

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

REGION 8

Public Water System Supervision Program

2007 Primacy Review

For the

State of Montana



August 15, 2008

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EXECUTIVE SUMMARY

The Drinking Water Program is unique among environmental programs. It is the only environmental program that oversees facilities that produce and distribute an essential nutrient for the human body—drinking water. Any failure in these facilities can lead to harmful reproductive and developmental effects, chronic illness, or acute illness. With these potentially serious consequences, it is vitally important that the Public Water System Supervision Program implemented by the Montana Department of Environmental Quality obtain and effectively deploy sufficient resources to enable the program to be strongly proactive to prevent water system failures—not simply react to them once public health has been compromised.

In 2002 and 2007 EPA conducted primacy oversight evaluations of the Montana Public Water System Supervision Program. Each time EPA found similar deficiencies.

EPA appreciates these steps taken by the Montana Department of Environmental Quality to improve its Public Water System Supervision Program:

1. Improved its data systems and recordkeeping methods
2. Upgraded the quality of sanitary surveys
3. Created a position devoted to the challenging process of adopting new regulations.

Despite the efforts of competent management and enthusiastic professional staff, EPA has these significant concerns:

1. The Public Water System Supervision Program remains significantly understaffed and inadequately funded.
 - a. Based upon a national workload model the staffing for Rule Specialists is 21 work years short of minimum levels.
 - b. Extraordinarily high turnover of critical staff has created gaps in the implementation of the National Primary Drinking Water Regulations.
 - c. Since 1992 Montana DEQ has not received authority to increase the tap fees from public water systems and is falling behind in the resources necessary to finance an adequate program.
2. The programmatic gaps most critical to public health are those pertaining to implementation of the suite of Surface Water Treatment Rules.
 - a. Unfiltered surface water systems remain out of compliance after regulatory deadlines.
 - b. Some filtration avoidance decisions have not been made for public water systems serving unfiltered surface water.
 - c. Half the conventional surface water treatment plants may have failures in operations and/or design.

- d. Public water systems utilizing ground water under the influence of surface water as their sources remain out of compliance after the regulatory deadlines.
3. Montana Public Water System Supervision personnel informed EPA that its legal counsel believes the program lacks the authority to implement the requirements of the currently delegated Interim Enhanced Surface Water Treatment Rule with respect to sanitary surveys. This deficiency must be addressed as expeditiously as State law will allow.
4. Among its Region 8 peer group of States, Montana consistently has the highest number of public water systems out of compliance and unaddressed.

Since 2007 EPA has been implementing two new National Primary Drinking Water Rules, i.e., the Long Term 2 Enhanced Surface Water Treatment Rule and the Stage 2 Disinfectants/Disinfection Byproducts Rule, on behalf of the State. Also, EPA has provided on-site staff augmentation for implementation of the Total Coliform Rule and portions of the suite of Surface Water Treatment Rules.

At this time we request that Montana structure a proactive program in accordance with its delegation agreements. Without adequate staffing and funding Montana is not in a position to fully implement the Safe Drinking Water Act, thus, leaving the citizens of and visitors to Montana highly vulnerable to waterborne disease outbreaks due to unsafe drinking water. EPA understands that Montana will add 12 additional staff to its Public Water System Supervision Program to address many of the issues identified in this report. We commend the State for taking this substantial action toward building a proactive program protective of public health.

INTRODUCTION

In response to increasing concerns regarding the safety of drinking water served by public water systems (PWSs) in Montana, the Region 8 US EPA Drinking Water Program and the Montana Operations Office conducted an on-site review during the week of November 26, 2007. The review focused on implementation of the National Primary Drinking Water Regulations (NPDWRs), which is the largest component of a Public Water System Supervision (PWSS) Program. A description of a basic State PWSS Program is provided in Appendix 1. As authorized by EPA, the PWSS Program in Montana is implemented by the Montana Department of Environmental Quality (MDEQ). EPA's review consisted primarily of interviews with Rule Specialists and their managers. The findings from these interviews are described in detail in Appendix 2. EPA conducted a similar review in 2002, which is attached as Appendix 3. The earlier report predicted that MDEQ's capabilities to protect health vis-à-vis its PWSS Program would be significantly impaired if additional resources were not assigned to the implementation of NPDWRs becoming effective 2002 and later. Prior to August 2008, MDEQ had not secured increases in its resources for this set of 2002 and later rules. Three more drinking water regulations will become effective in 2009–2010. At this time EPA understands that MDEQ will increase its PWSS Program staff by 12 members in order to address the implementation problems identified in this report.

ACCOMPLISHMENTS

EPA commends MDEQ for a number of accomplishments achieved over the past years, despite an overwhelming workload and historic resource shortfalls. This speaks highly of the professionalism of Rule Specialists, other staff, and managers, and their dedication to protecting the quality of drinking water in the State of Montana. These accomplishments include:

1. **Data base administrator.** MDEQ recently hired a database administrator with expertise in Oracle™. This will allow the several databases within MDEQ to more efficiently communicate with each other. This will help Rule Specialists to access all available information in these data bases and allow quicker and more effective implementation of the regulations.
2. **Electronic file system.** Last year MDEQ initiated a program to scan documents related to each PWS, organize them, and make the electronic records available at each Rule Specialist's computer. This increases efficiency, because key public water system documents can be viewed while the operator is on the phone. This eliminates the time consuming need for a Rule Specialist to examine the hard copy records in a file room before responding to inquiries.
3. **Improved quality of surface water sanitary surveys.** The new Rule Specialist for surface water systems has advanced the quality of sanitary surveys from cursory visits to comprehensive reviews for the State's most complicated systems. These thorough investigations have discovered a significant number of issues that would have been otherwise undetected.

4. **Efficient utilization of the Safe Drinking Water Information System (SDWIS) for inorganic/organic rule implementation.** The Inorganic/Organic Rule Specialist developed advanced computer skills to be able to fully utilize the SDWIS and Access™ computer databases employed by MDEQ. The result has been improved efficiency in implementing all of the rules pertaining to inorganic and organic chemical contaminants. Her expertise helped other Rule Specialists implement their respective rules with more efficiency, as well.
5. **New rules manager.** MDEQ created a position that is devoted to the challenging process of adopting new regulations. This will ensure that MDEQ adopts three new regulations in a more efficient and timely manner.
6. **Lead education.** The new Lead and Copper Rule Specialist has made lead public education a high priority. She ensures that the 29 public water systems (PWSs) that have exceeded the lead action level during summer 2007 perform this vital public education activity.
7. **Competitive salaries.** To address turnover and vacancies within the past three years, MDEQ has increased salaries for professional staff, i.e., attorneys and engineers, from 80% of parity with market to 84-90%. Recently, environmental specialists received lump sum increases.

RESOURCES

The Drinking Water Program Resource Needs Self Assessment (ASDWA Model) is a comprehensive framework that is designed to estimate the resources needed to properly implement PWSS Programs in States of various sizes. It was developed as a collaborative effort between the Association of State Drinking Water Administrators and EPA. The ASDWA Model applies to groups of States identified as very small, small, medium, large and very large. With its 2100 PWSs Montana falls within the medium classification. Thus, the ASDWA Model suggests that as of 2007 Montana would have needed a total of 79 work years to fully implement its PWSS Program. MDEQ currently has a staff providing 34 work years—less than half the number recommended. Since EPA’s focus for this review is upon implementation performed by Rule Specialists, that portion of the ASDWA Model is of particular interest. The ASDWA Model indicates that a range from 29 to 54 work years is needed to implement all regulations, including the Ground Water Rule to become effective December 2009. By comparison, MDEQ only has 8.25 work years available. The following table shows the comparison between the ASDWA Model work year range and MDEQ staff assignments for each rule:

Regulation¹	Range of Estimated Work Years for Rule Specialists by the ASDWA Model	Actual Work Years for Rule Specialists Available to MDEQ
Total Coliform	5-7	1.75
Surface Water Treatment ²	7-13	1.75
Disinfection Byproducts ³	3-6	1.0
Inorganic/Organic ⁴	3.5-5.5	0.6
Lead and Copper	0.7-2	0.75
Radionuclides	0.8-2	0.4
Ground Water	8-16	1.0
Consumer Confidence	0.7-2	1.0
Totals	29-54	8.25

¹ Rule estimates include work years needed for public notification but not for sanitary surveys.

² Includes the Surface Water Treatment Rule, the Interim Enhanced Surface Water Treatment Rule, Long Term 1 Enhanced Surface Water Treatment Rule, Long Term 2 Enhanced Surface Water Treatment Rule and Filter Backwash Recycling Rule.

³ Includes the Stage 1 Disinfectants/Disinfection Byproducts Rule and Stage 2 Disinfectants/Disinfection Byproducts Rule.

⁴ Includes Phases II through V, which regulate inorganic chemicals (including nitrate and arsenic) and volatile organic and synthetic organic chemicals.

The chart indicates that MDEQ is nearly 21 work years short of even the minimum number of work years estimated by the ASDWA Model. EPA has applied the ASDWA Model to its direct implementation responsibilities in the State of Wyoming and in Indian country. From this experience EPA has found the model is a useful tool to estimate resources. However, the results it calculates may be somewhat inflated for two reasons. First, the model was largely developed in 1999-2000, prior to the promulgation of many regulations. Thus, the work years derived to implement the new rules were based upon best professional judgments as to the then unknown complexity, sampling, monitoring and reporting requirements. Second, each State has a unique set of governmental and management efficiencies, staff experience, geographical advantages, and pristine source waters, all of which provide opportunities for reasonable deviations in work years. Nevertheless, the wide difference between the ASDWA Model minimum requirements and MDEQ's staffing levels is of concern and suggests that MDEQ must boost its staff size to fully implement the NPDWRs. EPA recommends that MDEQ view the ASDWA Model as a tool to be employed with other benchmarks, such as other Region 8 State staffing levels. These are identified in Appendix 5.

In addition to staffing levels MDEQ has suffered historically high staff turnover and, due to vacancies, experienced significant periods when certain NPDWRs were not fully implemented. For example, within two months of EPA's primacy review, MDEQ lost three critical staff members. This required remaining staff stretching to cover the basic implementation work that had been conducted by the departed staff. EPA understands that, historically, it takes MDEQ six months to a year and a half to hire qualified new staff. During this period, rule implementation is impaired. A new Rule Specialist must learn the regulation, which can take more than a year, and try to restore management of a regulation that has been neglected. Turnover significantly increases training costs and consumes an excessive amount of management time in the hiring process. A high percentage

of inexperienced staff greatly impairs the PWSS Program's ability to perform efficiently and proactively.

In its 2002 report on Montana's PWSS Program (attached as Appendix 3), EPA noted similar problems with retention of staff, including high vacancy rate, low longevity, low salaries, and inability to attract qualified applicants. That report's findings are summarized as follows:

- Public Water and Subdivisions Bureau (PWSB) statistics, 2002 report
 - Technical position salaries 20% behind those of the private sector and nearby States;
 - 34 PWS section staff members left their positions within the most recent five-year period; 16 did so within the last three years;
 - Three or more simultaneous vacancies (14% of staff) more than 54% of the time (total of 25.5 work years);
 - Average staff member longevity 20 months; 16 months among engineering staff;
 - 12 staff members stayed with the program for less than one year; six of those 12 stayed less than six months.

- Enforcement Division statistics, 2002 report
 - More than one vacancy more than 54% of the time (total of seven work years);
 - Five of seven case officer positions turned over more than three times each since 1996;
 - Average staff member longevity 18 months;
 - Ten staff members stayed for less than one year; three of those stayed for three months or less.

- Remedies attempted
 - As a result of those findings, MDEQ undertook a number of steps to address these problems, including:
 - Implementing a market-based pay scale that boosted professional salaries to 84-90% of market and provided a lump sum increase to environmental specialists;
 - Increasing spending for staff from the State Revolving Fund Set-Aside;
 - Implementing a core program focused on only the most critical priorities; and
 - Seeking additional staff and fee increases.

- In addition, EPA assisted MDEQ by:
 - Assuming a portion of MDEQ's PWSS enforcement caseload; and
 - Implementing by contract and staff assignment some of MDEQ's primacy-related activities.
 - Conducting early implementation for two NPDWRs

The improvements resulting from those remedies are mixed. For a short time, the market-based pay scale increased retention of some staff and drew qualified applicants to vacancy announcements. PWSB vacancy rates dropped to near zero; however, these improvements were short-lived. Due to budget shortfalls, MDEQ was unable to expand the market-based pay scale. By mid-2005, vacancy rates began to climb once more. Moreover, with the inception of new rules, these remedies did little to relieve the continuing overload of responsibilities on current staff. Recent statistics show that the PWSB's staffing situation has not only reverted to pre-2002 conditions, but now exhibits an even greater vacancy rate:

- PWSB statistics, July 1, 2005 through July 1, 2008
 - 20 staff members have left their positions; 14 of them did so within the most recent two years;
 - Three or more simultaneous vacancies (14% of staff) 75% of the time;
 - At no time was the PWSS Program fully staffed;
 - Average staff member longevity was 22.5 months.
 - The Compliance Section Chief position turned over three times within this period, the average longevity in this single position being only 14 months.
 - Twelve people were in their positions for 14 months or less; of those 12, half stayed for six months or less.

These data indicate that more permanent solutions to the problems of staff retention and compensation were necessary if MDEQ is to have the capacity to carry out the provisions of primacy and adequately protect public health. However, the State recently and significantly has adjusted pay for environmental specialists, who constitute more than a third of the work force of MDEQ. Although it is too soon to assess results, it is reasonable to assume that this action will have a positive effect upon retention.

Montana is one of three States in Region 8 that utilizes PWS fees to secure funds for the 25% matching funds required for the federal PWSS Program grants. A schedule of fees is provided in Appendix 5. Montana is the only Region 8 State that collects fees per service tap rather than by population. The Montana legislature sets fee rates. The fee charged per tap has not kept pace with inflation. The only change in the fee rate occurred in 1993, and it was a reduction in the rate. Without adequate funding that keeps pace with inflation, MDEQ's ability to provide adequate technical assistance and other services to PWSs has suffered. This inability to provide technical assistance appears to have negatively influenced the regulated PWSs such that their collective support for a fully staffed and adequately funded PWSS Program has weakened.

DRINKING WATER REGULATIONS

EPA discovered public health concerns with the implementation of almost every NPDWR. The most serious of the concerns pertain to various parts of the suite of Surface Water Treatment Rules, i.e., unfiltered surface water systems, problem surface water treatment plants, filtration avoidance, and PWSs serving ground water under the direct influence of surface water (GWUDISW). EPA recommends that MDEQ coordinate with the State Epidemiologist to consider establishing a program to monitor the communities served by the aforementioned types of PWSs to determine if there are increased levels of disease typically associated with unsafe drinking water. This should help MDEQ target any regulatory actions it might take in the interim until all new staff are hired and trained. EPA's findings are described in the paragraphs below.

Unfiltered surface water systems. A system is a non-compliant unfiltered water system if it serves surface water that is not filtered and has not complied with the filtration avoidance criteria. During 2007, eight PWSs that are required to filter continue to serve unfiltered surface water more than 14 years after the regulatory deadline to install filtration. They are East Glacier, Hill County Water District, Essex Water and Sewer District, South Chester County Water District, Riverview Colony, Carter Choteau County Water District, Blains Mobile Home Court, and Armstead Campground. EPA understands that several of these systems await connections to future regional PWSs to be constructed with federal funds that have not been appropriated. Nevertheless, as the PWSs wait for funding, their residents and visitors are unprotected against some of the most potent disease causing pathogens that EPA regulates, i.e., *Cryptosporidium* and *Giardia lamblia*.

Although the NPDWRs do not specifically authorize MDEQ to require business customers of PWSs, i.e., hotels and restaurants, to post notice, EPA notes that some hotel rooms in East Glacier are posting advisories to lodgers—while others are not—to avoid drinking tap water. Nevertheless, some unsuspecting guests are possibly exposed to microbial pathogens present in the tap water. Also, EPA has received unconfirmed reports that new residents to Hill County Water District have been violently ill. In June 2007 MDEQ discovered that non-compliant unfiltered water was being served at Armstead Campground, but it did not require a “do not drink” order. Thus, visitors at Armstead Campground were unaware that they had been possibly exposed to pathogens through tap water. The deficiency pertaining to non-compliant unfiltered systems appears to be the most serious gap in the Montana PWSS Program.

Surface water systems not meeting filtration avoidance criteria. There are 11 regulatory requirements that can trigger filtration for systems meeting the filtration avoidance criteria in the Surface Water Treatment Rule. It appears MDEQ is not reviewing these criteria and, subsequently, has made no determination as to whether seven public water systems are meeting the rigorous avoidance criteria, i.e., Butte, Eureka, Philipsburg, Ronan, Anaconda CCC, Kalispell, and Hill County (activated in 2008). EPA is concerned that all of these systems might have triggered filtration—particularly the City of Butte, which is not filtering its largest source of drinking water. Due to pine beetle infestation, the city has observed severe degradation to its watershed, such that it is highly vulnerable to a devastating fire. Butte's source water turbidity routinely exceeds one

Nephelometric Turbidity Unit (NTU), a criterion which triggers daily coliform monitoring. However, the city has gaps in its monitoring schedule. The potential is high for a serious public health emergency in Butte. An additional concern is that most of the hotels and restaurants in Butte are served by the unfiltered source. Because it is difficult to track disease in a transient population, any severe public health effects from this source may not be identified in a timely manner.

Systems that are filtering surface water. MDEQ staff reported to EPA that as many as ten of the filtered surface water systems in Montana might have serious operational and/or design problems with their water treatment plants. MDEQ has lesser concerns with another 15 filtered surface water systems. The PWSs that pose the very highest risks of increased endemic and waterborne diseases have filtration processes that have failed. Filtration makes poorer quality surface waters safe, but when there are failures in treatment, high concentrations of potent pathogens, e.g., *Cryptosporidium* and *Giardia lamblia*, could be delivered to customers. During the interviews MDEQ staff reported to EPA that one surface water system was serving water with a combined filter effluent turbidity as high as 4 NTUs and several others with turbidities of greater than 1 NTU. For most filtered systems the regulatory standard is 0.3 NTU. During the 1992 Milwaukee, Wisconsin, *Cryptosporidium* outbreak, filtered water exceeded a turbidity of merely 1.5 NTU; yet, it infected over 104,000 citizens. EPA reviewers found other reported instances of serious non-compliance by Montana PWSs, i.e., no certified operators, physical bypasses to filtration, and failures to report turbidity or other operational information. Three Montana systems triggered the requirement for a comprehensive performance evaluation (CPE), the most intensive evaluation of a surface water system. Because PWSs submit operational data only in summary form, MDEQ is unable to monitor combined turbidity readings for every four-hour increment, as required by regulation. With only this summary information it is not possible for MDEQ to view trends, look for data falsification, or provide adequate technical assistance.

Systems that serve ground water under the influence of surface water (GWUDISW). Except during position vacancies, MDEQ has had a ground water hydrogeologist working on GWUDISW for many years. Yet, implementation progress has been unusually slow. MDEQ has not completed all GWUDISW determinations 13 years after the deadline for community water systems (CWSs), and eight years after the deadline for non-community water systems. This is a serious public health concern, because with each rain event, snowmelt or drought, a PWS that is not properly treating GWUDISW may be serving unsafe drinking water.

Filter Backwash Recycling Rule (FBRR). Very high levels of *Cryptosporidium* and *Giardia lamblia* can be trapped in surface water treatment plant filters and concentrated during a filter backwash cycle. It is the Filter Backwash Recycling Rule (FBRR) that protects public health by ensuring that if backwash water is recycled, these high levels of potent pathogens are treated through all plant processes. At the time of EPA's review, the FBRR reports from PWSs were stored in a box somewhere in the MDEQ office. Subsequently, EPA has learned that all but one of the PWSs that recycles filter backwash has had a review by MDEQ.

Total Coliform Rule. This rule is extremely important because it requires all public water systems to test for the possible presence of bacteriological contaminants. It ties the source and distribution system together and provides key public health links to other regulations. MDEQ is not always able to ensure that the basic requirements of the rule are implemented, i.e., routine sampling, repeat monitoring, and public notice. Total coliform, fecal coliform, and E.coli positive samples are too often addressed simply by the addition of chlorine disinfection. This process masks the cause of the contamination, thereby minimizing the effectiveness of any follow up investigations to determine possible sanitary deficiencies in the water system. Due to a minimal level of staffing MDEQ does not have the capacity to conduct trend analyses of positive samples to determine if there are recurring cycles, links to the sources or distribution systems, or the relationships of positive samples to adverse weather conditions or to other external sources of contamination in a proactive effort to identify and mitigate problems.

Sanitary surveys. MDEQ has not developed a policy clearly identifying what constitutes a significant deficiency for surface water systems, which creates inconsistency in identifying problems that may impact public health. Once a significant deficiency has been identified, schedules for correction are not enforced. Sanitary surveys for systems serving less than 4100 people vary widely in quality and consistency. Actual sanitary surveys for these systems must be distinct from reports that might be generated from other site visits, which are otherwise called “sanitary survey short forms.” During 2009 the Ground Water Rule (GWR) will require an expansion of sanitary surveys for PWSs serving ground water to include eight components, including identification of significant deficiencies. With the addition of 12 new staff members, it appears that MDEQ is preparing to accommodate this additional workload.

In 2002 EPA delegated the Interim Enhanced Surface Water Treatment Rule (IESWTR) to Montana. Subsequently, MDEQ staff indicated that it has been advised by the Montana Attorney General’s office that Montana regulations do not give the State adequate authority to address significant deficiencies as required by federal law. Specifically, the Attorney General’s office does not believe that the regulations contain adequate authority to compel correction of significant deficiencies for surface water systems. To correct this, Montana needs to complete a rulemaking with the following changes: 1) specifically define significant deficiencies; 2) specifically require a PWS to submit a corrective action plan within 45 days after receiving its sanitary survey report, in which at least one significant deficiency is identified; and 3) create specific enforcement mechanisms allowing the State authority to enforce the schedule submitted by a PWS for correcting significant deficiencies. Through its rulemaking process, Montana should correct this lack of authority as soon as possible.

Stage 1 Disinfectants/Disinfection Byproducts Rule and Stage 2 Disinfectants/Disinfection Byproducts Rule. Several systems have recorded levels of total trihalomethanes (TTHM) and haloacetic acids (HAA5) that are two to four times their respective maximum contaminant levels (MCLs). For these violations it appears that MDEQ has not provided aggressive technical assistance and enforcement. At these elevated levels, the primary public health concerns are reproductive and developmental effects, plus the additive carcinogenic effects from volatilization and ingestion. EPA understands that for at least one of these systems, the high disinfection byproducts levels were the result of

MDEQ allowing rural water systems to connect to cisterns. As opposed to delivering water directly to the internal plumbing of homes, the cisterns create additional detention time that facilitates the formation of TTHMs and HAA5s. EPA found at least ten systems that have not taken TTHM or HAA5 samples since the 2004 monitoring date required by regulations. In some cases, MDEQ has not determined the number of samples systems are required to take. It appears that MDEQ has misclassified at least 25 conventional filtration PWSs as direct filtration systems. Thus, these systems have unaddressed monitoring violations for disinfectant byproduct precursors, e.g., total organic carbon (TOC) and alkalinity at the entry point and TOC of the finished water, and/or treatment technique violations for TOC removal.

Lead and Copper Rule. Some Montana children may have been exposed to the serious health effects of lead in drinking water for unknown periods of time—perhaps for years. Despite the progress noted herein above, MDEQ has not provided public education materials to some public water systems that violated the lead action level in years from 2002 through 2006. This public education is required as a method for reducing children’s exposure to lead. Lead causes irreversible negative intelligence effects in children. This rule was not staffed for almost two years. As a result, past violations have gone unaddressed. Misinterpretations of the rule by previous Rule Managers led to the inappropriate granting of nine-year monitoring waivers.

Inorganic chemicals (including nitrates and arsenic), volatile organic chemicals, synthetic organic chemicals, and radionuclides. It appears the public has been exposed to various contaminants at levels exceeding their MCLs for excessive periods of time. MDEQ has been unable to assist at least 28 public water systems to achieve compliance with the new arsenic MCL. Fifteen public water supply systems have reported levels of nitrate, an acute contaminant linked to “blue baby syndrome,” over the MCL. Some 266 systems have not monitored for nitrates. MDEQ has not established proper monitoring schemes for various chemical contaminants. It has not provided radionuclide waivers in accordance with the NPDWRs.

Consumer Confidence Rule (CCR) and Public Notice Rule. MDEQ has not fully implemented the CCR. Although MDEQ has designated staff with the added duty of implementing this rule, its execution has been historically of low priority. Given the major deficiencies and violations identified herein above, failure to provide the public with information about the quality of their drinking water is a serious deficiency itself. The residents of Montana cannot make informed decisions about the safety of their water, because 125 community water systems failed to publish a Consumer Confidence Report. Recently, MDEQ hired a full-time Rule Specialist. EPA understands he has now reviewed 60 reports for 2007 and intends to review one-third of those submitted for 2008.

New rules are not being implemented by MDEQ. MDEQ has entered into an extension agreement until January 2010 for the Long Term 2 Enhanced Surface Water Rule (LT2) and the Stage 2 Disinfectants/Disinfection Byproducts Rule (Stage 2). It did so because of lack of resources to implement within a two-year deadline. On behalf of MDEQ, EPA is performing the early implementation requirements of these rules. MDEQ has assigned staff to plan for new drinking water regulations, and with the addition of 12

new staff members it appears that MDEQ has taken steps to implement LT2 and Stage 2 and the resource-intensive GWR that becomes effective December 2009.

ENFORCEMENT

Each year, EPA evaluates the performance of State compliance and enforcement programs. The evaluation covers 14 aspects of State inspection and enforcement activities, including frequency and completeness of inspections or sanitary surveys, timeliness of enforcement and incorporation of appropriate injunctive relief and penalties, completeness and accuracy of compliance data provided to EPA, etc.

Based upon the results of nine years of such evaluations, MDEQ's PWSS Program has routinely fallen at or near the statistical bottom among the six Region 8 states overall—particularly with regard to the timeliness of its enforcement actions against Significant Non-Compliers (SNCs). These are PWSs with the longest-standing and most significant violations. Although Montana has the most PWSs among the Region 8 States, it consistently has the highest number of SNCs—well beyond the proportion one might expect in relationship to its peers. Rankings for MDEQ have been as follows:

Federal FY	Rank overall¹	Rank for timeliness of enforcement actions^{1,4}	Number of SNCs
1999	6	not available	not available
2000	6	not available	not available
2001	5	not available	not available
2002	6	6	not available
2003	6	6	209 (3.1 times the number of the next highest State)
2004	6	5	179 (3.8 times the number of the next highest State)
2005	5	5	97 (1.6 times the number of the next highest State)
2006	4 out of 5 (1 State not evaluated due to high performance the prior year)	2 ³ out of 5 (1 State not evaluated due to high performance the prior year)	226 (twice the number of the next highest State)
2007	NA ²	3 ³	166 (twice the number of the next highest State, but 2 States were not evaluated due to high performance in the prior year.)

Footnotes:
¹ 1 = best performing State program; 6 = worst performing State program.
² For FY07, EPA evaluated only the timeliness of enforcement actions.
³ During FY06 and FY07, MDEQ placed special emphasis on data quality and more timely development of enforcement cases, resulting in much improved scores. However, the cost to make this improvement was a significant decrease in on-the-ground assistance to PWSs.
⁴ Owing to a special enforcement agreement that EPA negotiated only with Montana, timeliness has been evaluated against a time period longer by at least 30 days than the other five States in Region 8 (see MT/EPA Consolidated Cooperative Enforcement Agreement, September 2000).

In June 2006 MDEQ began referring some enforcement cases to EPA as a means to address the significant backlog of water systems out of compliance with the NPDWRs. Since then, EPA has issued 41 enforcement actions in Montana, more than in any other State delegated by Region 8.

Since October 2004, MDEQ has issued more PWS enforcement actions annually than any other State in Region 8 (43 in FY05, 102 in FY06, and 59 in FY07). Despite that commendable effort, Montana continues to report more water systems out of compliance than any other State in Region 8. For example, at the end of the first quarter of CY08 with merely 30% of the Region 8 PWSs, Montana had 45% of all the SNCs and 57% of all the Exceptions (SNCs that have remained unaddressed for at least two consecutive quarters) among all States in Region 8 combined.

CONCLUSIONS

Despite the best efforts of management and Rule Specialists, MDEQ implements the NPDWRs with an assigned staff and budget that does not provide for a robust, proactive PWSS Program. The high staff turnover rates and vacancies for extended periods of time have created gaps in expertise and experience. In turn, the gaps have led to inconsistent implementation and application of rules. Also, the failure to adequately fund the program with tap fees that maintain pace with inflation has not provided resources with which the PWSS Program might hire and retain adequate staffing and engage contractors to provide effective technical assistance to PWSs.

At the current level of resources, the Rule Specialists are minimally able to maintain their basic program and respond to only the most severe of public health emergencies. This shortfall is so pronounced that MDEQ must choose between public health concerns and emergencies. Implementation of all major drinking water regulations has some public health concerns that are unaddressed. The status of some of the PWSs most vulnerable to disease outbreak is unknown, because MDEQ is unable to review and act upon monitoring data. This has created a significant number of treatment technique violations. If treatment techniques violations are not aggressively pursued, the public may be exposed to arsenic (a human carcinogen) or to acute contaminants for extended periods of time. The status of many contaminants in drinking water is unknown due to the failure of many PWSs to sample and report. Without proactive rule implementation and timely technical assistance, MDEQ, by default, pushes PWSs into formal enforcement. This process does not promote the timely public health benefits that derive from early, meaningful, and cooperative technical assistance. One result of this technical assistance and enforcement cycle is that Montana has the greatest number of individual PWSs out of compliance in proportion to any other Region 8 State.

An adequate PWSS Program responds to all public health concerns and emergencies, maintains the basic program and proceeds in a comprehensive manner to proactively ensure the safety of drinking water. Most importantly, a PWSS Program staffed at the minimum levels recommended by the ASDWA Resource Model will avoid backsliding when a Rule Specialist retires or takes another position. MDEQ personnel turnover has created significant gaps in staffing, which in turn have spawned significant rifts in rule coverage. This, in turn, exacerbates the effect of limited resources, which is particularly noticeable for the Surface Water Treatment, Lead and Copper, and Disinfectants/Disinfection Byproducts Rules. Within the State's current limitations, MDEQ would have great difficulty restoring appropriate implementation practices for these rules. However, it appears that MDEQ is finally taking steps to restore appropriate implementa-

tion practices for these rules. Proactive implementation appears much more likely in the light of the State's decision to add significantly more staff to its PWSS Program. We anticipate the new direction of the State will result in significantly better protection for citizens of and visitors to the State of Montana against situations potential health threats.

RECOMMENDATIONS

EPA recommends that the State of Montana take the following actions:

1. Analyze its staffing needs based upon a variety of benchmarks, i.e., the ASDWA model and staffing and funding levels of peer States that have sustainable proactive PWSS programs.
2. Assess reasons for high staff turnover and vacancies and implement policies and procedures to mitigate these problems.
3. Determine funding levels for a PWSS Program protective of public health and proceed to provide adequate resources.
4. Prioritize current drinking water rule implementation issues based upon the significance of possible threats to public health and proceed to address them with appropriate levels of staffing, funding and management emphasis. At this time EPA offers this prioritization for possible consideration by MDEQ.
 - a. Surface Water Treatment Rules
 - i. Work with the State Department of Health to identify where gastrointestinal diseases might be of higher incidence and concentrate resources on solving problems with PWSs serving those populations.
 - ii. Proceed with actions to require unfiltered surface water systems to install filtration or meet filtration avoidance criteria.
 - iii. Conduct annual watershed and disinfection inspections for PWSs meeting filtration avoidance criteria and require all triggered sampling.
 - iv. Proceed with actions to require PWSs serving GWUDISW to immediately install disinfection (if they have not already done so) and install filtration or meet the filtration avoidance criteria within 18 months.
 - v. Review the classifications of surface water systems for possible errors and correct them in the inventory records.
 - vi. Require all surface water systems to properly report operational data.
 - vii. Require those surface water systems that have triggered CPEs to conduct them.
 - b. Require all PWSs to test for nitrates at least annually.
 - c. Withdraw any nine-year sampling and monitoring waivers for lead, copper and radionuclides and replace them with periods authorized by the NPDWRs
 - d. Proceed with actions to address disinfection by-product levels exceeding their MCLs

5. As expeditiously as allowed by State law, proceed to revise State rules pertaining to sanitary surveys conducted under the IESWTR to allow for enforcement of significant deficiency provisions and re-apply for primacy for those provisions.
6. Consider adding resources for a bulge effort to address past implementation problems and possibly higher levels of enforcement actions necessary to address issues of non-compliance.

EPA requests that within 120 days of issuance of this report the State respond with a summary of actions taken and planned in its PWSS Program. The response should include a plan for training of new staff, a program to rectify implementation errors and omissions, re-apply for delegation of the IESWTR, and a process to minimize the backlog in unaddressed violations of SDWA. Also, EPA requests target dates for the corrective actions by which progress might be measured. EPA looks forward to assisting the State in any way possible so that the result is an enduring, robust, and proactive PWSS program that is protective of public health.

Appendix 1

Basic PWSS Program Requirements

In order to obtain and retain primacy, the MDEQ was required to meet the requirements set forth in 40 CFR 142 subpart B. These regulations set forth the initial requirements for obtaining and maintaining primacy as set forth in the Safe Drinking Water Act (SDWA) and subsequent requirements imposed by new regulations adopted as required by amendments to SDWA. Initial requirements for a PWSS Program include:

1. State regulations at least as stringent as federal regulations.
2. State has adopted and is implementing adequate procedures for the enforcement of these regulations including:
 - a. Maintenance of an inventory of PWSs,
 - b. A systematic program for conducting sanitary surveys with priority on non-complying systems;
 - c. State program for the certification of laboratories;
 - d. Assurance of the availability of a State laboratory capable of performing analytical measurements for all drinking water contaminants;
 - e. Establishment and maintenance of an activity to ensure that the design and construction of new or modified PWSs will be capable of complying with State Primary Drinking Water regulations;
 - f. Statutory or regulatory authority to compel compliance with State Drinking Water Rules; and
 - g. Has established and will maintain recordkeeping and reporting requirements as required by regulations.

Subsequent rules established special primacy requirements which States are required to meet as a condition of acquiring primacy for the new rule and retaining primacy for the overall PWSS Program. Included in these special requirements are additional frequency, detail, and correction requirements for sanitary surveys, requirements for the establishment of specific State procedures to implement various rules, and requirements for the establishment of enforceable requirements and procedures that PWSs must follow in order to comply with State Drinking Water Rules. Subsequent rules that set forth the special primacy requirements for which MDEQ currently has primacy include:

Surface Water Treatment Rule (SWTR)

Total Coliform Rule (TCR)

Inorganic (IOC), Synthetic Organic (SOC), and Volatile Organic (VOC) Chemical Rules

Interim Enhanced Surface Water Treatment Rule (IESWTR)

Long Term 1 Enhanced Surface Water Treatment Rule (LT1)

Filter Backwash Recycling Rule (FBRR)

Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1)

Lead and Copper Rule (LCR)

Public Notice Rule (PNR)

Consumer Confidence Report Rule (CCR)

Recently promulgated rules for which Montana has not yet been delegated primacy include Long Term 2 Enhanced Surface Water Treatment Rule (LT2), Stage 2 Disinfection Byproducts Rule (Stage 2) and the Ground Water Rule (GWR). There are several early implementation requirements for Stage 2 and LT2. Although no Region 8 primacy States have yet been delegated primacy for LT2 and Stage 2, Montana is the only State currently not able to conduct required early implementation for LT2 and Stage 2. Region 8 is conducting the early implementation for Montana out of the Region 8 Denver Office.

Areas tied to a PWSS Program but not included in this review are Laboratory Certification, Data Management, Source Water Assessments, Operator Certification, Capacity Development, and the Drinking Water State Revolving Fund. Staffing estimates for these functions are also found in the ASDWA Resource Model but have not been included in this report. However, it is noted that EPA and MDEQ are implementing a work share agreement; whereby, EPA has taken a number of Montana's enforcement cases since MDEQ currently lacks the resources to effectively conduct its enforcement responsibilities for drinking water.

Appendix 2

Detailed Rule Review

The findings and conclusions herein are based upon the interviews and file reviews conducted and field notes taken by the EPA oversight team during the week of November 26, 2007. They reflect the situation at that time and provide the bases for the final report. In general, this appendix does not consider the subsequent corrective actions taken by the State, which are noted in the Executive Summary and body of the final report.

Surface Water Rules

The surface water rules consist of the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Long Term 1 Enhanced Surface Water Treatment Rule (LT1), the Filter Backwash Recycling Rule (FBRR), and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). These five rules regulate PWSs that use surface water or Ground Water under the Direct Influence of Surface Water (GWUDISW) as their source. These are the most vulnerable of all PWSs to waterborne disease outbreaks and increases of endemic disease (low level of disease). These rules are treatment technique regulations. They regulate complex water treatment processes, are the most complicated and time consuming to implement, and protect against the most difficult to treat pathogens, e.g., *Cryptosporidium* and *Giardia lamblia*. Once a treatment technique rule becomes effective, the number of resources needed to assist PWSs increases permanently. Each subsequent treatment technique rule compounds the resources needed. When a State fails to acquire and maintain the proper level of resources for ensuring compliance with these rules, the result is not simply PWSs failing to monitor but rather systems providing inadequate treatment. This might have direct impact on the occurrence of disease in a community.

The surface water rules are applicable to about 70 PWSs in Montana. At the time of EPA's on-site review MDEQ was utilizing about 1.75 work years to implement the surface water rules as follows:

1. One Surface Water Rule Specialist at 0.8 work years (also implementing the Total Coliform Rule health advisories and boil water notices in the western part of the State, which took time away to implement the surface water rules)
2. One GWUDISW Rule Specialist at 0.75 work years.

The ASDWA Resource Model estimates that seven to 13 work years are needed to implement the surface water rules for Montana. This work year estimate does not include sanitary surveys for surface water systems. Due to the non-compliance of numerous surface water systems discovered by EPA and MDEQ's severe shortage in resources needed to implement the surface water rules, EPA is very concerned that Montana has high potential for a major waterborne disease outbreak. Also, residents may be currently experiencing increased levels of endemic disease in the State of Montana.

Surface Water Treatment Rule

Beginning June 1993 the SWTR sets rigorous requirements for unfiltered systems. It required the PWSs to filter its source water, meet rigorous filtration avoidance criteria, or find a new source. This was a tremendous resource burden for any State with unfiltered systems. Prior to the SWTR all Region 8 States except Montana and Wyoming had mandatory filtration requirements so this resource burden was absent for Colorado, North Dakota, South Dakota, and Utah. In 1993, Montana had over 20 unfiltered systems. Many filtered and unfiltered systems had to physically expand their clearwells to meet the *Giardia lamblia* inactivation requirements. The design review by MDEQ was another huge resource burden. The SWTR required most filtered systems to lower their lower turbidity limits by half. New State rules required calculating disinfection contact times every day, monitoring turbidity on individual filters, and daily monitoring of disinfection residual samples in the distribution system. Montana did not increase its available work years to match the tremendous workload from unfiltered systems, capital improvements, technical assistance and the tracking of additional monitoring results. This historical resource shortfall adversely affects its implementation problems to this day. In some cases, MDEQ improvised implementation of its rules and the NPDWRs to compensate for its resource shortfall as discussed in the paragraphs devoted to the Stage 1 Disinfectants/Disinfection Byproducts Rule and Stage 2 Disinfectants/Disinfection Byproducts Rule herein below.

Unfiltered Systems

A water system is not in compliance with SWTR if it serves if it serves surface water that is not filtered or has not complied with the filtration avoidance criteria. At the time of EPA's visit, eight unfiltered systems remained out of compliance more than 14 years after the deadline to install filtration. These systems are: East Glacier, Armstead Campground (discovered to be serving unfiltered surface water in the summer of 2007), Hill County Water District, Essex Water and Sewer District, Riverview Colony, South Chester County Water District, Carter Choteau County Water District, and Blains Mobile Home Court). At East Glacier, it was reported that some hotel rooms have no permanent postings advising lodgers to avoid drinking the tap water. As a result, travelers to Glacier National Park, an international tourist destination, may have unsuspectingly consumed unfiltered surface water. Immediate steps need to be taken to more fully protect the traveling public at East Glacier. Due to the time and resources it was taking MDEQ to address East Glacier, this PWS was finally referred to EPA for additional enforcement.

At Armstead Campground, during a sanitary survey in June of 2007, this system was found to be serving water through a 5 micron screen, which is not recognized as adequate filtration; therefore this system was serving unfiltered surface water. This information was transferred to the Surface Water Treatment Rule Specialist, who was so overwhelmed with other serious problems at larger PWSs that a "do not drink" order was never issued. People visiting this campground were unknowingly allowed to drink unfiltered surface water throughout their entire operating season—at least three months in 2007.

At Hill County there were unconfirmed reports of new residents getting sick and an unconfirmed outbreak of Campylobacter bacteria in 2000. Since 1995 Hill County has been on an Administrative Order and Boil Water Notice for its unfiltered surface water source. Only as of January 2008 has their unfiltered surface water source been permanently disconnected. Hill County switched to their infiltration gallery, which was determined to be GWUDISW. After six months of rigorous data collection, they determined they could be successful meeting the filtration avoidance criteria. Hill County began trying to meet the avoidance criteria starting January 2008 (see section below on the rigors of meeting avoidance criteria).

Essex Water and Sewer District is serving unfiltered surface water and has never demonstrated compliance with the filtration avoidance criteria. They were placed on an Administrative Order in 1994 and have yet to install a new source of water. Essex is currently serving unfiltered surface water.

Riverview Colony's infiltration gallery was determined to be GWUDISW in 2000 and never told to perform the avoidance criteria; to date, it has not filtered this source. Riverview is currently serving unfiltered surface water.

South Chester failed the avoidance criteria in 2006 and has not installed filtration. South Chester is currently serving unfiltered surface water.

Carter Choteau was determined to be GWUDISW in 2000, has never demonstrated compliance with the avoidance criteria and has not installed treatment. Carter Choteau is currently serving unfiltered surface water.

Blains Mobile Court's infiltration gallery was determined to be GWUDISW and has never demonstrated compliance with the filtration avoidance criteria. Blains is currently serving unfiltered surface water. EPA has issued an Administrative order to Blains.

Systems that are meeting the filtration avoidance criteria can fall back into noncompliance if they trigger one of the 11 criteria for filtration. This has occurred for South Chester. These types of systems have 18 months to install filtration. Because they have failed the avoidance criteria, the systems are out of compliance with the SWTR. Their required interim actions may include, but are not limited to, trying to continue to meet the avoidance criteria until filtration is installed. Nevertheless, for this 18-month period or until filtration is installed, they out of compliance with the SWTR.

Systems Allowed to Utilize the Filtration Avoidance Criteria

There is a provision in the SWTR that allows systems to avoid installing filtration if they meet a very rigorous set of avoidance criteria. Meeting the avoidance criteria is a high risk for any PWS, because failure to meet any one of the criteria requires the installation of filtration within 18 months. Only systems with exceptional water quality and very responsible operators stand a chance of successfully meeting these criteria over time. Systems that are avoiding filtration are: Butte, Eureka, Philipsburg, Ronan, Anaconda CCC, Kalispell and Hill County after 1/1/08.

There are 11 violations that require the installation of filtration. They are recited here to demonstrate the complexity with which a Surface Water Treatment Rule Specialist must work. There are two source water criteria violations: 1) a fecal or total coliform occurrence exceeding standards in >10% of the samples over a rolling six-month period of time (filtration is required on the first violation) and 2) a source water turbidity event exceeding 5 NTU. If all violations are unusual and unpredictable (U&U), filtration is required on the third violation in a rolling 12-month period, or the sixth violation in a 120-month period. Alternatively, filtration is required on the first violation not due to U&U circumstances. There are three site specific criteria violations for disinfection: 1) a failure to meet the required daily CT values more than one day in any month (filtration is required on the second violation in a rolling 12-month period if neither was due to U&U circumstance and filtration is required on the third violation under any circumstance), 2) the residual disinfection concentration entering the system is less than 0.2 mg/l for more than four hours (filtration is required on the first violation unless U&U circumstances were the cause), and 3) the residual disinfectant concentration is not detected in more than 5% of the samples per month in two consecutive months (filtration is required on the first violation unless the failure is not due to a deficiency in the source water treatment). There are four site specific criteria for State determinations: 1) the lack of redundant disinfection components or the lack of approved automatic shutoff of delivery of water to the distribution system (filtration is required on the first violation), 2) the determination that a system's watershed control program or wellhead protection program is inadequate (filtration is required on the first violation), 3) the determination that an on-site inspection warrants filtration (filtration is required on the first violation), and 4) the determination that a waterborne disease outbreak was caused by failure of treatment system (filtration is required on the first violation). There are two violations from other rules that can trigger filtration: 1) a violation of the Total Coliform MCL (filtration is required on the second violation in a rolling 12-month period unless the State determines that a violation was not caused by source water treatment deficiencies) and 2) a violation of the Stage 1 Disinfectants/Disinfection Byproducts Rule (filtration is required on the first violation).

Montana's regulations state that only systems with an A1 closed watershed are eligible for meeting the filtration avoidance criteria. However, many systems that did not have an A1 closed watershed were allowed by MDEQ to meet the avoidance criteria; only the watersheds at Butte and Philipsburg meet this qualification. The avoidance criteria were designed to be used by systems with pristine lakes, but MDEQ has allowed infiltration galleries, springs and wells that were under the influence of surface water to meet the avoidance criteria. This was never the intent of the SWTR because the rule requires an annual *watershed survey* each year. Nonetheless, the SWTR guidance manual does allow the flexibility that a wellhead protection plan (WHPP) can be used in lieu of a watershed plan if an infiltration gallery, spring or well is GWUDISW and is allowed to meet the avoidance criteria. Annual watershed surveys have been performed on Butte Silverbow, Phillipsburg and fairly regularly on Ronan. However Ronan did not submit the required annual report until recently. MDEQ did not realize that WHPPs and annual reviews were required for GWUDISW systems that are avoiding filtration.

Systems meeting the avoidance criteria are required to have a costly initial setup of equipment, such as redundant disinfection units and back-up generator or automatic shut-off, the building of enough storage (contact time) to achieve the entire 3 logs reduction of

Giardia lamblia before the first customer, and turbidity monitoring capabilities at the source. Phillipsburg, Butte, and Ronan do have redundancy in chlorination, automatic shutoff and/or back up power. A rigorous set of monitoring accompanies the expenditures of initial setup, for example, every four hour monitoring of source water turbidity, daily calculation of inactivation to verify that 3 logs is achieved, and coliform monitoring every day at the first customer when the turbidity exceeds 1.0 NTU. Failure to perform the initial setup or monitoring can trigger filtration. Due to the lack of resources at MDEQ, systems were allowed to avoid filtration without installing the initial required equipment. More importantly, due to lack of resources, no one is able to review the rigorous set of monitoring data required by systems avoiding filtration to determine if they are in compliance. Annual watershed surveys (or WHPP surveys) are required to be performed for systems meeting the avoidance criteria; however, these are rarely performed. Subsequently, these health-based violations are not reflected in MDEQ's database. Violations of avoidance criteria monitoring are a treatment technique violation and can trigger filtration. MDEQ considers filtration avoidance criteria as taking fewer resources to implement than requiring filtration for unfiltered surface water or GWUDISW systems, but, when properly implemented, evaluating compliance with filtration avoidance should take more resources. This inadequate implementation of the regulations jeopardizes public health protection. The SWTR was designed to slowly eliminate all unfiltered systems and replace them with multiple barriers of public health protection including filtration. Therefore, it is vital that MDEQ only allow systems with A1 Closed watersheds to meet the filtration avoidance criteria. This will prevent systems that are determined to be GWUDISW, an ongoing process that also is in disarray (see section below on GWUDISW), from attempting to avoid filtration by inadequately meeting the avoidance criteria.

The largest system that is avoiding filtration is the City of Butte. This year's annual watershed survey reported a deteriorating source that was algae-laden and turbid, with a large number of trees surrounding the lake blighted by pine beetles. This watershed is now extremely vulnerable to forest fires and erosion. This water quality degradation is reflected in the source water turbidity levels that have consistently been greater than 1 NTU in seven out of 12 months. The SWTR identifies 1 NTU at the source as a serious concern for systems avoiding filtration, and requires them to take a total coliform sample at the first customer. The total coliform samples are not being taken every day the turbidity exceeds 1 NTU, and on occasion those that are collected show positive results. These samples are required to be included in the samples for the TCR to determine compliance; Butte only needs two total coliform positive (TC+) samples to be in violation. Butte recently had two positive samples and violated the TCR. If Butte has two total coliform violations in a rolling 12-month period, filtration is triggered. Given the deteriorating source and recent violation at Butte, MDEQ needs to make the difficult determination that filtration is required, especially given that this is Butte's largest water source. If a fire occurs in this watershed, Butte, a city of 28,000 people, will be faced with a very serious public health emergency. EPA expects that if MDEQ had the resources to check if systems were meeting all of the avoidance criteria related to monitoring, it would find that all unfiltered systems have incurred a treatment technique violation, and all may have triggered filtration. Reviewing this data carefully and helping systems that have triggered filtration would consume tremendous resources. On the other hand, if filtration has been triggered and no action is taken by MDEQ, then inadequate public health protection is prolonged for these systems.

Filtered Systems

The new Surface Water Treatment Rule Specialist reported that nearly half of the 20 filtered surface water systems may have serious problems with their water treatment plants. These problems are, or may, affect their ability to meet the SWTR regulations on a continuing basis. At least three filtered water systems have exceeded finished water turbidities of greater than 1 NTU; one system routinely has levels reaching 4 NTU. One of these systems still has a physical bypass of the filtration treatment train; this needs to be eliminated as soon as possible. One system lost all of their operators and is being run by someone who has no experience operating a water treatment plant; not having a certified operator is a violation. MDEQ is required to check filtered water turbidity readings which the SWTR requires to be reported every 4 hours, but cannot because MDEQ has resorted to using a summary sheet which only requires the highest sample and the number of measurements to be reported. MDEQ must be able to view the 4 hour turbidity results to view trends, look for data falsification, and to provide technical assistance. Conventional filtration systems are required to provide 0.5 logs of *Giardia lamblia* inactivation, and direct filtration systems are required to provide 1.0 log of *Giardia lamblia* inactivation. Due to inaccurate classification of conventional filtration systems, as described in the Stage 1 section of this review, the log inactivation requirements are inconsistently being implemented according to the SWTR. With just 0.8 work years devoted to the SWTR Rule Specialist position, it is impossible for MDEQ to completely implement the SWTR Rules.

Ground Water Under the Direct Influence of Surface Water (GWUDISW):

DEQ was required to determine whether systems serving ground water were under the direct influence of surface water; deadlines were for community systems by June 1994 and for non-community systems by June 1999. Although MDEQ has employed a hydrologist for many years, progress has been unusually slow. Determinations have not been completed 13 and eight years, respectively, after the deadlines. The initial preliminary assessments (PA) have been performed, but MDEQ has not addressed those systems determined to be in need of further investigation. Given the resource shortfall and staff turnover, EPA is not confident that these involved and complicated determinations have been properly made. For example, one system had only one microscopic particulate analysis (MPA) conducted in July, and the result showed moderate risk. This system was then determined not to be GWUDISW. The SWTR guidance on GWUDISW and MDEQ's Circular DEQ-5 state that at least one MPA needs to be performed in the wet season (during snowmelt or rain event), and another performed during the dry season (typically during the fall prior to snowfall). The results of the MPAs are to be considered in conjunction with any hydrogeological analysis and water quality analysis. The lack of resources to make these determinations leaves these systems vulnerable to surface water influence, especially during drought and wet seasons. As an example, the Total Coliform Rule Specialist reported a spike in TC+ samples during one particular year. There are no resources for Rule Specialists to make important correlations between rules and investigate if this spike occurred during an unusually wet or dry year and review systems with the total coliform violations to determine if these violations occurred at GWUDISW systems. In addition, due to insufficient resources, MDEQ does not reevaluate PAs every

time they perform a sanitary survey. There are many items on the PA form that can change over time and trigger the need for further analysis. When systems receive a PA score of greater than 40, MDEQ enters these systems as GWUDISW into SDWIS. This process needs to be corrected, because the GWUDISW designation triggers the installation of filtration within the next 18 months. However, the score of 40 is merely an indicator that a comprehensive evaluation and final determination must be completed before the State notifies the PWS it must install disinfection and filter or install disinfection and meet the filtration avoidance criteria. By not having sufficient resources to implement GWUDISW evaluations, MDEQ does not know the actual number of systems that are serving unfiltered GWUDISW to the residents of Montana. This is a serious public health concern because every time a rain event, snowmelt or drought occurs for a GWUDISW system that is not properly filtered, there is the potential for an occurrence spike of disease in that community. With the current MDEQ process, when these systems are determined to be GWUDISW, they are allowed to inadequately avoid filtration. Thus, elevated risks to public health are allowed to continue.

Filter Backwash Recycling Rule

The Filter Back Wash Recycling Rule (FBRR) was created to protect public health from the high levels of *Cryptosporidium* and *Giardia lamblia* that can be trapped within the filters during a filter run and to ensure that the recycling of backwash water does not increase the levels of these contaminants in the finished water. The FBRR required that conventional and direct systems report to the State in writing by December 8, 2003, if the system recycles; that report must describe its location. The State needed to review these submittals and determine if the PWS was required to change its recycle location, to ensure that the recycle water went through all of the plant processes. It was very important that the State review these submittals because the PWSs were then required to change their recycle location six months later or by June 8, 2004.

The Surface Water Treatment Rule Specialist reported that FBRR submittals were all in a box in her office in Kalispell. It was later reported that the box in the Kalispell office contained copies of the originals, and the originals were located in a box in the Helena office. The data has recently been put into the SDWIS database and the originals are being filed in the physical files after they have been scanned. At the time of the on-site review EPA was unable to determine if the State had reviewed these submittals as required, and has written a letter to each PWS informing them whether their recycling location was correct. If MDEQ is not reviewing the recycle locations and responding to the water systems, a PWS would not know whether they needed to change their location to be in compliance with the rule by June 8, 2004. This possible inaction by the State would have caused a PWS to incur a violation. More importantly, since June 2004 the PWSs that needed to change their recycle location were not providing public health protection against two of the most difficult to treat pathogens EPA regulates, *Cryptosporidium* and *Giardia lamblia*. Due to lack of resources, this information had not been entered into SDWIS or filed until four years later. Subsequently, EPA has learned that MDEQ has completed reviews for all but one PWS that recycles backwash water.

Also by June 8, 2004, PWSs must have collected annual recycle flow information, including a list of all recycle flows and frequency, average and maximum backwash rates,

written summary of how the length of a filter run is determined and what triggers back-washing. This information must be kept on file at the water plant so that it can be reviewed during the sanitary survey. Due to lack of resources, the sanitary survey form has not been modified to address this recycle flow information that the PWS was required to collect and the State was required to review. The current Rule Specialist for SW is reviewing recycle flow information during sanitary surveys visits, but there is no place to note it on the sanitary survey form to date. This Rule Specialist has taken a management position so the future of review is uncertain especially considering it is not on the sanitary survey form.

Interim Enhanced Surface Water Treatment Rule and Long Term 1 Enhanced Surface Water Treatment Rule

The Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Long Term One Enhanced Surface Water Treatment Rule (LT1) created significant improvements in public health protection by lowering the turbidity requirements for surface water systems to 0.3 NTU for conventional and direct systems and requiring that individual turbidity monitors be installed on each filter. Systems meeting these more stringent turbidity requirements are providing at least 2 logs of removal for *Cryptosporidium*, a protozoan that cannot be inactivated with chlorine. These treatment techniques updated the SWTR. Once they went into effect they permanently increased the level of resources needed by the State. For a system to continually meet these more rigorous turbidity standards, they must optimize the operation of their plant. This requires strong, proactive interaction and technical assistance from the Surface Water Treatment Rule Specialist. Due to insufficient resources, this proactive interaction was not possible. As a result at least 20 surface water systems, which are the most vulnerable systems in the State, are having difficulty meeting these requirements. The current Surface Water Treatment Rule Specialist is concerned about an additional 15 surface water systems but has not had the time to perform sanitary surveys at these.

Sanitary surveys were cursory reviews for systems that use surface water or GWUDISW as a source, and the reports severely lacked vital information. The current Rule Specialist has inadequate information from these reports for various reasons. The surveys were performed by non-surface water personnel, who did not understand the technical complexity of surface water treatment or what to look for. Many of the survey reports were never written up, so no information was available for many years. Many of the old reports were only in letter format and not in the inventory-type format. Many of the surveys were scanned or hand written so were not amenable for easily repopulating new information, or the surveys were incomplete. The surveys of larger, more complex systems that are geographically spread out were never completed due to lack of time and personnel. The current Rule Specialist has had to start from scratch and is now fully investigating these surface water systems according to a comprehensive sanitary survey, and is finding serious potential public health problems at many of these systems.

Several of these systems have significantly exceeded the new lower turbidity standards, which is of deep concern to EPA. Since this rule has been in effect since 2004, there should have been ample time for a State with adequate resources to train and assist these systems to meet the IESWTR & LT1 standards. (EPA recognizes that there may be the

exception of a system or two having difficulties meeting the requirements during periods of spring runoff.). Yet, just within this year, three comprehensive performance evaluations (CPE) have been triggered for Montana surface water systems because their individual filters exceeded 2.0 NTU for at least two consecutive months. These CPEs were completed by MDEQ at a great cost to their resources. A fourth CPE was completed for a system with serious operational problems. When a system is in need of a CPE, this implies that they are in desperate need of assistance. One CPE was delayed for six months because MDEQ did not have the funding, thus delaying vital public health protection. Resources are more effectively spent assisting PWS to prevent the need for CPEs.

During the sanitary survey, the primacy agency is required to review individual filter turbidity data for the past three years. Due to insufficient resources, individual turbidity data is not being reviewed by MDEQ during sanitary surveys. Review of this data is important to determine if the system triggered a filter self-assessment or a CPE, and to determine if the operator is reporting correctly or is falsifying data. This would also determine if the operator understands these requirements. In addition, the primacy agency is required to review the system's disinfection profile and inactivation benchmark at the time of the sanitary survey; this also is not being performed by MDEQ.

Ms. Shelley Nolan was the Surface Water Treatment Rule Specialist at the time of this review, and is now currently performing those duties as well as a position in management. She is to be highly commended for the improved public health protection she has been able to provide for the State's most vulnerable systems. Ms. Nolan has been able to perform comprehensive sanitary surveys of surface water systems that previously had only a cursory overview. As a result of these more thorough reviews, very serious problems are emerging and will require significant levels of resources to address. With respect to this concern, as well as Ms. Nolan's ability to spend less time with these systems due to her dual responsibilities, EPA recommends that additional staff with experience pertaining to surface water systems be reassigned full-time to assist the Surface Water Treatment Rule Specialist.

Long Term 2 Enhanced Surface Water Treatment Rule

Due to Montana's significant lack of resources, EPA is currently implementing the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) for Montana, the only such State in Region 8. EPA is concerned that after two years of EPA implementing the LT2 in Montana, the MDEQ has made no progress acquiring the additional resources needed to implement this rule. MDEQ only has two additional years, through the end of the extension agreement or January 2010, to acquire these additional resources. Partial primacy is not allowed by the SDWA. If the State does not adopt LT2 by the end of the extension period, EPA is obligated by the SDWA to begin the primacy withdrawal process. EPA is also concerned that having EPA implement the LT2 rule will erode the confidence that Montana PWSs have with MDEQ and lead to confusion at the water system level.

EPA is very concerned about the public health of the people served by unfiltered surface water or GWUDISW systems that remain out of compliance with SWTR or from surface water treatment plants that remain out of compliance. EPA recommends that MDEQ coordinate with the State epidemiologist to establish a disease surveillance program.

Total Coliform Rule

The Total Coliform Rule (TCR) is applicable to all of Montana's 2098 PWSs. MDEQ utilizes 1.75 work years to implement the TCR, consisting of one Total Coliform Rule Specialist full time, one administrative staff half time and the Lead and Copper Rule Specialist a quarter of the time (which is adding to the resource shortfalls to implement the LCR). The ASDWA Model estimates that five to seven work years are needed to implement the TCR for Montana. This work year estimate does not include sanitary surveys. Montana is more than three work years short of the low range of work years needed to implement the TCR.

The TCR is an extremely important rule, as evidenced by national stakeholders agreeing that this rule needed to be updated in the six-year review of contaminants impacting public health. The OGWDW initiated a year long Federal Advisory Committee to begin rule development to revise and update the TCR. The TCR protects the citizens of Montana from the acute health impacts that result from bacteriological and viral contaminants. This rule includes the most difficult and labor intensive class of systems to regulate, the transient non-community systems. Disease outbreaks are extremely difficult to track at transient systems because they cater to a population that is moving, e.g., a truck stop or restaurant with a single well. The only way to ensure that the visiting and permanent populations are protected from waterborne disease outbreaks and increases in endemic disease is to have a strongly proactive program. However, this is impossible to achieve with MDEQ being more than three work years short of the minimum number of work years needed to implement the TCR. This leaves the people of Montana and its visitors with elevated risk to waterborne disease.

The resource shortfall hinders the implementation of the TCR. Lack of implementation is actually increasing their workload because the same staff are also addressing enforcement actions; this is an inefficient, labor-intensive process that can take up to a year to issue an Administrative Order. The existing Rule Specialists are only able to send out a yearly schedule, limited reminder notices in the mail, review and enter electronic and paper reports and issue health advisories and boil water notices. Due to resource shortfalls MDEQ is unable to implement the following important portions of the TCR. MDEQ lacks the resources to call systems that have not performed their monthly or quarterly monitoring before the end of compliance period to personally remind them they need to monitor or risk an enforcement action. Personal calls to PWSs about to be in violation are not only greatly appreciated by the operators, but build an invaluable support system between these small system operators and MDEQ. These calls to PWSs would build MDEQ's image in the regulated community, and operators would realize that they are in the business of protecting public health together. Calls need to be made to systems on monthly and quarterly monitoring that have not taken their sample, and to seasonal systems during their first and last months of operation. MDEQ lacks the resources to work with seasonal systems to provide startup and sampling procedures; these are needed to ensure that a system left idle in the off season is providing safe water. MDEQ does not have the resources to follow up on repeat samples that are triggered by a TC+ sample. Repeat samples are extremely important because contamination has been detected and this is a check to see how widespread the contamination may be. MDEQ lacks the re-

sources to track extra routine samples the following month for systems that violate the previous month; these samples are important because they track the persistence of the contamination. MDEQ does not have the resources to track and ensure that public notice is being performed according to regulation. This public notice is vital, especially considering that there is an increasing population of immunocompromised people in the country; if they had proper public notice they could make an educated choice about drinking the tap water.

Most importantly, due to the resource shortfalls, MDEQ does not have the ability to track trends for systems with successive total coliform violations over a period of time; this ability would help identify significant problems at the PWS. The optimal procedure is to call the water system which had a TC+ sample and discuss: The potential causes, obvious sanitary defects, cross connections, weather related impacts, the procedures to disinfect the well and/or distribution system and the need to send someone to conduct an on-site visit. EPA is concerned about the lack of depth of the actual investigation being made. With its limited resources, MDEQ cannot determine whether disinfection of the source occurs prior to the repeat samples being taken, which may mask the true source of the contamination. Boil water notices are issued by MDEQ for systems with acute levels of contaminants; this resource-intensive action often draws on other Rule Specialists' time, compounding their own resource shortfall. EPA is concerned that without the resources to comprehensively investigate trends and review information from sanitary surveys and other rules, serious public health concerns are going unaddressed. This type of review takes in-depth investigative skills to determine causes, such as repeated TC positive samples caused by excessive sediment buildup in an unclean storage tank, or, for an otherwise undisinfectated ground water system, potential health problems are masked when the water system turns on the chlorinator prior to taking the total coliform sample.

EPA commends Ms. Sandi Ewing, Total Coliform Rule Specialist, for what she has been able to accomplish. One week after the on-site visit EPA learned that Ms. Ewing will have retired as of December 18, 2007. It is vital that MDEQ acquire significant resources as quickly as possible to prevent severe backsliding of this very important rule. MDEQ also cannot afford to assign portions of the TCR to the other Rule Specialists, given the tremendous lack of resources in all Rule Specialist positions. The loss of such an important person to MDEQ epitomizes the very reason EPA is writing this primacy review report.

Stage 1 Disinfectants/Disinfection Byproducts Rule and Stage 2 Disinfectants/Disinfection Byproducts Rule

The Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1) and Stage 2 Disinfectants/Disinfection Byproducts Rule (Stage 2) are applicable to all of Montana's surface water and disinfected ground water systems for a total of over 300 PWSs. MDEQ utilizes 1 work year to implement Stage 1 and to assist EPA with early implementation of Stage 2. The ASDWA Model estimates that 3 to 6 work years are needed to implement Stage 1 and 2 for Montana. This work year estimate does not include sanitary surveys. Montana is more than 2 work years short of the low range of work years needed to implement Stage 1 and is currently not implementing Stage 2.

The Stage 1 regulation was effective in January 2004 for systems serving less than 10,000 people. The PWSs were required to monitor quarterly or once per year. While EPA was conducting early implementation work for Stage 2, we found more than ten PWSs that had never conducted Stage 1 DBP sampling, even though the rule became effective four years ago. Even more disturbing were the systems that exceeded the Stage 1 TTHM and HAA5 MCLs by two to four times, for which aggressive technical assistance or enforcement was not being performed. One situation causing these high levels is the result of MDEQ approving connections to a household's existing cistern during rural water system expansion into their area. Connecting to a cistern, as opposed to the proper connection to household plumbing, allows excessive storage time for the formation of TTHMs/HAA5s. The State needs to ensure that aggressive public notice is and continues to be performed at each residence with high TTHMs/HAA5s due to this type of connection, to warn them of the potential reproductive and developmental health impacts. EPA strongly recommends these connections be corrected so that service is to the internal plumbing, and that no future connections to cisterns be allowed. MDEQ's decision to allow these ill-advised connections will result in a tremendous resource burden for remediation. This issue raises concerns with the many water haulers in the state that haul to homes with cisterns. Proactive investigation of the public health significance of this situation would be possible if MDEQ had adequate resources. This is another example of how the lack of resources and staff turnover leads to prolonged chemical exposure of a sensitive population group, in this case pregnant women. Also, these systems with cisterns are the same systems that are having severe problems trying to comply with the surface water rules. Lack of resources prevents Rule Specialists from coordinating on issues that span several rules.

Prior to the effective date for Stage 1, the State needed to determine the number of samples required for each system by reviewing the number of entry points into the distribution system. For ground water systems with more than one well, the State needed to review well water quality and make a determination whether or not each well drew water from the same aquifer. The number of samples was based on the number of aquifers and the number of entry points, but due to the lack of resources, these sample number evaluations were never made for ground water systems. By April 2004, monitoring plans were required to be submitted to the State for review by systems serving populations greater than 3,300; all other systems were required to keep their plans at their water plant. At the time of our visit it was not known where the submitted monitoring plans were, and if they had ever been reviewed. The monitoring plans for systems serving populations less than 3,300 are not being reviewed during the sanitary surveys. These Stage 1 monitoring plans are important not only for Stage 1 rule implementation, but they also form the basis for the Stage 2 DBP rule, since they must be amended for Stage 2 compliance monitoring.

Conventional systems are defined in State and Federal regulations as a "series of process including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal" and sedimentation is defined as a "process for removal of solids before filtration by gravity or separation." Due to insufficient resources, MDEQ has changed the classification of about 25 systems that are physically designed as conventional systems to classification as direct filtration (lacking a sedimentation step). This was done to reduce the resources needed to assist PWSs and track total organic carbon

(TOC) removal requirements for conventional filtration water treatment plants (WTPs). There are no regulatory allowances to reclassify systems for a single rule. The OGWDW is currently writing a PWSS guidance memo clarifying the physical treatment train which defines a conventional filtration WTP versus a direct filtration WTP. Since MDEQ is not implementing the TOC removal requirements for about 25 systems that were incorrectly reclassified, there are at least 25 conventional filtration systems that should have monitoring violations (not monitoring for TOC and alkalinity at their entry point and TOC after treatment) and treatment technique violations for not calculating TOC removal. Reclassifying systems to direct filtration also changes their requirements for the SWTR by requiring them to meet 1.0 log of Giardia inactivation as opposed to 0.5 logs; this can increase the levels of disinfection byproducts to which people are exposed. Reclassifying systems also changes the levels of treatment required under Stage 2. The lack of resources at MDEQ has led to improperly implementing the regulations and will require tremendous increased resources to correct these problems.

MDEQ's newest Rule Specialist, Mr. John Jose, is commended for the work he has been able to accomplish. Not only did Mr. Jose have the most difficult work of addressing very high disinfection byproduct MCL exceedances (which is the highest priority), but also experienced a variety of implementation problems. First, there was no summary of the number of samples each regulated system was required to take for the majority of systems covered by this rule. Second, he did not have access to monitoring plans. Third, he did not have a record of which systems had been granted reduced monitoring. Fourth, there were no records of the status of tracking and compliance for maximum residual disinfectant level monitoring and daily distribution system residual disinfectant monitoring (a State rule). Finally, due to the confusion between what constitutes a conventional versus a direct filtration process Mr. Jose had significant obstacles assisting systems with TOC monitoring. It is extremely difficult for one Rule Specialist to correct the implementation problems associated with the Stage 1.

Due to a significant lack of resources at MDEQ, EPA is implementing the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2) on behalf of Montana. It is the only delegated State in Region 8 to request this type of assistance. EPA is deeply concerned that after two years of implementing the Stage 2 Rule in Montana, the MDEQ has made no progress acquiring the additional resources needed to implement this rule. MDEQ only has two additional years, through the end of the extension agreement or until January 2010, to acquire these additional resources. Partial primacy is not allowed by the SDWA. If the State does not adopt Stage 2 by the end of the extension period, EPA is obligated by the SDWA to begin the primacy withdrawal process. EPA is also concerned that by EPA implementing rules for Montana, the confidence that PWSs have with MDEQ is eroding and this leads to confusion at the water system level.

Lead and Copper Rule

The Lead and Copper Rule (LCR) is applicable to all of Montana's 932 community and non-transient non-community PWSs. MDEQ utilizes 0.75 work years to implement the LCR. The ASDWA Model estimates that 0.7 to two work years are needed to implement the LCR for Montana. Montana is more than one work year short of the high range needed to implement the LCR. The implementation problems with the LCR in Montana

have been exacerbated due to long periods without a Rule Specialist and a Rule Specialist with no training in the LCR.

The ASDWA Model estimates are based on the assumption that, for any of these major rules, there is continuity in rule implementation. In other words, it is assumed that when a Lead and Copper Rule Specialist leaves there is a second Lead and Copper Rule Specialist and/or support staff able to, at the very least, maintain the current program and avert backsliding on the rule until a replacement Rule Specialist is hired. The LCR is an extremely complicated rule that is dependant on water quality, so sampling results are subject to fluctuation; it is well deserving of the two work years estimated by the Model. This is the one place we believe the ASDWA Model is estimating too low. Even when the original Lead and Copper Rule Specialist was implementing the rule, public education for lead was not properly implemented or tracked due to the lack of resources. Public education is required for any system that exceeds the action level for lead. But when the original Lead and Copper Rule Specialist left for a higher paying job in MDEQ, work shifted to a member of staff in the Billings office, who had neither the training nor experience in this complicated rule. As a result, implementation was incorrectly performed and nine-year monitoring waivers were granted to the wrong systems. This second Rule Specialist left after about 1.5 years, adding to the next Rule Specialist's burden of now having to correct those waivers. The implementation problems were just beginning when the LCR was left unattended for approximately two years, so implementation backslid at least three to five years. The work years estimated by the ASDWA Model to implement the LCR are far below what is needed to fix the compounded implementation problems that have occurred due to the absence of a Rule Specialist. The LCR demonstrates the cascading effect that the shortage of resources has on implementation. It is unknown whether systems that had lead levels above the action level during this period were warned about the irreversible health effects of lead in drinking water, especially for children.

When a rule has fallen into such a state of disarray, it takes more resources than you would ordinarily need to implement the rule. MDEQ has hired a new Lead and Copper Rule Specialist, but that is far less than the two to three work years needed to recover from this severe backsliding. This resource shortfall is compounded by the fact that the new Lead and Copper Rule Specialist has been requested to devote 25% of his time to the TCR (a higher percentage now that the Total Coliform Rule Specialist has retired). The new Lead and Copper Rule Specialist is faced with 29 systems that have exceeded the lead action level, 25 systems that exceeded the copper action level, and seven systems that exceeded both in 2007. This is an unusually large number of PWSs exceeding the action level for a rule that became effective in 1993. This is a tremendous workload because those systems are required to increase monitoring from once every three years to every six months, take water quality parameter samples, develop an optimal corrosion control plan within the monitoring period, and perform public education. In addition, personal calls need to be made to each system to investigate whether unusual circumstances were occurring during sampling. For example, one system lowered its reservoir to the lowest level ever during a sampling period. This is important because if the Rule Specialist is able to determine that an unusual event occurred, then the system is allowed to resample and average the results, which may lower the levels to below the action level. No further action would then be required.

There is tremendous effort in reviewing the previous monitoring period that was unattended (January 1, 2003 to December 31, 2004), which includes many action levels exceedances that were never addressed. This leaves MDEQ in the position of issuing violation letters for systems three years late and requesting the PWSs return to sampling during two six-month monitoring periods. To add to the burden, some of these systems are now below the action levels for the 2005 to 2007 compliance period, which creates the need to work closely with the systems to provide proper technical assistance as to future sampling and public education requirements. There is a need to review and rescind the nine-year monitoring waivers that had been incorrectly given to systems. Reversing waivers and issuing violation letters that are three years late reflects very poorly on MDEQ, and adversely affects confidence of the regulated community in MDEQ.

Ms. Autumn Coleman, the new Lead and Copper Rule Specialist is commended for the interest she has in this rule and the work she has been able to accomplish, especially implementing the public education requirements. However, it is nearly impossible for a Rule Specialist allowed to devote less than three quarters of a work year to recover without significant additional work years; less time now that the Total Coliform Rule Specialist retired. EPA anticipates that public health concerns regarding lead and copper are only going to increase in the future. New research is beginning to show that lead levels affecting children are more damaging than earlier research has shown. To further demonstrate the public health significance of this rule, EPA has recently decided to revise the LCR as a result of the six-year review of existing regulations. EPA is concerned that MDEQ has not been able to acquire and retain the resources needed to fully implement a regulation that protects against the irreversible damage to the IQ of children.

Nitrates, Inorganic Chemicals (Including Arsenic), Volatile Organic Chemicals, Synthetic Organic Chemicals, and Radionuclides

MDEQ regulates 2098 systems for nitrates; 932 systems for Inorganic Chemicals (IOC), including arsenic, Volatile Organic Chemicals (VOC), and Synthetic Organic Chemicals (SOC); and 678 systems for Radionuclides. Montana has one work year available to implement all of these rules. The ASDWA Model estimates that 4.3 to 7.5 work years are needed to implement these rules for Montana. MDEQ is at least three work years short of meeting the minimum amount of work years needed.

In February of each year MDEQ is able to organize and mail out to all 2098 systems a schedule describing the monitoring requirements for all rules. Also, throughout the year MDEQ is able to complete mass mailings encompassing reminder letters to PWSs. Each week the IOC/VOC/SOC Rule Specialist is able to review electronic data reports and address problems with the reports from several labs; this work can be very time consuming. Due to the lack of resources, only limited quality assurance is performed between the hard copy results and electronic files to ensure that the data in the data base are accurate. A Standard Operating Procedure to document such quality checks has not been created due to resource shortfalls. Lack of resources does not allow time for the Rule Specialist to call PWSs a month prior to the end of the compliance cycle for IOC/VOC/SOCs to prevent violations. The number of monitoring violations reported in MDEQ's 2006 Annual Compliance Report (ACR) was 316 violations.

MDEQ does not have the resources to proactively manage nitrates, an acute contaminant. This would include telephone calls to systems on quarterly monitoring one month prior to the end of each quarter, to schools in May prior to closing for summer, to seasonal systems in June and in August for those seasonal systems that have not monitored, and to systems that had not yet reported their annual sampling in December. These calls are essential to avert violations and more importantly to know what levels of regulated contaminants are present. If resources were available, telephone outreach could be made to non-compliant systems. Nitrate is an acute contaminant, and the levels can fluctuate and increase over a period of time. Unless monitoring is performed, these actual levels are not known by MDEQ. In its 2006 ACR, MDEQ reports that 266 PWSs have not monitored for nitrates and, thus, have unknown levels. With one work year there are inadequate resources to look for trends. Have these 266 systems failed to monitor for several years in a row? Did any have a high sample then purposefully ceased sampling and reporting? Which systems are trending upwards? More importantly, MDEQ has insufficient resources to work with the 15 systems reported to be in violation for nitrate in the 2006 ACR. The IOC/VOC/SOC Rule Specialist needs to be very involved with these highest priority systems to assist them with installation of treatment as quickly as possible to limit public exposure to this acute contaminant. If MDEQ had adequate resources, it could be tracking systems that are trending upwards and work with them to install treatment prior to the system ever exceeding the nitrate standard. In fact, trending should be tracked for any system with an IOC/VOC/SOC sample result above the detectable level. This important high level Rule Specialist task is not possible with the resource shortfalls MDEQ is experiencing, at least three work years short of the minimum effort needed.

Inadequate resources mean there is no time to correlate violations between rules. For PWSs that have exceeded the nitrate MCL, it is very important to investigate whether there are also high bacteria counts. The concern is that high bacteria levels in the presence of nitrates can form nitrites in the distribution system. Water systems do not monitor for nitrites or nitrates in the distribution system, but these contaminants can lead to methemoglobinemia (blue baby syndrome). This is another example of how the lack of resources and the lack of time to investigate associations between rules can lead to unsuspecting exposure of an acute contaminant to infants, a sensitive population group.

Since the new Arsenic Rule became effective, some States have been working proactively with PWSs to encourage them to install treatment. Due to the lack of resources, MDEQ has been unable to work with 28 PWSs with indications they would exceed the new arsenic MCL. Thus, MDEQ could not help the water systems reduce the time residents of these communities were exposed to this human carcinogen. Due to its inability to conduct the proactive implementation, Montana is poised to report an increase the number of systems in violation of health based standards by at least 28. Treatment for arsenic removal can be rather complex, and PWSs generally look to regulators for assistance. This type of technical expertise is developed by a Rule Specialist, who assists engineers, other bureaus within MDEQ, other State and federal agencies and PWSs with problem solving. But at its current level of resources that are three work years below what is estimated by the ASDWA Model as necessary, MDEQ is unable to provide this critical technical assistance. EPA is concerned that the paucity of MDEQ resources has a

direct bearing on the length of time people in Montana are exposed to contaminants that exist at concentrations over their MCLs.

Due to insufficient resources, MDEQ may not be ensuring that sampling for IOC/VOC/SOCs, including nitrates, occurs at the correct location. The regulation states that “water systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.” Due to the unique configuration of wells and surface water sources for each PWS, the variety entry points into the distribution system, and the locations of treatment, it can be very confusing to both the regulators and PWSs alike to accurately determine the proper locations and number of samples a system must take. As EPA has directly implemented the SDWA in Wyoming and Indian country, it has found it necessary to create a schematic of each system that visually shows how each source is connected and the location for sampling for different contaminants. This has been an invaluable tool to maintain the continuity of rule implementation and avoid backsliding when Rule Specialists retire or change jobs. Such a tool enables both the regulator and the PWS know what samples should be taken, where they should be taken, and if all required samples have been completed for compliance. The schematic helps systems with the cost of monitoring each well by indicating the potential to composite water samples. But to do this, the system configuration must be known. Due to lack of resources, this type of knowledge of the system configuration and compliance status is not possible at MDEQ.

MDEQ has not grandfathered radionuclide sampling according to the requirements in the regulation. The regulation addresses grandfathering in 141.26(a)2(2)(ii)(C) as follows: “...provided that the State finds that the historical data satisfactorily demonstrate that each entry point to the distribution systems is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminants levels between entry points. The State must make a written finding indicating how the data conforms to these requirements.” MDEQ has not completed written findings for these systems with historical data. The entry point for radionuclides is different than IOC/VOC/SOCs. The regulation states, “All CWSs using ground water, surface water or systems using both ground and surface water must sample at every entry point to the distribution systems that is representative of all sources being used.”

Ms. Andrea Vickory is highly commended for the work she has been able to accomplish; much of this success is possible due to her extraordinary skills to make SDWIS an efficient tool to assist her in implementation. Nevertheless, many required and vital public health related activities are not completed as outlined herein above due to resource shortfalls. MDEQ does not have the support resources to allow IOC/VOC/SOC Rule Specialist to fully assist the approximately 50 PWSs out of compliance with nitrate and/or arsenic MCLs. EPA is very concerned that with MDEQ more than three work years short for implementation of these rules and with the number of systems exceeding MCLs, the potential for backsliding is great.

Consumer Confidence Rule

The Consumer Confidence Rule (CCR) is applicable to all of Montana's 678 community water systems (CWSs). MDEQ has no staff dedicated to the implementation of the CCR beyond administrative support to file what reports are sent to MDEQ. The ASDWA Model estimates that Montana requires between 0.7 and two work years to implement the CCR.

Due to past and current resource shortfalls, EPA believes that at least two work years are needed to catch up on the CCR, which is not being implemented by MDEQ. Although not required by the CCR, the inadequacy of resources does not allow MDEQ to perform the following highly desirable technical assistance activities. First, Consumer Confidence Reports are not being reviewed prior to being issued to the public to ensure they list all violations of the SDWA from the past year, are accurate, and include a reporting period covering the prior five years. Second, in May MDEQ is not notifying those systems that have not yet submitted their Consumer Confidence Report. Third, MDEQ does not remind recalcitrant CWSs in late June about CCR requirements. Fourth, a reminder letter is not sent out by the first of September reminding systems that they are required to mail a certification letter that the Consumer confidence Report was sent to the public they serve. Finally, MDEQ does not make telephone calls the third week of September to remind systems of the October 1 deadline. As it implements the CCR, MDEQ is not proactive and has not developed any type of reporting tool to help CWSs comply with the annual requirements.

As EPA grants a State primacy for any NPDWR, the State agrees to fully implement that rule. The MDEQ resource shortfall is so severe that an entire rule meant to inform the public about the quality of their drinking water is not fully implemented. This is another rule MDEQ has let backslide. Restoration of full implementation will require extensive resources to ensure that Consumer Confidence Reports accurately account for the prior five years. MDEQ's 2006 ACR indicates that 125 systems failed to comply with the CCR. The lack of resources does not allow key correlations to be made. For example, of these 125 systems that failed to issue Consumer Confidence Reports in 2006, which ones had violations pertaining to the acute contaminants of E.coli, fecal coliform and nitrates, or exceeded the action level for lead? MDEQ must ensure that, at a minimum, PWSs with these violations issue timely and accurate Consumer Confidence Reports.

Sanitary Surveys

A sanitary survey is defined in the National Primary Drinking Water Regulations at 40 CFR 141.2 as "...an onsite review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water." It is a proactive measure designed to assist a system with compliance before the system is out of compliance. Thus, sanitary surveys are not compliance inspections. Although a sanitary survey may uncover a system that is out of compliance, particularly when rules are not being properly implemented by a State, compliance is normally assessed under the SDWA through monitoring and reporting processes.

Rule Specialists often depend upon sanitary surveys when making system specific decisions in the office. The surveys describe system facilities, their condition and often contain pictures of key facilities and system layout. An effective sanitary survey program will also give insight as to the capability of the operator and system management.

The IESWTR and GWR have expanded the sanitary survey definition to further describe this procedure as an assessment of technical and managerial capacity for the system to deliver safe drinking water. It is not a violation for a system to have a significant deficiency identified in a sanitary survey. However, under the IESWTR, and soon under the GWR, it is a violation if a PWS fails to address a significant deficiency.

Initial requirements for conducting sanitary surveys have been modified by subsequent rules. The TCR established frequency requirements of five and ten years for systems with less than 4101 population commencing in 1993. It also established the requirement to ascertain whether the monitoring requirements for these systems under the TCR were adequate. This applies to the vast majority of Montana PWSs.

The FBRR required systems to collect and maintain recycle flow information which is required to be reviewed by the State as a part of a sanitary survey. This information includes: a list of all recycle flows; frequency of flows; average and maximum backwash rates, a written summary of how the length of a filter run is determined, what triggers backwashing, and physical plant data.

The IESWTR established frequency requirements for all surface water and GWUDISW systems. It is three years for CWSs and five years for non-community water systems. The survey requirements of this rule apply to 80 Montana PWSs, including consecutive systems receiving water from systems with a surface water source, commencing December 2001. This rule also broadened the scope of a survey so it covers eight specific areas and imposed special requirements for assessing the effectiveness of surface water treatment. It also required the State to identify significant deficiencies during surveys and for the PWS to submit a plan within 45 days after receiving its survey to address them. The plan must be enforceable by the State.

Commencing December 1, 2009, the GWR will impose the three and five year requirements on the remaining 2018 PWSs in Montana. It also will require the full eight part coverage in each survey. Those parts are (1) source, (2) treatment, (3) distribution system, (4) finished water storage, (5) pumps, pump facilities and controls, (6) monitoring, reporting and data verification, (7) system management and operation, and (8) operator compliance with State requirements. It will require the State to identify significant deficiencies, approve enforceable correction plans within 120 days, track significant deficiency status and impose Public Notice requirements on all ground water systems, which include some water systems that use a surface water source.

Through Performance Partnership Agreements and as part of its enforcement oversight EPA has required Montana to commit to conducting *sanitary surveys every three years for community surface water systems and every five years for non-community surface water and ground water systems. Alternatively, the State shall commit to conducting sani-*

tary surveys for a minimum of 20% of ground water and non-community surface water systems and 33.3% of community surface water systems, considering any “unplanned” surveys which will be necessary for violation follow-up. Sanitary survey reports are to be completed within 90 days of completion of field work.

However, Montana’s Rules impose sanitary survey frequency, violation and some content requirements above and beyond both current and anticipated federal requirements. All CWSs and non-transient non-community (NTNC) water systems are required to have sanitary surveys every three years. While the State is required to conduct the surveys, all systems are responsible to see that it is done in a timely manner. All transient non-community (TNC) water systems are currently held to a five year frequency standard regardless of source, treatment or source protection. Any Montana PWSs is in violation of Montana’s Drinking Water Regulations if the survey is not accomplished within the required frequency. Also, all sanitary surveys are required under Montana Rules to evaluate monitoring sufficiency, not just those systems with 4100 population or less as under the federal TCR. None of the sanitary survey forms or reports reviewed as a part of this oversight visit asked or addressed this question. Montana is free to exceed federal requirements as it pleases. However, in view of the shortage of resources identified throughout this report, Montana may wish to revisit its rules and determine where it is best to exceed federal requirements in view of the limited resources available.

MDEQ has one work year devoted to sanitary surveys and receives partial support for this function from both its Kalispell and Billings offices. Montana leverages its available work years in this area by contracting with the Midwest Assistance Program (MAP), six Montana County Sanitarians, and The Cadmus Group, Inc. These arrangements help Montana address the required quantity of surveys. The County Sanitarians use a “short form” survey and are limited to the smaller systems.

Interviews with Montana staff and a spot check of system files raised several concerns. Surface water system sanitary surveys have not routinely covered operator compliance with State requirements and the full eight-part requirements, particularly with checking required on-site filter records. Significant deficiencies are not being identified, tracked and corrected as required by the IESWTR. Surveyors are not given any guidance as to what constitutes a significant deficiency.

The quality of sanitary surveys varies greatly. Examples from the files include:

ARMISTEAD CAMPGROUND, a TNC surface water system survey was performed June 29, 2006, by The Cadmus Group. No significant deficiencies identified in the cover letter to the system owner but “recommendations” included bringing the system into compliance with State requirements for filtration and disinfection. Existing filters were inadequate for *Cryptosporidium* and inadequate contact time was available for effective disinfection. Based on this information alone, the drinking water system should have been shut down until these items could be addressed. (A filter that may have met requirements was on-site but not hooked up.)

The survey report listed several other items that could be identified as significant deficiencies—items that if unaddressed may lead to the contamination of the drinking water. Some of these items include use of an improper disinfectant, improper operation and maintenance of disinfectant equipment, a storage tank not meeting proper construction

standards, which the surveyor believed was not constructed in accordance with approved plans, and specific violation of Montana Rules, i.e., contact time not calculated and pH, temperature, and turbidity not monitored. In the report was this statement “This system is a serious health problem and corrections should be addressed immediately.”

The report had been received by MDEQ July 13, 2006, and scanned into the electronic files on December 28, 2006. Sometime during that period a copy was faxed to the Surface Water Rule Specialist. As of November 28, 2007, the report laid in a pile of “to be addressed” catch up work. No one reviewed the report to identify significant deficiencies or flag it for urgent attention. Lack of filtration and disinfection had also been identified in sanitary survey reports for this system in 1999 and 2003. Commencing December 2001, the IESWTR required that: 1) sanitary surveys for this classification of system identify significant deficiencies, 2) the PWS submit a corrective action plan and schedule within 45 days, and 3) the State enforce the corrective action plan. None of these actions had been taken.

On May 21, 2007, the County Sanitarian conducted a sanitary survey of the River Rock County Water and Sewer District, a CWS ground water system. The report was received by MDEQ on June 25, 2007, and scanned into the electronic files on September 6, 2007. The report noted that all recommendations from the prior survey had been instituted and had no new recommendations. It also stated that chlorination was only used intermittently after a TC+ water sample.

Another survey on this system was conducted by MDEQ on September 12, 2007. This report addressed all eight elements, contained a preliminary assessment for vulnerability to surface water on both sources, had an attached monitoring history going back as far as 1999, and listed the individual management names along with current positions and contact information. Four significant deficiencies were identified, and the system was required to respond with notice of corrections in writing or lose its monitoring waivers. Those significant deficiencies and required corrections were: 1) disinfecting after a TC+ sample but before taking repeats to avoid masking any problems (MDEQ required full time disinfection because of TC+ results and using disinfection to mask repeats), 2) plans and specifications for the treatment system had not been reviewed and approved by MDEQ (MDEQ requires submission prior to installation of continuous disinfection), 3) a storage tank access hatch did not have an adequate seal (MDEQ required replacement of either seal or hatch), and 4) lack of security fencing, required action to prevent unauthorized access and tampering. Other deficiencies were listed in the findings section as not significant. These included not taking the required number of total coliform samples per month. MDEQ requested the PWS take prompt action to address these findings.

As a ground water system, identification and correction of significant deficiencies and the full eight-part survey is not yet required by regulation. However, this example demonstrates clearly the importance of a quality sanitary survey. The difference in these two surveys, six months apart on the same system, is stark. Although the short form surveys may meet frequency requirement toward the 33% of CWSs and NTNC water systems, their public health value, as demonstrated here, is questionable.

Statutory or Regulatory Authority to Compel Compliance with State Drinking Water Rules

PWSS Program management stated that they were being told by legal counsel that the program lacked authority to compel correction of significant deficiencies for surface water systems as required by the IESWTR. They indicated that their lawyers anticipated getting that authority when the Ground Water Rule was delegated.

After reviewing the relevant IESWTR crosswalk and applicable Montana Regulations, EPA agrees with this assessment. Although there is some general language in Montana Rule 17.38.231 from which such authority might be implied, there is no requirement for a surface water system to submit a plan and schedule to address a significant deficiency within 45 days. Also, the crosswalk described how Montana intended to identify significant deficiencies, but there is no rule defining a significant deficiency or supporting the crosswalk's assertion. EPA requests that Montana address this legal insufficiency by changing its rules as soon as feasible under State law.

Engineering Plan Review

MDEQ has over five work years devoted to engineering plan review (this does not include the staff in the State Revolving Fund Program, which may be up to four work years). The ASDWA Model estimates that three to 7.5 work years are needed to implement the engineering plan review requirement in a medium sized state. This puts MDEQ solidly in the middle of resources needed for engineering review as estimated by the ASDWA Model. When this is compared to the Rule Specialist work year estimates in the ASDWA Model, MDEQ needs a total of 29 to 54 work years for all the rules. This clearly demonstrates the severe resource shortfall in the Rule Specialist area of their program. In 2005, engineers performing plan and specification reviews were removed from Rule Specialist duties. Until that time, engineers spent up to 50% of their time as Rule Specialists. Rule Specialist duties were eliminated to allow the engineers to complete the review of plans and specifications within the statutory time frame. With the increase of engineering reviewer work years the engineering section is now able to meet the number of work years estimated by the ASDWA Model.

Rule Specialist Position

The core staff needed to implement the drinking water program is the set of Rule Specialists. ASWDA Model estimates that at a minimum 29 Rule Specialist work years are needed to implement a PWSS Program in a State the size of Montana. This number does not include the work years needed to perform sanitary surveys. MDEQ has only 8.25 work years, which is 21 work years short of what is estimated by the ADWA Model. By comparison, MDEQ has over five work years devoted to engineering plan review (this does not include the nearly four work years in State Revolving Fund). The ASDWA Model estimates that three to 7.5 work years are needed to implement the engineering plan review requirement in a medium sized State. This puts MDEQ solidly in the middle of resources needed for engineering review as estimated by the ASDWA model. With

shortages this severe for Rule Specialists, implementation of the NPDWRs becomes inadequate and reactive rather than proactive in its protection of public health.

EPA has observed that there is a misunderstanding of what a Rule Specialist entails, which is one of the reasons why these positions have not been compensated at appropriate levels in MDEQ. A Rule Specialist is a State-wide expert on that particular regulation. Rule Specialists often times become national experts in their field, assisting EPA in the creation of new regulations and making presentations at national conferences. Rule Specialists need to have the support of regulatory and technical training, but many times this type of training is only available outside the State. It takes at least one, possibly two years for the highly complex regulations, for a Rule Specialist become proficient. The Rule Specialist becomes familiar with the unique situations at each system and, therefore, builds invaluable experience and knowledge that cannot be taught. The Rule Specialist becomes knowledgeable not only on the rule but also in the treatment and disposal issues of the contaminants, and the complex interactions of the rule with other rules. This type of expertise is used to assist and coordinate with engineers, other MDEQ bureaus, other State agencies, federal agencies, universities and public. The Rule Specialist also builds rapport and respect with the regulated community when he/she demonstrates knowledge of the regulations and provides timely and thorough technical assistance. This is an extremely challenging and satisfying position. Ideally, all Rule Specialists and support staff become a close knit team to implement the full spectrum of NPDWRs in a consistent and coordinated manner.

Tremendous expertise needs to be developed by Rule Specialists; when a Rule Specialist retires or takes a position in management, an incredible amount of knowledge and experience goes with them. This makes it a challenge to maintain implementation status. That is why it is important that Rule Specialists be paid at the top salary band, so that they don't leave for a higher staff position. They develop a wealth of knowledge that directly improves public health protection for that rule. But when there are no back up Rule Specialists or support staff in the same rule, loss of a Rule Specialist can cause rule implementation to backslide by several years. Due to the amount of time it takes a Rule Specialist to learn their rule, if the proper number of work years as per the ASDWA Model are not available, regulation implementation can turn into disarray. Any new Rule Specialist is so burdened by the effort to catch up with rule implementation that they quickly become discouraged and begin looking for work at other positions within MDEQ.

Reviewing the history of the LCR implementation clearly demonstrates several important points in our discussion of Rule Specialists herein above. It takes at least one year for a Rule Specialist to learn to implement a rule. The Rule Specialist needs formal training to properly learn a rule. And the Rule Specialist needs to be paid at an appropriate level so he/she is not tempted to leave for higher salaries elsewhere within MDEQ. Finally, for each rule MDEQ should consider designating a back-up Rule Specialist and supporting staff to prevent possible backsliding of rule implementation should the primary Rule Specialist position become vacant.

MDEQ currently maintains a "Rule Expert" position, which is necessary to coordinate the adoption process of new regulations and to investigate the resources needed to implement those rules. This position can create efficient interaction between Rule Special-

ist positions. MDEQ needs a foundational change to accept that Rule Specialists are the core of their program, as evidenced by the numbers in the ASDWA Model, and to find a way to fund the core work of this program.

Funding for Rule Specialist Positions

Currently MDEQ only has authority to fund the PWSS Program by collecting fees from PWSs. The protection of public health in Montana has been historically under funded. As new rules become effective, service levels decrease. When MDEQ asks for additional fees, the PWSs reflect on the service they are receiving, and argue against additional fee increases. Thus, this funding method has proven unsuccessful in Montana. EPA recommends that Montana fund the PWSS Program at levels supporting full, proactive implementation. MDEQ is regulating drinking water not only for healthy individuals but also for individuals at highest risk—infants, children, and pregnant, elderly, and immunocompromised individuals. Without proactively regulating this public health program, the results can lead to increased risks of levels chronic or acute illness.

Appendix 3
2002 Report on Montana's Drinking Water Program

A Report on Montana's Drinking Water Program

To

Jan Sensibaugh,
Director,
Montana Department of Environmental Quality

and

Robert E. Roberts,
Regional Administrator,
U. S. Environmental Protection Agency Region 8

Compiled by the staff and management of the Montana Department
of Environmental Quality and EPA Region 8

July 30, 2002

A Report on Montana's Drinking Water Program

Executive Summary

Introduction

The State of Montana, through the Montana Department of Environmental Quality (MDEQ), has been granted primary enforcement responsibility (primacy) for the Public Water Supply (PWS) program by the US Environmental Protection Agency (EPA) under authority of the Safe Drinking Water Act (SDWA).

Conclusions

MDEQ has a capable and dedicated team of staff and managers in its Public Water Supply Program. They have a strong commitment to operating an effective program and to protecting Montana's public drinking water supplies.

MDEQ is currently unable to implement a fully functioning Public Water Supply program. Compliance monitoring, enforcement, data management, and important technical assistance to water system operators are falling behind. The primary reasons are excessive turnover, a high number of vacancies, and insufficient staff within MDEQ's PWS Section.

MDEQ is at a critical point. Additional rules being promulgated by EPA, as required by the Act, will result in even more responsibilities for MDEQ over the next five years. This will further strain MDEQ's already limited resources. MDEQ will not be able to adequately track violators and return them to compliance. MDEQ will not be able to provide critical technical services to drinking water suppliers, many of which are small systems that could not otherwise afford them.

The PWS program has many complex technical and regulatory requirements. They affect a large number of water systems in Montana. A staff of experienced individuals in sufficient number is critical for success.

Without additional resources and better retention of experienced staff, MDEQ will have significant gaps in its effort to protect drinking water. This could lead to increases in drinking water-related illness.

The Situation Now

- As the primacy agency, Montana currently receives approximately \$1.1 million annually in PWS program grants, and approximately \$7.5 million annually in grants for low-interest revolving loans to water systems.
- MDEQ is able to respond to non-compliance for the most critical, health-threatening situations (i.e., E. coli and nitrate above MCL levels). Often, however, chronic failure-to-monitor violations continue without sufficient or timely response from MDEQ. Staff vacancies cause substantial delays in quarterly compliance determinations and in preparing enforcement re-

- quests.
- Data reporting to EPA is problematic. Monitoring- and compliance-related data contain significant errors and omissions. Only 30% of the public water systems in the federal data base have complete data regarding water system characteristics. These circumstances hamper EPA's and MDEQ's ability to use the data base as the management tool it is intended to be.
 - Monitoring data review and entry is typically rushed. Inadequate time is available to determine whether violations generated by the database are actual violations or a result of miscellaneous reporting errors. This often causes MDEQ to generate incorrect violation letters, which creates a flood of responses from the public water suppliers and from labs. Any staff vacancies or extended illnesses create significant backlogs in data review and entry. MDEQ is uncertain if violations are missing from the data base.
 - MDEQ has determined that it can no longer review applications for monitoring waivers; provide on-site technical assistance except for emergency situations; assist water system designers; review water system as-built plans; prepare monitoring schedules for system operators; respond to requests for information from lending institutions; or perform Comprehensive Performance Evaluations.
 - The PWS Section and the Enforcement Division have experienced high staff turnover, and the PWS Section has had difficulty attracting qualified replacements. Staff cite poor pay and high workload as the primary reasons for leaving. Turnover has been a primary cause of complaints from public water suppliers regarding data quality and lack of technical assistance services.
 - Since 1997, 34 PWS Section staff members have left their positions, 16 of those since January 1999.
 - Since January 1999, the PWS Section has experienced three or more simultaneous vacancies (out of 26 positions) 54% of the time; at no time since then has the PWS Section operated *without* a vacancy.
 - Since January 1999, longevity has averaged only 20 months, only 16 months among engineers. During that time, twelve of its 40 current and past employees stayed with the Section for less than one year, six of those for less than six months.
 - Vacancy announcements from the PWS Section often draw no applicants, or only unqualified applicants, and must be announced several times. Filling a vacancy with a qualified person frequently takes more than a year.

- Since January 1999, for 54% of the time, at least one of the Enforcement Division's seven case manager positions has been vacant.
- Longevity among current and past case officers in the Enforcement Division has averaged only 18 months; ten individuals stayed for less than one year, three of those for three months or less.

What the Situation Could Become

MDEQ and EPA jointly examined the future of Montana's drinking water program assuming no significant increase in its resources. MDEQ projected that the following circumstances could occur.

- Technical assistance will be severely reduced, probably limited only to clear public health emergencies. No assistance to operators in preparing water supply monitoring schedules will be available.
- Training for water system operators will be provided only at the annual and spring water schools.
- MDEQ will not be able to address all violations; at least 25% of them will be referred to EPA.
- Sanitary surveys will be performed at no more than half the frequency required by EPA. Public water suppliers may be required to have surveys conducted at the required frequencies at their own expense. Most violations related to this requirement will be referred to EPA for enforcement. Failure to perform sanitary surveys will lead to more frequent water system failures, and greater exposure of the users to contamination.
- MDEQ could not implement the Radon Rule. As a result, about 15-20 water systems must either develop their own local radon mitigation plan, or reduce radon to 300 pCi/L (rather than 4,000 pCi/L) by treating, blending, or abandoning the source. No technical assistance will be available from MDEQ. At least 3-5 water systems will be referred to EPA for enforcement. *[Note to reader: Radon is the second leading cause of lung cancer.]*
- MDEQ could not implement the Arsenic Rule. Approximately 32 water systems are currently over the new standard. Most of them are small systems, which will have the most difficulty meeting this standard. MDEQ anticipates that 3-5 water systems will be referred to EPA for enforcement. *[Note to reader: Arsenic is a human carcinogen.]*
- MDEQ could not implement the Stage 2 Disinfectants and Disinfection Byproducts (D/DBP) Rule. Perhaps 30-50 systems will fail to sample as

required, and 15-20 will have MCL compliance problems. Approximately 20-30 water systems will be referred to EPA for enforcement. *[Note to reader: Certain disinfection by-products have been shown to cause cancer, and reproductive and developmental defects, in laboratory animals.]*

- MDEQ anticipates that 50-75 groundwater systems will fail to comply with the Ground Water Rule. Many will be referred to EPA for enforcement. Data review and entry will be very difficult because of the complexity of the rule. Sanitary surveys and the associated follow-up actions will fall behind.
- Technical assistance and training for the Long-Term 1 and Long-Term 2 Enhanced Surface Water Treatment Rules will be extremely limited. Perhaps 5-10 small systems will fail to meet the new monitoring and/or treatment requirements. Some will be referred to EPA for enforcement.

Recommendations

Both EPA and MDEQ recognize the seriousness of the current situation. In November 2001, EPA Region 8 and MDEQ convened a meeting of their senior program managers and directors to develop recommendations and present them to the Director of MDEQ and the Regional Administrator of EPA Region 8. The recommendations are:

- ☞ Implement a competitive, market-based pay plan in MDEQ;
- ☞ Increase spending from the Drinking Water State Revolving Fund Set-Aside;
- ☞ EPA can implement portions of the primacy program on a temporary basis;
- ☞ Streamline the MDEQ enforcement process for simple PWS violations;
- ☞ Implement a core program based only on the most critical priorities on a temporary basis;
- ☞ Convene a PWS Focus Group;
- ☞ Workshare some enforcement cases with EPA;
- ☞ Seek authorization for additional staff and funding from the Legislature.

Options and recommendations are considered in detail in Sections 3.0 and 4.0 of this report.

Concurrence Page

I concur with the recommendations in “A Report on Montana’s Drinking Water Program.”

Jan Sensibaugh
Director
Montana Department of Environmental Quality

Date

Robert E. Roberts
Regional Administrator
EPA Region 8

Date

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1.0 Results of EPA's Oversight Reviews

As the primacy-granting agency, EPA oversees MDEQ's implementation of the PWS program. As part of its oversight responsibility, EPA conducts an annual Primacy Review and an annual Unified Enforcement Oversight System (UEOS) review.

EPA's Primacy Review evaluates MDEQ's performance on all elements of primacy. These reviews have found increasing inability to carry out a fully functioning PWS program, largely due to an excessive number of vacancies, high staff turnover, and insufficient staff.

EPA's UEOS review examines MDEQ's compliance monitoring and enforcement activities specifically. These reviews have found MDEQ to be increasingly unable to respond to violations.

The following are excerpts from these 2001 reviews. The full reviews for FYs 1999, 2000, and 2001 are available upon request.

(The reader should note that the staff and management of MDEQ's PWS program are dedicated and capable, with a strong commitment to protecting Montana's drinking water supplies. EPA found many positive aspects to MDEQ's PWS program during its reviews. Although important in their own right, those findings are not repeated here.)

1.1 Primacy Review 2001

- a. Montana has had an excessive staff turnover rate recently, engineering has been particularly hard hit.
- b. Top priority is hiring and retaining qualified staff. Poor pay and excessive workload led to excessive turnover and inability to hire qualified replacements. Several key positions are vacant, compromising implementation of primacy requirements. *[Note to reader: It is common for MDEQ to receive no or unqualified applicants in response to job announcements, and MDEQ must frequently advertise vacancies multiple times to attract even one or two applicants.]*
- c. Montana's current efforts to increase pay and improve staff retention are overdue.
- d. Due to a series of vacancies, there is large backlog of chemical monitoring data entry, and there will probably be numerous violations. Contractors are being used to catch up on this. There is similar backlog in lead/copper data, but new rule manager is catching up on determining compliance status. There is no rule manager on staff currently to concentrate on nitrates and chemicals, which is

compromising implementation. *[Note to reader: Nitrate is an acute contaminant that can seriously harm or kill a fetus or baby.]*

- e. *(In response to a question about whether all groundwater systems have been evaluated for the influence of surface water)* No. The effort is about 70% complete. The hydrogeologist staff position responsible for this work is currently vacant.
- f. The Enforcement Division only recently filled all of its vacancies for the first time since its inception in 1996.

1.2 UEOS Review 2001

- a. A review of MDEQ enforcement files reveals that MDEQ has taken enforcement actions at only 10 of the 80 systems on the July 2000 federal list of systems in Significant Non-Compliance (SNC, a class of violations which are the most serious, and for which an early response should be taken to return them to compliance). *[Note to reader: After adjusting for incorrect data in the federal data base, it appears that approximately 30 Montana water systems have been in SNC status for a period of two to three years.]*
- b. For approximately the past 2 years, MDEQ has been able to evaluate compliance data and prepare enforcement requests for the most critical, health-threatening situations (i.e., the presence of e.coli. and nitrate above MCL levels). Often, however, chronic failure-to-monitor violations continue without sufficient or timely response from MDEQ. In EPA's judgement, insufficient staff in the PWS Section is the primary cause of this deficiency. It is critical that MDEQ acquire sufficient resources to stay abreast of non-compliance if Montana is to be sure that its water systems are providing safe drinking water.
- c. Due to staff vacancies, substantial delays occurred in quarterly determinations of compliance, and in preparation of enforcement requests.
- d. Only 30% of the PWSs in the federal data base have complete data regarding water supply characteristics.

2.0 Resources, Workload, Salaries, Longevity, Turnover, and Vacancies

2.1 Current Resources

In 1990, the Montana Department of Health and Environmental Sciences¹(DHES) formed a Public Water Supply Task Force to provide

ences¹(DHES) formed a Public Water Supply Task Force to provide recommendations for implementation of the 1986 amendments to the Safe Drinking Water Act (SDWA). The 1986 amendments were the first amendments to the 1974 SDWA, and greatly increased monitoring and treatment requirements for public water supplies.

After several meetings, the 1990 Task Force recommended that DHES seek legislative approval in 1991 to fund an interim program that would retain primacy for EPA rules adopted prior to July 1, 1993. Those rules included the Phase 1 Rule, the Phase 2 and 5 rules covering a range of organic and inorganic chemical contaminants, the Total Coliform Rule, the Surface Water Treatment Rule, the Public Notification Rule, and the Lead and Copper Rule. DHES had projected that 51.9 full-time employees (FTEs) would be necessary to fully implement these rules². The Task Force recommended funding for an interim program that would provide for 22.5 FTEs and 5.5 contracted FTEs³.

The 1991 Legislature authorized 8 new FTEs for the Public Water Supply (PWS) Section of DHES. This increased number of FTEs in the PWS Section from 8.5 FTEs to 16.5 FTEs. DHES also requested authority to assess a service connection fee of \$3 per service connection, but the Legislature authorized a fee of only \$2 per connection. The connection fee in effect today is still \$2 per service connection.

The PWS Section did not receive legislative approval for the originally recommended 22.5 FTEs until the 1999 Legislature. In 2001, the Legislature approved 3 new FTEs for a current total of 25.5 FTEs. The PWS Section also uses contracts that provide for the equivalent of 3.5 FTEs.

2.2 Increasing Regulatory Demands

The 1996 re-authorization of the Safe Drinking Water Act (SDWA) created several new aspects to the PWS program, including Source Water Assessment, Small Systems Capacity Assurance, and the Drinking Water State Revolving Fund. As a result of the 1996 amendments to the SDWA, EPA has promulgated a series of significant new regulations. These include the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Stage 1 Disinfectants & Disinfection By-Products Rule (D/DBP), the Consumer Confidence Report Rule (CCR), the Long-Term One Enhanced Surface Water Treatment Rule (LT1), the Filter Backwash Rule (FBR), the Arsenic Rule, and the Radionuclides Rule. EPA will adopt in the next two years the Ground Water Rule (GWR), the Radon Rule, the Stage 2 D/DBP Rule, and the Long-Term Two Enhanced Surface Water Treatment Rule

¹ In 1995, DHES was reorganized into two new agencies, the Department of Environmental Quality (DEQ) and the Department of Public Health and Human Services. The Public Water Supply Section became part of DEQ.

² DHES Supporting Documentation for 1990 Task Force, 1990

³ Public Water Supply Task Force Report, 1990.

(LT2).

The schedule below illustrates the increasing regulatory demands upon water suppliers and the PWS Section. (Less significant rules, such as the revisions to the Public Notice Rule and the Lead and Copper Rule, and some future rules under consideration by EPA, such as the revisions to the Total Coliform Rule and adoption of new contaminants for regulation from the Contaminant Candidate List, are not shown.)

Schedule of Major Public Water Supply Rules				
Rule	Federal Promulgation Date	State Adoption Date	Primacy Application Date	Number of Montana Water Systems Subject to the Rule
Existing Rules for Which MDEQ Has Primacy				
TCR	Current	Current	Has Primacy	2033 PWS
Phase I, II, V	Current	Current	Has Primacy	653 CWS + 227 NTNC
Lead/Copper	Current	Current	Has Primacy	653 CWS + 227 NTNC
Surface Water Treatment (SWT)	Current	Current	Has Primacy	70 SWS + 3 GWSUI
Existing Rules for Which MDEQ Does Not Yet Have Primacy				
Consumer Confidence Report	Final Rule 8/1998	12/2000	Projected 8/2002	653 CWS
Interim Enhanced SWT	Final Rule 12/1998	12/2000	Projected 8/2002	large SWS & GWSUI (5 total)
Stage 1 Disinfectants & Disinfection Byproducts	Final Rule 12/1998	12/2000	Projected 8/2002	6 SWS (large)
Radionuclides	Final Rule 12/2000	Projected early 2003	Projected 2/2003	653 CWS
Arsenic	Final Rule 1/2001	Projected early 2003	Projected 1/2004	653 CWS + 227 NTNC
Filter Backwash	Final Rule 6/2001	Projected early 2003	Projected 6/2003	8 SWS
Long-Term 1 Enhanced SWT	Final Rule 1/2002	Projected early 2003	Projected 1/2004	40 small SWS
Rules Still Under Development				
Radon	Proposed 11/1999 Final unknown	Unknown	Unknown	653 CWS
Ground Water	Proposed 5/2000 Final anticipated spring 2003	Unknown	Unknown	653 CWS + 227 NTNC
Long-Term 2 Enhanced SWT	Proposal anticipated late 2002 Final anticipated mid 2003	Unknown	Unknown	73 SWS
Stage 2 Disinfectants & Disinfection Byproducts	Proposal anticipated late 2002 Final anticipated mid 2003	Unknown	Unknown	653 CWS + 227 NTNC
CWS = Community water systems GWS = Groundwater systems GWSUI = Groundwater system under influence of surface water Large = Water systems serving more than 10,000 people		NTNC = Non-transient non-community water systems PWS = Public water systems SWS = Surface water systems Small = Water systems serving 10,000 or fewer people		

2.3 Present and Future Resource Needs

In order to determine what additional resources might be necessary to address these regulations, the PWS Section recently completed a Resource Needs Assessment using a survey⁴ prepared by the Association of State Drinking Water Administrators (ASDWA) and EPA. The results of the assessment show that 52 FTEs are necessary to administer the current requirements, and 70 FTEs will be necessary by 2006 to administer both current and new regulations. (This excludes the needs of the Operator Certification, DW State Revolving Fund, and the Source Water Assessment programs.)

In a separate projection, the Enforcement Division determined that it needs one additional FTE to manage current PWS enforcement cases, and by 2006 will need another additional FTE to manage the case load expected then.

Montana's PWS Resource Picture		
	PWS Section	Enforcement Division (PWS only)
Currently Funded for:	25.5 FTE + 3.5 contract	1 FTE
Current Needs (2002):	56 FTE	2 FTE
Future Needs (2006):	74 FTE	3 FTE

Most of the increase in resource needs will result from implementing the GW Rule, the Stage 1 and Stage 2 D/DBP Rules, the Arsenic Rule, the IESWTR, and the LT1 and LT2 Rules.

The challenges facing MDEQ can be described as *short-term* and *long-term*:

Short-term challenges are created by the concerns identified in EPA's Primacy and UEOS reviews, and are primarily a result of vacancies and staff turnover. MDEQ is presently evaluating a new Pay Plan. Although several years may be required to fully implement it, the Pay Plan, if successful, should gradually reduce vacancies and staff turnover, and will address the cause of many of EPA's concerns. Additionally, EPA is evaluating how to help MDEQ meet these short-term challenges since they will likely persist for several years.

Long-term challenges are created by new rules mandated by the 1996 amendments to the SDWA. These challenges are very significant as quantified by the ASDWA/EPA Resource Needs Assessment. In order to

⁴ 2001 Resource Needs Assessment, ASDWA and EPA.

meet these challenges, MDEQ has formed a PWS Focus Group that will be asked to recommend solutions.

2.4 Salaries, Turnover, Vacancies, and Longevity

Starting salaries for individuals meeting the requirements of engineering and water quality specialist positions currently range from \$30,000 to \$33,000 per year. A salary survey recently completed by MDEQ and the Department of Administration shows salaries for technical positions in MDEQ are behind those of other nearby states and the private sector by about 20%.

Staff turnover and vacancies in the PWS Section have been excessive.

Since 1997, at least 34 individuals have left their positions; 16 have left within the last 3 years.

Since January 1999, the PWS Section has experienced 3 or more simultaneous vacancies 54% of the time. At no time during that period did the PWS Section operate *without* a vacancy.

During January 1999 through March 2002, longevity within the PWS Section has averaged only 20 months; among the 9 engineering positions, only 16 months. Since January 1999, 12 staff stayed with the program for less than one year, 6 of those for less than 6 months.

The Enforcement Division has also experienced excessive vacancies and turnover.

Since January 1999, the Enforcement Division has operated with one or more vacancies 54% of the time; it wasn't until mid-2001 that all 7 case officer positions were occupied at the same time. Since the Division's inception in 1996, 5 of the 7 case officer positions have been occupied by 3 or more people each.

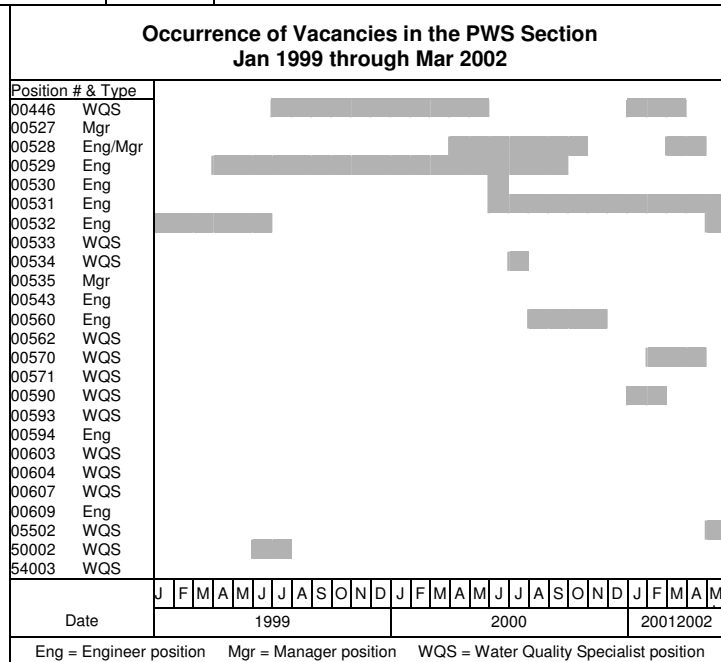
Longevity among current and past case officers in the Enforcement Division has averaged only 18 months; 10 individuals stayed for less than one year, and 3 of them for 3 months or less.

The following table and chart provide additional detail.

Vacancies in the PWS Section Since January 1999			
Number of simultaneous vacancies	% of time	Number of simultaneous engineering vacancies	% of time

Vacancies in the Enforcement Division Since Jan 1999	
Number of simultaneous case officer vacancies	% of time

1 or more	100	1 or more	100	1 or more	54
2 or more	90	2 or more	51	2 or more	23
3 or more	54	3 or more	13	3	8
4	26				



People leaving the PWS Section and the Enforcement Division have cited pay and/or workload as primary factors in their decisions to take other jobs.

In its 2001 primacy review, EPA cites staff turnover and number of vacancies as significant factors in not addressing some important regulatory responsibilities. They are the primary causes of numerous complaints from public water suppliers regarding data management and data quality issues, and a lack of technical assistance services. Implementation of new database systems during the most recent period of high staff turnover has exacerbated these problems.

MDEQ is nearing completion of a pay plan study that may result in significantly improved salaries for most positions affected by high turnover rates. Salaries are expected to be adjusted upward to the new pay plan sometime late in State Fiscal Year 2002. However, because of funding limitations, salaries will initially still lag behind those of other states and the private sector.

2.5 How Montana Compares to Other States

With the exception of Colorado, Montana currently has the largest number of public water supplies per FTE of the six states in EPA Region 8. (Colo-

rado, however, offers higher salaries, and experiences greater retention of experienced staff and less turnover.)

Montana’s water system universe has

- the largest percentage of small systems (small systems generally require more assistance and oversight from the state agency),
- the largest number of systems in Significant Non-Compliance (SNC), and
- the largest land mass (which relates to the costs and staff time required to provide on-site technical assistance)

of any state in Region 8. The following table provides more detail.

How Montana Compares to Other States in Region 8						
	Colorado	Montana	North Dakota	South Dakota	Utah	Wyoming
# PWS ¹	2084	2012	533	714	892	739
% Small % "Purchased"	82 8	89 9	75 8	76 7	76 0	87 8
# FTE ²	21	25.5	13	10	36	16
PWS per FTE	100	80	46	75	26	45
# SNCs ³	128	141	5	27	54	22
% SNCs ³	6.1	7.0	0.9	3.8	6.0	3.0
Square miles	104,247	147,138	70,665	77,047	84,916	97,914
<p># PWS = Number of regulated public water supplies in the state. # FTE = Number of full-time-equivalent staff in the PWS program (excludes Source Water Assessment, Operator Certification, and DW Stats Revolving Fund) % Small = Percent of public water systems serving fewer than 500 people ("small system"). % "Purchased" = Percentage of water systems that purchase water from another regulated water system, rather than produce their own. # SNCs = Number of public water supplies in Significant Non-Compliance. % SNCs = Percentage of water system universe in Significant Non-Compliance.</p> <p>¹ SDWIS-Fed report SDWRPT07, 4/29/2002. ² Excludes FTE in Operator Certification, DWSRF, and Source Water protection programs. ³ SDWIS-Fed SNC/Exceptions report, 5/25/2002.</p>						

2.6 What the MDEQ’s Situation is Now

As the primacy agency, Montana currently receives approximately \$1.1 million annually in PWS program grants, and approximately \$7.5 million annually in grants for low-interest revolving loans to water systems.

Monitoring data review and entry is typically rushed. Inadequate time is available to verify whether violations generated by the database are actual

violations or a result of miscellaneous reporting errors. This often causes MDEQ to generate incorrect violation letters, which creates a flood of responses from the public and from labs. Any staff vacancies or extended illnesses create significant backlogs in data review and entry.

Data reporting to EPA is problematic. Monitoring- and compliance-related data contain significant errors and omissions. Only 30% of the public water systems in the federal data base have complete data regarding water system characteristics.

MDEQ is able to respond to non-compliance for the most critical, health-threatening situations (i.e., e. coli and nitrate above MCL levels). Often, however, chronic failure-to-monitor violations continue without sufficient and timely response. Staff vacancies cause substantial delays in quarterly compliance determinations and in preparing enforcement requests. *[Note: Nitrate is an acute contaminant that can seriously harm or kill a fetus or baby; e.coli and fecal coliform are acute bacterial contaminants that can cause diarrhea, nausea, cramps, and headaches.]*

For the foreseeable future, the PWS Section has determined that it will no longer be able to provide the following services to public water suppliers:

- Review applications for monitoring waivers;
- Provide on-site technical assistance except for emergency situations;
- Assist water system designers;
- Review water system as-built plans;
- Prepare monitoring schedules for system operators;
- Respond to requests for information from lending institutions; or
- Perform Comprehensive Performance Evaluations.

2.7 What MDEQ's Situation Could Become

MDEQ and EPA jointly examined the future of MDEQ's drinking water program assuming no significant increase in its resources. MDEQ projected the following circumstances.

Technical assistance for compliance problems will be extremely limited, probably limited only to clear public health emergencies. No assistance to operators in preparing water supply monitoring schedules will be available.

Training for water system operators will be provided only at the annual and spring water schools.

MDEQ will not be able to address all violations; at least 25% of them will be referred to EPA.

Sanitary surveys, the associated follow-up actions (especially as required by the Ground Water Rule), and data entry are very time-consuming. Sanitary surveys will be performed at no more than half the frequency required by EPA. Public water suppliers may be required to have surveys conducted at the required frequencies at their own expense. Most violations of this requirement will be referred to EPA for enforcement. Failure to perform sanitary surveys will lead to more frequent water system failures, and greater exposure of the users to contamination.

MDEQ could not implement the Radon Rule. As a result, about 15-20 water systems must either develop their own local radon mitigation plan, or reduce radon to 300 pCi/L, rather than 4,000 pCi/L, by treating, blending, or abandoning the source. No technical assistance will be available from MDEQ. At least 3-5 water systems will be referred to EPA for enforcement. *[Note to reader: Radon is the second leading cause of lung cancer.]*

MDEQ could not implement the Arsenic Rule. Approximately 32 water systems are currently over the new standard. Most of them are small systems, and will have the most difficulty meeting this standard. MDEQ anticipates that approximately 3-5 water systems will be referred to EPA for enforcement. *[Note to reader: Arsenic is a human carcinogen.]*

MDEQ could not implement the Stage 2 Disinfectants and Disinfection Byproducts (D/DBP) Rule. Perhaps 30-50 systems will fail to sample as required, and 15-20 will have MCL compliance problems. Approximately 20-30 water systems will be referred to EPA for enforcement. *[Note to reader: Disinfection by-products have been shown to cause cancer, and reproductive and developmental defects in laboratory animals.]*

The Ground Water Rule will be a tremendous resource drain, and MDEQ anticipates that 50-75 groundwater system suppliers will fail to comply. Many will be referred to EPA for enforcement. Data review and entry will be very difficult because of the complexity of the rule. Sanitary surveys and the associated follow-up actions will fall behind.

Implementation of Long-Term 1 and Long-Term 2 Enhanced Surface Water Treatment Rules will also be difficult. Technical assistance and training for these complex new rules will be extremely limited. Perhaps 5-10 small systems will fail to meet the new monitoring and/or treatment requirements. Some will be referred to EPA.

2.8 Conclusions

MDEQ has a capable and dedicated team of staff and managers in its Public Water Supply Program. They have a strong commitment to operating an effective program and protecting Montana's public drinking water supplies.

MDEQ is currently unable to implement a fully functioning public water supply program. The primary reasons are excessive turnover, a high number of vacancies, and insufficient staff within MDEQ's PWS Section.

MDEQ is at a critical point. Additional rules being promulgated by EPA, as required by the Act, will result in even more responsibilities for MDEQ over the next five years. This will further strain MDEQ's already limited resources. MDEQ will not be able to track violators and return them to compliance. MDEQ will not be able to provide critical technical services to drinking water suppliers, many of which are small systems that could not otherwise afford them.

The PWS program is one with many complex technical and regulatory requirements which affect a large number of water systems in Montana. A stable staff of experienced individuals in sufficient number is critical for success.

Without additional resources, less turnover, and better retention of experienced staff, MDEQ will have significant gaps in its effort to protect drinking water. This could lead to increases in drinking water-related illness.

3.0 Options

This section presents a discussion of the options which are available to MDEQ and EPA to resolve the concerns presented above.

3.1 Staff Retention Options

3.1.1 *Implement a competitive, market-based pay plan.* [To address the problems of loss of experienced staff (turnover), and inability to attract qualified applicants.]

Discussion: Salaries for technical positions within MDEQ are currently behind those of nearby states and the private sector by about 20%. Since January 1999, the vacancy rate for engineering staff positions in the PWS Section has averaged 20% (i.e., on average, 20% of these positions are vacant at any given time), and the overall vacancy rate has averaged 10%. The PWS Section has experienced three or more simultaneous vacancies (out of 26 positions) 54% of the time.

Since 1996, the MDEQ Enforcement Division has experienced an average case manager vacancy rate of 28%, with 2 or more simultaneous vacancies (out of 7 case manager positions) 23% of the time. People leaving the Enforcement Division and the PWS Section cite pay and workload as the primary reasons for leaving.

Pros: A sufficiently funded, competitive pay plan would allow MDEQ to competitively attract and retain qualified employees, reduce turnover and vacancy rates to manageable levels, and markedly improve service to the drinking water community.

Cons: A greater portion of DEQ's budget would be consumed by salaries and benefits, potentially reducing other expenditures. The legislature may hesitate to authorize a competitive pay plan for MDEQ but not for other state agencies.

Obstacles: Legislative support is required to insure the continued ability to fund a competitive pay plan.

3.2 Funding Options

3.2.1 Increase spending from Drinking Water State Revolving Fund (DWSRF) set-aside. [To address the contribution that financial resource limitations make to the problems of turnover (loss of experienced staff) and inability to attract qualified applicants.]

Discussion: States receive annual capitalization grants from EPA to fund the Drinking Water State Revolving Fund (DWSRF). Based on priorities established by the State, these funds are loaned to drinking water systems for purposes of water system construction and infrastructure improvements, at an interest rate which is lower than could be obtained via a conventional loan. The water systems pay back the Fund, and the Fund then re-loans the money to other water systems.

By law, each state may reserve up to 10% of its annual capitalization grant to partially fund State program management activities, including source water protection, capacity development, operator certification, and PWS regulatory programs. Since FY 1997, MDEQ has reserved (set aside) from \$125,000 to \$350,000 each year for these purposes. By contrast, approximately \$800,000 has been available each

year.

A 1:1 state match requirement applies to set-aside funds. It appears that MDEQ has historically had enough authorized match to spend the all of the available set-aside each year.

Pros: Additional DWSRF set-aside funds are immediately available to MDEQ for FY 2002 upon EPA approval of a modified Intended Use Plan.

Cons: Increasing set-aside spending for state program implementation will reduce the funds available for loans to water systems.

Obstacles: Using additional set-aside funds for MDEQ regulatory programs may require the support of the public water system community. Hiring additional staff with these funds will require legislative authorization.

3.2.2 Increase user fees. ([To address the contribution that financial resource limitations make to the problems of turnover (loss of experienced staff) and attract qualified applicants.]

Discussion: The MDEQ PWS program obtains part of its funding from fees assessed to the users of MDEQ services. MDEQ assesses a “service connection” fee.

In 1991, DHES requested legislative authority to assess a service connection fee of \$3 per connection. The Legislature authorized a fee of only \$2 per connection. The fee in effect today is still \$2 per connection. Inflation has reduced the value of currently authorized fees to about \$1.45 per service connection.

Pros: Since fees come directly from the users of the service, assessing fees is an equitable means of paying for services. Increased fees will reflect the increased costs of providing services.

Cons: Increasing fees will increase the operating costs of water systems that may not currently have the budget to absorb the increased fees, and may have difficulty raising increased fees from its consumers. Water systems may question whether they are receiving services from MDEQ commensurate with the higher fees.

Obstacles: Support of the drinking water community will be needed to convince the legislature to allow MDEQ to raise fees. Legislative authorization is also needed to spend the fees which are collected.

3.2.3 Seek authorization for additional staff and funding from the Legislature. [To address the problems of insufficient staff, loss of experienced staff (turnover), and inability to attract qualified applicants.]

Discussion: The 1991 Legislature authorized 8 new FTEs for the Public Water Supply (PWS) Section of DHES, which at that time raised the staffing level to 16.5 FTE. A 1990 Public Water Supply Task Force, organized by DEQ, had recommended funding for a program that would provide 22.5 FTEs and the contracted equivalent of 5.5 FTEs. The PWS Section did not receive approval for the originally recommended 22.5 FTEs until the 1999 legislative session. The 2001 Legislature approved 3 new FTEs, raising the total to the current level of 25.5 FTEs. Presently, the PWS Section also uses contracts that provide the equivalent of an additional 3.5 FTEs.

During 2001, the PWS Section participated in a Resource Needs Survey conducted by the Association of State Drinking Water Administrators (ASDWA). The ASDWA Survey showed that MDEQ needs a total of 52 FTE to adequately administer current PWS program requirements, and will need 70 FTE by 2006.

The drinking water community in Montana is largely comprised of small water systems without the financial means to provide their own technical services. The PWS program is designed to rely heavily on providing technical and compliance assistance to the regulated community. Additional FTE and dollars are necessary to provide an adequate level of support to the drinking water community.

Pros: A full complement of staff will allow MDEQ to provide the technical and compliance services which the drinking water community needs to assure clean and safe supplies of drinking water. It will reduce the present per-staff workload to a manageable level, allowing each staff member to markedly increase the quality of his or her services.

Cons: There are no significant cons to having a full complement of staff. However, without sufficient funding to pay staff at competitive salaries, MDEQ may not be able to attract and keep qualified staff regardless of authorized FTE level.

Obstacles: Support from the drinking water community will be required to gain legislative authorization for a larger drinking water program.

3.2.4 Seek additional funding from the Resource Indemnity Trust (RIT) Fund. [To address the contribution that financial resource limitations make to the problems of turnover (loss of experienced staff) and inability to attract qualified applicants.]

Discussion: The RIT is comprised of fees paid by natural resource extraction industries to a trust maintained by the State of Montana. The purpose of the trust is to compensate future generations for the loss of the natural resources taken today. It may also used to pay for the environmental damages that may remain.

In general, the programs funded by the RIT must be related to the regulation and remediation of resource extraction activities. However, the law creating the RIT is broadly written. The interest accrued by the fund is used to support several governmental programs, including the PWS program.

Pros: Increased use of the RIT would supplement the EPA SDWA grant dollars and PWS fees to fund the needed program increases. It may also prevent the need to increase the use of DWSRF set-asides, freeing up those funds for infrastructure repairs and upgrades to comply with new requirements.

Cons: Some people believe that the RIT should only be used for activities that center on a narrow interpretation of the statute limited to the effects of natural resource extraction; increased use of the RIT for the PWS program may be perceived as counter to that view. Poor economic conditions have severely limited the interest income of the RIT. RIT funds have historically been over-appropriated. Increased RIT appropriation is no guarantee that the funds will be available.

Obstacles: Increased RIT appropriations would require the support and approval of the Montana legislature and Governor's office. Current funding shortages throughout state government would make that highly unlikely.

3.3 Outside Resource Options

3.3.1 Procure more contracted assistance. [To address the problem that existing staff levels are insufficient to complete the work that needs to be done.]

Discussion: When FTE are insufficient, contracts may be used to temporarily fill the gap. Contractors may only provide services which are not "inherently governmental functions".

Pros: Highly qualified technical and administrative services may be secured from carefully selected contractors and consultants, without incurring the overhead costs associated with hiring employees. Because contractors may not enforce regulatory requirements, water systems may respond more favorably to contractor-provided technical and compliance assistance.

Cons: Although exceptions exist, contracts are more suitable for the temporary procurement of specialized services, rather than long-term implementation of State functions. Contract services are frequently more costly than providing the same services with in-house staff. Depending on the circumstances of the procurement process, it may take longer to procure a contract than to hire an employee. Contractors and consultants may not speak for the government, or perform inherently governmental functions. Technically-trained staff must be used to oversee the contractor's performance – these staff are already in short supply, and are already managing 27 separate contracts. The PWS Section currently does not have sufficient funding to procure additional contract support (which also requires legislative authorization) without jeopardizing completion of current contracted efforts.

Obstacles: Legislative authorization is necessary for MDEQ to procure additional contract support, and additional FTE would be

necessary to oversee contractor performance.

3.3.2 *Seek more assistance from universities and local governments.*
[To address the problem that existing staff levels are insufficient to complete the work that needs to be done.]

Discussion: With contracts and grants, MDEQ can enlist the assistance of local governments and universities to help implement the PWS program. MDEQ currently engages in similar arrangements with local governments and universities in other environmental programs, and has done so in the past in the PWS program.

Pros: Pros for this option are similar to those for contracts, option 3.3.1.

Cons: Cons for this option are similar to those for contracts, option 3.3.1.

Obstacles: Obstacles for this option are similar to those for contracts, option 3.3.1.

3.3.3 *Seek temporary support from EPA to implement portions of the primacy program.*
[To address the problem that existing staff levels are insufficient to complete the work that needs to be done.]

Discussion: EPA may temporarily assist MDEQ in implementation of its primacy program. This assistance could be provided in the form of contracted support, an IPA, the assignment of existing staff to perform some of the work of the primacy program from the EPA office, or some combination.

EPA currently has contracts and staff with the technical capability to provide the kind of support needed by MDEQ. MDEQ has funds in its current PPG which it could divert to EPA to pay for a contract work assignment or an IPA.

Pros: Each (or a combination) of these approaches could provide one or more qualified persons to help MDEQ implement its primacy program.

Cons: EPA efforts to implement primacy program functions must be temporary, and are contingent upon Montana working diligently to remedy its inability to perform those functions itself. Performance of these activities by EPA staff, whether by IPA or re-assignment, comes from current FTE allocations, making it more difficult to accomplish

other objectives. IPA relocation expenses may be difficult to find. IPAs may have a negative effect on state morale because EPA employees on IPA assignments often perform the same work alongside state staff who are paid at significantly lesser salaries. Managing a contract work assignment would place additional workload on existing EPA staff.

Obstacles: Either alternative will require EPA to revise mission priorities and staff assignments.

3.4 Policy Options

3.4.1 *Streamline the enforcement process for simple PWS violations.* [To address the problem that all violations are not now being addressed.]

Discussion: Many PWS violations are similar or identical. For example, MDEQ estimates that about 60 water systems fail to monitor for total coliform at least one month out of each year. The Enforcement Division can develop a simple, generic administrative penalty order that can be issued quickly for such violations. PWSs can be offered a reduced penalty if they settle quickly and agree to return to compliance in a timely manner. This approach has had some success in Underground Storage Tank (UST) violations where numerous UST owners failed to meet the December 1998 closure deadline.

Pros: Generic APOs could be prepared with a minimum of effort, and processed faster than conventional APOs. This approach may be particularly applicable to small, cash poor water systems. Reduced penalties and quick settlements may reduce the number of cases appealed.

Cons: This approach to enforcement may be viewed by some as “speeding tickets with a discount”. It may not be fair to apply such an approach to large water systems with the capability to monitor their own compliance.

Obstacles: Approval of the MDEQ Director and the Legal Unit would be required. Authority for expedited enforcement may need further research.

3.4.2 Temporarily workshare some enforcement cases with EPA. [To address the problem that MDEQ is not now able to follow up on all significant violations.]

Discussion: Although ENFD spends an average of 80 hours per case, two PWS cases have consumed nearly 400 hours each because of uncooperative violators, judges not sufficiently knowledgeable in environmental issues, and time-consuming litigation. If MDEQ can identify these as well as backlogged cases, they could become “workshare” enforcement cases with EPA.

Pros: MDEQ enforcement workload would be reduced, and resources would be freed to work on other cases. Federal judges sometimes better comprehend environmental issues than do state judges. Larger maximum penalties may encourage water systems to settle and comply rather than appeal or litigate. The number of systems with long-standing violations would be reduced.

Cons: EPA’s enforcement workload would increase. A perception may arise that MDEQ can’t handle the “meaty” cases.

Obstacles: Enforcement workshare requires the concurrence of the MDEQ Director, and the acceptance of the case by EPA.

3.4.3 Implement a core program based on only the most critical priorities. [To address the related problems of staff overload and insufficient staff to complete the work that needs to be done.]

Discussion: In times of tight resources, management must decide to invest in those activities which are most important, and scale back activity in those of lesser importance. It may be difficult task to decide which public health measures are least important. Management must decide between acute threats or chronic threats, response or prevention, small systems of which there are many or large systems that serve many people.

Until additional resources are available, MDEQ could cease activities which have less *immediate* public health benefit (such as non-emergency technical assistance) in favor of activities which address immediate threats. Examples of activities which might be cut back include reviewing ap-

lications for waiver of monitoring requirements, providing on-site technical assistance except in emergencies, assisting water system designers, reviewing as-built plans, preparing monitoring schedules, responding to requests for information from lending institutions, and performing comprehensive performance evaluations.

Pros: Reducing activities to only the most critical priorities prevents staff overload, and preserves the organization's ability to respond to the most immediate public health needs.

Cons: Such a program may ignore preventative measures that could prevent an emergency, and the program may become reactive rather than proactive. Reducing non-emergency technical assistance may actually increase the probability of future public health effects. Such a program may not meet all of its own statutory mandates, and may not meet the requirements of federal primacy. Reducing compliance assessment could result in a large number of water systems remaining in violation for extended periods.

Obstacles: Requires the acceptance of EPA if any requirements of primacy are not to be met. Requires the approval of the legislature if statutory mandates are not to be met. The water system community will need to find other sources of technical support if MDEQ curtails technical assistance for very long. SDWA precludes EPA from allowing this option to exist on other than a temporary basis.

3.4.4 Cease to implement the requirements of primacy . [To address the related problems of staff overload and insufficient staff to complete the work that needs to be done.]

Discussion: In the worst case and as a final resort, MDEQ could determine that its resource and staffing retention problems were unsolvable, decide to substantially abandon the PWS program as a Department priority, and cease to implement the requirements of primacy. In such a case, EPA, having first exhausted all other possibilities permitted by law, would be required to begin proceedings to withdraw primacy according to SDWA Section 1413(b)(1) and 40 CFR 142.17. Although Congress embodied in the SDWA the preference that states implement the PWS program, SDWA requires that EPA do so where there is no state with primacy. After primacy is withdrawn, all regulated public water supplies in Montana would fall under the primary jurisdiction of EPA.

Pros: Since enforcement of SDWA regulations would be a priority within EPA, compliance with SDWA regulations in Montana presumably would improve.

Cons: Withdrawal of primacy would clearly be the option of last resort. It would result in financial and other impacts that would be distasteful to both the Federal and State government. Montana would lose approximately \$1.1 million annually in PWS program grants, and lose control of approximately \$7.5 million annually in DWSRF capitalization grants. State employees in the PWS and DWSRF programs would be forced to find employment elsewhere.

Water systems in Montana, which overwhelmingly prefer State regulation, would become subject to direct EPA regulation. Although EPA would convert PWS grant funds into contract or FTE resources within EPA, resource limitations would still be a factor, and EPA would likely emphasize more enforcement and less technical assistance than would MDEQ. Water systems in violation of SDWA regulations would face an EPA penalty authority which is significantly greater than State penalty authority.

Primacy withdrawal is a lengthy process which would encumber significant legal, technical, and management resources in both EPA and MDEQ. Primacy withdrawal is a statement that Montana has failed to comply with the terms of its primacy agreement with EPA, and with its own statutes.

Obstacles: EPA would shoulder the burden of finding in a legal, public, and (inevitably) political forum that Montana had substantially failed to implement the requirements of primacy.

4. Recommendations

The corrective measures necessary to bring the Public Water Supply Section to full strength will require considerable time and effort – initial estimates range from three to six years. They will include both short-term and long-term goals and objectives, and will require the cooperation and approval of various parties. Short-term goals and objectives will be achieved primarily through the cooperation of EPA and the MDEQ. Long-term efforts will require the participation of the regulated community, the Governor’s Office, and the Montana Legislature.

EPA's assistance in carrying out the functions of a primacy program must be short-term, and it is contingent upon MDEQ working diligently to resolve its inability to fully implement the program by itself. That said, EPA Region 8 agrees that the Public Water Supply program is presently in need of assistance.

MDEQ and EPA staff and managers recommend that MDEQ and EPA undertake the following actions in an attempt to resolve the concerns presented in this report.

4.1 Short-term MDEQ Activities

4.1.1 Implement an alternative pay plan

Working within administrative and budgetary restraints, the MDEQ will continue to develop and implement an alternative pay plan. This new plan will allow the MDEQ to compensate employees at levels that are more competitive with the open market for similar types of positions, and may help to relieve the DEQ's staff turnover and recruitment problems. Attracting better-qualified applicants and retaining staff longer will increase the Department's professional expertise and productivity within the existing staffing levels.

4.1.2 Implement a core program based on only the most critical priorities

Until staff turnover and vacancies improve, the MDEQ will focus its efforts on a list of core priorities, as agreed upon with the EPA. These core priorities will represent the primacy and public health protection activities that are achievable within the authorized staffing levels. The list is based on the DEQ's analysis of available manpower and the functions that provide the greatest protection of public health. The MDEQ will work with the EPA to determine what additional functions or measures can be achieved through a combination of contracting and work sharing arrangements between the MDEQ and EPA. As vacancies are eliminated and the staff attain additional expertise and proficiency, the MDEQ will re-evaluate the list to determine what revisions can be made and what additional activities can be added.

Until additional resources are available, MDEQ will cease or reduce activities which have less *immediate* public health benefit in order to preserve its ability to provide basic public health protection. For example, MDEQ has determined that it currently does not have the resources to review applications for waiver of monitoring requirements, to provide on-site technical assistance except in emergen-

cies, to assist to water system designers, review as-built plans, prepare monitoring schedules, respond to requests for information from lending institutions, or perform comprehensive performance evaluations.

4.1.3 Convene a PWS Focus Group

The Public Water Supply Section will work with a newly formed focus group consisting of representatives of various public water supplies, consultants, public health officials, and other interest groups. The group will discuss the various options that might be possible to assist the PWS Section in developing a fully functioning program. Through the interaction of this focus group and the Department, we hope to identify activities and changes that could help the Section accomplish its goals and objectives. Issues concerning funding, technical assistance, use of contractors, training, and any other topic may be raised for discussion. It is MDEQ's hope that the Focus Group will support the Department in its requests for more resources from the Montana Legislature.

4.2 Long-term MDEQ Activities

4.2.1 Seek legislative authorization for additional staff and funding

The MDEQ will seek additional staff and funding during future legislative sessions. MDEQ anticipates that several biennial legislative sessions may be required to achieve the necessary staff and funding levels. Each request will be based on what is justifiable and could be expected to gain approval during the budget review and approval process, and what increases are administratively manageable during a two-year period.

4.2.2 Increase use of DWSRF set-aside

DEQ will investigate additional use of the Drinking Water State Revolving Fund set-asides for Public Water Supply Section funding. Consideration will be given to the needs of the PWS Program, the needs of the SRF Program, and the needs of the public water facilities eligible for SRF funding. For the benefit of the public's health it is important to have an adequate program to regulate the delivery of drinking water to the public, and it is equally important that drinking water systems be capable of funding the improvements needed to protect the health of their consumers. A balance is needed to meet the needs of all parties involved to assure that Montana's drinking water is both safe and sufficient.

4.2.3 Streamline the enforcement process for simple PWS violations

The DEQ Enforcement Division will examine the possibility of streamlining the enforcement process for simple violations. A streamlined process could reduce the amount of time and effort needed to prepare both enforcement requests and enforcement actions, and could provide incentive for PWSs to return to compliance more quickly.

4.3 Support and Assistance Needed from Other Parties

The tasks to be accomplished by the MDEQ will inevitably require the cooperation and assistance of numerous and diverse entities. The regulated community, the EPA, the Governor, and the Montana Legislature will play pivotal roles.

The MDEQ will need the support and cooperation of the regulated community as changes are made to the structure and operation of the Public Water Supply Section. Until additional resources are received, the regulated community will need to know that the PWS Section will reduce services and technical assistance in non-critical areas. Additionally, they will need to know that new employees will need time to become proficient. The MDEQ will also need the support of the regulated community should it become necessary to increase fees. MDEQ hopes that the PWS Focus Group will be able to guide and assist the Department in these areas.

The support of the Governor's Office and the Montana Legislature will be necessary to increase budgets and staffing. MDEQ will need to provide information to the Legislature on the importance of a strong and fully functioning Public Water Supply Section for the benefit of the public health.

The MDEQ will need EPA's support in order to focus on the core priority activities, and will need EPA's assistance in the form of staff support and contract services to cover any other measures or activities that may be deemed necessary. Additionally, the Legislature may seek information from EPA as it considers the Department's requests for budget and staffing increases. Finally, as new staff are added to the PWS Section, the Department will need EPA's assistance to train and mentor the new staff so that they can quickly become proficient and productive members of the PWS Section.

4.4 Short-term EPA Activities

4.4.1 Provide contract support to help MDEQ implement some primacy rules

EPA can provide contract support to help MDEQ implement its program, with emphasis on Phase 2/5 rules, lead/copper rule, and the radionuclides rule. EPA will prepare a work assignment under the national drinking water contract, using funds authorized by MDEQ from MDEQ's drinking water program grant. The EPA contract would carry out MDEQ functions under EPA direction in close cooperation with MDEQ. A preliminary estimate by MDEQ indicates a need for approximately \$104,000 for one year.

4.4.2 Directly implement rules for which Montana does not have primacy

During the term of a primacy extension agreement between EPA Region 8 and MDEQ, EPA is prepared to implement (including enforcement) the regulatory requirements for rules which EPA has promulgated, but for which MDEQ does not yet have primacy. At the present time, these rules include the arsenic, disinfection by-products, groundwater, enhanced surface water treatment (Long-Term 1 and Long-Term 2), filter backwash, radon, and consumer confidence report rules (see Section 2.2 of this report). An extension agreement is limited to two years; therefore, such support from EPA cannot continue indefinitely.

Primary technical (rule manager) expertise and legal support would come from current resources within the Denver office of Region 8, with participation and coordination provided by current resources within the Montana Office. Although it is difficult to estimate legal resource needs, a high rate of non-compliance can be expected immediately after new rules become effective.

4.4.3 Workshare enforcement on some rules for which Montana has primacy

EPA can assist MDEQ in its evaluation of Significant Non-Compliers (SNCs) and undertake enforcement of some Public Water Supply regulatory requirements for which MDEQ has been granted primacy. This would be carried out via quarterly compliance review meetings between the Montana Office and MDEQ staff. Existing Montana Office staff would assist MDEQ with compliance review, and be the technical lead for cases pursued by EPA. The Montana Office may periodically request the support of

the Region 8 Denver office on technical and legal matters. EPA would enforce against violations which MDEQ does not have the resources or capability to address.

Appendix 4

State Comparisons

The data presented herein has been derived from the National Drinking Water Database, i.e., Safe Drinking Water Information System, internal Region 8 Drinking Water program records and polling of State Drinking Water Administrators in Colorado, North Dakota, South Dakota, and Utah. The State Drinking Water Administrators may not have reported the work years assigned to various rules in the same manner. In fact, it appears there is wide disparity among them in how they arrived at their sums. There are footnotes to the charts explaining some of the reporting disparities.

In the case of Wyoming Region 8 has reported its work years on a basis conforming to the ASDWA Model. The ASDWA Model is the result of a 1999-2000 collaborative effort between EPA and the Association of State Drinking Water Administrators to develop some sense of the resources necessary to provide for full implementation of the Safe Drinking Water Act through 2010. In 1999 not all requirements for National Primary Drinking Water Regulations effective in 2002 and later were fully known. Thus, the suggested labor standards appear to be somewhat inflated to account for the missing information. Thus, the standard provided by the ASDWA Model should be considered as an upper limit benchmark for staffing of a successful PWSS Program.

With its Wyoming PWSS Program EPA regulates 765 PWSs. This is about one third of the Montana universe of PWSs. Both programs are within large, generally rural western States. Eastern Montana is as distant from Helena as are parts of Wyoming from Denver. Thus, distances are issues for each program. The proportions of community, non-community non-transient, and transient non-community PWSs are roughly similar. Due to these similarities, it is reasonable to multiply the Wyoming staffing levels thrice to derive a suggested staffing level for Montana of 34.5 work years. This product is greater than the ASDWA Model. Thus, a linear comparison between programs is not helpful. As a PWSS Program grows in size, there are various management and administrative efficiencies that present themselves. Thus, a program three times the size of one that reasonably implements SDWA does not necessarily require thrice the staffing.

The Region 8 State closest to Montana in number of PWSs is Colorado. It reports a total of 7.0 work years devoted to rule implementation. According to the State Drinking Water Administrator, the drinking water and wastewater programs are combined so the calculation of assigned work years for NPDWRs implementation is not a simple one. Also, the reliance on district engineers adds to the difficulty in deriving exact work years. Several years ago Colorado found itself in a situation similar to that experienced by Montana now. It added additional staff to fully implement SDWA. It appears these additional staff members are not fully reflected in the chart herein below.

Thus, while the ASDWA Model represents a theoretical upper limit to the resources necessary and the Colorado staffing suggests a lower limit, the real need for Montana is in the range between seven and 29. Due to MDEQ's identified difficulties with implementation, the middle third of the range might be a reasonable starting point for further analyses of staffing needs

State	Program Statistics			Work Years Devoted to Delegated Rules							
	Number of PWS	PWS Type	% System Viol.	% Population in Viol.	TCR	IOC/VOC/SOC	Delegated SWTR GRP	TTHM/Stage 1 DBP	Lead & Copper	Radionuclides	CCR
Colorado #											
849	CWS	11.78%	1.96%								
169	NTNCWS	8.28%	9.50%								
977	TNCWS	4.81%	2.22%								
1995	Total	8.07%	2.06%	0.9	1.5	2.0	1.0	0.5	1.0	0.1	
Montana											
680	CWS	13.09%	8.92%								
256	NTNCWS	10.16%	6.67%								
1163	TNCWS	6.53%	7.62%								
2099	Total	9.10%	8.52%	1.8	0.9	1.6	1.0	0.8	0.1	0.0	
North Dakota											
330	CWS	5.45%	3.03%								
25	NTNCWS	12.00%	26.53%								
161	TNCWS	1.71%	2.40%								
516	Total	5.23%	3.17%	1.4	0.5	1.3	1.3	1.5*****	0.5	1.2	
South Dakota											
453	CWS	10.60%	6.97%								
25	NTNCWS	20.00%	51.71%								
178	TNCWS	17.95%	8.54%								
656	Total	10.21%	7.53%	0.3	0.6	0.3	0.3	0.3	0.3	0.2	
Utah											
460	CWS	8.91%	5.65%								
67	NTNCWS	4.48%	1.48%								
430	TNCWS	5.35%	5.40%								
957	Total	7.00%	5.60%	1.6	1.7	1.2	****	0.8	***	0.2	
Wyoming											
289	CWS	8.65%	3.80%								
87	NTNCWS	6.90%	6.96%								
389	TNCWS	6.17%	3.27%								
765	Total	7.19%	3.85%	2.0	3.0	2.8	2.0	0.5	0.5	1.0	

Footnotes on following pages.

State	Work Years Devoted to Not Yet Delegated Rules			Funding					
	Number of PWS	LT2	Stage 2	GWR	PWSS Grant	Other Grant Funds	DWSRF PWSS Set Aside*	State Appropriated Funds	State Fees**
					\$	\$	\$	% of Grant	\$
Colorado #									
849									
169									
977									
1995	1.0	1.0	1.0		1,394,400		1,449,700	10.0%	0
Montana									
680									
256									
1163									
2099	0.0	0.0	0.0		1,204,000	0	550,000	6.7%	0
North Dakota									
330									
25									
161									
516	Incl SWTR	Incl SWTR	1.3		641,100	0	100,000	1.2%	213,700
South Dakota									
453									
25									
178									
656	0.2	0.1	0.1		701,400		0	0.0%	
Utah									
460									
67									
430									
957					820,600	114,400	651,680	8.0%	1,641,800
Wyoming									
289									
87									
389									
765	0.3	0.0	0.1		710,500		0	0.0%	0

Colorado totals do not include data and administrative support 3.6 FTE, assisting Rule Managers, LT2 & Stage 2 positions are funded through Capacity Development Set Aside to enhance compliance with changing rule requirements, GWR position is funded with State Appropriations.

*Set Aside Funds for PWSS delegated program activities only, does not include Capacity Development

**Fee Descriptions by State, does not include Operator Certification, Cross Connection Certification or other fees outside

Colorado - Fees based on system type, source and population

Montana - No State General funds are available to PWSS Program. Although the program is funded through a \$2/tap fee and Plan Review fee, access to those funds is only through a State Appropriation from that account. Plan Review Fee increased 75% during SFY08. Projections show \$175,000 increase in Plan Review Fee revenues

North Dakota - From Admin Fees on DWSRF Loans, attached to DWSRF PWSS Set Aside Work Plan, available but not yet committed.

South Dakota - Fee based on System 1990 population for CWS, \$10.00 for NCWS.

Utah – No fees are charged.

Wyoming – Primacy Agent is Region 8 US EPA so no fees are charged.

***Included with IOC/SOC/VOC

****Included with Delegated SWTR Group

***** Includes Arsenic as well as Lead and Copper

Appendix 5 Abbreviations

0.5 logs	67.7%
1 log	90%
2 logs	99%
3 logs	99.9%
4 logs	99.99%
A1	Pristine watershed
ACR	Annual Compliance Report
ASDWA	Association of State Drinking Water Administrators
CCR	Consumer Confidence Report
CFR	Code of Federal Regulations
CPE	Comprehensive Performance Evaluation
CT	Contact Time
CWS	Community Water System
EPA	US Environmental Protection Agency
FBRR	Filter Backwash Recycling Rule
FTE	Full-Time Equivalent (One Work Year)
GWR	Ground Water Rule
HAA5	Haloacetic Acids
IESWTR	Interim Enhanced Surface Water Treatment Rule
IQ	Intelligence Quotient
LT1	Long Term 1 Enhanced Surface Water Treatment Rule
LT2	Long Term 2 Enhanced Surface Water Treatment Rule
MAP	Midwest Assistance Program
MCL	Maximum Contaminant Level
MDEQ	Montana Department of Environmental Quality
mg/l	Milligrams per Liter
MPA	Microscopic Particle Analysis
NPDWRs	National Primary Drinking Water Regulations
NTNC	Non-Transient Non-Community
NTU	Nephelometric Turbidity Unit
OGWDW	Office of Ground Water and Drinking Water

PA	Preliminary Assessment
pH	<i>Pouvoir Hydrogène</i> (degree of acidity or alkalinity)
PWS	Public Water System
PWSB	Public Water and Subdivisions Bureau
PWSS	Public Water System Supervision
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SNC	Significant Non-Complier
Stage 1	Stage 1 Disinfectants/Disinfection By-Products Rule
Stage 2	Stage 2 Disinfectants/Disinfection By-Products Rule
SWTR	Surface Water Treatment Rule
TC+	Total Coliform Positive
TCR	Total Coliform Rule
TNC	Transient Non-Community
TOC	Total Organic Carbon
TTHM	Total Trihalomethanes
U&U	Unusual and Unpredictable
WHPP	Wellhead Protection Plan
WTP	Water Treatment Plant