MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Missouri Department of Natural Resources
Regulatory Impact Report
in preparation for proposing a new rule

10 CSR 60-4.022 Revised Total Coliform Rule
with related amendments to the following existing rules:

10 CSR 60-2.015 Definitions
10 CSR 60-4.020 Maximum Contaminant Levels and Monitoring Requirements
10 CSR 60-4.025 Ground Water Rule Monitoring and Treatment Technique Requirements
10 CSR 60-4.055 Disinfection Requirements
10 CSR 60-5.010 Accepted and Alternative Procedures for Analysis
10 CSR 60-7.010 Reporting Requirements
10 CSR 60-8.010 Public Notification of Conditions Affecting a Public Water Supply
10 CSR 60-8.030 Consumer Confidence Reports
10 CSR 60-9.010 Requirements for Maintaining Public Water System Records

Division/Program: DEQ/WPP/Public Drinking Water Branch

Rule numbers: (see list above) **Rule titles:** (see list above)

Type of rule action: One new rule and eight amendments

Nature of the rulemaking: Prescribes environmental standards

Approval of the Completed Regulatory Impact Report

John Madras 4/14/15

Program Director Date

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Applicability: Pursuant to Section 640.015 RSMo, "all rulemakings that prescribe environmental conditions or standards promulgated by the Department of Natural Resources…shall… be based on the regulatory impact report…." This requirement shall not apply to emergency rulemakings pursuant to section 536.025 or to rules of other applicable federal agencies adopted by the Department "without variance."

Determination: The Missouri Department of Natural Resources has determined this rulemaking prescribes public health conditions or standards, which could be construed as environmental conditions or standards. Although this rulemaking adopts a federal rule required for maintaining delegation of the drinking water program, the Department anticipates proposing some differences in the state rule. Accordingly, the Department has produced this Regulatory Impact Report which will be made publicly available for comment for a period of at least 60 days. Upon completion of the comment period, official responses will be developed and made available on the agency web page prior to filing the proposed rulemaking with the Secretary of State. Contact information is at the end of this report.

Regulatory Impact Report

1. Describe the environmental conditions or standards being prescribed.

The U.S. Environmental Protection Agency (EPA) promulgated revisions to the 1989 Total Coliform Rule (TCR) on February 13, 2013. The Safe Drinking Water Act requires EPA to review and revise, as appropriate, each National Primary Drinking Water Regulation at least every six years. The purpose of the TCR and the Revised Total Coliform Rule (RTCR) is to protect human health from the effects of microbial pathogens in public drinking water.

The TCR focused on the presence of total coliform as an indicator of possible contamination of potentially harmful pathogens and established a Maximum Contaminant Level (MCL) for Total Coliform, including requiring public notification. In the RTCR, EPA recognizes that total

coliform is not, in and of itself, a health hazard unless further analysis finds the presence of *E. coli*. Consequently, EPA has removed Total Coliform as an MCL violation and requires public water systems (PWSs) that have an indication of coliform contamination in the distribution system to assess the system for sanitary defects and take corrective action to correct them. *E. coli* continues to have an MCL.

An *E.coli* MCL violation occurs with any one of the following conditions:

- A system has an *E. coli*-positive and one of its associated repeat samples is total coliform-positive;
- A routine sample is *E. coli*-positive and one of its associated repeat samples is *E. coli*-positive;
- A routine sample is *E. coli*-positive and one of its associated repeat samples is total coliform-positive;
- A system fails to test for *E. coli* when any repeat sample tests positive for total coliform; or
- A system fails to take all required repeat samples following a routine sample that is positive for *E. coli.*

Under the RTCR, total coliform samples must continue to be collected by PWSs at sites that are representative of water quality throughout the distribution system according to a written sample siting plan subject to state review and revision. The number of monthly samples is based on population served or type of water system, whichever number is greater. The minimum number of samples PWSs must collect each month under RTCR is the same as current TCR requirements. The Department intends to propose retaining monthly monitoring requirements for all systems.

Within 24 hours of learning of a total coliform-positive (TC+) routine sample result under the RTCR, the PWS must collect at least three repeat samples at locations specified in the sample siting plan, regardless of the system's population or water system type.

- One repeat sample must be collected from the same tap as the original sample. One repeat sample must be collected from within five service connections upstream. One repeat sample must be collected from within five service connections downstream; or
- The PWS may propose alternative repeat monitoring locations that are expected to better represent pathways of contamination into the distribution system.

The PWS must collect an additional set of repeat samples if a system assessment has not been triggered. The PWS must take additional sets of repeat samples until either all repeats in a set are TC- or a system assessment has been triggered. (System assessments are described below.)

For ground water systems not conducting compliance monitoring and serving 1,000 people or fewer, a single sample can meet both the triggered source water requirements of the Ground Water Rule (GWR) and the repeat sample requirements of the RTCR, but only if the Department approves the use of the single sample to meet both rule requirements and the use of *E. coli* as the fecal indicator. Otherwise, the system must collect a source water sample in addition to the three repeat samples to comply with the GWR.

The purpose of a system assessment is to find sanitary defects that could provide a pathway of entry for microbiological contamination, or sanitary defects that indicate failure (existing or potential) of protective barriers against microbiological contamination.

A Level 1 assessment is required if any one of these conditions is met:

- For systems taking 40 or more samples per month, it exceeds 5% total coliform-positive samples in the same month; or
- For systems taking less than 40 samples per month, it has more than one total coliform-positive samples in the same month; or
- The system fails to take every required repeat sample after any single routine total coliform-positive sample.

Level 1 assessments may be conducted by system staff, and consist of a basic examination of the source water, treatment, distribution segment, and relevant operational practices. The purpose is to look at conditions that could have caused the total coliform-positive sample.

Level 2 assessments are more comprehensive than Level 1 and must be performed by the Department or a department-approved third party. The system must also comply with any expedited or additional actions required by the Department in the case of an *E. coli* MCL violation. A PWS that incurs an *E. coli* MCL violation must conduct a Level 2 assessment and correct any sanitary defects found. A Level 2 assessment is also required if a system has a triggered a second Level 1 assessment within a rolling 12-month period.

Any sanitary defects found during either Level 1 or 2 assessments must be corrected within 30 days and reported to the Department on an assessment form. The schedule must be approved by the Department and must specify when the corrective action will be completed, along with any milestones or temporary public health protection measures. The system must comply with this schedule and notify the Department as each scheduled corrective action is completed.

The RTCR defines seasonal systems and specifies additional monitoring requirements. A seasonal system is defined as a non-community water system that is not operated as a PWS on a year-round basis and starts up and shuts down at the beginning and end of each operating season such as a campground or state park. Under this rule seasonal systems will be required to develop and use start-up procedures approved by the Department and submit certification that the start-up procedures have been completed prior to serving water to the public at the beginning of each operating season.

A PWS will receive a Treatment Technique violation when any of the following occur:

- Failure to conduct a Level 1 or Level 2 Assessment within 30 days of a trigger;
- Failure to correct all sanitary defects from a Level 1 or Level 2 Assessment within 30 days of a trigger or in accordance with the state-approved timeframe; or
- Failure of a seasonal system to complete state-approved start-up procedures prior to serving water to the public.

The Department anticipates proposing to adopt the requirements of the federal rule, with these exceptions, which have been discussed with stakeholders:

1. The federal rule requires community and nontransient noncommunity water systems to measure their residual disinfectant level in the distribution system at the same point and at the same time as the total coliform sample in taken. The draft state rule 10 CSR 60-4.055(4)(E) would apply this requirement to all public water systems.

2. The Department proposes to retain the existing monthly bacteriological monitoring for all public water systems regardless of size or source water, and also requires a higher number of monthly samples, compared to EPA's RTCR. Systems that use iron removal or lime softening would be required to collect at least five routine samples per month. Also, surface water systems and groundwater under the influence of surface water systems serving a population of less than 4,100 persons would be required to collect at least five routine samples per month. Because these requirements would apply to all public water systems they are found in several subsections of the draft 10 CSR 60-4.022 Revised Total Coliform Rule: subsections (3)(A), (4)(B), (5)(B), (6)(B), and (7)(B).

2. A report on the peer-reviewed scientific data used to commence the rulemaking process.

In July 2007 EPA convened a Total Coliform Rule/Distribution System Federal Advisory Committee (TCRDSAC) charged with evaluating how well the objectives of the Total Coliform Rule are met and possible revisions to the rule. EPA and the committee did extensive research and developed a series of nine issue papers on water distribution system issues that experts ranked as potentially significant public health concerns. These white papers complement an earlier set of 11 papers on operational issues that were developed in cooperation with the American Water Works Association (AWWA). Topics addressed include intrusion, cross-connection control, aging infrastructure and corrosion, permeation and leaching, nitrification, biofilms and growth, covered storage, decay in water quality over time, and new and repaired water mains.

The TCRDSAC completed its analysis and recommendations in 2008, and signed an Agreement in Principle. EPA committed to developing the proposed rule in conformance with the agreement. The RTCR is based on this Agreement in Principle.

Member of TCRDSAC were: AWWA, Association of Metropolitan Water Agencies, Association of State Drinking Water Administrators, Clean Water Action, Council of State and Territorial Epidemiologists, Environmental Council of the States, National Association of State Utility Consumer Advocates, National Association of Water Companies, National Environmental Health Association, National League of Cities, National Rural Water Association, Native American Water Association, Natural Resources Defense Council, Rural Community Assistance Partnership, and EPA. Members were selected by EPA based on diverse perspectives, expertise, and experience need to provide balanced recommendations.

The white papers, Agreement in Principle, proposed and final EPA rules, Economic Analysis, and other supporting documents are available at the following web site: http://www.regulations.gov.

3. **A description of the persons who will most likely be affected by the proposed rule, including persons that will bear the costs of the proposed rule and persons that will benefit from the proposed rule.**

The Revised Total Coliform Rule applies to all public water systems. Currently there are approximately 2,720 systems located throughout Missouri, ranging in size from systems that serve only 25 people to a system serving a population of 1,100,000. About 90 percent of Missouri's public water systems serve populations of 10,000 or less. This includes community water systems that serve the same populations year-round, such as cites and water districts, and noncommunity systems that provide drinking water only parts of the year, such as schools or campgrounds, or serve a transient population, such as convenience stores and campgrounds.

The Department and public water systems will bear the implementation costs

Persons served by the public water systems will benefit from greater health protection provided by the rule. Approximately 90% of the citizens of Missouri are served by public water systems.

4. **A description of the environmental and economic costs and benefits of the proposed rule.**

Non-economic costs and benefits of the RTCR are public health-related rather than environmental. The RTCR is expected to increase public health protection by ensuring the integrity of distribution systems within a public water system through monitoring for microbial contamination, and identifying and fixing problems. The potential benefits from the RTCR include avoidance of health effects from the consumption of fecal-contaminated drinking water ranging from mild abdominal discomfort to acute gastrointestinal illness outbreaks, and even death, particularly for sensitive subpopulations such as children, pregnant women, the elderly, and immune-compromised persons. No public health costs are associated with this rule.

The nature and magnitude of the economic costs is expected to range from minimal costs associated with sample collection, recordkeeping, and reporting to more extensive costs for treatment, maintenance or repair of distribution system mains or storage facilities, or other actions to correct sanitary defects identified during assessments.

EPA estimated that the net change in mean annualized national costs of the RTCR relative to the 1989 TCR is estimated to be approximately $14 million. Among PWSs serving 4,100 or fewer people, EPA estimated nationally that the largest increase in aggregate net costs is incurred by transient water systems serving 100 or fewer people because of the large number of systems. On a per system basis, this translates to a net annualized present value increase of approximately $86 per system serving 100 or fewer people nationally.

EPA estimated that the total net change in national annualized present value costs for all PWSs serving greater than 4,100 people is approximately $5.6 million nationally.

Monitoring requirements for these systems remain essentially unchanged. The overall net increase in estimated costs is driven primarily by the requirements to conduct system assessments and to correct sanitary defects**.** Based on the approximate 155,000 active public water systems nationwide reported as of fourth quarter 2007 data, PDWB staff estimate a net annualized present value increase of approximately $36 per system serving more than 4,100 people.

EPA estimated a net increase in national annualized cost estimates incurred by PWSs for rule implementation and annual administration to be approximately $2.77 million. PDWB staff estimate a net annualized cost estimate incurred for rule implementation and annual administration of approximately $18 per water system.

According to the Economic Analysis for the Proposed Total Coliform Rule, EPA estimated that households served by community water systems that would perform assessments and required corrective actions to experience an increase in annual net household costs of less than $1 on average for systems serving more than 4,100 people to approximately $23 for systems serving 100 people or fewer. Overall, EPA estimates annual net household costs to decrease as system size increases, due mainly to the economies of scale for the corrective actions. EPA estimated that households served by community water systems that perform assessments but no corrective action would experience a slight cost savings on an annual basis due to slight reduction in monitoring and Public Notification costs.

The Department will also incur costs, which are addressed in the response to question #5.

5. The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenue.

No effect on state revenue is anticipated.

The Department will incur costs related to administrative, implementation (including providing technical assistance), and enforcing the rule. Administrative costs include rule review, rule adoption, staff training, development of assessment forms, implementation and guidance documents, etc.

Implementing and enforcing the rule will include revising sample siting plans, reviewing sampling results, conducting site visits and assessments, reviewing completed assessment forms, tracking corrective actions, tracking public notification, ensuring assessments are performed, tracking corrective actions, and similar tasks. This impact will be absorbed by existing staff through adjusting workloads and re-prioritization or by contracting for assistance. No increased expenditures are anticipated.

On-going costs for implementing and enforcing the rule will include upgrading and maintaining data management tools, reviewing and approving systems' corrective actions plans, consulting with systems on corrective actions, tracking sanitary defects and corrective actions, providing compliance assistance for system assessments and seasonal systems, tracking seasonal system start-up procedure certifications, reporting compliance to the Safe

Drinking Water Information System, issuing treatment technique violations, and providing technical assistance and information.

The Department assumes—

- The cost of Level 1 Assessments will be equivalent to the unsafe sample investigations currently performed and will, therefore, not contribute significantly to existing on-going costs;
- The estimated number of Level 2 Assessments that may be required will be about 100 per year;
- Staff performing the Level 2 Assessments will be environmental specialists or engineers; and
- The amount of time that may be involved in performing the Level 2 Assessment and associated data entry and tracking will vary from about 8 to 16 hours, depending on the complexity. This time estimate includes providing technical assistance to the system, data tracking, follow-up, enforcement, etc.

In addition, 50 public water systems are located in the Department's state parks. These systems will be subject to the same regulatory requirements under the RTCR as other public water systems.

Four other state agencies, four federal agencies, and one county agency will be affected by this rulemaking because they own public water systems. The state agencies are the Missouri Departments of Conservation (6 systems), Corrections (7 systems), Elementary/Secondary Education (1 system), and Transportation (1 system). Federal agencies with public water systems in Missouri are the U.S. Army Corps of Engineers (64 systems), Department of Defense (3 systems), U.S. Forest Service (15 systems), and U.S. Park Service (9 systems). The St. Charles County Department of Community Health also owns a public water system (Rivers Project Office).

These systems will be subject to the same regulatory requirements under the RTCR as other public water systems. As with other systems, bacteriological monitoring costs will continue to be covered by DNR or DHSS. These public agencies will incur costs for Level 1 assessments (if they exceed the treatment technique triggers) and correction of sanitary defects. They will incur a cost savings with public notice because there will no longer be a Total Coliform MCL violation requiring public notice.

Additionally, about 60 percent of public water systems are publically owned and will incur the same implements costs as privately-owned systems. These costs are addressed in the response to question #4.

6. A comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction, which includes both economic and environmental costs and benefits.

Benefits of adopting this rule include:

- Greater public health protection for the public water system customers.

- Maintaining delegation of the federal primacy program. Missouri's public water systems would continue to be regulated by a state agency more in tune with their needs rather than a federal agency located in Kansas or Washington, DC.
- Maintaining federal funding for the Drinking Water State Revolving Fund (DWSRF) loan program.
- Maintaining federal funding for technical assistance, source water grants, engineering report services grants, and other special assistance provided to public water systems.

Costs of adopting the rule are addressed in the responses to questions #4 and #5 above.

Costs of inaction include the following:

- Withdrawal of delegation of federal authority (primacy). Ultimately EPA would take over all regulation of Missouri's public water systems except backflow prevention and permits, which are state requirements. If the rule is not adopted, the requirements will nonetheless become effective in Missouri as a federal rule and public water systems will be required to comply.
- Federal funding for drinking water, including the entire DWSRF grant, would be lost. Missouri's DWSRF capitalization grant is approximately $13 million annually. Sixty-nine percent of this funding is used to provide loans and grants to public water systems for infrastructure improvements. Thirty-one percent is used for non-infrastructure assistance to PWSs and for state primacy program needs. This assistance includes direct assistance to PWSs through source water protection grants, engineering report service grants, technical assistance, and other special assistance. Also, the state would lose federal funding for the primacy program, which is about $1.9 million per year.
- Funding provided by the state primacy fee would also be lost. By state law, the primacy fee can be collected from water system customers only as long as Missouri has primacy. The primacy fee generates approximately $4.5 million annually to implement the primacy program.
- Water systems' monitoring costs will increase. State statutes require MDNR or DHSS to provide laboratory analytical services to the water system for monitoring required by the state. With regulation of public water systems reverting to EPA, monitoring would be required by federal rather than state requirements. Presumably these monitoring costs would fall on the public water systems. Also, MDNR reduces the amount of monitoring required through vulnerability assessments, which is estimated to be about $6.1 million annual. EPA does not perform these vulnerability assessments and would require the full scope of monitoring regardless of the system's vulnerability.

Since the federal rule will become effective in Missouri regardless of the state rulemaking, there are no benefits to inaction.

7. A determination of whether there are less costly or less intrusive methods for achieving the proposed rule.

As addressed in response to the previous question, the rule must be adopted and must be at least as stringent as the federal rule. With the few exceptions noted in the response to question #1 of this report the requirements of the proposed state rule mirror the federal rule.

8. **A description of any alternative method for achieving the purpose of the proposed rule that were seriously considered by the department and the reasons why they were rejected in favor of the proposed rule.**

   The proposed rule must be adopted as a state regulation in order to retain delegation of the federal drinking water program so no methods other than adoption of the rule were considered. The more stringent monitoring requirements proposed in the draft rule have been in effect in Missouri since 1990 and the Department believes retaining these requirements is necessary in order protection public health. For the same reason, the Department believes transient systems that use chlorine or chloramines should be required to comply with the same disinfectant residual monitoring as all other systems.

9. **An analysis of both short-term and long-term consequences of the proposed rule.**

   Anticipated short-term consequences include an increase in training needs for both PWS and Department staff and increased technical assistance needs as water system staff adjusts to the new requirements.

   Long-term consequences may include a need for increased water system revenue, increase in capital costs for water system improvements, on-going costs of complying with the rule for both PWSs and the Department, and greater protection of public health.

10. **An explanation of the risks to human health, public welfare, or the environment addressed by the proposed rule.**

    The RTCR provides for increased protection against microbial pathogens in public water systems. The rule uses a risk-targeted approach to target PWSs that are susceptible to fecal contamination. Water is fecally contaminated when fecal indicators (for example, *E. coli*, enterococci, or coliphage) are present. The occurrence of fecal indicators in a drinking water supply is an indication of the potential presence of microbial pathogens that may pose a threat to public health. Their presence demonstrates that there is a pathway for pathogenic viruses and bacteria to enter drinking water sources. This rule requires PWSs that are at risk of fecal contamination to take corrective action to reduce cases of illnesses and deaths due to exposure to microbial pathogens.

11. **The identification of the sources of scientific information used in evaluating the risk and a summary of such information.**

    Sources of scientific information used in evaluating risk are discussed in depth throughout the U.S. EPA's preamble to its proposed and final RTCR as well as Draft Supporting Analyses and Appendices and other Supplemental Information documents listed under the response to question #2 of this regulatory impact report. Additional data and information sources are included the Economic Analysis for the Ground Water Rule (GWR EA) (USEPA 2006a), the *Technology and Cost Document for the Revised Total Coliform Rule* (RTCR T&C document) (USEPA 2012b), U.S. census data, and the knowledge and experience of stakeholders representing industry, states, small water systems, and the public.

The GWR EA provides occurrence information on *E. coli* in the source water of ground water PWSs for modeling the triggered monitoring component of GWR and informed the assumptions on the distribution of corrective actions taken in response to the presence of *E. coli* in the source water. As discussed in section VI.C of the preamble to the RTCR, *Occurrence and Predictive Modeling*, the model developed for this economic analysis considers the effect of GWR both before and during implementation of the RTCR. The RTCR T&C document included estimates of unit costs for the major components of the RTCR that were obtained from the advisory committee technical workgroup and vendors, including labor, monitoring, assessments, and corrective actions.

Fecal contamination and waterborne pathogens can cause a variety of illnesses, including acute gastrointestinal illness (AGI) with diarrhea, abdominal discomfort, nausea, vomiting, and other symptoms. Most AGI cases are of short duration and result in mild illness. Other more severe illnesses caused by waterborne pathogens include hemolytic uremic syndrome (HUS) (kidney failure), hepatitis, and bloody diarrhea (World Health Organization 2004). Chronic disease such as irritable bowel syndrome, renal impairment, hypertension, cardiovascular disease and reactive arthritis can result from infection by a waterborne agent (Clark *et al.* 2008; Clark *et al.* 2010; Moorin *et al.* 2010). Sensitive subpopulations are at greater risk from waterborne disease than the general population (Gerba *et al.* 1996).

When humans are exposed to and infected by waterborne enteric pathogens, the pathogens become capable of reproducing in the gastrointestinal tract. As a result, healthy humans shed pathogens in their feces for a period ranging from days to weeks. This shedding of pathogens often occurs in the absence of any signs of clinical illness. Regardless of whether a pathogen causes clinical illness in the person who sheds it in his or her feces, the pathogen being shed may infect other people directly by person-to-person spread, contact with contaminated surfaces, and other means referred to as secondary spread. As a result, waterborne pathogens that are initially waterborne may subsequently infect other people through a variety of routes (WHO 2004).

Study has shown that the fecal coliform assay is imprecise and too often captures bacteria that do not originate in the human or mammal gut (Edberg *et al.* 2000). On the other hand, *E. coli* is a more restricted group of coliform bacteria that almost always originate in the human or animal gut (Edberg *et al.* 2000). Thus, *E. coli* is a better indicator of fecal contamination than fecal coliforms. The provisions of the RTCR reflect the improved understanding of the value of total coliforms and *E. coli* as indicators.

The U.S. Centers for Disease Control and Prevention (CDC) estimates that there are 73,000 cases of illness each year in the US due to *E. coli* O157:H7 (Mead *et al.* 1999). The CDC estimates that about 15 percent of all reported *E. coli* O157:H7 cases are due to water contamination (Rangel *et al.* 2005). Active surveillance by CDC shows that 6.3 percent of *E. coli* O157:H7 cases progress to HUS (Griffin and Tauxe 1991; Gould *et al.* 2009) and about 12 percent of HUS cases result in death within four years (Garg *et al.* 2003). About 4 to 15 percent of cases are transmitted within households by secondary transmission (Parry and Salmon 1998).

A complete list of references addressing risk assessment can be found at the following link: https://www.federalregister.gov/articles/2013/02/13/2012-31205/national-primary-drinking-water-regulations-revisions-to-the-total-coliform-rule

A complete list of Distribution System White Papers for the RTCR discussing studies of waterborne disease linked to various possible sources of waterborne disease can be found at http://water.epa.gov/lawsregs/rulesregs/sdwa/tcr/distributionsystems.cfm

12. A description and impact statement of any uncertainties and assumptions made in conducting the analysis on the resulting risk estimate.

EPA made assumptions based on conversations with state drinking water staff with on-the-ground experience and reflecting EPA best professional judgment with regard to simulating RTCR Implementation for Level 1 Assessments and Level 2 Assessments. The EPA recognizes that there is a large uncertainty with the assumptions. Sensitivity analyses showed that the fundamental conclusions of the economic analysis do not change over a wide range of assumptions tested. Source: RTCR Economic Analysis (USEPA 2012a)
The assumptions used to simulate RTCR implementation are detailed in the RTCR Economic Analysis and summarized in Exhibit VI-3 of the RTCR preamble which is available at https://www.federalregister.gov/articles/2013/02/13/2012-31205/national-primary-drinking-water-regulations-revisions-to-the-total-coliform-rule.

EPA made assumptions for the effectiveness of assessments and subsequent corrective actions to account for the differences between the two types of assessments. The Level 2 assessment is a more comprehensive investigation that may result in finding more substantial problems than what may be found during a Level 1 assessment, and for that reason the corrective actions that result from a Level 2 assessment were modeled to result in corrective action measures that are generally more expensive and have bigger and longer lasting effects than those of the Level 1 assessments. EPA conducted sensitivity analyses around the key assumptions summarized in Exhibit VI-2 as discussed in section VI.L of the RTCR preamble, *Uncertainties in the Benefit and Cost Estimate for the RTCR.*

Since *E. coli* is an indicator of fecal contamination, EPA assumed that a decrease in *E. coli* occurrence in the distribution system would be associated with a decrease in fecal contamination in the distribution system. In general, this decrease in fecal contamination should reduce the potential risk to human health for PWS customers. Thus, any reduction in *E. coli* occurrence is considered a benefit of the RTCR.

13. A description of any significant countervailing risks that may be caused by the proposed rule

No significant countervailing risks were identified.

14. The identification of at least one, if any, alternative regulatory approaches that will produce comparable human health, public welfare or environmental outcomes.

Because EPA's RCTR must be adopted, no alternative regulatory approaches were identified for the state rule.

EPA evaluated two alternative regulatory approaches as part of their rulemaking effort:

(1) Retain the existing 1989 rule. EPA determined that this approach would not provide the comparable health benefits of its final Revised Total Coliform Rule.

(2) Require all PWSs to sample monthly for an initial period until they meet the eligibility criteria for reduced monitoring. This more stringent approach differs from EPA's final rule in that it allows PWSs to continue to monitor at their current frequencies until they are triggered into an increased sampling frequency. No PWSs are allowed to reduce monitoring to an annual basis. EPA determined that this more stringent approach went beyond the level necessary to provide public health protection.

15. Provide information on how to provide comments on the Regulatory Impact Report during the 60-day period before the proposed rule is filed with the Secretary of State.

Comments on this Regulatory Impact Report should be sent to Scott Weckenborg of the Public Drinking Water Branch. Electronic, faxed, and other written comments will be accepted. In your comments, please indicate the section of the Regulatory Impact Report your comment addresses.

Email your comments to: Mr. Weckenborg at scott.weckenborg@dnr.mo.gov . Please put "RTCR RIR Comment" in the subject line. Your comments may be in the text of the email or may be a Word attachment.

Fax your comments to: Mr. Scott Weckenborg, MDNR Public Drinking Water Branch, 573-751-3110.

Send your comments by U.S. Mail to: Mr. Scott Weckenborg, MDNR Public Drinking Water Branch, P.O. Box 176, Jefferson City, MO 65102-0176.

16. Provide information on how to request a copy of comments or the web information where the comments will be located.

Comments and responses will be posted on the Water Protection Program's Rules in Development website at http://dnr.mo.gov/env/wpp/rules/wpp-rule-dev.htm.