

OFFICE OF THE STATE INSPECTOR GENERAL

Virginia Department of Health Office of Drinking Water Drinking Water Regulation Program

Performance Audit
June 2021



Michael C. Westfall, CPA
State Inspector General
Report No. 2021-PA-005



COMMONWEALTH OF VIRGINIA
Office of the State Inspector General

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June 24, 2021

The Honorable Ralph Northam
Governor of Virginia
P.O. Box 1475
Richmond, VA 23219

Dear Governor Northam,

The Office of the State Inspector General (OSIG) completed an audit of the Virginia Department of Health's Drinking Water Regulation Program. The final report is attached.

OSIG would like to thank Office of Drinking Water Director Dwayne Roadcap and his staff for their cooperation and assistance during this audit.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael C. Westfall".

Michael C. Westfall, CPA
State Inspector General

cc: The Honorable Clark Mercer, Chief of Staff to Governor Northam
The Honorable Daniel Carey, M.D., Secretary of Health and Human Services
Senator L. Louise Lucas, Chairman of the Education and Health Committee
Delegate Mark D. Sickles, Chairman of the Health, Welfare and Institutions Committee
Delegate Patrick A. Hope, Chairman of the Joint Commission on Health Care
Delegate David L. Bulova, Chairman of the State Water Commission
Faye O. Prichard, Chairman of the Virginia State Board of Health
The Honorable M. Norman Oliver, M.D., State Health Commissioner
Robert Hicks, Deputy Commissioner, Public Health and Preparedness
Parham Jaberi, M.D., Chief Deputy Commissioner, Public Health and Preparedness
Dwayne Roadcap, Director, VDH Office of Drinking Water
Maisha Beasley, VDH Internal Audit Director

June 2021

HIGHLIGHTS

Virginia Office of Drinking Water (ODW) Drinking Water Regulation Program

What OSIG Found

ODW Takes Strides to Improve Regional Office Support

OSIG commends ODW for developing the Compliance Specialist (CS) position to support and guide regional field offices in the process of implementing updated internal compliance and enforcement (C&E) policies and procedures. CSs are also important to improving C&E processes by working collaboratively with ODW's Central Office to foster safe drinking water supervision throughout the Commonwealth.

The ODW Inspection Program Needs to Ensure Consistency Statewide

ODW is responsible for protecting public health and helping ensure all Virginians have a safe and adequate supply of drinking water in accordance with the U.S. Environmental Protection Agency Safe Drinking Water Act (SDWA) and Virginia Waterworks Regulations. ODW leadership has taken a decentralized approach in the management of regional field offices and, as such, local C&E duties are performed with autonomy, which has led to C&E inconsistencies throughout the state and lessened opportunities to improve overall monitoring processes.

ODW Is Not Fully Utilizing Enforcement Tools to Ensure Public Water System Compliance

ODW is not using all enforcement tools allowed by the *Code of Virginia*, such as administrative orders and civil penalties, as incentives to deter repeated and future violations of drinking water statutes and regulations.

Management concurred with all nine findings and plans to implement corrective actions by July 2022.

Why OSIG Conducted This Audit

OSIG performed this audit to assess the effectiveness and efficiency of ODW's Public Water System Supervision Program in ensuring Virginia's water is safe for human consumption through monitoring and enforcement.

ODW is responsible for overseeing and enforcing drinking water regulations established by the SDWA, *Code of Virginia* §§ 32.1-27 and 32.1-167 to 32.1-176, and Virginia Administrative Code 12VAC5-590.

What OSIG Recommends

- Continued updates and expansion of C&E policies and procedures, to include the updates and revisions of internal manuals.
- Assessment of enforcement processes; development of improved management practices; expansion of internal performance metrics and implementation of process tracking systems.
- Use of data analytics to evaluate regional violation trends and corrective action efforts.
- Improved central and regional office oversight of compliance procedures such as public notice and water sampling processes.
- Development and implementation of enforcement escalation procedures.



For more information, please contact OSIG at 804-625-3255 or www.osig.virginia.gov

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REPORT ACRONYMS

The following is an alphabetical list of acronyms used in this report.

AO – Administrative Order
C&E – Compliance and Enforcement
CS – Compliance Specialist
CY – Calendar Year
DCLS – Division of Consolidated Laboratory Services
EPA – Environmental Protection Agency
ETT – Enforcement Targeting Tool
FCAP – Financial and Construction Assistance Program
FY – Fiscal Year
GEC – Global Environmental Consulting
LFO – Lexington Field Office
MCL – Maximum Contaminant Level
MON – Monitoring
NOAV – Notice of Alleged Violation
NPDWR – National Primary Drinking Water Regulations
ODW – Office of Drinking Water
OSIG – Office of the State Inspector General
PMCL – Primary Maximum Contaminant Levels
PN – Public Notice
PWS – Public Water System
PWSL – Public Water Supplies Law
PWSS – Public Water System Supervision
QA/QC – Quality Assurance/Quality Control
RFO – Richmond Field Office
SDWA – Safe Drinking Water Act
SDWIS – Safe Drinking Water Information System
SOP – Standard Operating Procedure
TT – Treatment Technique
VDH – Virginia Department of Health

BACKGROUND

As published in the ODW's Study on Virginia's Drinking Water Infrastructure and Oversight of the Drinking Water Program in December 2020, the Executive Summary and Legal Framework, explain, "The Virginia Department of Health's Office of Drinking Water regulates approximately 2,787 waterworks in the Commonwealth of Virginia, collectively serving approximately 7.5 million consumers--about 89% of the Commonwealth's total population. Safe and adequate drinking water directly influences community health and economic prosperity and as such, the drinking water program continues to be a vital component of Virginia's public health safety management."

The study goes on to say, "The Public Water Supplies law (PWSL) authorizes the Board of Health to supervise and control all water supplies and waterworks in the Commonwealth insofar as the bacteriological, chemical, radiological and physical quality of waters furnished for human consumption may affect public health and welfare. Enacted in 1950, the PWSL is broader than the Safe Drinking Water Act (SDWA) in that it authorizes the Virginia Department of Health (VDH) to regulate not just drinking water standards and treatment practices, but also waterworks construction, operation and maintenance, permitting, enforcement and receivership. Congress passed the SDWA in 1974, which authorized the Environmental Protection Agency (EPA) to enforce National Primary Drinking Water Regulations (NPDWR). The NPDWR set forth uniform, nationwide standards for drinking water to protect the public against adverse health effects from exposure to naturally occurring and man-made contaminants. Congress amended and reauthorized the SDWA in 1986, 1996, 2005, 2015, 2016, and 2018. In addition to setting drinking water standards and treatment techniques, the SDWA also allows EPA to award states with primacy (i.e., primary responsibility for implementing the federal program). To maintain primacy, Virginia adopted the Waterworks Regulations, which may be no less stringent than the federal requirements in the SDWA and NPDWR. Through primacy, VDH oversees monitoring and reporting requirements, routine operations, plans for construction and modification, sanitary surveys, training and technical assistance, and enforcement of drinking water standards. VDH has been the primacy agency for the federal law and regulations since 1977."

The ODW C&E guidance explains that if a waterworks violates a water quality standard or other requirement, then VDH's priority is to work with the waterworks to address the issue and return to compliance. Waterworks with health-based violations are reported to the EPA through SDWIS federal, which weighs violations based on the history of noncompliance and the potential for harm to human health. Regardless of whether water violations are health-based or not, ODW has the authority to issue notices of alleged violations to inform the waterworks of the regulatory requirement not met and what the waterworks must do to return to compliance. If the waterworks is either unwilling or unable to address the violation in a timely and appropriate manner, then

escalated enforcement may be necessary. Enforcement can include informal letters and meetings or formal administrative orders requiring compliance actions.

ODW Enforcement Actions - Informal to Formal

Notice of Alleged Violation	Email or Phone Call	Letter of Agreement	Warning Letter	Consent Order	Informal Fact Finding Proceedings & Special Order	Formal Hearing
Documents a violation and stipulates the corrective action required to return a waterworks back into compliance.	Informal tool used to reach out to waterworks in an attempt to have them return to compliance swiftly.	Informal action that acknowledges a violation was observed, the waterworks makes efforts to comply and corrective action(s) are scheduled.	Informal action to schedule a compliance meeting with waterworks to discuss noncompliance.	A case decision authorized by statute and enforceable in court, this negotiated administrative order alleges specific violations, requires specific actions and may include a monetary penalty.	A hearing between ODW and waterworks owner and/or any other representatives to receive evidence, make a finding and determine course of action to address alleged violations of the Virginia Public Supplies law.	ODW and the waterworks present evidence and arguments in a hearing before the Executive Secretary of the Supreme Court of Virginia.

Source: 2020 ODW Enforcement Manual

In emergency situations, the PWSL authorizes the State Health Commissioner to issue an emergency order to protect public health from “imminent dangers.” However, in most cases, local authorities and waterworks owners/operators that are most familiar with the waterworks’ design and operation, condition of infrastructure, system capabilities and governing resources are capable of responding to the emergency situation and protecting public health. ODW coordinates programs across the state and provides assistance to ensure an issue is corrected or the actions causing risk to public health cease.

SCOPE

The audit scope covered operations by the VDH ODW – Public Water System Supervision Program as it relates to safe drinking water regulations and state PWSL from July 2017 through December 2020. In addition, we examined open violations, sanitary surveys, and administrative orders dating back to January 2015.

OBJECTIVES

Objectives of this audit were to:

- Determine whether ODW effectively monitors PWSs in Virginia to ensure safe drinking water by continuous monitoring and water sample testing for various identified contaminants.
- Determine whether ODW effectively monitors PWSs in Virginia to ensure safe drinking water by conducting sanitary surveys (i.e., on-site inspections) of PWSs.
- Determine if ODW conducts systematic reviews of water testing data in the SDWIS and if staff review indicates problems that may develop over time and questionable results that could indicate mistakes or fraud.
- Examine the violations issued from 2015 through 2019 to assess the effectiveness of ODW monitoring and enforcement efforts.
- Determine if ODW has taken formal enforcement actions against PWSs that incurred significant violations for MCL, TT or monitoring and/or reporting requirements.
- Determine if ODW is assessing or collecting civil penalties for drinking water violations.

METHODOLOGY

OSIG conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that OSIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on the audit objectives. OSIG believes that the evidence obtained provides reasonable basis for the findings and conclusion based on the audit objectives.

OSIG applied various methodologies during the audit process to gather and analyze information pertinent to the audit scope and to assist with developing and testing the audit objectives. The methodologies included the following:

- Conducting interviews with ODW leadership including the C&E Unit, Division of Technical Services, Division of Policy and Programming, regional field office directors and regional Compliance Specialists to gain an understanding of the audit area.
- Reviewing policies and procedures.
- Benchmarking business processes, activities and performance metrics against similar activities in other states.
- Conducting a virtual walkthrough of information systems.
- Collecting and performing analysis of data from key information systems.
- Selecting and reviewing a sample of sanitary survey inspections and water violations.
- Reviewing additional documentation.

To select OSIG's data sample for audit testing, OSIG obtained the information as reported in the SDWIS during January 2015 through December 2019. OSIG used the sample and performed testing to gain a better understanding of drinking water sampling and monitoring, sanitary survey inspections and violation processes, as well as verify ODW performance results. OSIG did not use the sample to draw conclusions on the entire population.

COMMENDATIONS

Commendation #1 - ODW Recognized the Need for Regional Office Support

ODW developed the CS position to support and guide regional field offices in the process of implementing updated internal C&E policies and procedures. ODW management recognized the importance of improving C&E processes and working collaboratively to foster safe drinking water supervision throughout the Commonwealth.

Commendation #2 - ODW Recognized the Need for Expanded Performance Measures

During the course of the audit, ODW self-identified the need for expanded performance data analysis to assist management with evaluating the success of their program. OSIG appreciates management's interest in developing additional program measures and beginning the process to improve program reporting.

Commendation #3 - ODW Updated the Internal Enforcement Manual

On August 11, 2020, OSIG was provided a copy of the updated ODW Enforcement Manual. ODW is also in the process of consolidating policy and procedure memos into agency procedural manuals. Although this is ongoing process, OSIG appreciates ODW's focus on evaluating and implementing updated guidance for internal processes to improve statewide safe drinking water activities.

FINDINGS

FINDING #1 - THE ODW INSPECTION PROGRAM NEEDS TO ENSURE CONSISTENCY STATEWIDE

Procedures assist ODW in achieving its goal and objectives to provide safe drinking water to the citizens of the Commonwealth. SOPs detail recurring work processes that an organization conducts or follows. The procedures should convey information clearly and explicitly to clarify requirements. Prudent management practices include making ODW regional staff aware of the enforcement policies and procedures to include the implementation of SOPs in support of enforcement efforts.

Only one of six regional field offices have a formal process for documenting and tracking notices of violations and administrative orders. ODW regional offices employ informal means of communication (e.g., phone call, verbal confirmation during site visits) to notify public waterworks owner operators of a return to compliance.

ODW enforcement processes are decentralized and, as such, regional offices have developed their own internal methods related to enforcement. The lack of agency wide SOPs can lead to field offices' lack of proper documentation to support a public waterworks return to compliance or may cause delays in the appropriate escalation of enforcement action.

Standardized procedures would provide for the following:

- Ensure a mutual understanding of operations and responsibilities between staff and management.
- Ensure that enforcement requirements are treated consistently across the regional offices.
- Improve the understanding of requirements for new staff.
- Assist with continuity of operations over time.

The benefits of a formal SOP are reduced workload and improved comparability, credibility and legal defensibility.

Recommendation(s):

1. Assess enforcement processes and develop better management practices and tracking systems to ensure issuance of enforcement actions for all violations and closing of violations in a timely manner.
2. Communicate and document these requirements in a formal manner to minimize the possibility of inconsistency among the regions and to ensure all activities are sufficiently documented in support of the enforcement of drinking water laws and regulations.

Management Response(s):

ODW uses the SDWIS to manage and track the issuance of enforcement actions for all violations and the closing of violations. ODW will build a more robust and uniform management and tracking systems by the C&E Director collaborating with the field office directors and Compliance Specialists to:

- Ensure all technical staff in each field office follow consistent enforcement processes through routine trainings and oversight.
- Ensure that each field office has a consistent procedure to manage and track issuance of enforcement actions.
- Identify and eliminate inconsistencies among and within each field office and report inconsistencies to the C&E Director for alignment and policy improvement.
- Compile or develop policies and procedures more specific to notice and compliance into a single manual (the Compliance Determination Manual).
- Ensure policies and procedures are clear and consistent and support enforcement action as described in the Enforcement Manual.

Management Corrective Action:

ODW completed an initial training in February 2021, and will repeat trainings annually in February. ODW expects to compile, document and implement final policies and procedures in guidance documents by March 2022.

FINDING #2 - ODW IS NOT FULLY UTILIZING ENFORCEMENT TOOLS TO ENSURE COMPLIANCE

Issuing appropriate enforcement actions and ensuring timely compliance with enforcement orders are essential components of the drinking water enforcement process. The goal of enforcement is not only to establish liability for noncompliance, but also to correct and prevent further violations.

Across the six field offices, OSIG randomly sampled 30 violations. Three of the violations resulted in administrative orders. None of the three administrative orders resulted in civil penalties, even though clearing the violations took six months or longer for the PWS to return to compliance. In addition, OSIG noted that serious health-based violations for MCL and TT identified in the sample resulted in one administrative order and, as stated above, no escalated civil penalties.

ODW supports the use of technical assistance (e.g., site visits, one-on-one counseling, workshops and resource referrals) for PWSs rather than impose penalties as the best way to bring regulatory violators back into compliance. This may be affecting the timeliness of actions. Based on interviews, the assessment of civil penalties is viewed as punitive and doing so does not support enforcement efforts, especially when dealing with smaller, privately owned waterworks.

ODW's reluctance to use such enforcement practices could signify to waterworks, even if inadvertently, that the correction of violations is not important. Civil monetary penalties are an incentive for compliance and deter future violations of drinking water statutes and regulations. The development and adoption of a new ODW Enforcement Manual, which strengthens enforcement procedures, indicates management acknowledges the need for a proactive approach of ensuring water systems compliance.

Recommendation(s):

1. Continue the process of improving and implementing ODW written guidelines for the escalation of enforcement actions from informal to formal, including the imposition of civil penalties.
2. Clearly define appropriate enforcement timeframes, particularly for health-based violations.
3. Monitor and report the performance of enforcement actions in annual compliance reports, including the median number of days it takes for violations to return to compliance by violation type and number of violations remaining open at year-end.

Management Response(s):

ODW agrees with this recommendation and commits responding to noncompliance using all the tools available. ODW agrees that civil penalties have not been used and are an effective means of achieving compliance and deterring future noncompliance, as well as creating a fair playing field for the regulated community. An important hurdle to achieving compliance continues to be the lack of technical, managerial, and financial capability at small and very small PWSs. Often systems facing noncompliance issues serve disadvantaged, low-income and minority populations. To improve the use of enforcement tools and ultimately see greater rates of compliance, ODW will address health inequities and environmental justice for these systems.

The C&E Director will:

- Finalize written guidelines for escalating enforcement actions from informal to formal, including the imposition of civil penalties. The process includes seeking input on the proposed guidelines by the Waterworks Advisory Committee, completing public notice of the proposed guidelines on Town Hall and, if there are public comments, addressing them as appropriate before formally implementing the guidelines.
- Update the Enforcement and Compliance Manual to ensure that it provides a framework for appropriate enforcement timelines, particularly for health-based violations.
- Examine historical averages and norms for addressing noncompliance and corrective action by violation type to more clearly define enforcement timeframes.
- Continuously monitor and report the performance of enforcement actions in annual compliance reports to the EPA.
- Develop a metric to track the median number of days for violators to return to compliance by violation type and the number of violations remaining open at year-end with the assistance of the Data Management team.
- Collaborate with the Director of Technical Services and the field offices to evaluate the usefulness of the new metrics as a tool for improving program performance.
- Address health equity concerns during the state and local permitting processes.
- Seek funding and legislation to address health equity for disadvantaged systems.
- Field directors and Compliance Specialists will:
 - Follow policies and procedures set forth in the Enforcement and Compliance Manual.
 - Report inconsistencies to the C/E Director.
 - Measure performance using performance plans in Cornerstone.

Management Corrective Action:

ODW will revise the Enforcement Manual and complete the public notice procedures for guidance documents, as required by the *Code of Virginia* § 2.2-4002.1 by January 1, 2022. Improve performance plans in Cornerstone to promote accountability and measure field office staff compliance with guidance documents. ODW will implement new metrics no later than July 1, 2022.

FINDING #3 - ODW ADMINISTRATIVE AND CIVIL REMEDIES ARE NOT FULLY SUPPORTED BY THE ENFORCEMENT MANUAL

Civil penalties are one of the enforcement tools that ODW can use to hold PWSs accountable and can be a factor in enhancing the efficiency and effectiveness of enforcement efforts. Generally, ODW has determined how and when it may impose a civil penalty on any PWS that violates certain laws or regulations related to the safety of drinking water.

According to *Code of Virginia* § 32.1-27.C, “[A]ny person violating or failing, neglecting or refusing to obey any injunction, mandamus or other remedy... shall be subject... to a civil penalty not to exceed \$25,000 for each violation...”; *Code* § 32.1-27.D, “With the consent of any person..., the Board may provide, in an order issued by the Board against such person, for the payment of civil charges for past violations in specific sums...”; and *Code* § 32.1-175.01, “[T]he Board may issue a special order that may include a civil penalty against an owner who violates this article of any order or regulation adopted thereto by the Board.”

Civil monetary penalties act as incentives for water companies to come into compliance and deter future violations of drinking water statutes and regulations. Ideally, ODW should calculate penalties to recover any economic benefit of noncompliance, including the cost of enforcement and to compensate for the seriousness of the violation. The EPA Drinking Water Enforcement Response Policy also outlines the approach for targeted enforcement under the SDWA by focusing on waterworks with health-based violations and a history of noncompliance. The policy ensures consistency, provides a model to escalate responses to violations, defines timely and appropriate actions and defines what constitutes a formal action. A fair and equitable ODW civil penalty policy would also outline steps to measure immediate and continued compliance; degree of impact on water quality; whether the company is taking all steps necessary to correct the violation; extent of prior violations; degree of harm to public health, safety and welfare; and whether the PWS notified its consumers of the violation.

ODW has not fully utilized administrative orders and civil penalties as a means of enforcing Virginia waterworks regulations, specifically for PWSs that are habitual and nonresponding violators. OSIG found that although statutes allow regional offices to use civil action as a means of enforcement, ODW did not always take advantage of its ability to use civil action. Until CY 2020, there is no record of a penalty ever assessed against violators of drinking water regulations by the agency.

There has been some debate within the department as to whether the best way to achieve compliance is through cooperative mechanisms or traditional enforcement approaches, such as orders and penalties. Some ODW staff and management view the assessment of civil penalties as inflexible and of limited enforcement value.

The lack of administrative orders and civil penalties may diminish the likelihood of prompt compliance and may unnecessarily expose consumers to extended public health risks. Without managerial guidance, inconsistent regional office application of penalties can occur, and the regulated community ultimately receives different messages about violations. The goal of any civil penalty policies and procedures should be to assist staff in administering and calculating appropriate, fair and consistent monetary policies for violators.

Recommendation(s):

1. Enforce *Code of Virginia* §§ 32.1-27 and 32.1-175.01 because the purpose of these statutes is to support the agency's efforts to ensure that PWSs comply with Virginia waterworks regulations.
2. Continue implementation of updated administrative order and civil penalty policies and procedures within the new Enforcement Manual. Add the following items to ensure that enforcement and reporting are occurring:
 - A reporting mechanism for ODW management to identify habitual and nonresponding public water system violators.
 - An outline of escalation procedures to ensure timely enforcement of water regulations consistently among the regions in the state.
 - A consent order and civil penalty tracking system shared between ODW Central Office and regional field offices to monitor assessments, correspondence, collections, etc.
 - Regular training and guidance for staff, especially CSs, on the new enforcement manual's methodology for calculating, adjusting and recording penalties to ensure practices are appropriate, fair and consistent with statutory requirements.

Management Response(s):

The Enforcement Manual establishes ODW's guidelines and procedures for issuing civil penalties and administrative orders. ODW will implement *Code of Virginia* §§ 32.1-27 and 32.1-175.01 pursuant to the Enforcement Manual. Field Directors and/or Compliance Specialists will:

- Ensure the Enforcement Manual is understood and consistently implemented;
- Understand and be familiar with the Enforcement and Compliance Manual policies and procedures and ensure that guidance is followed.
- Use the EPA's ETT list and the ETT Assistant to identify habitual and non-respondent public water system violators.
- Improve reporting of state-only violations not included in federal reporting.
- Follow a flowchart and process to escalate enforcement of the Waterworks Regulations.

- Ensure staff are monitoring and tracking consent orders and civil penalties using SDWIS.
- Hold annual enforcement training for regional CSs.
- Attend annual enforcement training for regional CSs.
- Attend monthly meetings with regional CSs to ensure consistent practices across field offices.

Management Corrective Action:

ODW will complete enforcement escalation procedures by December 1, 2021. ODW performs training for staff on an ongoing basis and completed training for the regional CSs in October 2020 and all staff training in February 2021. The C&E Division Director will provide regular and ongoing training during monthly CS meetings, and incorporate all recommendations into the Enforcement Manual as described.

FINDING #4 - WEAKNESSES IN THE ODW WATER SAMPLING OVERSIGHT AND VERIFICATION PROCESS WERE IDENTIFIED

Accurate water sampling and testing are necessary to ensure that drinking water meets required quality standards. PWSs must test their water supply for various contaminants on a regular basis and report the results to ODW. Generally, the systems that serve a larger population on a continuous basis are required to test their water more often. The type of contaminants ODW monitors for, the methodology for collecting a sample and the frequency of sampling is contingent upon the type of PWS (community or non-community) and the water source (surface or groundwater). Some PWSs contract with an independent, certified laboratory to analyze water samples from their facilities, while some large PWSs may operate in-house certified labs. The owner/operators of waterworks are required to report results to ODW on a monthly, quarterly or annual basis.

Virginia Administrative Code 12VAC5-590-340 states, “[A]ll physical, chemical, bacteriological, or radiological analyses for the purpose of demonstrating compliance with primary and secondary maximum contaminant levels, action levels, or contaminants that do not have Primary Maximum Contaminant Levels (PMCLs) but for which compliance samples must be analyzed by certified laboratories shall be performed by the Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services (DCLS) or in laboratories certified by the Division of Consolidated Laboratory Services for such purposes. The owner is responsible for the collection and submission of all samples. A sample is deemed to have been collected only if and when its results are made known to the Office of Drinking Water.”

In 2002, all water sampling responsibility transferred to PWSs. Before 2002, sanitary survey inspection schedules had closely aligned with water monitoring schedules for each waterworks (twice per year at surface water plants, every three years at groundwater systems). ODW staff would collect certain compliance chemical samples during routine inspections, particularly for groundwater source systems. DCLS would provide free sampling analysis to ODW through the use of budgeted general funds. As the complexity of monitoring and the amount of sampling increased over time, it became difficult for ODW staff to collect the appropriate compliance samples during the sanitary survey process. In July 2002, DCLS began charging fees for lab samples when General Assembly general fund support ended due to budget limitations. Since ODW transferred water sampling responsibility to the public water systems, ODW has not implemented alternate procedures to increase oversight of the sampling process.

ODW's current process does provide licensure training and technical assistance to guide the proper collection and submission of water samples, but does not cover the following risk areas:

- ODW does not inspect the sample collection process. The department approves a sampling site plan for certain chemicals, but does not check that an individual sample actually came from the designated location on the plan. Although drinking water labs are required to conduct internal audits, any deviations from sampling requirements may go undocumented and therefore go undiscovered. Specific vulnerabilities could include water samples collected from sources outside the actual water supply, taken from the same location or altered to remove impurities.
- ODW does not perform an independent systematic sampling of public water systems as a check on the entire system. ODW may conduct internal tests of drinking water under special sampling circumstances, such as consumer complaints.
- The sample process for certain chemicals relies on PWS customers. Customers are provided instructions on how to perform the sampling procedures, but no one knows how well customers actually implement the instructions.
- Some certified labs are in-house and are part of a large PWS. Therefore, the in-house lab conducts sample collection, recording, testing and reporting.

The quality of water sample data generated by the testing laboratory begins with the quality of the sample collected in the field. If PWSs provide inaccurate water samples to the labs, serious health threats may go undetected. Moreover, if the Commonwealth does not detect and investigate questionable test data, the Commonwealth's ability to take proactive measure to prevent contamination of the water supply is compromised.

Recommendation(s):

Strengthen existing strategies and procedures to maintain or improve the integrity of water sampling processes such as:

- Incorporate processes in the current site inspections to verify the sample pulling process and to ensure PWSs properly pulled samples from locations on their sampling plan.
- Implement a documented process that allows for random water sampling and testing of PWSs. As part of the process, verify and confirm the validity of water samples that are required for monitoring through the submission of lab results to DCLS. This could be performed during the course of performing sanitary surveys or by an alternate schedule established by the agency.
- Determine additional resource needs, and pursue federal and state funding for additional staff and resources for the expansion of ODW water sampling oversight.

Management Response(s):

The Director of the Division of Technical Services will work with field directors to:

- Identify problems to be addressed related to waterworks sampling, sample location and collection techniques.
- Identify problems to be addressed related to sample and water quality data falsification.
- Understand sampling program and policies in place at DEQ.
- Establish policy and priorities.
- Understand current and future budget and resource needs.

Management Corrective Action:

ODW will complete the following by January 1, 2022:

- Add new questions to the electronic sanitary survey to trigger assessment of sample locations and collection techniques.
- Add new questions to the electronic sanitary survey to address water quality data in SDWIS and monthly operation reports.
- Provide training and written sampling instructions and to field staff on proper sample collection techniques.
- Develop written policy for responses to potential data falsification and data problems.
- Identify resource and budget needs to implement a statistically meaningful policy and procedure to perform quality control/quality assurance of sampling by the regulated community.
- Implement a QA/QC sampling verification program to the extent that budget and human resources allow.

FINDING #5 - ODW PERFORMANCE METRIC REPORTS LACK MONITORING AND COMPLIANCE ELEMENTS

The purpose of performance metric reporting and analysis is to produce essential information about organizational accomplishments and determine areas where improvements can be made. ODW managerial assessments should include monitoring the performance of programs, evaluating any deviations from expected or desired results, identifying any necessary improvements and implementing corrective action in a timely manner.

ODW has developed internal performance metric reports that track three timeliness-based and one health-based performance metrics. The current performance metric reports do not include data that will allow management to evaluate the effectiveness of water monitoring and compliance processes. The current compliance performance metrics do not report the following information valuable to measuring the success of program operations:

- Days late in reference to inspections, sampling and other compliance requirements.
- Days between sampling, notice of violations and notification of the return to compliance.
- Current and historic chemical testing results with a focus on exceedances.
- Habitual violators and nonresponding waterworks.
- Other criteria for determining the effectiveness of monitoring and compliance processes.

Recommendation(s):

1. Continue the process of evaluation, analysis and reporting of monitoring and compliance performance metrics, and consider including the following:
 - Days late in reference to inspections, sampling and other compliance requirements.
 - Days between sampling, notice of violations and notification of the return to compliance.
 - Current and historic chemical testing results with a focus on exceedances.
 - Habitual violators and nonresponding waterworks.
 - Other criteria for determining the effectiveness of monitoring and compliance processes.
2. Work with the VDH Office of Information Management and GEC to ensure any updates to current software platforms and/or implementation of new software will have the capability to track appropriate monitoring and compliance data.

Management Response(s):

The Director of the Division of Technical Services will work with the Leadership Team and Compliance Specialists to:

- Develop and demonstrate new metrics focusing on the time to return to compliance for categories of violations.

- Review and evaluate the new metrics to determine how to use the new metrics.
- Establish priority for use and development of new metrics.
- Continue tracking nonresponding violators using the ETT.
- Implement revised metrics.
- To the extent possible, collaborate with the Office of Information Management and GEC to improve software platforms for monitoring compliance data to the extent that budget allows.

Management Corrective Action:

ODW will complete the following by December 2021:

- Preliminary metrics focusing on the time to return to compliance for categories of violations.
- ODW division directors assigned this task will offer recommendations for use of the new metrics, including how often to run the metrics.
- Based on the user acceptance of the metrics and other considerations, ODW will consider implementing the metrics on an interim basis using current resources and an implementation plan.
- Based on user acceptance of the metrics, ODW expects to implement the new metrics in the GEC software changes pursuant to this recommendation in 2022 provided ODW receives unallotted funding for the proprietary software package for Global Environmental Consulting (GEC).

FINDING #6 - ODW PUBLIC NOTICE OVERSIGHT IS INCONSISTENT

The Public Notice (PN) rule is part of the SDWA. The rule ensures that consumers will know if there is a problem with their drinking water. These notices alert consumers if there is risk to public health. ODW also notify customers:

- If the water does not meet drinking water standards.
- If the water system fails to test its water.
- If the system has been granted a variance (use of less costly technology).
- If the system has been granted an exemption (more time to comply with a new regulation).

In 2000, the EPA revised the existing PN rule. The revisions matched the form, manner and timing of the notices to the relative risk to human health. The revised rule makes notification easier and more effective for both water systems and their customers.

Notices must be sent within 24 hours, 30 days or one year depending on the tier to which the violation is assigned. The clock for notification starts when the PWS learns of the violation.

Tier Violation	Deadline for Notice	Repeat Notice Frequency	Notification Delivery Methods
Tier 1	Within 24 hours of learning about the violation	As directed by the state	Broadcast media (e.g., radio, television); posting of notice in conspicuous locations throughout PWS service area; hand delivery to persons served by the PWS or another delivery method approved in writing by the state
Tier 2	Within 30 days of learning about the violation	Every 3 months	Mail or hand delivery; additional methods as necessary to reach all consumers
Tier 3	Within one year of learning about the violation	Annually	Mail or hand delivery; may be included in annual report to consumers; additional methods as necessary to reach all consumers

In a memo dated February 22, 2011, the EPA provided primacy agencies with guidance on entering resolving action codes into the SDWIS indicating that past violation of PN requirements

has been appropriately resolved and no further enforcement action is warranted. The memo also provided additional clarification on properly addressing PN violations in certain circumstances.

In order to validate ODW oversight of public notice processes according to EPA primacy and state drinking water regulations, OSIG reviewed a sample of 40 PWSs to verify the recording of the PN done date in SDWIS. The waterworks in the sample were selected as enforcement action taken by ODW was elevated to the issuance of an administrative order related to drinking water violations. Based on the types of violations associated with the administrative orders, public notice would have been required of most of the waterworks.

Auditors evaluated public notice information for the violations associated with the administrative order as well as historical PN done dates for CY 2015 through CY 2019. Of the 40 waterworks in the sample reviewed by OSIG, 16 or 40 percent of the waterworks had none or one missing PN done date. OSIG found that seven were inactive systems or the missing PN done dates were out of the scope of audit. For the remaining 17, analysis established that out of 240 public notices, 154, or 64 percent, were missing PN done dates.

Depending on the type of violation, warning letters and/or NOAVs require the owner of the waterworks to certify to ODW that it took public notice action. OSIG was told during discussions that field office staff may optionally confirm that the public notice action has been completed, which is usually when a violation has the potential for a severe or acute health effect on the public. ODW management acknowledge the potential need for additional oversight of PN business processes. It was explained that staff did not enter some public notification dates, making it difficult for ODW to effectively track and monitor public notice requirements. Leadership also explained there is not specific guidance, such as the frequency of running compliance reports that requires field offices to follow-up on and verify the proper issuance of public notifications.

Unless PWSs provide timely public notifications about violations such as exceedances, which is a requirement of the regulations, customers may not receive important information about possible related public health concerns. By ensuring that waterworks submit evidence of public notification, ODW can verify that customers are receiving the required information, including the details of health-based violations and actions the PWS is taking to correct it.

Recommendation(s):

ODW management should make improvements to ensure PWSs have issued required public notices to consumers and that those notices are timely, especially for health-based violations.

The ODW C&E Unit, in collaboration with field office leadership and Compliance Specialists, should:

1. Improve central and regional office oversight of public notice processes, including follow-up, in support of federal and state drinking water regulations.
2. Develop and implement an internal public notice tracking policy, using SDWIS, between ODW Central Office and the Compliance Specialists to:
 - a. Monitor PN correspondence.
 - b. Confirm appropriate and timely PN certifications.
 - c. Verify entry of PN information into SDWIS.
3. Develop an outline of escalation procedures to ensure proper issuance of public notices and mitigate waterworks that are habitual PN violators, in coordination with the enforcement recommendations listed in Finding #3.
4. Ensure that the current status of all PNs are properly updated in SDWIS to allow ODW management to properly track PNs moving forward.

Management Response(s):

Staff is developing a new Field Manual to describe updated and revised business process and procedures for day-to-day operations at the field offices, including how those processes interact and interplay with Central Office Division activities. The Field Manual will change how ODW escalates enforcement for repeat violators of the PN rule. Currently, staff escalates PN violations based on the ETT score, but repeat PN rule violations are not sufficient by themselves to require formal enforcement, assuming the underlying violation returns to compliance (e.g., the waterworks submits the missing water sample). Repeat PN violations should trigger escalation, and repeat PN violations should trigger a higher tier violation. Preliminary data on PNs indicate ODW field offices are not consistently tracking PNs or entering data into SDWIS for all tiers of violations. Field offices also do not appear to be consistently issuing NOAVs for failure to complete all tiers of PNs based on ODW's preliminary data review. The Field Manual will identify a process to clear and remove old PN violations for transient/non-community PWSs from former owners. Staff will address these additional topics in the PN chapter of the Field Manual.

Management Corrective Action:

ODW will incorporate OSIG's recommendations into the Field Manual by January 2022, train staff on the new procedures by February 2022 and implement the recommendations by April 2022.

Field offices report a lack of adequate human resources to respond to low priority Tier 3 violations. ODW leadership will continue to work on adequately staffing field offices and providing sufficient resources to implement the recommendations.

FINDING #7 - ODW REGIONAL FIELD OFFICES' MONITORING AND OVERSIGHT POLICIES ARE INCONSISTENT

High percentages of violations, especially monitoring and health-based violations, put the Virginia population at risk of being exposed to unsafe drinking water. ODW procedures require that field offices issue a NOAV to public water systems that do not comply with EPA and/or Virginia drinking water regulations. The NOAV formally records the violation and specifies the PWS' required follow-up actions and their timing. Depending on the violation's severity, in addition to notifying the public, the PWS may be required to conduct continued or enhanced monitoring (e.g., sampling); make minor alterations to treatment and operations; or make major changes such as installing new treatment techniques or developing new sources of drinking water. If the public water system fails to comply with NOAV requirements, ODW may initiate further action, including formal enforcement.

OSIG analyzed violation data based on the three types of PWSs (community, non-community and non-transient/non-community). Testing was performed to determine any significant trends in the number and/or types of drinking water violations. Below are the results of that analysis from data provided by ODW:

Table 1 – Total Public Water System Violations for January 1, 2015, through December 31, 2019

	# of PWS's	Monitoring	MCL	Reporting	Public Notice	Treatment Technique	Total
Abingdon	219	759	108	238	29	32	1,166
Culpeper	223	764	81	45	2	8	900
Danville	229	734	141	94	12	12	993
Lexington	229	703	62	46	4	7	822
Richmond¹	241	1,055	79	116	55	11	1,316
Southeast	224	773	166	63	45	16	1,063
*Total Violations	1,365	4,788	637	602	147	86	6,260
% of Total		76.5%	10.2%	9.6%	2.3%	1.4%	

Note¹: Richmond Field Office was formed in 2020. PWSs previously assigned to Lexington and Southeast Field offices are now assigned to RFO. As such, the data from LFO and SEVFO transferred to RFO. However, the outcome of OSIG's analysis is the same.

Table 2 – Breakdown of Public Water Systems with 19 or Fewer Total Violations by Region
for January 1, 2015, through December 31, 2019

Region	# of PWS's	Monitoring	MCL	Reporting	Public Notice	Treatment Technique	Total Violations
Abingdon	209	523	92	199	22	24	860
Culpeper	215	512	66	38	2	8	626
Danville	221	547	115	89	10	6	767
Lexington	225	551	51	39	1	6	648
Richmond	229	647	58	101	34	11	851
Southeast	214	504	104	50	16	10	684
Total	1,313	3,284	486	516	85	65	4,436

Table 3 – Breakdown of Public Water System with 20 or More Total Violations by Region
for January 1, 2015, through December 31, 2019

Region	# of PWS's	Monitoring	MCL	Reporting	Public Notice	Treatment Technique	Total Violations
Abingdon	10	236	16	39	7	8	306
Culpeper	8	252	15	7	0	0	274
Danville	8	187	26	5	2	6	226
*Lexington	4	152	11	7	3	1	174
**Richmond	12	408	21	15	21	0	465
Southeast	10	269	62	13	29	6	379
Total	52	1,504	151	86	62	21	1,824

OSIG compared the public water systems with the least and greatest number of violations during CY 2015 and CY 2019 to determine any significant variances and the potential causes. The LFO accounted for about 17 percent and the RFO 18 percent of all PWSs in the Commonwealth. The LFO is responsible for eight percent of the 52 waterworks with 20 or more violations, with that region having 174 violations. Of those, 164, or 94 percent, were MON, MCL and TT violations. The RFO accounted for 23 percent of the 52 waterworks with 20 or more violations, with 465 violations. Of those, 429 or 92 percent were MON, MCL and TT violations. Auditors did not discover any specific cause for the variation from region to region other than ODW's decentralized nature of C&E practices.

Additional analysis was used to evaluate the impact of ODW's use of enforcement tools such as administrative orders to mitigate repeat, noncompliant waterworks. Administrative orders are consent orders issued on behalf of the Virginia Board of Health to resolve issues of

noncompliance with waterworks. AOs require a set of actions and, in some instances, an assessment of civil penalties to return the waterworks to compliance. Consent orders are considered case decisions that are authorized by statute and enforceable in court. OSIG was provided the list of 40 waterworks-issued AOs during CY 2015 through CY 2020. That list was compared to the violation data stated above with the following results:

Table #4 – Comparison of ODW Administrative Orders to Regional Violations Issued
January 1, 2015, through December 31, 2019

	AO Total	% of AO Total	# of PWS's <19 Violations and AO ¹	% of AO Total	# of PWS's >20 Violations and AO	% of AO Total
Abingdon	8	20.0%	6	75.0%	1	12.5%
Culpeper	4	15.0%	1	25.0%	2	50.0%
Danville	12	30.0%	7	58.0%	3	25.0%
*Lexington	1	2.5%	1	100.0%	0	0%
**Richmond	12	30.0%	6	50.0%	6	50.0%
Southeast	3	7.5%	0	0%	3	100.0%

Note¹: Four of the public water systems listed on the administrative order list from Abingdon, Culpeper and Danville were not found in the violation data provide to OSIG. Because of this, the percentages in the chart do not add to 100 percent for these regions.

Though the LFO had the fewest number of waterworks with 20 or more violations, no AOs were issued, even though the majority of the violations were monitoring and health-based (illustrated in Table #3). In comparison, the RFO's waterworks with 20 or more violations had a lower percentage of MON, MCL and TT violations, yet AOs were issued to 50 percent of those waterworks.

Although water regulations authorize ODW to issue AOs along with the assessment of penalties for *Code* violations, agency officials said that historically they have used enforcement measures when technical assistance is unsuccessful over time. Field office management stated that violations are best remedied with efforts that bring about compliance in the shortest amount of time, which is best achieved through cooperation with the PWS as opposed to penalties. Field offices take a broad range of other actions to address violations and guide PWSs toward compliance, such as working with the PWS to inform the public of the violation; directing and conducting follow-up sampling of the water supply and, in some cases, of the distribution system; and requesting, reviewing and approving treatment enhancements to address the violation and reduce exposures.

Additionally, discussions with ODW regional staff indicate owner/operator rapport and waterworks financial resources are contributing factors that have led to varying approaches to enforcement as evidenced in the results of OSIG's analysis. Field directors say historically, an engineer builds a relationship, so that if there is an emergency, camaraderie and trust is established to help remedy the situation. ODW management also told auditors the idea of rotating inspectors is built on the assumption that every engineer and inspector are equal in experience and skill, which they are not. Decisions on assignment have been made based on the ability of employees.

Agency management has taken steps to provide regional field offices with additional guidance through the update of internal procedural manuals. But if all regional field offices do not consistently follow established criteria and procedures for initiating appropriate corrective action whenever a PWS has multiple violations, ODW cannot provide assurance that PWSs are properly complying with their regulatory obligations; that health-based violations are being addressed appropriately and timely; and that violations are properly mitigated consistently across the Commonwealth.

Recommendation(s):

1. Continue the process of improving and implementing ODW written guidelines for escalation of enforcement actions as noted in the recommendation to Finding #2.
2. Develop and provide written guidance for when administrative orders should be pursued in order to maintain statewide consistency.
3. Use data analytics to evaluate regional violations trends and corrective action efforts to ensure consistent application of enforcement and compliance policies and procedures.
4. Include issuance of administrative orders in the oversight monitoring program as noted in Finding #8.

Management Response(s):

ODW published the Enforcement Manual in November 2020 and recently revised it to incorporate OSIG's recommendations in findings #1, #2 and #3. Those edits are under review. The revised manual includes a workflow diagram with a proposed timeline to escalate noncompliance to formal enforcement. ODW supports data analytics to evaluate regional violation trends. Each violation type is fact-dependent and can have different timeframes and expectations for returning to compliance. Identifying trends over time, such as what OSIG presented in this specific recommendation, are informative and necessary to ODW's oversight of the drinking water program.

Management Corrective Action:

ODW commits to the following actions:

- Continue using the SDWIS database, Excel spreadsheets and the ETT to track administrative orders and other enforcement data, including the dates of when a violation occurred, when a notice was issued to the owner, when a consent order became effective and when the PWS returned to compliance.
- By January 2022, evaluate regional trends and corrective actions.
- Over the next 12 months, collaborate with the agency's recently created Center for Public Health Informatics, which can help ODW develop, translate, visualize and disseminate public health data and informatics knowledge to improve population health outcomes.
- Evaluate regional trends and corrective actions.
- Evaluate funding options to create an enforcement-tracking database to monitor and track enforcement actions and evaluate enforcement program performance and effectiveness.
- Continue to issue administrative orders pursuant to the Enforcement Manual and Finding #8.
- Continue to establish timeframes and expectations for return to compliance.

June 1, 2022, is the expected completion date for all bulleted items. ODW commits to these changes on an ongoing basis, with a review each year in February. ODW will update policy and procedures in the Enforcement and Compliance Manual as necessary. Ongoing training will be provided in February each year to ensure understanding of policy and procedure changes. ODW is exploring ways to improve its data management and enforcement metrics. ODW will explore statistical analysis software as budget allows.

FINDING #8 - ODW REGIONAL FIELD OFFICES LACK QUALITY ASSURANCE/QUALITY CONTROL PRACTICES

OSIG evaluated 30 drinking water violations (five violations from each of the six regions) issued from FY 2015 through FY 2019. OSIG reviewed ODW files and the SDWIS for the following:

- Documentation to support the justification for the violation, including correspondence with the waterworks, lab and inspection results (if applicable), corrective action documents, etc.
- Confirmation the violation process was followed according to the EPA Enforcement Response Policy and/or ODW's Enforcement Manual, such as:
 - Proper notification of the violation to waterworks.
 - Explanation of the required corrective action from the waterworks.
 - Verification of timely corrective action taken by the waterworks.
 - Documented waterworks return to compliance.
- Determination of a waterworks accumulation of additional violations after the sample violation and, if so, how many were within the scope of the audit.
- Determination of the applicable level of escalation of enforcement such as the issuance of an administrative order.

In eight out of 30, or 27 percent, of the violations tested, the documentation needed to follow the process and support a waterworks return to compliance was not provided. Auditors were able to determine from regional management responses that some regions have their own internal methodologies for documenting violations. For 12 out of 30, or 40 percent, of the violations included in the sample, ODW policy was not followed or evidence was not provided to demonstrate compliance with ODW policy. Results for criteria such as the type of documentation provided to support a violation, the amount of time field offices would allow a waterworks to respond or to implement a corrective action varied from region to region. ODW cannot ensure that valid drinking water violations are being issued or provide evidence that appropriate C&E action was taken if levels of record keeping and tracking are inconsistent throughout the state.

Formal documentation policies and process tracking systems support an effective internal control structure and drives consistency within an agency. ODW management has identified this and established CS positions to assist with addressing the issues noted above. ODW management also indicated there is opportunity to perform quality assurance checks of work in the field, including observing inspections in real time to confirm that all significant deficiencies are being captured and properly documented. However, the agency will be unable to effectively validate the taking of enforcement action such as the issuance of drinking water violations without first putting in place effective internal controls such as robust documentation policies and systems to manage and maintain those activities. Those internal control mechanisms should then be checked regularly through a QA/QC process to evaluate if changes are needed.

Recommendation(s):

1. Given ODW's size and the decentralized nature of the organization, implement a comprehensive, complete and accurate methodology to monitor compliance activity, assess trends and evaluate outcomes of its efforts to bring regulated entities into compliance, such as:
 1. Develop a formal documentation policy that would support effective office management of the violation process and waterworks compliance with state and federal water safety regulations.
 2. Develop a formal tracking system with time control goals that have an impact on the ability for regional offices to monitor effectively waterworks progress in completing corrective actions and to ensure the return to compliance is timely.
2. Establish a comprehensive QA/QC program to provide the agency a continual mechanism to evaluate and improve the effectiveness of policy and procedures that support Virginia's safe drinking water program. An effective QA/QC program would include:
 - Quantifiable performance indicators for measuring outputs and outcomes of water monitoring and enforcement processes.
 - Performance standards that describe the desired level of outputs and outcomes based on management expectations, industry standards and/or historical data.
 - Mechanisms to gather output and outcome data, such as validating the occurrence and accuracy of inspections and sampling being conducted.
 - Established schedules for managerial comparison of results.
 - Development of proposals for program changes to improve effectiveness.

Management Response(s):

ODW revisits policies annually to improve its understanding and expectations for compliance and enforcement. Recently, ODW finalized the Sampling Manual and Enforcement Manual. A third manual, the Field Manual, is under review. These three manuals include guidelines for tracking noncompliance, notifying the waterworks owner and the public of noncompliance and documenting the enforcement process. ODW is increasing the use of SharePoint for storing final records. A more robust electronic document management system would ensure consistent application of documentation policies. ODW will continue to search for funding opportunities in support of this objective.

Management Corrective Action:

ODW commits to the following actions on an ongoing basis with annual updates:

- Continue to revise the Enforcement and Compliance Manual to better formalize documentation policies and procedures.

- Continue to seek funding for an electronic document management system, which would automatically formalize business process and documentation.
- Regional CSs will run monthly compliance reports for all violations that have not been returned to compliance in SDWIS.
- Continue to work under the oversight of the EPA in implementing the enforcement program.
- Update the Enforcement Manual to establish clear policy and procedure for how long a certain violation should remain in effect before escalating.
- By June 2022, the Director of C&E will develop an audit and review method to evaluate outputs of field offices and the C&E Division. For example, an audit could review a sample set of notices of alleged violation to assess accuracy, consistency and the timeline for compliance. Staff will revise the Enforcement Manual as necessary to document the audit process and implement the changes.
- Collaborate with the VDH Center for Public Health Informatics Advisory Council to improve QA/QC and data visualizations.

FINDING #9 - ODW REGIONAL COMPLIANCE SPECIALISTS ARE MISSING THE TOOLS NECESSARY TO BE EFFECTIVE

ODW has not provided CSs with all the necessary tools to provide consistent value in their role across the Commonwealth. The varying regional understanding of the CS role, along with a lack of expanded policies and procedures that strengthen internal processes, leave gaps in the agency’s ability to implement improvements and identify control deficiencies intended for the role.

The CS position was developed to assist central and field office coordination. Strengthening regional CS oversight and reporting to ODW’s Central Office C&E Division would contribute to the agency’s overall efforts to ensure safe water quality conditions. Locally generated reports with the focus on conditions, such as the ones listed below, would also assist CSs to make recommendations to improve safe drinking water processes.

Compliance Levels
<ul style="list-style-type: none"> • Regulated facilities in compliance. • Complaints resulting in violation. • Noncompliance by geographic region. • Permits issued within a specified time.
Enforcement Actions
<ul style="list-style-type: none"> • Violations resolved through informal versus formal enforcement methods. • Violators returned to compliance (within a specified time). • Repeat violators (by violation type and within a specified time).
Harmful Incidents
<ul style="list-style-type: none"> • Reduction in health-based violations. • Waterworks with structural deficiencies.

Source: OSIG review of ODW data and industry literature

Although ODW identified the need for updated, coordinated C&E efforts between Central Office and each regional office by developing the position to serve as the liaison at the local level, the challenge for the agency is still the decentralized nature of regional field office management that continues to contribute to the variances in how statewide processes are conducted.

Recommendation(s):

Continue the process of developing the CS position to include:

- Increased reporting and sharing of information between CSs and ODW’s Central Office.
- A level of independence for CSs reporting to Central Office to provide regional assessments and recommendations for improvement. Reporting to Central Office would also provide Central Office management insight in the issues at regions and

- allow for trending to determine if an agency wide solution, such as training, is necessary.
- Expanded oversight policies and procedures of local C&E activities to drive consistency throughout the Commonwealth.
 - Performance tracking and analysis, including the criteria listed in the chart above and addressed in findings in performance metric reports and monitoring and oversight, to communicate to internal and external stakeholders the results of C&E efforts and guide decision-making.

Management Response(s):

ODW leadership concurs that the CS position needs strengthening, and use of the positions in each field office is not consistent. While changing supervision from six regionally focused engineers to one statewide C&E Division Director would likely improve consistency and autonomy, ODW wants to evaluate root causes more deeply and explore all possible interventions before moving forward with a change in supervision. A supervisory change may create new and different problems related to field office operations.

With or without a change in supervision, Central Office and field offices must have better coordination, collaboration and communication to strengthen the CS position and eliminate inconsistency. ODW wants engineering staff focused on engineering and OSIG's recommendation aligns with that goal. ODW is evaluating an organizational change for the field offices and it will incorporate this specific recommendation into that effort. ODW expects implementation of this recommendation to be iterative and incremental over time.

Management Corrective Action:

ODW specifically commits to the following by March 1, 2022:

1. Evaluate CS employee work profiles and update as necessary.
2. Update the Enforcement Manual to make CS duties clear.
3. Revisit and update communication and reporting channels for CSs as necessary to strengthen the positions and eliminate inconsistency.

AUDIT RESULTS

This report presents the results of OSIG's audit of the VDH Office of Drinking Water – Drinking Water Regulation Program. The following audit testing was performed with immaterial, if any, discrepancies noted:

- Compared ODW's performance measures to those required by the EPA to determine that ODW's metrics are appropriate for states that have been granted primacy.
- Reviewed a sample of sanitary surveys to determine ODW field offices are conducting inspections according to EPA standards and results are being recorded.

Based on the results and findings of the audit test work conducted of ODW, OSIG concluded that internal controls were operating properly as it relates to the objective of the audit except as identified in the report findings.

APPENDIX I - CORRECTIVE ACTION PLAN

FINDING	RECOMMENDATION	CORRECTIVE ACTION	DELIVERABLE	ESTIMATED COMPLETION DATE	RESPONSIBLE POSITION
<p>The ODW Inspection Program Needs To Ensure Consistency Statewide</p>	<ol style="list-style-type: none"> 1. Assess enforcement processes and develop better management practices and tracking systems to ensure issuance of enforcement actions for all violations and closing of violations in a timely manner. 2. Communicate and document these requirements in a formal manner to minimize the possibility of inconsistency among the regions and to ensure all activities are sufficiently 	<p>ODW uses the SDWIS to manage and track the issuance of all enforcement actions and to monitor and return to compliance all open violations. ODW will build a more robust and uniform management and tracking systems by the C&E Director collaborating with the field office directors and compliance specialists to:</p> <ul style="list-style-type: none"> • Ensure all technical staff in each field office follow consistent 	<ul style="list-style-type: none"> • ODW completed an initial training in February 2021, and will repeat trainings annually in February. • ODW expects to compile, document and implement final policies and procedures in guidance documents by March, 2022. 	<p>February 2021 and ongoing</p> <p>March 1, 2022</p>	<p>Deputy Office Director, Compliance Specialists, and C&E Director, working with each Field Director</p>

	<p>documented in support of the enforcement of drinking water laws and regulations.</p>	<p>enforcement processes through performance metrics, routine trainings and oversight.</p> <ul style="list-style-type: none">• Ensure that all field office staff are following the statewide policy and procedure for managing and tracking issuance of enforcement actions to address and eliminate inconsistencies.• Identify and eliminate inconsistencies among and within each field office and report inconsistencies to the C&E Director for alignment and policy improvement.			
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		<ul style="list-style-type: none"> • Compile or develop policies and procedures more specific to notice and compliance into a single manual (the Compliance Determination Manual). • Ensure policies and procedures are followed and enforcement actions support clear and consistent strategy as described in the Enforcement Manual. 			
<p style="text-align: center;">ODW Is Not Fully Utilizing Enforcement Tools to Ensure Compliance</p>	<p>1. Continue the process of improving and implementing ODW written guidelines for the escalation of enforcement actions from informal to formal, including the imposition of civil penalties.</p>	<p>The C&E Director will:</p> <ul style="list-style-type: none"> • Finalize written guidelines for escalating enforcement actions from informal to formal, including the imposition of civil penalties. The 	<ul style="list-style-type: none"> • ODW will revise the Enforcement and Compliance Manual and complete the public notice procedures for guidance documents, as required by the <i>Code of Virginia</i> § 2.2-4002.1 	<p>Ongoing January 1, 2022, and each year thereafter July 1, 2022</p>	<p>Deputy Office Director, DTS Director, Field Directors will support performance plan implementation.</p> <p>C&E Director will keep Enforcement and Compliance</p>

	<p>2. Clearly define appropriate enforcement timeframes, particularly for health-based violations.</p> <p>3. Monitor and report the performance of enforcement actions in annual compliance reports, including the median number of days it takes for violations to return to compliance by violation type and number of violations remaining open at year-end.</p>	<p>process includes seeking input on the proposed guidelines by the Waterworks Advisory Committee, completing public notice of the proposed guidelines on Town Hall and, if there are public comments, addressing them as appropriate before formally implementing the guidelines.</p> <ul style="list-style-type: none"> • Update the Enforcement and Compliance Manual to ensure that it provides a framework for appropriate enforcement timelines, particularly for 	<ul style="list-style-type: none"> • Improve performance plans in Cornerstone to promote accountability and measure field office staff compliance with guidance documents. • ODW will implement new metrics no later than July 1, 2022. 		<p>Manual up to date.</p>
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		<p>health-based violations.</p> <ul style="list-style-type: none">• Examine historical averages and norms for addressing noncompliance and corrective action by violation type to more clearly define enforcement timeframes.• Continuously monitor and report the performance of enforcement actions in annual compliance reports to the EPA.• Develop a metric to track the median number of days for violators to return to compliance by violation type and the number of violations remaining open at year-end with the assistance			
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		<p>of the Data Management team.</p> <ul style="list-style-type: none">• Collaborate with the Director of Technical Services and the field offices to evaluate the usefulness of the new metrics as a tool for improving program performance.• Address health equity concerns during the state and local permitting processes.• Seek funding and legislation to address health equity for disadvantaged systems.• Field directors and compliance specialists will:<ul style="list-style-type: none">○ Follow policies and procedures			
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		<p>set forth in the Enforcement and Compliance Manual.</p> <ul style="list-style-type: none"> ○ Report inconsistencies to the C/E Director. ○ Measure performance using performance plans in Cornerstone. 			
<p>ODW Administrative and Civil Remedies Are Not Fully Supported By The Enforcement Manual</p>	<ol style="list-style-type: none"> 1. Enforce <i>Code of Virginia</i> §§ 32.1-27 and 32.1.175.01 because the purpose of these statutes is to support the agency’s efforts to ensure that PWSs comply with Virginia waterworks regulations. 2. Continue implementation of updated administrative order and civil penalty 	<p>The Enforcement Manual establishes ODW’s guidelines and procedures for issuing civil penalties and administrative orders. ODW will implement <i>Code of Virginia</i> §§ 32.1-27 and 32.1-175.01 pursuant to the Enforcement Manual. Field Directors and/or Compliance Specialists will:</p>	<ul style="list-style-type: none"> • ODW will complete enforcement escalation procedures by December 1, 2021. • ODW performs training for staff on an ongoing basis and completed training for the regional CSs in October 2020 and 	<p>December 1, 2021</p> <p>Ongoing, each year in February.</p>	<p>C&E Director Deputy Field Director / Field Directors / Compliance Specialists/ C&E Director</p>

	<p>policies and procedures within the new Enforcement Manual. Add the following items to ensure that enforcement and reporting are occurring:</p> <ul style="list-style-type: none"> • A reporting mechanism for ODW management to identify habitual and nonresponding public water system violators. • An outline of escalation procedures to ensure timely enforcement of water regulations consistently among the regions in the state. • A consent order and civil penalty tracking system shared between ODW Central Office and regional field offices to monitor 	<ul style="list-style-type: none"> • Ensure the Enforcement Manual is understood and consistently implemented; • Understand and be familiar with the Enforcement and Compliance Manual policies and procedures and ensure that guidance is followed. • Use the EPA’s ETT list and the ETT Assistant to identify habitual and non-respondent public water system violators. • Improve reporting of state-only violations not included in federal reporting. • Follow a flowchart and process to escalate enforcement 	<p>all staff training in February 2021.</p> <ul style="list-style-type: none"> • The C&E Division Director will provide regular and ongoing training during monthly CS meetings, and incorporate all recommendations into the Enforcement Manual as described. 	<p>Annual enforcement training initially held in February 2021. Planned to continue each year.</p>	
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	<p>assessments, correspondence, collections, etc.</p> <ul style="list-style-type: none"> Regular training and guidance for staff, especially CSs, on the new enforcement manual’s methodology for calculating, adjusting and recording penalties to ensure practices are appropriate, fair and consistent with statutory requirements. 	<p>of the Waterworks Regulations.</p> <ul style="list-style-type: none"> Ensure staff are monitoring and tracking consent orders and civil penalties using SDWIS. Hold annual enforcement training for regional CSs. Attend annual enforcement training for regional CSs. Attend monthly meetings with regional CSs to ensure consistent practices across field offices. 			
<p>Weaknesses In The ODW Water Sampling Oversight and Verification Process Were Identified</p>	<p>Strengthen existing strategies and procedures to maintain or improve the integrity of water sampling processes such as:</p>	<p>The Director of the Division of Technical Services will work with field directors to:</p> <ul style="list-style-type: none"> Identify problems to be addressed related to waterworks 	<ul style="list-style-type: none"> Add new questions to the electronic sanitary survey to trigger assessment of sample locations and collection techniques. Add new questions to the electronic 	<p>January 1, 2022</p>	<p>Director of Technical Services</p> <p>Field Directors</p> <p>Division of Training, Capacity</p>

	<ul style="list-style-type: none"> • Incorporate processes in the current site inspections to verify the sample pulling process and to ensure PWSs properly pulled samples from locations on their sampling plan. • Implement a documented process that allows for random water sampling and testing of PWSs. As part of the process, verify and confirm the validity of water samples that are required for monitoring through the submission of lab results to DCLS. This could be performed during the course of performing sanitary surveys or by an alternate schedule established by the agency. 	<p>sampling, sample location, and collection techniques.</p> <ul style="list-style-type: none"> • Identify problems to be addressed related to sample and water quality data falsification. • Understand sampling program and policies in place at DEQ. • Establish policy and priorities. • Understand current and future budget and resource needs. 	<p>sanitary survey to address water quality data in SDWIS and monthly operation reports.</p> <ul style="list-style-type: none"> • Provide training and written sampling instructions and to field staff on proper sample collection techniques. • Develop written policy for responses to potential data falsification and data problems. • Identify resource and budget needs to implement a statistically meaningful policy and procedure to perform quality control/quality assurance of sampling by the regulated community. • Implement a QA/QC sampling 		<p>Development and Outreach</p>
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	<ul style="list-style-type: none"> Determine additional resource needs, and pursue federal and state funding for additional staff and resources for the expansion of ODW water sampling oversight. 		<p>verification program to the extent that budget and human resources allow.</p>		
<p>ODW Performance Metric Reports Lack Monitoring and Compliance Elements</p>	<p>1. Continue the process of evaluation, analysis and reporting of monitoring and compliance performance metrics, and consider including the following:</p> <ul style="list-style-type: none"> Days late in reference to inspections, sampling and other compliance requirements. Days between sampling, notice of violations and notification of the return to compliance. 	<p>The Director of the Division of Technical Services will work with the Leadership Team and Compliance Specialists:</p> <ul style="list-style-type: none"> Develop and demonstrate new metrics focusing on the time to return to compliance for categories of violations. Review and evaluate the new metrics to determine how to use the new metrics. Establish priority for use and development of new metrics. 	<ul style="list-style-type: none"> Preliminary metrics focusing on the time to return to compliance for categories of violations. ODW division directors assigned this task will offer recommendations for use of the new metrics, including how often to run the metrics. Based on the user acceptance of the metrics and other considerations, ODW will consider implementing the metrics on an 	<p>December, 2021</p>	<p>Director of Technical Services ODW Director</p>

	<ul style="list-style-type: none"> • Current and historic chemical testing results with a focus on exceedances. • Habitual violators and nonresponding waterworks. • Other criteria for determining the effectiveness of monitoring and compliance processes. <p>2. Work with the VDH Office of Information Management and GEC to ensure any updates to current software platforms and/or implementation of new software will have the capability to track appropriate monitoring and compliance data.</p>	<ul style="list-style-type: none"> • Continue tracking nonresponding violators using the ETT. • Implement revised metrics. • To the extent possible, collaborate with the Office of Information Management and GEC to improve software platforms for monitoring compliance data to the extent that budget allows. 	<p>interim basis using current resources and an implementation plan.</p> <ul style="list-style-type: none"> • Based on user acceptance of the metrics, ODW expects to implement the new metrics in the GEC software pursuant to this recommendation in 2022 provided ODW receives unallotted funding for the proprietary software package for GEC. 		
<p>ODW Public Notice Oversight Is Inconsistent</p>	<p>ODW management should make improvements to ensure PWSs have issued required public notices to consumers and that those</p>	<p>Staff is developing a new Field Manual to describe updated and revised business process and procedures for day-</p>	<ul style="list-style-type: none"> • ODW will incorporate OSIG’s recommendations into the Field Manual 	<p>January 2022</p>	<p>Director of Technical Services</p>

	<p>notices are timely, especially for health-based violations. The ODW C&E Unit, in collaboration with field office leadership and compliance specialists, should:</p> <ol style="list-style-type: none"> 1. Improve central and regional office oversight of public notice processes, including follow-up, in support of federal and state drinking water regulations. 2. Develop and implement an internal public notice tracking policy, using SDWIS, between ODW Central Office and the compliance specialists to: <ol style="list-style-type: none"> a. Monitor PN correspondence. 	<p>to-day operations at the field offices, including how those processes interact and interplay with Central Office Division activities. The Field Manual will change how ODW escalates enforcement for repeat violators of the PN rule. Currently, staff escalates PN violations based on the ETT score, but repeat PN rule violations are not sufficient by themselves to require formal enforcement, assuming the underlying violation returns to compliance (e.g., the waterworks submits the missing water sample). Repeat PN violations should trigger escalation, and repeat PN violations should trigger a higher tier</p>	<ul style="list-style-type: none"> • Train staff on the new procedures by February 2022 • Implement the recommendations 	<p>February 2022</p> <p>April 2022</p>	
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	<p>b. Confirm appropriate and timely PN certifications.</p> <p>c. Verify entry of PN information into SDWIS.</p> <p>3. Develop an outline of escalation procedures to ensure proper issuance of public notices and mitigate waterworks that are habitual PN violators, in coordination with the enforcement recommendations listed in Finding #3.</p> <p>4. Ensure that the current status of all PNs are properly updated in SDWIS to allow ODW management to properly track PNs moving forward.</p>	<p>violation. Preliminary data on PNs indicate ODW field offices are not consistently tracking PNs or entering data into SDWIS for all tiers of violations. Field offices also do not appear to be consistently issuing NOAVs for failure to complete all tiers of PNs based on ODW’s preliminary data review. The Field Manual will need to identify a process to clear and remove old PNs for transient/non-community PWSs that close and reopen under new ownership. Staff will address these additional topics in the PN chapter of the Field Manual.</p>			
<p>ODW Regional Field Offices’ Monitoring and Oversight Policies Are</p>	<p>1. Continue the process of improving and</p>	<p>ODW published the Enforcement Manual in</p>	<ul style="list-style-type: none"> • Continue using the SDWIS database, 	<p>June 1, 2022 is the expected completion date</p>	<p>Compliance and Enforcement</p>

<p>Inconsistent</p>	<p>implementing ODW written guidelines for escalation of enforcement actions as noted in the recommendation to Finding #2.</p> <p>2. Develop and provide written guidance for when administrative orders should be pursued in order to maintain statewide consistency.</p> <p>3. Use data analytics to evaluate regional violations trends and corrective action efforts to ensure consistent application of enforcement and compliance policies and procedures.</p> <p>4. Include issuance of administrative orders in the oversight monitoring program as noted in Finding #8.</p>	<p>November 2020 and recently revised it to incorporate OSIG’s recommendations in findings #1, #2 and #3. Those edits are under review. The revised manual includes a workflow diagram with a proposed timeline to escalate noncompliance to formal enforcement. ODW supports data analytics to evaluate regional violations trends. Each violation type is fact-dependent and can have different timeframes and expectations for returning to compliance. Identifying trends over time, such as what OSIG presented in this specific recommendation, are informative and necessary to ODW’s</p>	<p>Excel spreadsheets and the ETT to track administrative orders and other enforcement data, including the dates of when a violation occurred, when a notice was issued to the owner, when a consent order became effective and when the PWS returned to compliance.</p> <ul style="list-style-type: none"> • By January 2022, evaluate regional trends and corrective actions. • Over the next 12 months, collaborate with the agency’s recently created Center for Public Health Informatics, which can help ODW develop, translate, visualize 	<p>for all bulleted items.</p> <p>Ongoing, review each year in February. Update policy and procedures in the Enforcement and Compliance Manual as necessary. Provide ongoing training in February each year to ensure understanding of policy and procedure changes.</p>	<p>Director</p>
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		oversight of the drinking water program.	and disseminate public health data and informatics knowledge to improve population health outcomes. <ul style="list-style-type: none">• Evaluate regional trends and corrective actions.• Evaluate funding options to create an enforcement-tracking database to monitor and track enforcement actions and evaluate enforcement program performance and effectiveness.• Continue to issue administrative orders pursuant to the Enforcement Manual and Finding #8.		
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			<ul style="list-style-type: none"> • Continue to establish timeframes and expectations for return to compliance. 		
<p>ODW Regional Field Offices Lack Quality Assurance/Quality Control Practices</p>	<p>1. Given ODW’s size and the decentralized nature of the organization, implement a comprehensive, complete and accurate methodology to monitor compliance activity, assess trends and evaluate outcomes of its efforts to bring regulated entities into compliance, such as:</p> <ul style="list-style-type: none"> • Develop a formal documentation policy that would support effective office management of the violation process and waterworks 	<p>ODW revisits policies annually to improve its understanding and expectations for compliance and enforcement. Recently, ODW finalized the Sampling Manual and Enforcement Manual. A third manual, the Field Manual, is under review. These three manuals include guidelines for tracking noncompliance, notifying the waterworks owner and the public of noncompliance and documenting the enforcement process. ODW is increasing the</p>	<ul style="list-style-type: none"> • Continue to revise the Enforcement and Compliance Manual to better formalize documentation policies and procedures. • Continue to seek funding for an electronic document management system, which would automatically formalize business process and documentation. • Regional CSs will run monthly 	<p>Ongoing, Enforcement and Compliance Manual updated each year by February, with follow-up training on new procedures and policy updates.</p>	<p>Field Directors Compliance Specialists C&E Director</p>

	<p>compliance with state and federal water safety regulations.</p> <ul style="list-style-type: none"> • Develop a formal tracking system with time control goals that have an impact on the ability for regional offices to monitor effectively waterworks progress in completing corrective actions and to ensure the return to compliance is timely. <p>2. Establish a comprehensive QA/QC program to provide the agency a continual mechanism to evaluate and improve the effectiveness of policy and procedures that support Virginia’s safe drinking water program. An effective QA/QC program would include:</p>	<p>use of SharePoint for storing final records. A more robust electronic document management system would ensure consistent application of documentation policies. ODW will continue to search for funding opportunities in support of this objective.</p>	<p>compliance reports for all violations that have not been returned to compliance in SDWIS.</p> <ul style="list-style-type: none"> • Continue to work under the oversight of the EPA in implementing the enforcement program. • Update the Enforcement Manual to establish clear policy and procedure for how long a certain violation should remain in effect before escalating. • Develop an audit and review method to evaluate outputs of field offices and the C&E Division. For example, an audit could review 	<p>June 1, 2022</p>	
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	<ul style="list-style-type: none"> • Quantifiable performance indicators for measuring outputs and outcomes of water monitoring and enforcement processes. • Performance standards that describe the desired level of outputs and outcomes based on management expectations, industry standards and/or historical data. • Mechanisms to gather output and outcome data, such as validating the occurrence and accuracy of inspections and sampling being conducted. • Established schedules for managerial comparison of results. • Development of proposals for program changes to improve effectiveness. 		<p>a sample set of notices of alleged violation to assess accuracy, consistency and the timeline for compliance. Staff will revise the Enforcement Manual as necessary to document the audit process and implement the changes.</p> <ul style="list-style-type: none"> • Collaborate with the VDH Center for Public Health Informatics Advisory Council to improve QA/QC and data visualizations. 		
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<p style="text-align: center;">ODW Regional Compliance Specialists Are Missing The Tools Necessary To Be Effective</p>	<p>Continue the process of developing the CS position to include:</p> <ul style="list-style-type: none"> • Increased reporting and sharing of information between CSs and ODW’s Central Office. • A level of independence for CSs reporting to Central Office to provide regional assessments and recommendations for improvement. Reporting to Central Office would also provide Central Office management insight in the issues at regions and allow for trending to determine if an agency wide solution, such as training, is necessary. • Expanded oversight policies and 	<p>ODW leadership concurs that the CS position needs strengthening, and use of the positions in each field office is not consistent. While changing supervision from six regionally focused engineers to one statewide C&E Division Director would likely improve consistency and autonomy, ODW wants to evaluate root causes more deeply and explore all possible interventions before moving forward with a change in supervision. A supervisory change may create new and different problems related to field office operations.</p> <p>With or without a change in supervision,</p>	<p>ODW specifically commits to the following:</p> <ol style="list-style-type: none"> 1. Evaluate CS employee work profiles and performance plan, update as necessary. 2. Update the Enforcement Manual to make CS duties clear. 3. Revisit and update communication and reporting channels for CSs as necessary to strengthen the positions and eliminate inconsistency. 	<p>March 1, 2022</p>	<p>ODW Director</p>
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	<p>procedures of local C&E activities to drive consistency throughout the Commonwealth.</p> <ul style="list-style-type: none"> • Performance tracking and analysis, including the criteria listed in the chart above and addressed in findings in performance metric reports and monitoring and oversight, to communicate to internal and external stakeholders the results of C&E efforts and guide decision-making. 	<p>Central office and field offices must have better coordination, collaboration and communication to strengthen the CS position and eliminate inconsistency. ODW wants engineering staff focused on engineering and OSIG’s recommendation aligns with that goal. ODW is evaluating an organizational change for the field offices and it will incorporate this specific recommendation into that effort. ODW expects implementation of this recommendation to be iterative and incremental over time.</p>			
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