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Secretary of State

State of Oregon

**DEPARTMENT OF HUMAN SERVICES**

**Oregon Health Division**

**Drinking Water Program**



**Audits Division**

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No. 2001-03

January 26, 2001



OFFICE OF THE  
SECRETARY OF STATE

Bill Bradbury  
Secretary of State



AUDITS DIVISION  
John Lattimer  
Director

(503) 986-2255  
FAX (503) 378-6767

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*Auditing for a Better Oregon*

The Honorable John Kitzhaber, M.D.  
Governor of Oregon  
254 State Capitol  
Salem, Oregon 97310-4047

Gary Weeks, Director  
Department of Human Services  
500 Summer Street NE, Dept. 15  
Salem, Oregon 97301-1097

The National State Auditors Association annually conducts a joint audit dealing with issues affecting various states. This year's audit focused on water quality. The Department of Human Services' Oregon Health Division is the principal state agency governing drinking water quality. This report presents the results of work performed relating to drinking water quality in the state of Oregon.

We found that the department was not always receiving from water system operators timely and complete information on contaminant levels. The audit found that the division could improve its enforcement of drinking water quality reporting requirements, its procedures for responding to violations of water quality standards, and its monitoring of water quality tests conducted by independent laboratories.

OREGON AUDITS DIVISION

John N. Lattimer  
Director

Fieldwork Completion Date:  
August 18, 2000



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# EXECUTIVE SUMMARY

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## Background and Purpose

The Oregon Audits Division is one of twelve states participating in a National State Auditors Association (NSAA) joint audit of water quality. The objectives of the project are to determine whether the states' regulatory programs meet or exceed federal requirements, whether state monitoring programs are effective, and whether states apply corrective actions effectively. The NSAA audit program and our responses to specific audit questions is included in Appendix C of this report.

In Oregon, the Oregon Health Division (division) of the Department of Human Services administers and enforces drinking water quality standards.

## Results in Brief

The division reports that when drinking water quality problems occur, they usually occur in smaller systems that serve less than 3,300 people. According to the division, none of the four systems in Oregon serving more than 100,000 people had any violations in 1999. We found, however, that the division could improve its monitoring and enforcement of water quality laws.

### **A Critical Weakness in State Water Quality Reporting**

**Requirements.** Water system operators must periodically test their water for contaminants and report the results to the division. To ensure that appropriate action is taken if contamination is found, the division must receive complete and timely test results. Under ORS 448.150(1), laboratories that perform water quality tests report the results to system operators. The system operators then report results to the division. The division may receive reports directly from laboratories only with the permission of system operators. Under this arrangement, as shown by examples in this report, water system operators can control what information is provided to the division, and when it is provided.

For example, we found that water systems did not always report their test results. Of the 100 water systems reviewed:

- Three systems never reported test results showing coliform bacteria or chemical contamination.

- Fourteen systems did not report required lead and copper test results, 11 systems did not report required inorganic chemical test results, and 12 systems reported incomplete test results.

The division's effectiveness in monitoring drinking water quality could be enhanced if the law was amended to require laboratories to report all test results directly to both the division and water system operators.

**The Division Should Improve Its Enforcement of Reporting Requirements.** The division did not always issue violations when water systems failed to report water quality test results, reported incomplete results, or reported results after the due date. None of the water systems mentioned above that failed to report test results were issued a violation. Another 27 systems provided chemical test results to the division after the due date, but did not receive a violation.

**The Division Should Improve Procedures for Responding to Violations of Drinking Water Regulations.** The division did not always use its enforcement powers when violations were found. For example:

- The division did not take proper action with water systems with severe or recurring violations, known as significant non-compliers (SNCs). We reviewed a sample of 10 SNC systems and found that the division was aware that seven had not corrected violations in the time allowed, but the division took no enforcement action.
- The division did not issue a written violation notice to three of 12 systems reviewed that reported having water containing excess chemical contaminants.
- The division did not issue a written violation notice to three of 12 water systems that reported having nitrate contamination and that failed to take another sample for testing within 24 hours, as required. If nitrate limits are violated, and a system is unable to resample within 24 hours of receiving the test results, the system must immediately notify water users of the situation. We found no evidence that the three systems immediately notified users.

**The Division Should Improve Its Monitoring of Water Samples Analyzed by Independent Laboratories.** All laboratories that test drinking water in Oregon must first be certified by the division's Public Health Laboratory. Laboratories may perform water quality tests on only those chemicals for which they have

received approval, using approved methodologies. Our review of laboratories that performed tests for 77 water systems showed that:

- One system had water quality tests performed by a laboratory that was not certified to perform work in Oregon.
- Eleven systems used laboratories that had not obtained division approval to test for one or more chemical contaminants.
- Fifteen systems used laboratories that tested for one or more chemical contaminants using unapproved methodologies.

**The Division Should Adopt and Enforce All Federal Standards for Drinking Water.** Oregon is required to have drinking water standards that meet or exceed federal standards. The state's rules for two contaminants, however, are less stringent than those set by the EPA. The state requires water systems to test volatile and synthetic organic chemicals less frequently than required by federal rules.

**The Division Should Ensure That Sanitary Surveys are Conducted.** The division is required to complete sanitary surveys of certain community water systems every five years.<sup>1</sup> These onsite inspections evaluate the adequacy of the system, including its water sources and distribution system. Only 102 of 746 community water systems (13.7 percent) requiring a survey had received one in the past five years.

## Agency Response

The Department of Human Services generally agreed with the conclusions and recommendations in this report.

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<sup>1</sup> This includes small systems serving less than 4,100 users that are not required to collect and test at least five routine samples per month.



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# BACKGROUND AND INTRODUCTION

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## NSAA Joint Audit on Water Quality

The Oregon Audits Division is a member of the National State Auditors Association (NSAA), an organization that promotes the exchange of information and ideas among state audit organizations. The NSAA coordinates joint audits on issues of national importance. States participating in the project address the same questions and issue separate audit reports. The NSAA compiles the results into a summary report. Oregon is one of 12 states participating in the NSAA's 2000 joint audit on water quality.

## Public Drinking Water Regulatory Program

In 1974, Congress enacted the Safe Drinking Water Act to protect and improve the quality of the nation's drinking water. The U.S. Environmental Protection Agency (EPA) establishes and enforces rules under the Act. Currently, the EPA has established standards for 96 different contaminants.

Besides federal regulations, Oregon public drinking water systems are also subject to the Oregon Drinking Water Quality Act, signed into law in 1981. According to the Oregon law, the term "safe drinking water" refers to water that is sufficiently free from biological, chemical, radiological, or physical impurities such that individuals will not be exposed to disease or harmful physiological effects.

With the help of its Drinking Water Advisory Committee, the division has established a Safe Drinking Water Benchmark. The goal is to have 95 percent of Oregonians served by public drinking water systems that meet all health-based standards continuously during the year.

According to the division, the state has made considerable progress towards meeting the benchmark goal. The following division data, the most recent available, shows this positive trend for the 1,300 water systems included in their benchmark.

Year	Percentage of Oregonians Served by Systems Meeting Health-Based Standards (Unaudited)
1998	90%
1997	88%
1996	56%
1995	50%
1994	49%

Source: Oregon Health Division

The division reports that most violations of drinking water laws and rules occur in smaller systems serving less than 3,300 people, rather than the larger public water systems. The division did not issue any violations during 1999 to any of the four systems in Oregon that serve more than 100,000 people.

Under the Oregon Act, the division has broad authority to set water quality standards necessary to protect public health. The Act includes the following requirements:

- Public water systems must regularly take samples of their water and have it analyzed for contaminants.
- Water samples may be analyzed only by laboratories approved by the division.
- Water systems must report the laboratory results to the division.
- The division must investigate water systems that fail to submit samples, or that receive laboratory results showing contaminant levels in excess of regulated limits.
- Water systems must take corrective action and notify users if they fail to sample their water and have it tested, fail to report laboratory results to the division, or receive laboratory results showing contaminant levels in excess of regulated limits.

Under a 1986 agreement with the EPA, the division is responsible for administering the federal Safe Drinking Water Act in Oregon. According to the agreement, the division is required to adopt and enforce standards that are no less stringent than the federal standards. The EPA provides partial financial support for the division's water quality program.

The division regulates public drinking water systems in cooperation with county health departments. The work is divided as follows:

- The division is responsible for regulating any community water system that serves more than 3,300 people, uses surface water sources, or is located in a county that does not operate a drinking water program.
- County health departments are responsible for regulating community water systems serving 3,300 people or less and using groundwater sources, and all non-community water systems.

## **Drinking Water Standards For Contaminants**

The EPA has established drinking water quality standards for 96 contaminants. A standard sets the maximum allowable level of the contaminant as well as a sampling and testing frequency. Contaminants associated with health effects that could develop from very long-term exposures, like arsenic, may be tested infrequently, such as every three or four years. Contaminants associated with immediate health impacts, such as bacteria and nitrates, must be tested more often, such as every month, quarter, or year.

Regulated contaminants are grouped into the following general categories:

**Inorganic Chemicals**—a group of chemicals that are mainly heavy metals, including: arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, lead, mercury, nickel, and selenium.

**Volatile Organic Chemicals**—a group of compounds composed mostly of industrial solvents like trichlorethylene, benzene, carbon tetrachloride, and toluene.

**Synthetic Organic Chemicals**—a group of compounds that are composed mostly of pesticides, such as atrazine, endrin, and dioxin.

**Radiological Agents**—a group of chemicals that emit alpha radiation.

**Nitrate**—a proven serious health risk to infants under six months in age. Sources may include leaching from septic tanks, runoff from fertilizer use, and livestock wastes.

Coliform Bacteria—common organisms that, when found in drinking water, may indicate a serious problem with the water system and a health threat. Testing is required for two forms of the bacteria: Total Coliform and Fecal Coliform.

### Classification of Public Water Systems

A public water system is subject to federal regulations if it serves 25 or more people for at least 60 days. Smaller public water systems are subject only to the provisions of the Oregon Drinking Water Quality Act. Table 1 depicts the different classifications of public water systems.

**Table 1  
Public Water System Classifications in Oregon  
2000**

Public Water System Categories	Description	Number of Systems	Approximate Total Population Served	Basis of Regulation	Examples
<b>Community</b>	Serves at least 15 connections used by at least 25 year-round residents.	885	2,700,000	Federal	Cities, subdivisions, mobile home parks.
<b>Non-Transient, Non-Community</b>	Serves non-residential sites that generally consist of the same people every day.	329	69,000	Federal	Schools and factories with their own water supply.
<b>Transient, Non-Community</b>	Serves non-residential sites that generally consist of different people every day.	1,438	222,000	Federal	Parks, campgrounds, restaurants with their own water supply.
<b>State Regulated</b>	Serves 4 to 14 connections, or 10 to 24 people.	965	18,000	State	Any of the above.
<b>Non-Regulated Systems</b>	Serves 1 to 3 connections, or 1 to 9 people.	NA	500,000	None	Homes served by individual wells.

Table 1 shows that about 500,000 Oregonians get their drinking water from home wells. These sources are not subject to federal or state rules.

Public water systems get their water from wells or springs (called groundwater), or from rivers, lakes, or streams (called surface water). Fewer than 400 systems get some or all of their water from surface water supplies; the remainder use only groundwater.

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# Chapter 1: Water Quality Reporting Requirements

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Water system operators must test their water for chemical and bacterial contaminants routinely and report the results to the Oregon Health Division (division). According to Oregon Administrative Rule (OAR) 333-061-0040, all analytical results must be reported to the division within 10 days after the end of the required reporting period.

If the analysis indicates the presence of coliform bacteria, or if any other contaminant limits are exceeded, the results must be reported to the division within 24 hours or by the next business day.

To review the division's enforcement of chemical and coliform bacteria testing and reporting requirements, we randomly selected laboratory results for 100 public water systems. All 100 systems were required to test for coliform bacteria. Six of the systems were not subject to chemical testing and reporting requirements during our audit period.

## A Critical Weakness in State Water Quality Reporting Requirements

As prescribed by ORS 448.150(1), laboratories that perform water quality tests report the results directly to system operators, not the division.<sup>2</sup> The division may receive laboratory results directly only with the permission of a water system operator. During 1999, approximately 30 percent of coliform test results were reported directly from laboratories to the division. If permission is not given, it is possible for a water system operator to control what information is provided to the division, and when it is provided.

In some cases, a laboratory provided test results to a system operator, but the operator did not report the test results to the division. Of the 100 systems reviewed:

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<sup>2</sup> ORS 448.150 (1): "The division shall:  
(b) Require regular water sampling by water suppliers. These samples shall be analyzed in a laboratory approved by the division. The results of the laboratory analysis shall be reported to the division by the water supplier, unless direct laboratory reporting is authorized by the water supplier."

- Three systems did not report test results showing coliform bacteria or chemical contamination.
- Fourteen systems did not report required lead and copper test results.
- Eleven systems did not report required inorganic chemical test results.
- Twelve systems reported incomplete chemical test results.

To ensure that appropriate action is taken if contamination is found, the division needs complete and timely water quality data. The division's effectiveness could be enhanced if the law was amended to require laboratories to report test results directly to the division and water system operators.

## **Water Systems Not Reporting Initial Positive Results**

We visited two private laboratories and reviewed test results for 25 public water systems to determine if the division was properly notified of results showing coliform bacteria or any regulated substance in excess of allowable limits. In three instances, a water system had a positive sample but did not report the result to the division.

The following results were not reported to the division:

- One system tested positive for nitrates in 1997.
- One system exceeded the lead/copper limit in 1999.
- One system tested positive for coliform bacteria in 1996.

The system that tested positive for coliform bacteria conducted a second test six days later. The retest, which came out negative, was then reported to the division.

### **Violations Not Issued to Water Systems Failing to Report Lead and Copper Results**

***Fourteen systems did not report lead and copper test results and were not issued violations.***

Of the 94 water systems reviewed that were required to test for chemical contaminants, 14 systems (15 percent) failed to report lead and copper test results. The division had not identified these exceptions and issued reporting violations. (See Appendix B, Figure 1.)

Program administrators stated that the division closely monitored the results of the state's first two series of lead and copper tests. However, the division's automated database of water systems does not keep track of when systems' tests results are due. Water systems that have not remained current with lead and copper testing requirements appear to have gone unnoticed.

Water systems that have not completed or reported the required tests may be subjecting users to unhealthy levels of lead and copper.

### **Violations Not Issued to Water Systems Failing to Report Initial Inorganic Chemical Results**

***Twelve percent of the systems reviewed did not report initial inorganic chemical test results.***

Of the 94 water systems reviewed that were required to test for chemical contaminants, 11 systems failed to report an initial inorganic test result. The division had not identified these exceptions and issued reporting violations.

Water systems that have not completed and reported the required tests may be subjecting users to unhealthy levels of inorganic chemicals.

### **Incomplete Chemical Tests Not Identified**

***Thirteen percent of systems reviewed reported an incomplete test.***

Of the 94 water systems reviewed that were required to test for chemical contaminants, 12 systems reported incomplete test results and were not issued a reporting violation. The reports were missing results for one or more contaminants. (See Appendix B, Figure 1.)

## Violations Not Issued to Water Systems Reporting Late

***Of the systems we reviewed, 29 percent reported chemical results after the due date and were not issued violations.***

Water systems must report laboratory test results to the division within 10 days after the end of the required reporting period.

Of the 94 water systems reviewed that were required to test for chemical contaminants, 27 systems reported chemical test results more than 10 days after the due date. None were issued a reporting violation.<sup>3</sup> (See Appendix B, Figure 1.)

Ten out of 100 systems reported a coliform test result more than 10 days after the due date but were not issued a reporting violation. (See Appendix B, Figure 2.)

According to division staff, violations are issued only to systems reporting 20 days or more after the due date. We were told that issuing violations for late reporting was considered not practical. The division's goal when issuing a violation is to get the water system to comply. In the division's view, if a water system submits its test results a few days late, it has essentially complied.

Without enforcement actions to motivate water system operators to report on time, the division may continue receiving late laboratory results. Enforcement could pay off by reducing the time required to follow up on late and missing laboratory reports.

## Water Systems Not Reporting Initial Positive Results in a Timely Manner

***Ten out of 14 systems that tested positive for coliform did not report the results within 24 hours, as required.***

Of the 100 water systems reviewed, 14 systems had initial results that were positive for coliform bacteria. Ten of the 14 systems did not report initial results within 24 hours, as required. Eight of the 10 systems did not complete a repeat test within 24 hours, as required. None of the 10 systems received reporting violations. (See Appendix B, Figure 2.)

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<sup>3</sup> The chemicals tested for included inorganic chemicals, synthetic organic chemicals, volatile organic chemicals, radiological agents, and lead and copper.

We also reviewed 12 water systems that had received violations for exceeding allowable contaminant limits. Nine of these systems had not reported initial positive results to the division within 24 hours, as required. Most did not report for a week or more. (See Appendix B, Figure 3.)

## Recommendations

**We recommend** that the Legislative Assembly:

1. Consider amending ORS 448.150(1) to require laboratories to report public water system test results directly to both the division and water system operators.

**We recommend** that DHS:

1. Determine whether monitoring requirements can be automated to ensure that the system identifies all violators.
2. Provide for electronic reporting of laboratory results. The division should consider developing electronic forms for laboratories and water systems to use in reporting.
3. More actively enforce water water sample reporting requirements. Violations should be issued to water systems that fail to report within 10 days after the end of the required reporting period, fail to report complete results, or fail to report tests entirely.



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## Chapter 2: Responding to Violations of Drinking Water Regulations

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According to ORS 448.255, the division is required to give written notice to any public water system being operated or maintained in violation of state and federal water quality standards. The written notice must include a schedule requiring remedial action.

We found that the division did not consistently issue violation notices. In some cases, the division did not investigate violations to ensure that corrective action had been taken.

### Written Notice of Violations Not Issued to Systems Determined to Violate a Standard

***Of 12 systems reporting excess contaminants, three did not receive a written notice of violation.***

We reviewed 12 water systems reporting tests showing unallowed contaminant levels. After testing positive for excess contamination, these systems were required to perform repeat sample tests to confirm the initial results. All of these systems performed the repeat tests, and all confirmed that contaminant limits had been exceeded. The division did not issue a written violation notice to three of the systems. (See Appendix B, Figure 3.) We noted that 11 of the 12 systems took corrective action to resolve the problem.

***Of 24 systems not reporting test results, the division did not issue a written violation notice to 22.***

Of the 100 water systems in our review, the division found that 24 had failed to report chemical test results. The division did not issue a written violation notice to 22 of the systems. (See Appendix B, Figure 4.) We noted that 21 of the 24 systems did not take corrective action and report their results.

Without receiving official notice of violation, system operators may allow problems to go uncorrected.

### Water Systems Not Completing Repeat Tests Within 24 Hours

According to state rules, if test results show excess levels of nitrate or nitrite, a system operator is required to collect and test one additional sample within 24 hours after being notified of the results. Systems unable to comply with the 24-hour sampling requirement must immediately notify their users and collect one additional sample within two weeks. Repeat sampling and testing is done to confirm the validity of the initial results.

Three systems exceeded limits for nitrate and did not complete repeat tests within 24 hours. Because they did not resample within the required time, the system operators should have immediately notified their users. We found no evidence that their users had been immediately notified. (See Appendix B, Figure 3.)

## **Public Notices of Violations Not Issued**

State rules require the owner or operator of a public water system found to have excess levels of contaminants to notify persons served by the system. The time period for notifying users depends on the contaminant. If the contaminant is one considered to pose an acute risk to human health, the system operator or owner must provide notice as soon as possible, but in no case more than 72 hours after receiving notice. The system owner or operator also must furnish a copy of the notice to radio and television stations serving the area.

We reviewed files for 12 water systems that had reported excess contaminants and received a violation notice. Files for four of the systems did not contain evidence that a public notice was provided to the users of the system. Three of the four systems had excess levels of contaminants considered to pose an acute risk to human health. (See Appendix B, Figure 3.) One of the systems issued a public notice approximately one year after learning that it exceeded allowable limits for nitrate, a contaminant considered to pose an acute risk to human health.

Of the 24 public water systems reviewed that received a reporting violation, there was no evidence in the division's files that any provided public notices to the users of those systems. (See Appendix B, Figure 4.)

## **Significant Non-Compliers (SNCs) Not Held Accountable for Continued Violations**

The state and EPA classify systems having several violations in a short amount of time, or having severe violations, as significant non-compliers (SNCs). The state is required to identify and report SNCs to the EPA and make efforts to return these systems to compliance.

According to division management, most Oregon SNCs are classified as such because of reporting violations.

Any SNC not achieving compliance within eight months following a compliance deadline is to subject to one of the following enforcement actions:

1. A compliance agreement containing interim compliance milestones,
2. An administrative order,
3. A civil penalty, or
4. Court action.

We selected a sample of 10 SNC systems for review. The systems we selected had been classified as SNCs for at least one year. Eight were classified as SNCs because of reporting violations.

Files for seven of the 10 SNCs showed that violations had not been corrected in the time allowed, but the division had not taken enforcement action. For two of the systems, there was no evidence that the division had contacted the system operator about the violations.

### **Recommendations**

**We recommend** that DHS:

1. Follow state rules by issuing written violation notices when violations are found. Document and justify any exceptions to this requirement.
2. Require system operators to submit documentation of all public notices. Follow up with water systems that do not submit this evidence.
3. Follow agreements with the EPA for monitoring water systems classified as significant non-compliers (SNCs). The division should ensure that enforcement action is taken with SNCs that have not achieved compliance within eight months of the end of the compliance period.



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## Chapter 3: Monitoring of Laboratories

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Water system operators contract with private laboratories for analytical work to satisfy water quality testing requirements.

State rules require drinking water samples to be analyzed in division-certified laboratories using division-approved equipment, procedures, and methods. The Oregon State Public Health Laboratory, a part of the division, is responsible for certifying and approving laboratories to test drinking water.

To review the division's monitoring of test results to ensure that work was done under division certification and approvals, we obtained division records for laboratories that performed tests for 77 public water systems.

### **Most Laboratories Were Division-Certified to Complete Analysis in the State of Oregon**

The division appeared to adequately ensure that water quality analysis was completed by laboratories that the division had certified to conduct analysis in the state of Oregon.

Of 77 water systems reviewed, only one system (1.3 percent) had chemical contaminant tests done by an uncertified laboratory. The division required the tests to be performed again by a certified laboratory. (See Appendix B, Figure 5.)

### **Laboratories Testing Chemical Contaminants Without Division Approval**

The division could improve its monitoring of test results to ensure that analysis is completed under appropriate division approvals.

***Six of 77 systems reviewed had chemicals analyzed by laboratories not approved to do so.***

Six of 77 water systems reviewed had samples analyzed for chemical contaminants by a laboratory that did not have the division's approval to perform the tests. (See Appendix B, Figure 5.)

***Fifteen of 77 water systems reviewed were tested by laboratories using unapproved methods.***

Fifteen of 77 water systems reviewed had chemical contaminant samples analyzed by a division-approved laboratory, but the laboratory did not use an approved analytical method. (See Appendix B, Figure 5.)

The division identified one of the laboratories using unapproved methods. The division required the laboratory to complete repeat sample tests for each chemical contaminant for which an unapproved method was used.

Program administrators said that the division's database does not automatically match laboratories' results to division approvals. Test results are reviewed manually. The division randomly selects results for a number of systems and verifies that laboratories have received the appropriate division approvals. This monitoring procedure appears to allow unapproved testing to go undetected. The division is scheduled to receive from the EPA in 2001 a new database system, which may allow for improved monitoring.

## **Sample Retests Not Completed**

Sixteen of 77 systems reviewed were tested by the laboratory that the division identified as using unapproved methods. Although all systems should have been retested, 14 either did not receive any retesting, or the tests performed were incomplete.

The division did not have an automated follow-up process for determining whether required retests were being performed. Due to the large number of water systems in the state, we question whether the division can effectively track sample retests without automated support.

## **Recommendations**

**We recommend** that DHS:

1. Develop a process for monitoring test results to ensure that laboratories conducted the analysis in accordance with state rules. Determine which monitoring requirements could be automated.
2. Develop a process to ensure that all retests are conducted properly.

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## Chapter 4: Requirement to Enforce Federal Standards for Drinking Water

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***States are required to adopt standards no less stringent than the federal standards.***

Since 1986 the division has exercised primary responsibility for administering the federal Safe Drinking Water Act in Oregon. The state must adopt and enforce standards that are no less stringent than federal standards. In return, the EPA gives the division the regulatory responsibility for public drinking water systems and provides partial financial support for the Oregon program.

### **The Division Has Adopted Most of the Minimum EPA Standards for Drinking Water**

The division has adopted most of the minimum EPA standards for drinking water. We found that the state exceeds the minimum standards in two areas. The state requires transient non-community water systems to complete at least one inorganic chemical test, something that the EPA does not require. The state also requires that nitrite be tested for more frequently than required by the minimum federal requirements.

We found, however, that the state's testing requirements for volatile and synthetic organic chemicals are less stringent than those set by the EPA. Oregon allows for less frequent testing. As a result, some Oregon water systems may not have a sufficient number of tests completed to clearly indicate users' level of exposure to regulated substances.

### **Tests for Volatile and Synthetic Organic Chemicals**

***The state testing requirements for volatile and synthetic organic chemicals are less stringent than EPA standards.***

To test for volatile organic chemicals, Oregon rules require community and non-transient non-community systems to collect and test one sample every three years. This state testing requirement is less stringent than those set by the EPA, which requires annual testing. If no contamination is found, systems using groundwater as a source are allowed to test once every three years. Surface water systems are still required to test annually.

To test for synthetic organic chemicals, Oregon rules require all community and non-transient non-community systems to collect and test one sample every three years at each sampling point. While the state rules meet federal requirements for smaller water

systems, they are less stringent than those set by the EPA for larger systems. Federal rules require large systems serving more than 3,300 people to test for these chemicals twice during a three-year compliance period.

## **Recommendations**

**We recommend** that DHS:

Implement federal standards for volatile and synthetic organic chemical testing frequency. The division should adopt and enforce the federal testing frequency requirements in the current compliance period.

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## Chapter 5: Requirement to Conduct Sanitary Survey Inspections

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The division conducts onsite sanitary surveys at public water systems to identify operating deficiencies and potential public health hazards. Under federal rules, the division must perform an initial sanitary survey of systems collecting fewer than five water samples per month. This rule includes community water systems serving up to 4,100 users. Thereafter, these systems must receive a sanitary survey every five years. As part of a survey, the division or county staff will review the adequacy of the following:

- Water sources (including any sources of contamination);
- Treatment methods;
- Distribution system;
- Finished water storage;
- Pumps, pump facilities, and controls;
- Water quality monitoring, reporting, and data verification;
- System management; and
- Compliance with legal requirements.

### Sanitary Survey Inspections Are Not Conducted as Required

***Only 13.7 percent of the community water systems had a required sanitary survey conducted.***

As of February 2000, of the 746 community water systems required to have a sanitary survey, only 102 (13.7 percent) had received one in the past five years.

According to program managers, the division's goal is to comply with the law and conduct a sanitary survey every five years. We were told that the majority of the division's resources had gone into ensuring statewide compliance with lead and copper testing requirements. As a result, the division postponed conducting sanitary surveys.

In order to address the backlog, the division recently began paying county health departments to conduct the sanitary surveys.

## Recommendations

**We recommend** that DHS:

Continue working with counties to complete sanitary surveys. The division should evaluate whether this effort is effective in addressing the backlog of systems needing surveys and, if necessary, develop another approach to effectively meet the sanitary survey requirements.

## **Commendation**

The courtesies and cooperation extended by the officials and staff at the Department of Human Services were commendable and much appreciated.

## **Audit Team**

James D. Pitts, Audit Administrator

Jason Stanley, CPA

Robert Martinez

Leslie Finley, CPA



## **APPENDICES**



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## Appendix A: Objectives, Scope and Methodology

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This audit was conducted in cooperation with the National State Auditors Association (NSAA) joint audit on water quality. Oregon is one of 12 states participating in the audit. In addition to the drinking water portion of the audit, another team from the Oregon Audits Division audited issues relating to surface water quality at the Department of Environmental Quality. The NSAA identified three objectives for the audit:

1. Do state regulatory programs meet or exceed minimum EPA standards for drinking water?
2. Do states have an effective monitoring program for drinking water?
3. Do states apply corrective actions effectively?

In addition to the objectives provided by the NSAA, we included the following objectives:

4. Is Oregon's Drinking Water Program conducting sanitary surveys of public water systems in a timely manner?
5. Are public water systems reporting all positive sample results to the division's Drinking Water Program as required by state and federal regulations?

To determine whether state regulatory programs meet or exceed minimum EPA standards for drinking water, we reviewed state statutes and rules, and compared them to the federal drinking water requirements issued by the Environmental Protection Agency (EPA). We interviewed program management and personnel to gain a better understanding of the drinking water program.

To determine whether the state has an effective monitoring program for drinking water, we selected a random sample of 100 public water systems from the division's water system inventory database. Our sample consisted of 30 community, 25 non-transient non-community, 20 transient non-community, and 25 state-regulated water systems. Our review considered the division's monitoring of both coliform bacteria and chemical test results.

To test the division's monitoring for bacterial (coliform) contaminants in drinking water, we reviewed and tested appropriate documentation for the 100 randomly selected public water systems. Our audit period included coliform tests required to be submitted between January 1999 through December 1999.

To test the division's monitoring for chemical contaminants in drinking water, we reviewed and tested appropriate documentation found in the division's files and recorded in the database for the water systems selected. Six of the 100 systems reviewed were exempt from chemical testing requirements during our audit period.

For the 94 systems we sampled that were required to perform chemical testing, we reviewed documentation for the most recent applicable compliance period. These were:

- January 1996 through December 1998 for chemicals that must be tested every three years.
- January 1999 through December 1999 for chemicals tested on a yearly basis.

To evaluate the division's monitoring of both coliform and chemical test results, we noted an exception if one of the following errors occurred and the division failed to issue a violation for that error:

- Contaminants were **not** tested in accordance with the compliance schedules established by the division;
- Sample results were **not** reported completely or in a timely manner; or
- Test results showed excess chemical contamination or positive coliform results and the system failed to take the appropriate follow-up action, such as resampling and public notification, if necessary.

We reviewed division approvals for laboratories to determine whether the division had thoroughly evaluated chemical test results to ensure that the analysis had been conducted by a division-approved laboratory using approved methods.

We attempted to review division approvals for laboratories performing work on all of the 94 systems required to submit chemical tests during our audit period. Out of the 94 systems, 17 either met the criteria for a testing waiver during our review

period or did not report the required chemical tests; thus, there were no laboratory approvals to review. Of the remaining 77 systems with laboratory test results, we reviewed laboratory certification records maintained at the division's Public Health Laboratory. We noted an exception upon finding the following:

- Chemical contaminant samples were analyzed by a laboratory that had **not** been approved by the division to test the chemical;
- Chemical contaminant samples were analyzed by a laboratory that used an unapproved methodology; or
- Chemical contaminant samples were analyzed by a laboratory **not** approved by the division to complete analysis in the state of Oregon.

To determine whether the state applies corrective actions effectively, we selected systems that had received a violation for either not reporting results or for exceeding allowable contaminant limits. Out of our original random sample of water systems, we identified 24 systems that were issued a violation for failing to report chemical test results, and two systems that had received violations for testing positive for coliform contamination. Because there were no systems in our original sample that were issued violations for exceeding allowable chemical contaminant levels, we expanded our sample to include 10 systems that received violations for excess contaminants between the years 1996 and 1999.

In order to determine whether corrective actions were effective, we reviewed documentation located in the division's water system files and database. We noted an exception if the following resulted:

- The division had **not** issued a water system a written notice of violation and compliance schedule by the state as required by law;
- Water systems had **not** taken or completed corrective actions to the violations issued by the division;
- Water systems did **not** report initial results showing excess contaminants to the division within 24 hours to the state;
- Water systems did **not** complete the required number of repeat samples within specified time period; or

- Water systems did **not** notify the public when excess contaminants were discovered or a required test was not reported to the division.

To determine if the division is conducting sanitary surveys of public water systems in compliance with state rules, we reviewed the division's database files. The division was required to complete an initial sanitary survey by June 29, 1994 of all community water systems that do not collect five or more routine samples per month. Thereafter, systems were to receive a sanitary survey every five years.

Using the division's database, we identified a total of 884 community water systems that were active as of February 14, 2000. Of the 884 community water systems, we determined that 746 do not collect five or more routine coliform samples per month. We then identified systems that had not had a follow-up sanitary survey completed after the initial survey due date of June 29, 1994.

To determine whether public water systems are reporting all sample results that exceeded allowable chemical limits or showed positive coliform contamination to the division, we judgmentally selected two laboratories that appeared to be frequently used by water systems to conduct drinking water quality analyses. From our original sample of 100 public water systems, we selected 25 that had an analysis completed by one of these laboratories. We visited the laboratories and reviewed analytical results for the 25 water systems that were completed between 1996 and 1999. All test results in which the system exceeded allowable contaminant levels, or tested positive for coliform were then cross-checked with the division's files and database. We noted an exception if the tests indicating chemical or coliform contamination that were found in the laboratory's files were not found in the division's files or database.

We conducted our audit from February to August 2000 in accordance with generally accepted government auditing standards.

## Appendix B: Testing Summary Tables

Figure 1: Summary of Chemical Monitoring Review by System Type

	COMMUNITY WATER SYSTEMS	NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS	TRANSIENT NON-COMMUNITY WATER SYSTEMS	STATE REGULATED WATER SYSTEMS	TOTAL
	TOTAL=885	TOTAL=329	TOTAL=1,438	TOTAL=965	TOTAL=3,617
NUMBER OF SYSTEMS REVIEWED	25	24	20	25	94
NUMBER NOT REPORTING TEST RESULTS BY DUE DATE*	18	7	2	0	27
NUMBER NOT REPORTING LEAD AND COPPER TEST RESULTS*	9	5	Not required	Not required	14
NUMBER NOT REPORTING INITIAL INORGANIC CHEMICAL TEST RESULTS*	0	0	2	9	11
NUMBER NOT REPORTING COMPLETE TEST RESULTS*	3	7	1	1	12
NUMBER OF SYSTEMS WITH AT LEAST ONE OF THE ABOVE MONITORING PROBLEMS**4	21	14	5	10	50

\* The division did not issue a violation notice for any of the exceptions in this table.

<sup>4</sup> Avoids double counting of systems with multiple chemical monitoring exceptions.

**Figure 2: Summary of Coliform Monitoring Review by System Type**

	<b>COMMUNITY WATER SYSTEMS</b>	<b>NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS</b>	<b>TRANSIENT NON- COMMUNITY WATER SYSTEMS</b>	<b>STATE REGULATED WATER SYSTEMS</b>	<b>TOTAL</b>
	TOTAL=885	TOTAL=329	TOTAL=1,438	TOTAL=965	TOTAL=3,617
NUMBER OF SYSTEMS REVIEWED	30	25	20	25	100
NUMBER NOT REPORTING TEST RESULTS BY DUE DATE*	9	1	0	0	10
NUMBER INITIALLY TESTING POSITIVE FOR COLIFORM BACTERIA	5	2	6	1	14
NUMBER NOT REPORTING INITIAL POSITIVE TEST RESULT WITHIN 24 HRS*	4	0	5	1	10
NUMBER NOT CONDUCTING A REPEAT SAMPLE TEST WITHIN 24 HRS*	1	1	5	1	8
SYSTEMS WITH AT LEAST ONE OF THE ABOVE MONITORING PROBLEMS** <sup>5</sup>	11	2	6	1	20

\* The division did not issue a violation for any of the exceptions in this table.

<sup>5</sup> Avoids double counting of systems with multiple coliform monitoring exceptions.

**Figure 3: Maximum Contaminant Level Violation Summary by System Type**

	<b>COMMUNITY WATER SYSTEMS</b>	<b>NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS</b>	<b>TRANSIENT NON-COMMUNITY WATER SYSTEMS</b>	<b>STATE REGULATED WATER SYSTEMS</b>	<b>TOTAL</b>
	TOTAL=885	TOTAL=329	TOTAL=1,438	TOTAL=965	TOTAL=3,617
NUMBER OF SYSTEMS REVIEWED	4	3	5	0	12
NUMBER NOT INITIALLY REPORTING TO THE DIVISION WITHIN 24 HOURS	4	1	4	0	9
NUMBER WITH NO WRITTEN NOTICE OF VIOLATION AND COMPLIANCE SCHEDULE IN SYSTEM FILE	2	1	0	0	3
NUMBER THAT DID NOT COMPLETE CORRECTIVE ACTIONS	1	0	0	0	1
NUMBER THAT DID NOT PERFORM REQUIRED NUMBER OF REPEAT SAMPLES IN ALLOWABLE TIME PERIOD	1	0	2	0	3
NUMBER THAT DID NOT ISSUE A PUBLIC NOTICE	1	1	2	0	4

**Figure 4: Chemical Non-Reporting Violation Summary by System Type**

	<b>COMMUNITY WATER SYSTEMS</b>	<b>NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS</b>	<b>TRANSIENT NON- COMMUNITY WATER SYSTEMS</b>	<b>STATE REGULATED WATER SYSTEMS</b>	<b>TOTAL</b>
	TOTAL=885	TOTAL=329	TOTAL=1,438	TOTAL=965	TOTAL=3,617
NUMBER OF SYSTEMS REVIEWED	5	1	6	12	24
NUMBER WITH NO WRITTEN NOTICE OF VIOLATION AND COMPLIANCE SCHEDULE	4	1	5	12	22
NUMBER THAT DID NOT COMPLETE CORRECTIVE ACTIONS	5	1	4	11	21
NUMBER THAT DID NOT ISSUE A PUBLIC NOTICE	5	1	6	12	24

**Figure 5: Laboratory Certification Review by System Type**

	<b>COMMUNITY WATER SYSTEMS</b>	<b>NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS</b>	<b>TRANSIENT NON- COMMUNITY WATER SYSTEMS</b>	<b>STATE REGULATED WATER SYSTEMS</b>	<b>TOTAL</b>
	TOTAL=885	TOTAL=329	TOTAL=1,438	TOTAL=965	TOTAL=3,617
NUMBER OF SYSTEMS REVIEWED	25	24	15	13	77
NUMBER OF SYSTEMS ANALYZED BY A LABORATORY NOT APPROVED BY THE DIVISION	1	0	0	0	1
NUMBER OF SYSTEMS ANALYZED BY A LABORATORY NOT APPROVED TO TEST CHEMICAL CONTAMINANT	4	2	0	0	6
NUMBER OF SYSTEMS ANALYZED BY A LABORATORY USING AN UNAPPROVED METHOD	9	6	0	0	15
NUMBER OF SYSTEMS REQUIRING REPEAT SAMPLE TESTS <sup>6</sup>	7	6	2	1	16
NUMBER OF SYSTEMS FOR WHICH A REPEAT SAMPLE TEST WAS NOT CONDUCTED OR INCOMPLETE	7	5	1	1	14

<sup>6</sup> The division discovered one lab that was testing unauthorized chemicals and using unauthorized methodologies. This lab was required to perform repeat tests using only methodologies for which it had been approved.



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## Appendix C: NSAA Audit Program

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### **1.0 OBJECTIVE: Do individual state regulatory programs meet or exceed minimum EPA standards for Drinking Water and Surface Water?**

#### **1.1 Identify EPA minimum standards for maximum contaminant levels (MCLs).**

We identified EPA minimum standards for maximum contaminant levels. A listing can be found on the EPA's website at <http://www.epa.gov/safewater/mcl.html>.

#### **1.2 Identify the state agencies with water quality responsibilities.**

Our focus was on drinking water. The Oregon Health Division (division), under the Department of Human Services, is the administrator of the Federal Safe Drinking Water Act. The division also coordinates with the Department of Environmental Quality (DEQ) to implement provisions of the Source Water Assessment Plan.

There are many other agencies that have responsibilities related to water quality, including DEQ, the Department of Fish and Wildlife, and the Department of Agriculture.

#### **1.3 Determine whether the state has measurable goals for MCLs.**

The division, in association with a Drinking Water Advisory Committee, have constructed the following Benchmark: "The percentage of Oregonians served by public drinking water systems that meet all health-based standards continuously during the year."

According to the division, the benchmark includes about 1,300 public water systems, including all community systems, all non-transient non-community systems, and the larger transient non-community systems (serving more than 500 people per day).

#### **1.4 Establish to what extent the state is meeting MCLs.**

The Oregon (and EPA) goal is to have 95 percent of the population served by systems meeting all health-based water quality standards by 2005. The division provided the following results to meeting this goal: 1994—49 percent, 1995—50 percent, 1996—56 percent, 1997—88 percent, 1998—90 percent.

#### **1.5 Establish what aspects of the state regulatory programs exceed minimum EPA standards. Why? Significance?**

There were no instances in which state standards exceeded or were less than the EPA standards in regards to MCLs.

**1.6 Establish what are the EPA statutory provisions and the actual state requirements for testing, reporting, inspection, and enforcement/corrective action. Compare and contrast the EPA and state requirements to identify where the state requirements exceed minimum EPA standards.**

The division has adopted most of the minimum EPA standards for drinking water. We found that the state exceeds the minimum standards in two areas. The state requires transient non-community water systems to have passed at least one inorganic chemical test, while the EPA requires only that inorganic chemicals be tested by community and non-transient non-community systems. The state also requires that nitrite be tested more frequently than is required by the minimum federal requirements.

**1.7 Identify any public reports prepared by responsible state agencies. Establish with whom these reports are filed, any kind of federal actions arising from the filed reports, and review report contents for issues and data.**

The division's Drinking Water Program produces quarterly public reports called "The Pipeline." These reports offer information on standards, technical advice, and statistics.

The Pipeline is available online at the Drinking Water Program website. We have obtained several copies of the Pipeline containing information relevant to our audit objectives.

The Pipeline is available to the public. The reports are not specifically produced for the federal government; thus, no federal actions resulted from these reports.

**1.8 Identify the type and extent of oversight provided by the EPA. Are there any audits of state-specific issues/data?**

Oregon is in EPA Region X (10), which is headquartered in Seattle, Washington. The division is required to submit the Safe Drinking Water Grant Application on a yearly basis to the EPA. The application is reviewed and must be approved in order for the division to receive federal funding and continue the program.

The EPA performs data audits to ensure that data is being accurately reported from the division to the federal database. It also determines if the division is in compliance with federal reporting and monitoring requirements. The EPA contracted with a private firm to perform such a review in June 2000. According to the contract auditor's preliminary results, the division accurately reported data to the EPA. The auditor, however, identified state regulatory requirements less stringent than federal regulations set by the EPA.

**2.0 OBJECTIVE: Do individual states have an effective monitoring program for drinking water and surface water?**

**Standards and Requirements**

**2.1 Compare the state's policy to the minimum monitoring standards of the EPA and state. Is state policy in compliance with minimum federal and state standards?**

In comparing the state's monitoring requirements to EPA standards, we noted two instances in which the state's policy was not as stringent as EPA standards. See Chapter 4 of the report for a detailed discussion.

**2.2 Interview officials to determine how policies and procedures are carried out by staff. Are waivers granted? Are there standards more significant than others? Why? Does the EPA or any other group encourage states to change standards or to use resources in a certain manner?**

Staff members essentially follow the Oregon Administrative Rules as their policies and procedures and use these to help carry out their work. Waivers are rarely granted. Some had been granted in the past but, in recent years, waivers have become rare. The division considers the standards related to MCL violations and positive coliform tests to be most significant. According to management, the division has limited resources and must use them wisely. Because positive test results pose the most immediate risk to human health, the division focuses more on those aspects. The EPA reviews the division's Primacy agreement, which outlines its primary goals and objectives for the year. The EPA has accepted the division's agreement and has not required any changes.

**2.3 Identify and describe the monitoring programs in place at the state and local level to determine if the state is implementing the standards.**

Oregon counties with drinking water programs are responsible for monitoring all community water systems serving 3,300 people or fewer and that use groundwater sources. The counties also monitor all non-transient non-community and transient non-community systems.

The division is responsible for monitoring all community water systems serving more than 3,300 people and all community systems that use surface water sources. In counties without drinking water programs, the division is responsible for all public water systems. The division's staff also serves as a technical resource for county drinking water programs as needed.

The division ensures that requirements for drinking water are completed by entering results for each water system and creating a report to identify systems not completing the testing requirements.

**2.4 Identify and review state reports to EPA; EPA reports or audits of the state program; and any other local, state, and federal reports on monitoring. Is the state implementing the standards?**

See step 1.8 regarding EPA audits of the state program.

**2.5 Contact stakeholders to determine if they feel that the standards are being implemented. Obtain and review any reports, testing, etc.**

We did not contact any stakeholders to determine if they feel that standards are being implemented.

### **Consistency of Monitoring**

#### **2.6 Identify whether water systems are categorized and, if so, the number of each.**

The division classifies water systems according to the following EPA definitions of water system types: (1) community water systems, (2) transient non-community water systems, (3) non-transient non-community water systems, and (4) state regulated water systems.

A total of 3,617 active public water systems are currently regulated by the division.

- 885 community water systems
- 1,438 transient non-community water systems
- 329 non-transient non-community water systems
- 965 state regulated water systems

#### **2.7 Obtain and review an inventory of water systems in preparation for Step 2.9.**

We reviewed the inventory of water systems from the division's database. See Step 2.6.

#### **2.8 Interview relevant officials, inquiring whether the same type of monitoring is being conducted across the state within similar systems. Is the monitoring being conducted consistently across the state?**

Monitoring is completed according to requirements established by the EPA for each water system type and source. The four water system types include community, transient non-community, non-transient, non-community, and state regulated water systems. Each of these four types of systems can then be classified by whether its source is ground water or surface water.

#### **2.9 Based on Steps 2.6 and 2.7, perform a file review of testing information from water systems to ascertain whether the same type and quantity of testing is being done within each identified category.**

We reviewed 100 public water system files and found that although the same type and quantity of testing is required within each water system category, test results are not always reported to the division. See Chapter 1 of the report for more details.

### **Self-reported Data**

#### **2.10 Interview officials about self-reported data. Are there instances in which the state does not accept self-reported monitoring data? How many? Why? What measures does the state take to verify self-reported data and ensure that the timeliness and accuracy of that data?**

All public water systems essentially self-report their laboratory results. The division cannot require test results to be reported directly from the laboratories. Laboratories must report to the water system operators, who are then responsible for reporting to the division. *Oregon Revised Statute* (ORS) 448.150 gives the water systems, not the division, discretion whether or not to authorize laboratories to report directly to the division. When excess contaminants are found, the system operator has the responsibility to notify the division. When water systems report, they are required to send a copy of the laboratory report, which helps to ensure that the results are accurately reported.

To ensure the timeliness of data, the division has adopted EPA requirements for reporting. Results must be sent to the division by the 10<sup>th</sup> of the month following the end of the compliance period. The division allows an additional 10-day grace period by not running its violation report until approximately the 20<sup>th</sup> of the month; therefore, systems that send in their results between the 10th and 20th are technically late but do not receive violations.

**2.11 Review policies and procedures regarding self-reported monitoring data and when such data would not be accepted. Review also for measures the state takes to verify self-reported data and ensure that the timeliness and accuracy of that data.**

No policies or procedures exist regarding self-reported monitoring data and when such data would not be accepted.

**2.12 Assess the control structure of the monitoring system and identify strengths and weaknesses. Identify documentation available to support the state's efforts to monitor the program, verify, and ensure the timeliness and accuracy of self-reported data.**

Strengths: The division requires the water systems to submit copies of the original laboratory report to ensure that results being reported are accurate. The laboratories are required to be independent of the water systems and must be approved by the division.

Water system documentation, including testing results and general system information, can be found in system files maintained by the division. Most of the information also is available through online inquiry through the division's web site.

Weaknesses: The division relies on self-reported data and does not independently verify results. It would be possible, therefore, for a water system to submit test results that were actually obtained from a different water source. Because systems self-report, the division cannot ensure that data is received in a timely manner.

**2.13 Based on the assessment of controls, determine the extent to which audit testing should be done and sample reports of self-reported data from the different water systems and point sources identified to determine what type of monitoring was done. Did the state find inaccuracies? What was done to correct inaccuracies? Was the self-reported data submitted by the deadlines?**

Since all data collected is essentially self-reported, the samples selected in objective 2.9 will suffice for testing purposes. No additional testing will be required specifically for self-reported data.

### **Information Systems**

#### **2.14 Interview officials to understand the system being used and any pros and cons associated with it. What controls are in place to ensure that accurate data is entered? What reports can the system produce? Is the system solely set up for reporting to the EPA or can the state use it to analyze information for state-specific use?**

Division officials stated that the current database is limited in the functions that can be performed. They identified the following problems, which have been encountered using the current database system:

- Compliance determination for chemical tests is not automated. Compliance determination for each of the chemical tests must be completed on a system-by-system basis and calculated by a technical staff person.
- The division cannot track a public notice issued by a system that has been issued a violation.

All chemical and coliform sample results received in hard copy reports must be entered manually into the database system. To ensure that accurate data input, all sample results, which are entered into the database by clerical staff, are reviewed by the Monitoring and Compliance Unit Manager. Technical staff reviews and determines lead and copper compliance, enforcement actions, and chemical MCLs.

The division is able to receive some data electronically directly from laboratories. Division officials estimate that about 30 percent of coliform results are received electronically, thus eliminating the risk of the division staff entering incorrect data. The current database system, however, does not allow chemical results to be received electronically.

#### **2.15 Obtain and review any federal or state audits, reports, etc. on the information systems.**

We obtained and reviewed an EPA survey completed by the division in 1998. The survey was sent to each state to obtain a consensus on the reporting procedures from each state's database system to the Federal database system (SDWIS). The survey was also completed to determine if similar data management and processing problems occurred between states. See step 2.14 for problems the division has encountered with current database system.

#### **2.16 Assess the control structure of the data system and identify strengths and weaknesses. Is the data reported on an exception-only basis?**

Strengths: The division's current database is able to accept electronic coliform sample results directly from laboratories. Approximately 30 percent of coliform sample results are reported directly to the division. The ability to receive direct results from laboratories enables

the division to detect and initiate corrective actions to a positive result faster than receiving notification from a water system. Also, the division receives all chemical and coliform sample results regardless of whether an MCL has been exceeded or a positive coliform sample is present.

Weaknesses:

- Because the division's current database does not have the capability to calculate lead and copper results, either the water system or the division must calculate the tests manually and may not detect a positive result if the calculations are not completed correctly. The division's current database also is not able to track systems compliance with reporting requirements-determination is on a system-by-system basis. Thus, many systems have not completed a lead and copper test required to be completed and have not been issued a violation.
- The current database system does not have the capability to determine compliance with MCLs for chemical contaminants required to be tested. The current database system is not able to calculate averages for chemical contaminant MCLs and determine if a violation has occurred.
- All chemical contaminant results must be manually entered, there is an increased potential for individual contaminants to not be tested and the division not identifying the missed contaminant.
- The current database system is not able to track whether a public notice has been issued by water systems that have been issued violations.

Overall: The division's current database system is limited in the functions that can be performed. Because a large amount of data must be entered manually, the likelihood for data entry errors increases. The division is scheduled to implement a new database system in late 2001, which will allow the division to calculate all types of violations; however, the new system has already been delayed several times.

**2.17 Based on this assessment, how accurate is the flow of information from the local to state to federal level? Sample a number of suppliers and track for accuracy their reported data through each successive level of reporting.**

We selected a sample of 100 systems for testing, in which we tested the flow of information from the water system to the state (see Step 2.9). We found instances in which information was not flowing properly from the system to the state. In some cases, a specific chemical was missed during testing, but not identified by the division.

We did not track the flow of information to the federal government. The EPA's contract auditors completed a review of 60 systems and generally found that the division was accurately reporting information to the EPA (see Step 1.8).

### **Planning and Coordination**

#### **2.18 Interview officials concerning any planning and coordination that is done between different offices, regions, states, and local agencies.**

Planning and coordination efforts are mostly informal on an as-needed basis. The division does work closely with DEQ for the State Water Assessment Program (SWAP) program.

#### **2.19 Obtain and review any policies and procedures that require coordination and planning between offices, regions, states, and local agencies.**

No policies and procedures requiring coordination and planning between the division and other agencies exist.

#### **2.20 Obtain and review any comprehensive or strategic plans.**

The division's Drinking Water Program does not have a formal strategic plan. According to program management, the division is just trying to keep up with the ever-increasing standards. Program managers currently are preparing for the implementation of new standards that will take effect during the next few years.

Management said that they do not have enough resources to plan additional projects, which would require some kind of strategic planning.

The DWP does have an advisory committee to help make some strategic decisions. The committee was set up by the division, it is not legally required by state statute.

#### **2.21 Interview and/or visit regional offices to determine whether activities and information are consistent statewide.**

Because most of the division's work on the drinking water program is done centrally rather than in regional offices, we did not contact or visit the regional offices.

County health department staff carries out many of the program duties. Although we did not interview county health departments, it appears that there is adequate communication between the division and the counties in regards to notifying them of chemical and coliform alerts. Those alerts are faxed directly to the county health department when a sample exceeds allowable contamination levels.

We noticed that county follow up does not always return to the division in a timely manner. Counties are required to send copies of pertinent information, such as contacts made with water systems, to the division for its files. This helps the division staff ensure that counties are following up appropriately with the water system. We were told that one county sends bundles of information about once every six months to be filed in the division's water system files. Thus division employees may not have the most up-to-date information available to them.

### **Qualifications**

#### **2.22 Determine the controls that exist to ensure that all operators/laboratories conducting testing are maintaining valid certification and qualifications.**

Operators are required to renew their certifications every year. Certifications run from January 1 through December 31.

They are required to report their Continuing Education Units (CEU's), however, every two years. Approximately one-half of the systems (those in the first part of the alphabet) send proof of their CEU's in odd years, while those in the second half send in that documentation in even years.

Certification renewals must be accompanied by documentation showing that the required CEU's have been completed. OAR 333-61-0235 states that operators are to have 2 CEU's (equal to 20 hours of classroom time) every two years.

The division reviews the CEU's to ensure that they are acceptable. Courses offered by the division are not questioned. However, if a course does not appear to really apply to drinking water system operation, it will be questioned. Each year, the division rejects several CEU applications because they are not specific to the drinking water program. For instance, the division indicated that some operators tried to submit classes on general workplace safety as CEU's. These were rejected because they did not specifically apply to the Drinking Water Program.

If CEU's are rejected, the operator needs to take an appropriate course and submit the paperwork by March 31st (along with a late fee) to continue the license. After March 31st, the operator's license is cancelled.

#### **2.23 Perform a file review to make sure that operators/laboratories have their certifications and CPEs.**

We did not review operator files to review for adequate certification and CPEs. The procedures described in Step 2.22 appear to be adequate.

### **Nonpoint Source**

**2.24 and 2.25 relate to nonpoint source pollution, which does not apply to drinking water. Our audit team at the Department of Environmental Quality addressed these issues.**

### **Emergency Preparedness**

#### **2.26 Interview officials to determine whether the state monitors local areas for emergency preparedness.**

The division is a regulatory agency, not an emergency responder. Division officials often consult with other agencies when water emergencies occur; however, coordination is done at a higher level through the Oregon Emergency Response System (OER).

A typical emergency would be a gasoline tanker truck spilling its load into a river or creek. OER would contact the division and ask what systems might be affected by that spill. OER would then contact those systems to inform them of the emergency.

Division officials would consult as needed, but would not be involved in cleanup, which would likely be the responsibility of the Department of Environmental Quality (DEQ). The Health Division may consult and suggest additional drinking water testing to be performed to ensure that contaminants aren't in the drinking water system. Typically, however, DEQ does large amounts of testing when such a spill occurs.

The division's Drinking Water Program has an emergency response plan. Counties also are required to have emergency plans, which are reviewed during the division's triennial county review.

#### **2.27 Obtain and review policies and procedures regarding state monitoring of local areas for emergency preparedness.**

Policies and procedures for emergency preparedness were reviewed. A program staff person maintains an emergency preparedness binder that contains an inventory of water systems and sources that may affect them in case of a contamination spill. Also contact phone numbers are included. Basic safety precautions, such as requirements for boiling water, are also included.

The binder appeared to adequately address emergency preparedness, especially because the division is not an emergency responder, but instead provides assistance as needed.

### **3.0 OBJECTIVE: Do individual states apply corrective actions effectively?**

#### **3.1 Identify applicable state laws and regulations related to corrective actions.**

Applicable state laws and regulations related to corrective actions were identified in Oregon Revised Statutes and Oregon Administrative Rules.

#### **3.2 Review policies and procedures related to corrective actions, including levels and severity. Determine whether there are internal or external established guidelines for corrective actions. Note any differences for enforcement between public and private entities.**

The division does not have standard corrective actions that must be taken by all water systems determined to have violated an MCL or tested positive for coliform. The proper corrective action to take can vary, depending on what is causing the problem; thus, the division determines the proper corrective action to take on a system-by-system basis.

**3.3 Review progressive penalty structure and when “formal” enforcement kicks in. Evaluate whether penalty structure is an “effective” deterrent to noncompliance, based on the enforcement options available to the regulatory agency.**

Oregon Revised Statutes and Oregon Administrative Rules related to the penalty structure imposed on water systems that fail to comply with standards and rules established by the division, were identified.

According to *ORS 448.280*, any person who violates any rule of the Health Division relating to the construction, operation or maintenance of a water system or part thereof shall incur a civil penalty not to exceed \$500 for each day of violation, except that a violation at any water system that serves more than 10,000 people shall be subject to a civil penalty not to exceed \$1,000 for each day of violation. The actual penalty amount imposed, if any, is at the division’s discretion up to the maximum amounts cited by law; however, the division infrequently imposes such penalties. In these situations, issuing a civil penalty would only further hinder the system’s ability to implement the corrective action needed. The division would rather work with systems to find feasible solutions to get systems back into compliance with drinking water standards rather than punish systems with civil penalties.

**3.4 Interview officials to determine actions taken to return violators to compliance prior to formal penalties.**

The following process is utilized by the division when a system is determined to have an initial sample result that exceeds an MCL:

1. An alert is issued by the division which identifies the initial sample result has exceeded the MCL.
2. The division or County staff contacts the water system to identify the steps needed to be taken—typically, more sampling to validate results.
3. During the process from the initial sample to actual determination, staff (division/County) is in contact with the system informing personnel as to what may need to be done next, what it means, and how to do it.
4. Once a system is determined to have exceeded a chemical MCL, a formal enforcement action is started which provides the steps to be taken to return to compliance (public notice, supply bottled water in interim, looking for better water, treatment, etc.) and gives the system a deadline to complete the steps.

**3.5 Obtain background information on the number of violations that have been written up and corrective actions that have been taken by category and type of violation for calendar years 1997-1999.**

Data for the following table of chemical and coliform violations was taken from the division's annual compliance reports. The reports do not include state-regulated systems.

**Oregon Chemical and Coliform Violations Issued  
Calendar Years 1997-1999**

	1997	1998	1999	Total
Chemical MCL Violation	10	4	6	20
Chemical Monitoring/Reporting Violation	898	5,271	745	6,914
Coliform MCL Violation	212	220	165	597
Coliform Monitoring Violation*	2,193	2,089	1,845	6,127
Number of Public Water Systems Included	2,719	2,706	2,699	8,124
Number of Systems With No Violations	1,098	1,217	1,109	3,424

\* Does not include minor reporting violations

**3.6 Test violations (or a sample thereof) that occurred during calendar year 1999 to determine if proper steps were taken by the enforcement agency or appropriate plans were agreed to. Document final results, if case was closed, and whether desired results were achieved in a timely manner and appropriate retesting was done.**

We reviewed division files for 36 public water systems that were issued either a chemical violation, or chemical non-reporting violation. See Chapter 2 of the report for results.

**3.7 For drinking water, obtain 1999 quarterly lists of significant non-compliers and determine (for all or for a sample) whether or not the state followed federal guidelines for actions the state needed to take for the SNCs.**

We reviewed the files of 10 public water systems identified as significant non-compliers (SNCs). See Chapter 2 of the report for results.

**3.8 Test cases (or a sample of) open more than one year that were active during calendar year 1999 to determine whether agreed upon corrective actions were followed by the non-complier. If actions weren't followed, determine what steps were taken by the state regulatory agency. Document final results, if case was closed, and whether desired results were achieved in a timely manner and appropriate retesting was done.**

We reviewed files for 10 public water systems identified as significant non-compliers (SNCs) to determine if corrective action was completed. See Chapter 2 of the report for results.

**3.9 For Steps 3.6-3.8, review results by region to see if there are any differences in application.**

We found no significant geographical differences in the monitoring of public water systems that have been issued a violation.

**3.10 For Steps 3.6-3.8, identify causes for exceptions noted (cases in which enforcement actions did not follow established policies or laws and regulations).**

See Chapter 2 of the report for results.

**3.11 Identify any documented health/safety problems that have resulted from unsafe water. Also, document any lawsuits that have been brought against government entities as a result of unsafe water.**

We were unable to identify and associate health/safety problems that have resulted from unsafe drinking water. We also did not identify any lawsuits brought against government entities as a result of unsafe drinking water.



## **AGENCY'S RESPONSE TO THE AUDIT REPORT**





# Oregon

John A. Kitzhaber, M.D., Governor

## Department of Human Services

*Office of the Director*

500 Summer Street NE, E15

Salem, OR 97301-1097

(503) 945-5944

FAX: (503) 378-2897

TTY: (503) 945-5928

December 27, 2000

James D. Pitts  
Audit Administrator  
Office of the Secretary of State  
225 Capitol Street NE  
Salem, OR 97310

Dear Mr. Pitts:

Thank you for the opportunity to respond to the audit report concerning the Oregon Health Division's drinking water program. We are in general agreement with the conclusions and recommendations of the report.

The Division operates a drinking water program that is responsible for 2,699 public water systems in Oregon subject to the federal Safe Drinking Water Act. The Division has adopted regulations addressing 96 different drinking water contaminants since 1986 and has implemented a variety of other program initiatives associated with the federal Act over the past three years. The Act mandates significant additional drinking water standards through 2005.

Currently available resources are insufficient to carry out all of the increasing responsibilities of the federal Safe Drinking Water Act regulations. Therefore, the Division sets priorities for the drinking water program with the assistance of the Drinking Water Advisory Committee. These priorities focus available resources on activities that have the highest potential to protect public health. The Division is committed to continuing its focus on these highest priorities. The audit report findings confirm that the priorities are being followed.

The Division is committed to maximizing the use of its limited resources. Implementation of a new database system is underway and will be complete by June 1, 2001. This will expand and improve automated identification of violations and will also automate notification of water suppliers of violations. The Division believes that the five-year frequency of sanitary surveys has now been achieved and will verify that during the July-October 2001 quarter. The Division agrees to

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implement electronic data reporting and implement a process to ensure use by laboratories of approved test methods during 2001-03, assuming that expected program funding is available. The Division will also work with the EPA in 2001-03 to reach agreement on reduced sampling frequencies for volatile and synthetic organic chemicals.

The other recommendations require additional resources for the drinking water program beyond those currently available. The Department agrees to seek the increased resources needed to implement all the recommendations during the 2003-05 budget development process.

More detailed responses to the individual report recommendations are attached.

Thank you for the report and for the good work of your audit team.

Sincerely,

A handwritten signature in black ink that reads "Gary K. Weeks". The signature is written in a cursive style with a long horizontal stroke at the end.

Gary K. Weeks  
Director

Attachment

# **Detailed Responses to Drinking Water Program Audit Recommendations**

**Department of Human Services Health Division  
December 2000**

## *Chapter 1* Water Quality Reporting Requirements - Recommendations

### **Recommendation to the Legislative Assembly:**

- 1. Consider amending ORS 448.150(1) to require laboratories to report public water system test results directly to both the division and water system operators.**

Note – Requiring drinking water laboratories to report test results directly to both the Division and the water supplier would improve the Division's response to water quality problems and improve the perceived level of oversight of public water systems. A direct-reporting requirement would require a change in statutory authority. Originally, ORS 448 contained direct-reporting authority:

ORS 448.448.150(2) "...The results of the laboratory analysis shall be reported to the division, the local health department, and to the water supplier."

The Division attempted to use that authority in 1988 in an effort to improve program operating efficiency and reduce time lags in reporting of test results. Objections were received from water suppliers, laboratories, and organizations. The 1989 Legislature amended the statute to remove the direct-reporting authority, as follows:

ORS 448.150(1)(b) "...The results of the laboratory analysis shall be reported to the division by the water supplier, unless direct reporting is authorized by the water supplier."

The audit report found that the Division receives complete test results for the most part, although several instances were documented in which test results indicating the presence of contaminants were found at the laboratory but not in the Division's database or files. The Division agrees that direct reporting from labs is a key feature in streamlining data management and reporting according to other audit recommendations described below, and would improve the perception of oversight effectiveness by the state program. The Division notes that the four largest certified labs now directly report about 80% of their test results through authorization from their water supplier clients.

The Division will consider developing and implementing a periodic random audit of laboratory records, similar to that carried out by the audit team, as a quality assurance measure, but would require additional resources to carry this out.

**Recommendations to the Department:**

- 1. Determine whether monitoring requirements can be automated to ensure that the system identifies all violators.**

Response – The Division is implementing the EPA-designed Safe Drinking Water Information System (SDWIS-State) to replace the current state-designed SWS2 system, and expects to have this new database management system operational by June 2001. The current SWS2 database automatically identifies 9 different types of regulatory violations. Additional violations are identified manually. In comparison, SDWIS-State automatically identifies all 38 different types of violations. The Division will require additional staffing beginning in 2001-03, supported by expected funding, to manage this much larger and more complex database system. Specifically, the Division needs an OIS Network Administrator and a program- based Database Administrator. In addition, program technical staff time will need to be redirected to making and recording compliance decisions about individual public water systems necessary to support the operation of the new database.

- 2. Provide for electronic reporting of laboratory results. The division should consider developing electronic forms for laboratories and water systems to use in reporting.**

Response – The Division recognizes the enormous opportunities for improvements in program efficiency and accuracy presented by electronic reporting. The Division met with certified laboratories several years ago to explore these opportunities and developed a description of a range of tools that the Division could develop and provide to labs to enable them to report their data electronically. These tools could also be provided to water suppliers who choose not to authorize their lab to report directly to the Division. Note that electronic reporting does not itself solve the direct-reporting issues of recommendation #1 above. SDWIS-State is capable of receiving electronically transmitted data. Electronic reporting of drinking water data is in the Division's current Information Resources Management Plan, and the Division will implement this in 2001-03 if expected funding is available.

- 3. More actively enforce water sample reporting requirements. Violations should be issued to water systems that fail to report within 10 days after the end of the required reporting period, fail to report complete results, or fail to report tests entirely.**

Response – SDWIS-State will identify all of these violations automatically, and has the capability to generate form letters notifying water suppliers of the identified violations. The Division currently accepts data received after the 10th of the month but before the final violation transmittal to EPA. The Division agrees to tightening this process in 2001-03 after SDWIS-State is implemented and notes that additional violations are likely to occur for a time. SDWIS-State also identifies several types of minor reporting violations that the Division currently does not identify. The Division will need additional staffing and funding in 2003-05 to deal with the increased number of these violations and effectively respond to resulting inquiries from water suppliers.

## *Chapter 2*      **Responding to Violations of Drinking Water Regulations - Recommendations**

- 1. Follow state rules by issuing violation notices when violations are found. Document and justify any exceptions to this requirement.**

Response – The Division currently responds to high priority violations and issues violation notices. The Division will require additional funding in 2003-05 to prepare and distribute Notices of Violations on all violations and to establish, track, and follow up on compliance/correction schedules.

- 2. Require system operators to submit documentation of all public notices. Follow up with water systems that do not submit this evidence.**

Response – The Division currently focuses its efforts on public notice of water quality problems. SDWIS-State will identify all water systems that violate public notice requirements. The Division will require additional funding in 2003-05 to assure that all public notices are carried out with appropriate verification, and that appropriate enforcement is used to compel the public notices.

- 3. Follow agreements with the EPA for monitoring water systems classified as significant noncompliers (SNCs). The division should ensure that enforcement action is taken with SNCs that have not achieved compliance within eight months of the end of the compliance period.**

Response – The Division currently focuses available resources and efforts on SNCs that have water quality problems, following priorities agreed to with USEPA Region X. The Division agrees to assure that timely action is taken with the high priority SNCs. Expanding this effort to lower-priority SNCs with reporting problems will require additional resources in 2003-05.

### *Chapter 3*    Monitoring of Laboratories    Recommendations

**1. Develop a process for monitoring test results to ensure that laboratories conducted the analysis in accordance with state rules. Determine which monitoring requirements could be automated.**

Response – Individual labs are certified to perform drinking water analyses according to approved methods, and each laboratory's certification can change when the lab adds new tests, installs new test equipment, changes between alternate approved methods, or fails performance testing. The Division has relied on certified labs to conduct their work according to the methods for which they have current approval. This has been sufficient, for the most part, with some notable exceptions that resulted in one enforcement case. The Division is now implementing the National Environmental Laboratory Accreditation Program (NELAP), which will replace the current drinking water lab certification by April 1 with a more rigorous and comprehensive oversight program. This should reduce occurrences of use of unapproved labs and/or methods.

Actually ensuring the use of approved test methods on a continual basis could be done through a lab audit process, or by developing a software "filter" to automatically check during data entry for appropriate approved methods for the particular lab. The Division agrees to develop one of these options during 2001-03 after SDWIS-State and NELAP implementation are complete. The software filter approach would depend in part on implementing the electronic reporting of data by the labs or the water suppliers, and would need to be added to the Division's Information Resources Management Plan.

**2. Develop a process to ensure that all retests are conducted properly.**

Response – If the previous recommendation is carried out with the software filter option, there will be no need for tracking retests required due to use of unapproved methods. Test results using unapproved methods would simply be rejected at the point of data entry and returned to the water supplier. The Division agrees to develop a process to track retests during 2001-03, as an interim measure.

## *Chapter 4* Requirement to Enforce Federal Standards for Drinking Water - Recommendations

### **1. Implement federal standards for volatile and synthetic organic chemical testing frequency. The division should adopt and enforce the federal testing frequency requirements in the current compliance period.**

Response – The Division originally adopted the VOC/SOC federal requirements in their entirety and secured EPA approval of the testing program. These requirements specified quarterly initial testing by community and nontransient noncommunity water systems for each water source for one year during the first three-year period, then two samples in one year during subsequent three-year periods (one sample per three-year period for small systems). At an estimated cost of over \$1,000 per single complete VOC/SOC test, the Division was very concerned about the fiscal impact of these rules on the very large number of small water systems in Oregon. Federal requirements allowed reduced monitoring, through a complex waiver process that the Division developed and adopted. The Division found that the available program staffing, as well as statewide information on chemical use in the environment, was inadequate to effectively implement and manage the waiver process for all the eligible water systems.

Prior to the start of initial testing, however, Congressional action provided temporary relief to small systems nationwide by reducing initial testing to one test in the first three-year period as long as no contaminants were detected. In Oregon, the initial testing was completed during 1993-95 by 1,200 water systems, and very few contaminant detections occurred. Based on those results, the Division determined that a statewide requirement for small water systems of one test in every three year period provided adequate health protection. Division staff participated in a national workgroup effort to re-evaluate the EPA testing requirements, but no actions were taken by EPA to modify requirements. Therefore, the Division modified its own rules in 1996. This rule is less stringent than the federal requirement, but the Division remains committed to its position. Further support is provided by the test results received in the 1996-98 compliance period which again showed very few detections. The Division will participate with EPA and the other states in a national review of existing EPA regulations during 2001-03, and will advocate again for revisions to allow reduced sampling frequencies in accordance with our position.

The Division, in partnership with DEQ, is preparing detailed Source Water Assessments on each public water system source of supply (wells and/or surface water intakes), and will complete these by January 2003. These assessments will support a process of monitoring waivers. In addition, the new SDWIS-State database

management system will automate tracking of individualized monitoring schedules as originally envisioned in the federal requirements. These tools will allow the Division meet the federal requirements by implementing waivers in 2003-05, but additional staffing and funding will be needed to evaluate and assign reduced monitoring frequencies on a system-by-system basis.

## *Chapter 5* Requirement to Conduct Sanitary Survey Inspections - Recommendations

- 1. Continue working with counties to complete sanitary surveys. The division should evaluate whether this effort is effective in addressing the backlog of systems needing surveys and, if necessary, develop another approach to effectively meet the sanitary survey requirements.**

Response – During the Audit study period, the Division reallocated effort from sanitary surveys to higher priority regulatory compliance work associated with new EPA drinking water standards. As a temporary measure, and recognizing the value of on-site observations of water systems, the Division worked with county health departments to develop an abbreviated survey tool called a Sanitary Hazard Inspection. This tool focused on risks from microbial contaminants. Many of these inspections were carried out during the audit study period, as an alternative to conducting more comprehensive sanitary surveys.

The Division committed additional resources to county contracts in 1999-2001 and for 2001-03 to support sanitary surveys on a the five-year schedule. The Division is now attempting, within available staffing, to adhere to the five-year schedule for sanitary surveys on water systems that the Division is directly responsible for, however, additional staff may prove necessary in 2003-05. The Division will evaluate the status of sanitary survey completion during the July-September 2001 quarter. The Division notes that future federal requirements will likely require sanitary surveys on a three-year frequency, and that will increase funding and staffing needs in 2003-05.

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Public Service Building  
255 Capitol Street NE • Suite 500  
Salem, Oregon 97310

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Ph. 503-986-2255  
Hotline: 800-336-8218  
Internet: [Audits.Hotline@state.or.us](mailto:Audits.Hotline@state.or.us)

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