction follows the provisions of the Uniform Plumbing Code (UPC), then these provisions should supersede any requirements of the GWR, and such systems should be provided streamlined monitoring and reporting requirements. This SER also noted that according to CDC data, filtered systems appeared to be associated with many fewer water borne illness outbreaks than disinfected systems and suggested that there should be streamlined monitoring and reporting requirements, or even exemption from the GWR, for filtered systems. This SER also stated that the adoption of the UPC and the use of filtering should be key decision points of the vulnerability assessment, to help streamline the requirements of the GWR. Several SERs suggested that the vulnerability assessment and sanitary survey requirements be combined for small systems and/or that the vulnerability assessment be coordinated with the source water protection area delineations currently being conducted by states.

6.5 Other Comments

Many SERs submitted comments regarding the potential burden of the GWR on small systems, stressing that these systems' resources are limited. Several of the comments describe the difficulty small systems would have in raising revenue or finding time for staff (usually only one or two people, and those often part-time) to perform the GWR requirements currently under consideration. For instance, a SER stated that systems will face the same problems complying with the GWR as other regulations: lack of funding options, poor system management, lack of requirement for certified operators, and lack of state enforcement to address current violation. It was pointed out that compliance with the GWR rule may compete for limited small system resources with other priorities, such as upgrading of distribution systems and water sources and compliance with other EPA standards. As an example that might be indicative of potential compliance costs for the GWR, one SER noted that its water rates increased by 160% (from \$280 to \$730 annually for a family of five) following promulgation of the Enhanced Surface Water Treatment Rule, which addressed microbial contamination in surface water systems and contained some of the same provision being considered for the GWR. Another stated that in Maine, some TNC systems have invested substantial resources in switching to ground water sources in order to avoid costly filtration requirements for surface water. Several SERs stressed the need to identify funding sources for small systems to comply with any new requirements. One noted that funding from the Drinking Water State Revolving Fund is not available to many small private systems because they lack collateral and/or can't afford the loan payments; another commented more generally on the limited borrowing capacity of small systems. One SER also noted that unfunded federal mandates may expose municipalities unable to comply with them to litigation. Other SERs indicated that some small systems may elect to reduce their size to avoid being subject to regulations for public water systems, or that system users may elect to convert to unregulated private wells if costs of public water become too high.

A number of SERS questioned if the CDC waterborne disease outbreak data (showing 356 ground water related disease outbreaks over a 24 year period) was really indicative of a serious problem. Several SERs noted that 35% of the outbreaks occurred in ground water systems which were already disinfecting. Another SER stated that the data presented by EPA may inappropriately bias the estimate of waterborne disease in ground water systems. The SER stated that the bias existed because the data includes outbreaks which took place prior to the implementation of the Total Coliform Rule and the Enhanced Surface Water Treatment Rule. The SER presented an excerpt from a document prepared by the American Water Works Association which show only 4 outbreaks attributable to "true"(not under the influence of surface water) ground water systems for the period between 1993 and 1994. *[EPA notes that it believes, and the CDC concurs, waterborne disease outbreaks are significantly under reported to the CDC].*

Several SERs also commented on the contamination occurrence data. One SER questioned whether the occurrence data (from 8 studies of over 670 wells showing microbial occurrence rates of from 8 to 38 percent) was nationally representative. A SER provided information upon bacterial contamination in water systems which was obtained from the states of

Virginia, Michigan and Minnesota. Virginia provided data on approximately 24,000 samples which were taken from well heads of which 124 (0.5%) tested positive for E. coli bacteria. Michigan provided data from 32,294 samples taken from non community water distribution systems (in compliance with TCR) of which 25 (0.08%) tested positive for E. coli bacteria, and 7% tested positive for total coliform bacteria. Minnesota provided data from over 32,000 samples of 8,000 noncommunity water systems of which 222 (0.7%) tested positive. *[EPA notes that the occurrence percentages from the 8 studies are based upon viral indicators sampled at the well head, while the data collected from the states are indicators for bacteria which were collected in the distribution system for Michigan and Minnesota and at the well head in Virginia].*

The following comments were also submitted by the SERS:

- A SER commented that the multi-barrier approach is the cornerstone of drinking water treatment, but the application of multiple barriers must take place within the limits of cost effectiveness and reality. He believes that if source water is reasonably protected (e.g., if it is a "true" ground water source and not one under the influence of surface water) then there is less need for additional barriers. He also stated that poor well construction is probably the cause of most contamination problems for ground water systems and that ensuring proper construction and correcting deficiencies is the most important barrier.
- A statement was made by a SER that there tends to be a significant difference in the translation of the rule at the state level, creating additional financial, operational, and reporting burdens.
- A SER commented that private utilities should be provided the same mechanisms in grants and loans as municipalities.
- A SER stated, based on experience in his state, that the lack of state enforcement for systems in noncompliance is perhaps the biggest impediment to any new rule.
- A statement was made by a SER that a comprehensive guidance on how small systems may utilize the barrier system would be useful. This SER also urged EPA to develop guidance and set aside SRF money to support training of small system operators, with a major focus on proper sampling.
- Another SER suggested that EPA develop pre-designed plans and specifications for required treatment systems, stating that engineering was the biggest cost factor for small systems.
- A SER suggested a system classification which categorized water systems serving less than 3,300 as small, and subdivided small systems into three classes (0-500, 501-1000, and 1001 to 3300); this would allow a targeting of the rule to better manage implementation costs.
- A recommendation was made by a SER that TNC systems serving between 25 and 50 people have reduced requirements.

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Several SERs emphasized the need for state flexibility to tailor appropriate requirements, rather than a "one size fits all" approach.

6.6 Additional Comments Based on Information Provided to SERs on May 5 and 14, 1998

Three SERs responded to the Panel's request for additional comments following the distribution of additional information on May 5 and 14, 1998. **Table 4** lists the SERs that submitted comments.

Table 4. Comments Provided by SERs After the Review of Additional Information

Comment Letter	Name	Date Received	Number of Pages
1.	J.D. Hightower	5/20/98	2
2.	Greg Bouc	5/21/98	1
3.	Cathy Ekendahl	5/22/98	1 (plus 4 page attachment)

Comments were submitted by a SER regarding enforcement and compliance issues surrounding the GWR. The SER stressed his concern that there is not enough funding for small entities to foster compliance with current rules and if new standards are to be developed, additional funding must be made available for compliance with the GWR. A suggestion was made by a SER that funding specially targeted for small water systems should be allocated to help small systems achieve compliance. This SER also expressed concern over compliance issues, such as who will inspect wells and what happens to a small municipality if a non-compliant well is taken off-line?

Two SERs commented on options for enhanced monitoring requirements. One supported an increase in coliform monitoring from once to twice a year and a requirement for E. coli monitoring once a year, but questioned the need for enterococci monitoring as well and stated that viral monitoring should only be required if all other tests showed positive results. The other SER suggested that source monitoring requirements be imposed only on those systems which pose the highest risk of contamination. This SER recommended virus testing be carried out only on a case-by-case basis for wells located in highly vulnerable areas. He also expressed concern

that testing for additional contaminants (e.g., viruses) which may not pose a serious health risk could needlessly undermine consumers' confidence in the safety of their drinking water.

A SER stated that in California cities and counties are charged with compliance to the Uniform Plumbing Code and the National Fire Code, thus creating overlap with the proposed rule and possible conflict with these established rules. The SER raised concerns that the GWR may go beyond the scope intended by the Safe Drinking Water Act by setting standards for the construction and distribution of water. It was recommended that EPA consult with applicable professional organizations, such as the International Congress of Building Officials, the American Society of Civil Engineers, and the American Planning Association regarding industry standards for distribution system construction and maintenance and wellhead protection.

A SER recommended that each local government be encouraged to develop wellhead protection ordinance as a proactive measure to preserve ground water quality. The SER commented that the development of a wellhead protection ordinance would allow local governments to act within the planning processes currently in place. The SER pointed out that although funding is required for the mapping and planning of present and future well sites, the cost would be minimal when compared to retro-fitting an existing well, taking a well off-line or constructing a new well. The SER suggested that funds specifically marked for mapping and development of wellhead protection ordinances should be allocated as a result of the GWR. The SER stated that secured funding for these type of programs would be a proactive and a positive way to protect drinking water.

7. PANEL FINDINGS AND DISCUSSION

It is important to note the Panel's findings and discussion are necessarily based on the information available at the time this report was drafted. EPA is continuing to conduct analyses relevant to the proposed rule, and additional information may be developed or obtained during this process and from public comment on the proposed rule. Any options the Panel identifies for reducing the rule's regulatory impact on small entities may require further analysis and/or data collection to ensure that the options are practicable, enforceable, environmentally sound, and consistent with the Safe Drinking Water Act.

7.1 Number of Small Entities

No commenters questioned the information provided by EPA on the number and types of small entities which may be impacted by the GWR. Because EPA maintains the national Safe Drinking Water Information System (SDWIS) database, with information about all public water systems in the country, the Panel believes that EPA has very good information about the number and types of systems impacted by drinking water rules. The Panel notes that the number of potentially impacted small systems is significant (about 157,000) and suggests EPA focus the compliance requirements upon only those systems which are at risk of fecal contamination. In this regard, the Panel suggests that EPA continue to evaluate whether it may be appropriate to establish different ground water requirements for a particular system based upon system type,

size, or location. This can also be accomplished by giving maximum flexibility to primacy states, consistent with ensuring an appropriate minimum level of public health protection nationally, to tailor specific requirements to individual system needs and resources.

7.2 Record Keeping, Reporting and Other Compliance Requirements

The Panel notes the concern of many SERs that small systems often have a single, part-time operator with many other responsibilities. EPA should keep this limitation in mind when developing reporting and record keeping requirements, and keep these requirements to the minimum necessary to ensure adequate protection of public health. The Panel further suggests EPA focus the record keeping, reporting and other compliance requirements upon the ground water systems which face the greatest risk of contamination. Minimal requirements should be imposed upon systems which demonstrate they are at a low risk of contamination.

The Panel further notes the concern that many small systems will not have easy access to all of the records that would ideally be available for a vulnerability assessment or sanitary survey. The Panel thus recommends development of cost effective approaches for evaluating the risk of contamination at a particular system that minimizes the need for system operators to produce records that are not readily available. Risk evaluation approaches should focus upon techniques which are inexpensive and effective. EPA, after consultation with the SERs, stakeholders and SBAR Panel has determined that it will not use factors such as: (1) lack of adequate well records, (2) lack of a cross connection control program, or (3) intermittent pressure fluctuations as automatic triggers to indicate a potential risk of contamination, although these factors may be considered along with other evidence which more definitively demonstrates risk (e.g. uncorrected significant defects noted in past sanitary surveys) in evaluating whether corrective action is needed and what that action should be. The Panel supports this determination.

The Panel notes the SERs' concerns regarding the impact additional monitoring would have upon small systems, particularly if expensive viral indicator methods are required. The Panel believes that in determining whether and under what circumstances to require monitoring for viral indicators, EPA should consider the value of the information obtained from such monitoring in comparison to the cost of obtaining that information. EPA should only require monitoring for additional indicators if it determines that such monitoring can cost-effectively provide significant additional information on the presence of fecal contamination in ground water. Furthermore, the Panel is concerned about the practicability of requiring viral monitoring for small systems unless there is a significant decline in the cost (which currently ranges from several hundred to a thousands dollars per sample). Therefore, the Panel recommends continuing to support, as a high priority, efforts to develop cost effective viral indicator methods (such as a \$50 coliphage test). In addition, the Panel notes that EPA is currently supporting research intended to develop an approach by which states can identify those systems with the highest risk of viral contamination and strongly endorses this effort. If a reliable and workable method for identifying high risk systems is developed and some viral monitoring is required, the Panel believes that EPA should consider requiring viral monitoring only for these high risk systems.

The Panel also notes that a number of SERs indicated that they were not opposed to a modest increase to the minimum frequency of total coliform monitoring that is currently required under the Total Coliform Rule (TCR) or to an increase in sampling locations to include the source water in the event of a positive TCR sample. These SERs indicated that this would be far less burdensome than a requirement for regular viral monitoring. The Panel thus urges EPA to evaluate continued use of the sampling methods required by the TCR as the central tools for detecting fecal contamination until cost effective alternative methods are developed.

The Panel notes that many SERs believe sanitary surveys are effective tools for identifying problems which may lead to fecal contamination, and that many of the SERs have already had sanitary surveys performed on their systems by the States. The Panel believes that States should also have the authority to require the correction of significant defects as a cost effective method of eliminating risks of contamination. The Panel recommends, however, allowing States the flexibility to distinguish among the defects those which are significant for public health protection and those which are not.

The Panel also notes concerns expressed by many SERs that EPA should not require disinfection for all public water systems regardless of the potential risk of contamination. The Panel agrees with EPA that fecal contamination of public drinking water is a public health threat that must be corrected. The Panel recommends, however, that States be provided with the flexibility to select the most appropriate corrective action from a list which includes, but is not limited to, disinfection. At the same time, States should also have the flexibility to mandate across-the-board disinfection for all or a subset of systems if they determine that this provides the most appropriate level of public health protection. In this context, however, the Panel notes the concern of several SERs that disinfection not be viewed as a substitute for good sanitary engineering.

Although disinfection may be necessary in some circumstances, the Panel is concerned with the potential cost burden to systems that may be required to disinfect as a result of the GWR. In developing requirements or guidance concerning the appropriate use of disinfection, EPA should consider (and include in its regulatory cost estimates to the extent possible) the complete burden and benefits, which may include the following components:

- Purchasing and installing disinfection equipment;
- System re-engineering;
- Purchasing and storing disinfectant chemicals or other materials;
- Purchasing and installing safety equipment (e.g. chlorine leak detection equipment, breathing apparatus for leak repair if chlorine gas is used);
- Correcting other problems that may result from disinfection (e.g.: elevated DBP levels; corrosion; color, odor, and taste problems; problems with other regulated contaminants);
- Training operators;
- Providing additional operator time to monitor and maintain disinfection equipment;

- Requiring a minimum contact time for disinfectants, which may require the construction of additional storage tanks or the installation of oversized piping in the discharge lines from the disinfection treatment units; and
- Requiring disinfectant residuals in the distribution system.

EPA should also consider (and quantify to the extent possible) health risks and benefits that may result from the use of disinfectants, including those associated with elevated levels of other contaminants and with the storage and use of hazardous chemicals.

The Panel recommends allowing flexibility in the selection of disinfection treatment technologies, including chlorine based disinfection, ultraviolet disinfection, and ozone disinfection. EPA should permit the use of all technologies which are capable of meeting statutory requirements. Furthermore, EPA should be as flexible as possible in specifying requirements for the use of particular technologies (e.g., contact time and residual for disinfection) consistent with providing adequate protection of public health.

The Panel also notes the comments of many SERs that maintenance needs are highly system specific. The Panel suggests that EPA give flexibility to states and/or systems to determine appropriate maintenance and cross connection control activities and schedules. To the extent practicable, maintenance requirements should be performance based (e.g., "maintain the integrity of the wellhead to prevent contamination") rather than prescriptive regarding specific activities.

7.3 Interaction with Other Federal Rules

The Panel suggests using the Source Water Assessment Program's (SWAP) susceptibility determination as a component of the vulnerability assessment process. SWAP assessments could provide much of the data needed to evaluate the risk of fecal contamination. EPA should encourage States and systems to utilize SWAP data to the extent possible when assessing system vulnerability, in order to avoid duplicative data collection.

The Panel also recommends consideration of the monitoring already being performed by systems to comply with the TCR. Any monitoring required under the GWR should complement TCR monitoring. The Panel understands that EPA may consider changes to the frequency and location of samples required under the TCR, and notes that several SERs indicated that a modest increase in coliform sampling requirements would not be unduly burdensome. The Panel recommends relying as much as possible on the TCR's analytical methods as indicators of fecal contamination in ground water.

The Panel also notes the concerns of several SERs that disinfection could lead to increases in other contaminants of concern, depending on the specific characteristics of the source water and distribution system. Contaminants mentioned in this context include disinfection byproducts, lead and copper, and arsenic, but there may also be others. In developing regulations or guidance relating to disinfection, EPA should carefully consider these effects and allow states and systems

adequate flexibility to avoid or mitigate them in the most cost-effective manner. They should also be appropriately accounted for in the Regulatory Impact Analysis for the GWR.

7.4 Regulatory Alternatives

Because this outreach was conducted at an early stage in the rule development process, before there was a draft proposal for SERs to react to, few comments were received containing specific regulatory alternatives. In general, SERs supported the multi-barrier approach, while at the same time commenting on various aspects of it that might be burdensome or otherwise problematic for them. These comments are discussed throughout the report.

Several SERs suggested tailoring compliance requirements to system size, in recognition of the limited resources available to small systems. The Panel recommends that EPA consider such an approach. For example, the burden upon the smallest systems (e.g. systems serving 500 or less) could be decreased by reducing the required monitoring frequency, or the minimum required frequency of sanitary surveys.

Another suggestion was to combine the vulnerability assessment and sanitary survey into a single requirement. This requirement could be tiered, with a relatively low-effort screening assessment used to eliminate low-risk systems, followed by more data-intensive assessments for systems that might be at risk. Systems that find no contamination over a period of years may be considered low-risk. Some variation on this approach could significantly reduce the record-gathering burden on small systems and the assessment burden on primacy states, and the Panel recommends that EPA give it consideration. One option might be to allow a streamlined, combined vulnerability assessment and sanitary survey for very small systems, which are least likely to have complete records, while requiring more comprehensive (and perhaps separate) vulnerability assessments and sanitary surveys for larger systems.

7.5 Other Comments

The Panel notes that EPA received a number of comments indicating concern that the data presented at the March SER informational meeting on viral and bacterial occurrence in ground water was not representative of national conditions. The range in the occurrence rate is reflective of the different testing methods used in the different studies and the sensitivity of particular methods. EPA would like to clarify that these figures were not intended to represent a nationally applicable occurrence rate for fecal contamination. The studies underlying those numbers were conducted at different times and for different purposes. Some emphasized high-risk wells, and some examined a variety of wells, including many that were not expected to present high risk. Therefore, the 600 wells included in these studies do not represent a statistically random sample of ground water wells.

With regard to national data on TCR violations, EPA presented data at the March Meeting aggregated from the Safe Drinking Water Information System (SDWIS) indicating that, from 1993 to 1997, 15% of ground water systems accounted for 90% of all violations of the

MCL for the TCR. After reviewing this information, commenters requested data on an annual basis for violations of both the TCR and fecal coliform MCLs. For fiscal year 1996, the total number of ground water systems with violations of the MCL for TCR was 8,281 (5.2%) with 1,879 (1.2%) systems having violations of the MCL for fecal coliform. EPA is concerned that fecal coliform data are not necessarily a good indicator of national microbial pathogen occurrence, both because of a low frequency of sampling for many systems and because neither fecal nor coliform tests can identify the presence or absence of virus. However, these data are clearly relevant to the rule development process and will be included with the other information that EPA considers with stakeholders in developing the GWR proposal.

One of the points that EPA emphasized in its fact sheet distributed to SERs on Microbial Occurrence is the question of how all these data should be interpreted and used in developing the GWR. EPA believes these data raise an important concern that current microbial monitoring approaches may significantly understate the occurrence of ground water contamination from fecal viruses and fecal bacteria. This is particularly the case for viral contamination since there is no current monitoring requirement to assess the occurrence of viral pathogens. This information indicates that both viral and bacterial contamination can and do occur in underground sources of drinking water, though the degree and extent of this contamination is not fully known.

EPA believes that most ground water supplies are safe. However, EPA has a statutory obligation to protect public health by regulating contaminants of concern for which there is a meaningful opportunity for health risk reduction. Taking into account all the data currently available to the Agency, EPA believes that fecal contamination of ground water warrants such regulation.

OMB and SBA shared the concern of some commenters that the study data presented by EPA may significantly overstate the extent of ground water fecal contamination nationally. OMB and SBA thus recommend that in evaluating the usefulness of these data for estimating national occurrence rates, the agency give careful consideration to the well selection criteria and methodologies used in the individual studies. Studies in which wells were selected because of a known risk of contamination would not be appropriate for estimating national occurrence. EPA should also be alert to inadvertent sources of bias in the occurrence rate estimates produced by these studies. For example, if all of the wells in a study are currently disinfecting, this may be an indication that many of them previously detected contamination and are therefore more likely to be high risk. Conversely, if well operators volunteered for participation in a study, there may have been a natural self selection process in which those most likely to have contamination problems would be least likely to volunteer. Finally, if a study included a mix of targeted high risk wells along with a more representative sample, occurrence rate estimates should only be based on the subset of wells considered to be representative.

EPA recognizes and understands the concern that available study data may overstate the extent of ground water contamination. OGWDW notes, however, that it has received input from a number of virologists and microbiologists suggesting that available information may also possibly understate the extent of ground water contamination for several reasons. Much of the current occurrence data is based on single grab samples; the analytical methods used are sensitive only to a subset of virus families associated with water-borne diseases; and, as noted above, there may have been significant self-selection among system operators volunteering to participate in these studies. In light of these different perspectives, EPA continues to stress that a central issue facing all participants and stakeholders in this rulemaking is how to interpret available information. EPA agrees that the Ground Water Rule must be based on the best available data, good science, and sound analysis. OGWDW will continue to evaluate existing information, gather new information from studies not yet complete, and consult with all stakeholders on the nature and scope of the problem. As noted above, the studies EPA has under examination were conducted at different times and for different reasons; each requires careful analysis to ensure its proper use and to avoid misuse.

APPENDIX A

GROUND WATER DISINFECTION RULE SMALL ENTITY REPRESENTATIVES (SERs) MEETING SUMMARY

Date: March 4, 1998

Location: USEPA / Washington, DC / WIC Rm #4

Time: 9:00 am- 5:00 pm

Note: This summary is intended to supplement the presentation material distributed by EPA either during or in advance of the Small Entity Representative Meeting. This summary is not meant to represent the minutes of the meeting. The summary follows the general chronology of the meeting.

Speaker: Tom Kelly

Introductions:

Mr. Kelly indicated that EPA believes that the Small Entity Representatives (SERs) understand their industry and appreciates the time the SERs are able to contribute to the

Office of Ground Water and Drinking Water (OGWDW). The Small Business Regulatory Enforcement Fairness Act (SBREFA) dictates that EPA must contact small entities defined as small businesses, small non-profits, and small communities. The goal of the EPA is to write a “smart” rule which provides maximum results at minimum cost

SBREFA Background:

The Regulatory Flexibility Act (RFA) was passed in 1980. The rule states that agencies must gather information on the potential economic impacts a proposed rule may have on small businesses. The agency must then publish an initial analysis of their findings called the Regulatory Flexibility Analysis. In 1996 Congress amended the RFA to include SBREFA. SBREFA requires agencies to convene a federal panel to review the potential impacts that a proposed regulation may have on small entities. The federal panel includes the representatives of the Office of Management and Budget (OMB), Small Business Administration (SBA), and EPA. This panel will convene in approximately one month to review the comments provided by the participants of today’s meeting. This federal panel will prepare a report which will be put into public record at the time of the regulation’s proposal. The purpose of today’s meeting is to get us “grounded” in the Safe Drinking Water Act and the Ground Water Disinfection Rule and SDWA process and to hear the input of the SERs. SERs are to participate as individuals rather than as group representatives. An offer by OGWDW is extended to the SERs to speak to OGWDW one on one at any time. The OGWDW is defining “small” as a public drinking water system serving 10,000 people or less.

Issues and Responses:

- A request was made to lay out the chronology of the process thus far. EPA responded with the following chronology of the SBREFA process:
 - A package of background information was sent to the SERs prior to the SERs meeting.
 - The SERs meeting held March 4, 1998.
 - OGWDW will send out a letter thanking the SERs for their participation and providing a summary of the issues raised at the meeting.
 - Comments need to be returned to the OGWDW, within three weeks, by the SERs addressing the following four RFA questions:
 1. What are the types and numbers of entities which will be

- impacted by the rule?
 - 2. What will be the burden on the small entities (i.e. paperwork, personnel training)?
 - 3. What other existing rules may overlap or conflict with the GWDR?
 - 4. What alternatives should be considered by the agency?
- Notes from today's meeting and the comments from the SERs will be converted into a summary and given to the SERs and Federal Review Panel.
 - The Federal Review Panel will convene approximately April 15, 1998.
 - The Federal Review Panel will meet with the SERs through a conference call and ask for further comments sometime during mid April (time and date to be determined).
 - The panel will issue their report approximately June 15, 1998.
 - The National Proposed Rule Making (NPRM) will be published in March, 1999, and the 60 day public comment period will begin.

Speaker: Bill Diamond

Mr. Diamond presented an overview of the Safe Drinking Water Act and distributed a packet summarizing his presentation (*Safe Drinking Water Act Overview*).

Issues and Responses:

- It was asked if the economic analysis is looking at different small system size categories. EPA responded that there are analysis is being done on data for several size categories of systems serving less than 10,000. EPA has data which goes down to the statutory limit of 25 people. EPA realizes that important differences in size exist even in systems serving below 10,000 people. If any of the SERs have data on specific population size (i.e. 500) please provide this information to the OGWDW.
- A question was raised if EPA plans on giving small systems as much advance time as is possible regarding the requirements of their regulations so that systems can plan any upcoming modifications to their systems to be consistent with expected requirements. For example, small systems may

want to bring together their wells into one point of entry to reduce the cost of treatment. EPA stated that they will perform outreach to small systems, starting with the SBREFA process, and will also prepare compliance guidance documents for all systems subject to the requirements.

Speaker: Sylvia Malm

Ms. Malm presented the status of the proposed Radon Rule and distributed a briefing package and questionnaire (*Radon in Drinking Water - Presentation to Small Entity Representatives*) to be filled out by the SERs. Jennifer Wu will be the lead EPA staff person for the SBREFA portion of the proposed Radon Rule. The risk/cost analysis is required by statute and it is on a different schedule than the rule.

Issues and Responses:

- It was asked whether there has been an establishment of a risk factor of radon in water and EPA responded that they are working to establish a risk factor based on the findings in the National Academy of Sciences Risk Assessment.
- SERs asked whether EPA anticipates different requirements for systems based on size and EPA stated it is exploring the option of having different requirements for systems based on size.
- Comments were made by SERs regarding inadequate resources of States to implement and oversee flexible options in regulations, leading to small systems being unable to take advantage of these options. EPA responded that this is a known concern at the federal and state level. EPA indicated they were open to ideas from the SERs on how to make the flexibility in regulations more available to small systems.

Speaker: Irene Dooley

Ms. Dooley presented background on the Arsenic Rule accompanied by a handout (untitled).

Issues and Responses:

- It was asked if the 50 ug/L MCL for arsenic is still being used and EPA confirmed that the 50 ug/L MCL will continue to be used for 8 more years.

Speaker: Steve Potts

Mr. Potts presented information regarding both the Long Term Enhanced Surface Water Treatment Rule and the Filter Backwash Recycling Rule.

Speaker: Tom Kelly

The schedule for two future conference calls with the SERS was established. On April 28, 1998 at 9:30 am EST a conference call will be held to discuss the Long Term Enhanced Surface Water Treatment Rule and Filter Backwash Rule. On May 11, 1998 at 1:00 pm EST a conference call will be held to discuss the Radon Rule.

Speaker: Ephraim King

Mr. King presented the statutory background of the rule accompanied by a handout (*Statutory Background*) of his presentation. Mr. King stressed the point that the EPA is not requiring disinfection, but establishing criteria to figure out when disinfection is deemed necessary. The goal of the EPA is to protect public health and to figure out the best means to go about it. Please attempt to identify the most problematic issues and include comments on what information is viewed as relevant by the SERs.

Issues and Responses:

- Concern was expressed regarding the notion of vulnerability assessments, sanitary surveys, and monitoring being called barriers. EPA acknowledged that vulnerability assessments, sanitary surveys, and monitoring are not necessarily physical barriers to contamination, but that they could act to impede microbial contamination from reaching the drinking water. Active preventive steps are in fact barriers, however OGWDW doesn't want to get hung up on semantics so the terminology is not set in stone.
- Questions arose regarding the accuracy of the Center for Disease Control (CDC) data and EPA explained that the CDC depends on state officials to report the outbreak. CDC percentages are conservative because outbreaks are hard to identify, due to diagnosis difficulties. The OGWDW acknowledges the data are under-reported, but points out that the data is indicative of potential problems with microbial contamination of drinking water.

- At the December ground water stakeholder’s meeting certain States brought up issues regarding fecal contamination that may not have pertained to them, and it was asked whether the EPA had reviewed data provided by these States. EPA indicated that they had reviewed the information submitted by the States and found it to be consistent with their previous data. EPA is willing to review any new data which the states provide.
- The issue of outbreaks being attributable to bad well construction was raised. EPA stated they will follow up, and determine if information regarding the number of outbreaks attributable to bad well construction is available.
- A question was raised about whether a comparison of TCR MCL violations and data on disinfection requirements on a state by state basis has been done. EPA responded that this had been performed, and there seems to be a high correlation between disinfection and low TCR MCL violation rate.
- It was asked whether the goals of Ground Water Disinfection Rule come from statutory regulations and if the terminology “provide consistent level of public health protection” really means “provide minimal level of public health protection.” EPA responded that any state has inherent authority to provide a higher level of protection if it so chooses. The attempt is to create a regulation which permits variation in approaches between States, with a base minimum of public health protection is maintained.
- One commentor asked if EPA looked at variations in state practices to determine vulnerability of ground water systems to contamination, or if the evaluation of vulnerability assessments was made on a national level. EPA responded that when vulnerability was evaluated not all state practices were represented. EPA is trying to identify the states with a higher success rate. If any of the SERs are aware of states with good programs or live in states with good programs please let OGWDW know.
- A commentor asked if wells which historically have had no contamination would be required to do a vulnerability assessment. EPA indicated that if a well is monitored regularly and there have been no problems then there may not be a need for vulnerability assessments. This is still one of the points the OGWDW needs to address.

Speaker: Erin Flanagan

Ms. Flanagan's presentation discussed Sanitary Surveys and Distribution System Protection and was accompanied by handouts (*System Integrity - Sanitary Survey and Distribution System Protection*) and followed the general outline in the material presented to the SERs prior to the meeting (*Information for SERs Regarding the Ground Water Disinfection Rule*).

Issues and Responses:

- A commentor asked who would accompany the inspector to do the sanitary survey and whether there would be any self-inspection. EPA assumes that the State inspector will be accompanied by a staff person from the drinking water system. A system can self-inspect in advance, but the sanitary survey would have to be performed by a State inspector or an approved agent.
- A commentor indicated that most states already require sanitary surveys and asked if the estimate of the burden was to be made for the incremental increase of work required to if it would include the already required activity to comply with the state law. EPA responded that only the increase in burden associated with the rule would be estimated. The main goal of this process is to identify burden reduction opportunities for small entities.
- A comment was made that in Arizona strict withdrawal limits exist as a result of the Colorado River Pact. Fines can be imposed for wasting water. Flushing will be considered wasting water under the Colorado River Pact. Utilities are trying to develop justification for why flushing is necessary, so that utilities are not fined, however currently most systems are not performing flushing in Arizona. EPA stated that SBREFA is designed to highlight areas of conflict in federal regulations..
- An inquiry was made about the reasoning behind including distribution system maintenance requirements in the context of the GWDR. EPA responded that the distribution and maintenance issues are being discussed in context of GWDR because SDWA provides EPA with authority to address all sources of microbial contamination.
- A comment made by a SER regarded compartmentalization of the rule to make the rule more manageable. The SER questioned whether the

discussion was getting to broad and indicated the some coordination needs to be assured between existing rules and rules under-development.

- Concerns were expressed regarding requirements which might make systems have to implement well head protection measures such as zoning ordinances or ground water protection zones. Private utilities or non-community systems have no direct connection to the local governments which pass these ordinances, therefore it will be very difficult for them to implement.
- Comments were made about whether EPA should specify a specific frequency of flushing for water systems or if goals should be prescribed such as flushing as necessary to remove accumulated sediments.
- Small systems and flushing was addressed by SERs. Some small systems have found they achieve flushing velocities in their systems, with peak daily demands, and special flushing is not required. Small systems, such as campgrounds, do not have special valves for flushing and due to the small size of the system they are flushed every time a tap is opened.

Speaker: Tracy Bone

The first part of Ms. Bone's presentation focused on monitoring and was accompanied by handouts (*Monitoring*). Monitoring is the primary screening tool to determine if water is contaminated. The second part of Ms. Bone's presentation concerned disinfection and was also accompanied by handouts (*Disinfection*). Ms. Bone stressed that OGWDW views disinfection as a last resort.

Issues and Responses:

- A SER inquired whether a review of nitrite analysis has been done and EPA stated that OGWDW is going back to review nitrite data now.
- SERs asked if the collection of samples and transportation to the laboratory could be done by the systems, but the cost of testing and analysis be borne by the states or EPA.
- Concerns were raised by the SERs about the cost of installing disinfection equipment and for installing the storage required to achieve a contact time. It was stated that a contact time is critical to insure that disinfection is

effective. EPA hopes that in most cases other BMPs and barriers will prevent contamination and eliminate the need for storage tanks. OGWDW will only require disinfection “as necessary.” It is the last resort, but may be necessary.

- The question of whether states should be allowed to require mandatory disinfection was raised. EPA indicated that the rule will be structured to provide states with flexibility in achieving the goal of preventing microbial contamination in ground water systems. EPA stated that they can’t dictate to states to make requirements less stringent.
- Sampling of raw versus treated water was discussed. EPA indicated that raw water samples at the well head would probably be required since the TCR will monitor water in the distribution system.
- Concern was expressed that testing for viruses is very expensive and there are a limitless number of viruses to test. EPA recognizes that virus testing is expensive, however testing does not have to encompass a huge range, testing for indicators of viral contamination may be sufficient.
- Concerns were voiced by SERs regarding the use of hazardous material like chlorine and the possibility that some chemical distributors will not deliver it to small entities. Questions were asked how small entities would be able to deal with the logistics of this and manage a hazardous materials.
- A SER was interested whether the wells determined to be vulnerable would automatically be required to disinfect. EPA assured the group that the vulnerability analysis will not automatically require disinfection.

General Discussion and Comment in Final Session

- The SERs were asked to put themselves in the place of EPA and provide common sense approaches to protecting public health. They were asked to think broadly since the rule will apply across the Nation.
- The SERS were asked to look at the EPA occurrence and outbreak data and ask themselves the following questions:
 - How often does this happen?

- How big a problem is it?
 - What data is available for you to analyze?
 - What are the current rules on these topics?
 - What do you have to do if you have a problem?
 - What are the differences between primacy and non-primacy states?
-
- The SERs were reminded that EPA was asking them a number of questions contained in the *Information for Small Entity Representatives Regarding the Ground Water Disinfection Rule* package that was provided to the SERs prior to the meeting. The questions fell into the following general areas:
 - What are the types and numbers of entities which will be impacted by the rule?
 - What will be the burden on the small entities (i.e. paperwork, personnel training)?
 - What other existing rules may overlap or conflict with the GWDR?
 - What alternatives should be considered by the agency?

Please send your comments to Erin Flanagan by March 25, 1998. Ms. Flanagan's e-mail address is Flanagan.erin@epamail.epa.gov. Her fax number is (202) 401-6135.

APPENDIX B

Summary of Panel Discussions with the Small Entity Representatives May 18, 1998

The Small Entity Representatives (SERs) who participated in the conference call were: Bob Beaver, principal, Adams Friendship Area Schools in Adams, Wisconsin; Greg Boucs, Utility Superintendent, Valpariso, Nebraska; Cathy Ekendahl, Innkeeper, Dodgeville, Wisconsin; JD Hightower, City Planner, Escalon, California; Jesse Royall, Vice President, Sydnor Hydrodynamics, Richmond, Virginia; and Gary Walter, Tuolumne Utilities District, California. Steve Via of the American Water Works Association listened in.

Representatives from EPA were Tom Kelly (OPPE), Bill Diamond (OW), Ephraim King (OW), Erin Flanagan (EPA) and Stuart Miles- McLean (OPPE). Representatives from other government agencies include Jim Laity (OMB), Kevin Bromberg (SBA), and Jere Glover (SBA) who participated via teleconference.

Introduction from Tom Kelly:

Mr. Kelly described the Small Business Advocacy Review (SBAR) Panels responsibilities and introduced the other Federal Agencies involved. To complete their work, the Panel must complete its own outreach to the SERs. The comments received from the SERs after the March meeting and those received now will be considered by the Panel as they make their recommendations, by EPA as it develops the rule, and will be available for public review in the Rule Docket once the GWR goes to proposal. Because of the short time frame in which the Panel must complete its work, the SERs were encouraged to provide any additional written comments they may have to the Panel by Friday, May 22. All comments received before this date will be fully considered by the Panel in preparing its report. Comments received after May 22 will be included in the public record and will be considered by the Panel to the extent that time permits.

Mr. Kelly noted that an earlier concern regarding the status of four of the original SERs had now been resolved. After several discussions with EPA's Office of General Council, the Panel determined that individuals who owned or operated multiple small systems (i.e., systems serving 10,000 or fewer people) were eligible to participate even if the total number of people served by all of their systems combined exceeded 10,000. The Panel determined that, in light of the alternative definition of small business EPA intends to employ, the proper unit of analysis is the system, since the compliance concerns of small systems would generally be the same regardless of their ownership status. The Panel thus concluded that three of the four SERs in question are eligible to participate, because they

operate one or more systems serving fewer than 10,000 people, and apologized for any inconvenience its deliberations on the issue may have caused. The fourth SER operates a single system serving 30,000 people and is therefore not eligible to participate.

Each of the SERs present was given 10 minutes to provide the Panel with feedback on the information provided by the Panel on the GWR. The following summary outlines the issues discussed during the call. The summary is presented by issue rather than in chronological order. A list of materials provided to the SERs is in Attachment A.

It was noted that the SERs appreciated the change in the name of the rule from the Ground Water Disinfection Rule to the Ground Water Rule as the new name was more reflective of their understanding of the purpose of the rule.

A comment was made that the percentage of Total Coliform Rule (TCR) Maximum Contaminant Level (MCL) violations attributable to ground water systems which was cited by EPA in its outreach meeting to the SERs is proportional to the number of ground water systems to surface water systems generally and therefore not necessarily indicative of a significant ground water contamination problem. These data, from EPA's Safe Drinking Water Information System (SDWIS), indicate that 90% of TCR MCL violations occur in ground water systems. Fifteen percent of the ground water systems account for the majority of these violations.

One of the SERs commented that he believed the occurrence rates originally cited by EPA were too high; particularly since it is his belief that the majority of contamination problems originate in the distribution system. Jim Laity from OMB asked whether the new paragraph recently provided to the SERs (see May 14, 1998 communication from the Panel to the SERs) had helped clarify any confusion regarding the occurrence data that EPA had presented at the previous meeting. The SER indicated that the information was clear as presented and inquired whether it would be possible to break down the TCR MCL violations according to the source of contamination. EPA staff indicated that they would check into it.

One of the SERs inquired whether the real issue wasn't the 15% of systems that are responsible for the majority of the violations, rather than the fact that 90% of violations were at ground water systems. EPA agreed that these systems are of particular concern, but indicated that it is also concerned that there may be many vulnerable systems that are currently not reporting violations because of the low frequency of monitoring and/or the fact that total coliform is an imperfect indicator of fecal contamination, particularly by virus.

EPA noted that it has been focusing on how to identify the high risk wells.

EPA was asked why it is concerned that TCR may underestimate the extent of *fecal* contamination.

Ephraim King, of EPA, indicated that TCR may not be an adequate indicator of fecal contamination because:

1. the frequency of sampling may not be sufficient to identify a contamination problem (some systems only sample once per quarter),
2. the TCR method does not indicate the presence of virus, and
3. approximately one-third of systems currently maintain a disinfectant residual, which may mask contamination of the source water.

Several of the SERs indicated that proper well construction, siting, and maintenance of the well were critical in maintaining water quality. It should not be difficult to locate wells with structural defects with inspections. One SER indicated that wells are routinely serviced every 5 to 7 years, and that video monitoring of interal well conditions is generally available at reasonable cost. It was suggested that only those systems with defects identified by inspections be targeted with increased monitoring. This kind of targeting would prevent the rule from being “overly protective” given the magnitude of the problem. One SER indicated that although routine well inspection (e.g., checking for proper venting and cracked service heads) is fairly simple and could be performed by many small system operators, he was concerned about potential liability if inspections were not conducted by fully qualified engineers.

It was noted by EPA staff that in a study conducted by Morteza Abbaszadegan of the American Water Works Service Company funded jointly by the American Water Works Association Research Foundation (AWWARF) and EPA there was a 6.9% occurrence rate for infective virus by cell culture. Kevin Bromberg, of SBA, expressed concern with the representativeness of this figure, given that of the 250 wells analyzed in the study all but 7 currently disinfect. Wouldn't it be more appropriate to include a more varied mix of disinfected and undisinfected wells? EPA believes this mix of system provides valuable information.

EPA responded that most of the wells in the study are owned by the American Water Works Service Company and the company disinfects all supplies as a matter of policy. However, the samples in the study were taken prior to any disinfection activities. The wells in the study are widely distributed geographically and were chosen in part because they represent a variety of hydrogeologic settings. EPA believes thus believes the study results have wide applicability.

One SER indicated that the current required frequency of TC samples (once per year for that system) was not adequate to determine the extent of potential contamination. Most of the SERs agreed that the current required frequency could be increased without imposing significant extra burden because the sampling routine is familiar to the operators

and the laboratory analysis is not very expensive. There was no agreement, however, on how many additional samples should be taken. The number of samples taken by the SERs representing community systems ranged from a high of eight times per month to a low of once per month. One SER noted that having to take samples four to five times more frequently could be a problem because of the time involved. It was suggested that if the additional monitoring could be confined to problem wells, identified through additional surveillance activities, the additional monitoring would be more manageable. Conversely, another SER from a different state with stricter monitoring requirements indicated that taking samples once a week was appropriate. The SERs generally agreed that monitoring frequencies should be based on past history and/or vulnerability with less frequent monitoring for low risk systems and those with no history of TCR violations.

Small System Concerns:

The SERs were generally concerned about the possibility of requiring of virus testing. Because of the current high cost, the lack of available labs to perform viral analysis, and the lack of operator training in how to conduct such testing. One SER indicated that two coliphage tests per year would be a burden for small systems. The SERs indicated that this would be especially true for the small non-community water systems, both transient and non-transient.

There was some discussion regarding whether the virus testing was worth the additional expense. One SER indicated that it seemed like EPA was basing the rule on one study and it appeared that the conclusions were speculative. This SER questioned whether there is a benefit to virus testing when TC may be an adequate indicator. If the cost of the virus monitoring were small then the benefits could outweigh the costs. However, the current cost of virus monitoring would be a significant burden for small systems. For non-community systems, which are generally small and lack resources, spending \$50,000 to monitor for viruses (once each week) would put the system out of business. Even \$2000 (for semi-annual monitoring) is likely to be difficult for these systems. It was emphasized that before imposing any such requirement EPA should be very sure the benefits of the viral monitoring would justify these costs and have the data to support this conclusion.

Kevin Bromberg suggested that a statement of principle articulated by the Association of State Drinking Water Agencies (ASDWA) be considered by the Panel. The statement reads: "Viral monitoring will be incorporated when a reliable, economical, method is available and when it is shown to be an appropriate indicator for public health protection (e.g., a \$50 coliphage test)." Mr. Bromberg asked the SERs if a statement such as this would address their concerns? One SER indicated that it would alleviate most of his concerns.

It was noted that the many of the small systems may not have adequate well data as

described earlier by EPA. It was suggested that this alone should not put a system into high risk. One SER also suggested that any “checklist” approach needs to be based on a manageable number of variables; otherwise, too many systems may be designated as “vulnerable.”

In Virginia, while the State does not require disinfection, systems are required to sample their source waters if they use either chlorination or green sand filtration. The data from these samples indicate that in general the disinfection is not masking source water contamination.

It was suggested that EPA make an effort to take advantage of existing authorities local governments have to protect water quality, for example, local wellhead protection programs. It was also noted however, that many small systems, because they are not part of the local government, do not have the ability to work as closely with local building inspectors in the siting, design, and construction of their systems. As a result, the system operator may not be in a position to ensure that the system is properly engineered to maintain water quality (e.g., has appropriate cross connection controls). One SER suggested that inadequate/fluctuating pressure should not be used as an indicator of high risk for small systems.

EPA noted that based on stakeholder input, information received from SERs and suggestions from the SBAR Panel, it is not likely to include cross connection controls or consistent pressure as necessary requirements of the GWR. Several SERs also expressed concern with the focus on 150 foot setbacks in EPA’s background materials. One noted that his state (VA) only requires a 50 foot setback. He also noted that small private operators have little control over land use on neighboring property and often could not afford to own enough land (or it might not even be available for older wells) to ensure a 150 foot setback. He indicated his belief that site-specific setbacks based on hydrogeologic conditions were more appropriate than uniform setback requirements. Another SER noted that his state (CA) requires a 100 foot setback and indicated his belief that this was adequate as long as the well didn’t test positive for coliform. One SER also indicated that whatever rule EPA ultimately developed needed to be workable, to build on existing practices (such as the uniform plumbing code), and to recognize that most municipalities generate little revenue from providing water, so financing will be a significant issue. One SER also expressed concern with the high cost of building holding tanks if a minimum contact time for disinfection were required.

Bill Diamond of EPA, indicated that one particular concern of EPA’s was that deficiencies identified through sanitary surveys or vulnerability assessments be corrected. States must have the authority to require this. One SER indicated that particularly for older wells defects need to be prioritized based on their potential for contamination. He believed that not all such “defects” need to be remedied and it may be impractical to do so for older

wells. Ephraim King indicated that EPA was willing to give some flexibility to states to determine what is a “significant” defect and what corrective action was needed, but it must also ensure at least a uniform minimum level of protection.

Miscellaneous questions:

One of the SERs asked why are we concerned about samples anywhere but at the tap? EPA indicated that some States preferred to eliminate contamination at the source rather than relying on disinfection. This is particularly important as a backstop for situations where the disinfection system breaks down.

A SER asked if the Centers for Disease Control has had an opportunity to review and comment on the microorganism of concern in the GWR. It was noted that CDC does not get involved until there is an outbreak.

EPA was asked whether coliphage monitoring would eliminate the TCR requirements? EPA indicated that this was not likely because the TCR is a good indicator of distribution system integrity.

A SER asked if chlorine is the only disinfectant available to kill virus? No. All the standard disinfection technologies (including ozonation, and ultraviolet disinfection) will kill virus.

ATTACHMENT A

List of Materials Provided to Small Entity Representatives on the GWR and the Regulatory Approaches Table: Possible Mandatory Components for GWR

The following materials were provided to all SERs prior to the meeting on March 4, 1998:

1. Safe Drinking Water Act Guide to Small Entity Representatives, including *Water on Tap: A Consumers Guide to the Nation's Drinking Water* (EPA 815-K-97-002)
2. Information for Small Entity Representatives Regarding the Ground Water Disinfection Rule
3. Information Package from December 18-19, 1997 Stakeholders Meeting in Washington, DC
4. Draft Agenda for March 4, 1998 Meeting

The following materials were provided to SERs on March 25, 1998:

5. Ground Water Disinfection Rule Small Entity Representatives (SERs) Meeting Summary
6. Small Entity Representatives Meeting Participants List
7. Summary of Available Data
8. Radon in Drinking Water - Background and New Requirements for Radon

The following materials were provided to the SERs on request:

- a. Summary of Occurrence Data
- b. Application of PCR Technologies for Virus Detection in Ground Water
- c. Identification of Ground Water Wells at Risk to Fecal Contamination
- d. Ground Water Microbial Occurrence, Interim Report
- e. New England Ground Water Viral Study, Study Plan
- f. Missouri Ground Water Studies, Project Proposal
- g. Missouri Ground Water alluvial Study, Diskette
- h. Testing of Ground Water and Surface Water for Enteric Pathogens and Indicator Organisms, Study Proposal

ATTACHMENT A (continued)

List of Materials Provided to Small Entity Representatives on the GWR and the Regulatory Approaches Table: Possible Mandatory Components for GWR

- I. Viruses and Drug Resistant Bacteria in Ground Water in South East Minnesota, Final Report
- j. USGS Aquifer Study, Draft Summary Report
- k. General Accounting Office Report (GAO/RCED-97-123)
- l. GWDR Vulnerability Assessment Study, Draft Final Report
- m. Virus Sampling and Microbial Analysis at the US-Mexico Border, Interim Report
- n. Water Quality of Domestic Wells in Dona Ana County, New Mexico, Final Report

ATTACHMENT B

Small Entity Representative's Written Comments

Attached is a copy of each written comment submitted to OGWDW. The comments are provided in the following order:

Bob Beaver
Greg Bouc
Ken Bruzelius
Bob Campbell
Cathy Ekendahl
Doug Evans
Paul Gardner
Shirley Glynn
L. E. Godwin, III
Sandy Graham
J.D. Hightower
Jonathan Hirst and Wayne Weikel
Michael Knox
Paul Noran
Alan Ordway
Ron Payne
Albert Ricksecker
Jesse Royall

Jim Sheldon
Rafael Terrero
Paul Torok
Gary Walter