Office of Inspector General
Central Audit Division

Audit Report

WATER

Improvements to Louisiana's Water Quality Standards, Monitoring, and Reporting Program Would Better Protect State Waters

Report No. 2000-P-2000185-00022

September 29, 2000

Inspector General Division:	Central Audit Division Dallas, Texas
Region Covered:	Region 6
Program Office Involved:	Water Quality Protection Division
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September 29, 2000

MEMORANDUM

SUBJECT: Improvements to Louisiana's Water Quality Standards, Monitoring, and Reporting Program Would Better Protect State Waters
Report No. 2000-P-000185-00022

FROM: Randy P. Holthaus
Audit Manager
Dallas Office

TO: Gregg Cooke
Regional Administrator
Region 6

Attached is our report entitled *Improvements to Louisiana's Water Quality Standards, Monitoring, and Reporting Program Would Better Protect State Waters*. We discussed our findings with your staff and issued a draft report. We summarized your comments in the final report and included your complete response in Appendix I.

We appreciate the cooperation of your staff and the assistance provided throughout the audit. The staff exhibited a genuine interest in working with us to improve the water quality program and helped add value to this audit.

ACTION REQUIRED

In accordance with Environmental Protection Agency (EPA) Order 2750, you, as the action official, are required to provide this office a written response to the audit report within 90 days of the final audit report date. For corrective actions planned but not completed by the response date, reference to specific milestone dates will assist in deciding whether to close this report.

This audit report contains findings that the Office of Inspector General (OIG) has identified and corrective actions OIG recommends. This audit report represents the opinion of OIG, and the findings in this audit report do not necessarily represent the final EPA position.

Final determinations on matters in this audit report will be made by EPA managers in accordance with established EPA audit resolution procedures.

We have no objections to the release of this report to the public. If you have any questions, please call me at (214) 665-6620. Please refer to report number 2000-P-000185-00022 on any correspondence.

Attachment

EXECUTIVE SUMMARY

PURPOSE

Maintaining clean and safe water is one of the Environmental Protection Agency's (EPA) 10 strategic goals. This audit is one in a series of state water quality audits conducted by the Office of Inspector General to develop a national picture of the performance of state water quality programs.

The overall objective of the audit was to determine whether Louisiana had developed and effective water quality program that protects State waters. The objectives of the audit were to determine whether: (1) Region 6 maintained effective and adequate oversight of Louisiana's program; (2) Louisiana developed water quality standards that would protect State waters; (3) Louisiana monitored and assessed the quality of all appropriate waters in the State; and (4) Louisiana developed water quality reports that were complete, accurate, and useful.

RESULTS IN BRIEF

Region 6 generally implemented effective procedures to approve and evaluate Louisiana's water quality standards. The Region's oversight of the State's monitoring program, however, was limited because the Region had not made a formal evaluation of the adequacy of the program relative to the monitoring requirements of §106 of the Clean Water Act and the reporting requirements of §305(b). The Region's ability to evaluate the program was limited by Louisiana's untimely and incomplete water quality planning documents.

Louisiana's water quality program was strong in some areas, but needed improvements in others to better protect State waters. Although Louisiana was proactive in the development and adoption of water quality criteria, the standards setting process could be improved by: (1) using more sensitive test methods than currently used to

assess water quality needs; (2) adopting EPA recommended bacteria criteria; and (3) clarifying procedures in the State's antidegradation implementation plan.

Louisiana could improve its monitoring and assessment program with the use of biological monitoring, and updated and complete water quality planning documents. The water quality reports issued by Louisiana of its monitoring and assessment activities were submitted as required.

RECOMMENDATIONS

We recommend that the Regional Administrator consult with the Office of Water regarding guidance that would require permittees to use the most sensitive test methods and establish national guidance on antidegradation implementation plans.

We also recommend that the Regional Administrator negotiate §106 grant commitments with Louisiana in clarifying its antidegradation implementation plan, adopting EPA's recommended bacteria criteria, and implementing biological monitoring.

AGENCY AND STATE COMMENTS AND OIG EVALUATION

Region 6 generally agreed with the findings and recommendations. The Region provided comments to clarify portions of the report, and we have incorporated these comments and modified the report as appropriate. We have summarized the Region's comments following each chapter and have included the complete response in Appendix I.

Louisiana generally did not agree with our findings and recommendations. Louisiana's comments were considered and the report was modified as appropriate. We have summarized Louisiana's comments following each chapter. Because of significant modifications made in the report subsequent to receipt of the State's response, the complete response is not included in the final report. The State's complete response is available upon request.

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INTRODUCTION

PURPOSE

Water is one of our vital resources and must be protected. Clean and safe water is one of the Environmental Protection Agency's (EPA) 10 strategic goals. This goal includes ensuring our surface waters, such as lakes, rivers, wetlands, and oceans sustain human health; support and maintain aquatic life; and provide for both recreational and economic activities. EPA and the states have developed water quality programs to protect surface waters by designating use classifications, setting criteria to protect the use, and then monitoring and reporting on how well the water quality supports the use. EPA and states use their water quality information as a basis for, and to measure performance of, their programs to control and clean up water pollution. This audit is one in a series of state water quality audits conducted by the Office of Inspector General (OIG) to develop a national picture of the performance of state water quality programs.

OBJECTIVES

The overall objective of the audit was to determine whether the Louisiana water quality program effectively protects public health and the environment by supporting safe drinking water sources, fish consumption, safe recreation, and healthy aquatic life use designations. Our specific objectives were to determine whether:

- Region 6 implemented effective procedures to approve Louisiana's water quality standards and evaluate the State's water quality standards setting, monitoring, and reporting program;
- Louisiana developed water quality standards that will protect the State's water quality;

- Louisiana monitored and assessed the quality of all appropriate waters in the State; and
- Louisiana developed reports on water quality that were complete, accurate, and useful for program management.

BACKGROUND

The Clean Water Act (the Act) is the primary legislation addressing water quality programs. The objective of the Act is to restore and maintain the quality of the nation's surface waters. The Act gave EPA the responsibility for developing water quality criteria for priority pollutants to protect human health and aquatic life. Federal regulations place responsibility on states to adopt water quality criteria which are an important basis for states to protect designated uses of a waterbody. Water quality standards consist of three elements: designated use classifications, criteria necessary to protect the designated uses, and an antidegradation policy.

Use Requirements

States classify waters according to how they can be used, such as for drinking, fishing, and swimming. Multiple use classifications can be assigned to individual waters. The goal of the Act is that all waters of the United States, where attainable, be fishable and swimmable. The fishable use provides for the protection and propagation of fish, shellfish, and wildlife. The swimmable use provides for recreation in and on the water. In accordance with the goals of the Act, states are required to adopt the fishable and swimmable use classifications for all waters, unless the water cannot meet these uses. If the waters cannot meet these uses, states are required to conduct special studies showing the uses are not attainable, in accordance with 40 Code of Federal Regulations (CFR) 131.10, *Designation of uses.*

Criteria Requirements

Once use classifications are assigned, states are required to adopt criteria in their water quality standards to protect the designated uses. Numerical criteria identify the amount of a

specific pollutant that may be present in the water and still protect the designated use. Narrative criteria may also be used to protect uses if numerical criteria is not available or a specific pollutant cannot be identified as the cause of use impairment.

EPA develops and publishes criteria that set limits for pollutants based on the effect the pollutants have on the water use classifications. The Act requires EPA to develop criteria for 126 priority toxic pollutants (that are the most persistent, prevalent, and toxic of pollutants). States may use EPA criteria or develop their own scientifically defensible criteria.

§303(c)(2)(B) of the Act affords states the following three scientifically and technically sound options (or some combination thereof) for establishing criteria:

- adopt statewide numeric criteria for all §307(a) toxic pollutants for which EPA has developed criteria guidance, regardless of whether the pollutants are known to be present;

- adopt specific numeric criteria for §307(a) toxic pollutants as necessary to support designated uses where such pollutants are discharged or are present in the affected waters and could reasonably be expected to interfere with designated uses; or

- adopt a "translator procedure" to be applied to a narrative water quality standard provision that prohibits toxicity in receiving waters.

In establishing and revising water quality standards, states must review all available data to determine whether the discharge or the presence of a toxic pollutant is impairing, or is likely to impair, the attainment of the designated uses of any waterbody. If data indicate that it is reasonable to expect the toxic pollutant to impair the use, or it actually is impairing the use, then the state must adopt a numeric limit for the specific pollutant.

In identifying the need for numeric criteria, states are encouraged to use a variety of information and data such as:

- ambient water monitoring data, including those for sediment and aquatic life (e.g., fish tissue data),
- National Pollutant Discharge Elimination System (NPDES) permit applications and permittee self-monitoring reports,
- effluent guideline development documents, many of which contain §307(a)(1) priority pollutant scans,
- public water supply source monitoring data noting pollutants with Maximum Contaminant Levels,
- information in annual reports from the Toxic Chemical Release Inventor, and
- any other relevant information on toxic pollutants collected by federal, state, interstate agencies, academic groups, or scientific organizations.

Where any information and data review indicates a reasonable expectation of a problem from the discharge or presence of toxic pollutants, the state should identify the pollutant(s) and the relevant waterbody segment(s). In making these determinations, states should use their own EPA approved criteria or existing EPA water quality criteria. Upon completion of review, states may use other means to establish final criteria for inclusion in their standards.

States are required, at a minimum, to review their water quality standards once every 3 years and obtain EPA approval for the standards. If EPA disapproves a state's water quality standards, the Act requires EPA to promulgate new standards for the state. EPA may also propose and promulgate a new and revised standard applicable to one or more states if such a standard is necessary to meet the requirements of the Act. This was the

case in 1992, when EPA promulgated toxics criteria, under the National Toxics Rule, for those states not complying with the Act.

Antidegradation Requirements

40 CFR 131.12, *Antidegradation policy*, requires states to have an antidegradation policy to conserve, maintain, and protect existing uses of waterbodies and maintain water quality. The antidegradation policy also should require that the state protect waters of exceptionally high quality or value. The CFR also requires the state to identify the methods of implementation. Chapter 4, Section 4.3 of EPA's *Water Quality Standards Handbook-Second Edition*, provides that antidegradation procedures specify how the state will determine on a case-by-case basis whether, and to what extent, water quality may be lowered.

Ambient Monitoring Requirements

40 CFR 130.4, *Water Quality Monitoring*, requires that states establish appropriate testing techniques to monitor water quality. This monitoring information is to be used to support activities to abate and control pollution, develop water quality standards, and report water quality information to the public. The regulation further requires that water monitoring programs include the collection and analysis of physical, chemical, and biological data, and quality assurance and control programs to assure scientifically valid data.

EPA's *Section 106 and 604(b) Grant Guidance*, dated October 17, 1994, recommended that states provide a multi-year monitoring strategy with their grant applications. The monitoring strategy should address how the state will assess all waters on a periodic basis using a monitoring design targeted to the conditions of, and goals for, the waters. The multi-year strategy was to provide the framework for the regional/state annual work plan negotiations. The guidance recommended that the state address specific elements, including water quality problems, information gaps, time lines, testing approaches, coordination with other agencies, and quality assurance.

States are required to conduct planning based on water quality problems identified in their water quality assessment reports. The requirements of 40 CFR 130.5, *Continuing planning process,* provide that states establish a process for managing their water quality program. Additionally, the requirements of 40 CFR 130.6, *Water quality management plans*, provides that states prepare water quality management plans that identify and recommend procedures to control priority point and non-point water quality problems. The state's annual work programs should be based on the water quality management plans and water quality problems identified in the water quality assessment reports.

Reporting Requirements

§305(b) of the Act requires each state to assess and report to EPA every 2 years on the condition of its waters. Reporting requirements are further described in EPA's *Guidelines for Preparation of the Comprehensive State Water Quality Assessments [305(b) Reports] and Electronic Updates*, dated September 1997. The §305(b) report is used as a report to Congress to meet the Act requirements; to help states focus resources on priority areas; and to provide useful and accessible data to decision makers.

§303(d) of the Act requires each state to prepare a prioritized list of impaired water bodies that do not fully support their designated use. From this list, the state is required to develop total maximum daily loads, which are allocations of how much of a pollutant dischargers can release into each water body and still meet the state's water quality standards.

Louisiana Water Quality Program

The Louisiana Department of Environmental Quality (the Department) is responsible for protecting and maintaining Louisiana's water quality. All changes to water quality standards are developed within the Department and certified by the Department's General Counsel. The Department the State Department of Health and Hospitals share the responsibility for the protection of primary contact

recreation or "high use bathing waters." In fiscal 1999, approximately $1.4 million of §106 grant funds were awarded to the Department to support the water quality activities discussed in this report and other various water quality related activities within the State.

SCOPE AND METHODOLOGY

We performed our audit in accordance with the *Government Auditing Standards* (1994 revision) issued by the Comptroller General of the United States as they apply to program audits. Our review included tests of the program records and other auditing procedures we considered necessary. Our fieldwork was conducted from April 1999 through June 2000, at Region 6 in Dallas, Texas, and the Louisiana Department of Environmental Quality in Baton Rouge, Louisiana. See Exhibit 1 for our scope and detailed methodology.

PRIOR AUDIT COVERAGE

Neither OIG nor the U.S. General Accounting Office has issued any recent reports directly related to Louisiana's water quality standards, monitoring, and reporting program. Since 1998, OIG has completed similar audits of water quality programs in eight states. See Exhibit 2 for a listing of previous OIG water quality reports. Common issues identified in the other reports include: water quality standards; antidegradation polices and implementation plans; fecal coliform and *E. Coli* in recreational waters; triennial reviews and EPA approval of standards; submission of required water quality planning documents; and water quality monitoring and reporting.

CHAPTER 2
REGION 6 OVERSIGHT OF LOUISIANA'S MONITORING PROGRAM WAS LIMITED

Region 6 generally implemented effective procedures to approve and evaluate Louisiana's water quality standards. The Region's oversight of the State's monitoring program, however, was limited because the Region had not made a formal evaluation of the adequacy of the program relative to the monitoring requirements of §106 and the reporting requirements of §305(b). The Region's ability to evaluate the program was limited by Louisiana's untimely and incomplete water quality planning documents. Without a formal evaluation of the program, the Region cannot be assured that the requirements of the Act are being met or whether the State has focused its water quality efforts on priority areas.

EFFECTIVE OVERSIGHT OF WATER QUALITY STANDARDS

Region 6 generally implemented effective procedures to approve Louisiana water quality standards and placed a high priority on the oversight of water quality standards development. As part of its oversight, Region 6 routinely communicated with Louisiana personnel to discuss problems and answer questions that came up during the development of water quality criteria. This open communication assisted in identifying problems at an early stage and made the approval process quick with few complications. Cooperation between Region 6 and Louisiana throughout the water quality standards setting process contributed to an effective water quality standards setting process.

LIMITED OVERSIGHT OF MONITORING PROGRAM

Region 6's oversight of the State's monitoring efforts were limited because the Region had not made a formal evaluation of the adequacy of the program relative to

the monitoring requirements of §106 and the reporting requirements of §305(b). The Region's ability to evaluate the program was limited by Louisiana's untimely and incomplete water quality planning documents. As discussed in Chapter 4 , Louisiana had not communicated significant changes to its monitoring program through updated planning documents as provided in the planning requirements of 40 CFR 130.5. As a result, Region 6's involvement in the State's monitoring program was limited.

The monitoring strategy is intended to serve as a planning mechanism to ensure the adequacy of states' monitoring programs and eligibility for continued grant funding under §106 of the Act. Without updated information, Region 6 could not evaluate Louisiana's monitoring program and determine if the requirements of the Act were being met.

CONCLUSION

Region 6's active involvement in Louisiana's standards setting process contributed overall to an effective process. Timely and complete water quality planning documents should provide Region 6 with the opportunity to fulfill its oversight responsibilities.

RECOMMENDATIONS

We recommend the Regional Administrator:

2-1. Negotiate firm §106 grant commitments with Louisiana to ensure timely submittal of required water quality planning documents, including the Continuing Planning Process, Quality Assurance Project Plan, and a State monitoring strategy.

2-2. Consider imposing a §106 grant condition for withholding grant funds if the required documents are not submitted as negotiated.

AGENCY AND STATE COMMENTS AND OIG EVALUATION

Region 6 provided no specific comments to the findings and recommendations in this chapter. Louisiana provided comments indicating that they had worked very closely with Region 6 in addressing TMDL program needs, including monitoring and assessment. Further, Louisiana responded that EPA was very much aware and supportive of its revised water quality monitoring strategy. It is Louisiana's understanding that the monitoring strategy was described in other documents such as the §305(b) Report and the §106 grant workplan, and will be further described in a revised Continuing Planning Process document.

Louisiana's comments are acknowledged, and we agree that the monitoring strategy is generally discussed in the §305(b) Report and the §106 grant workplan. However, we do not believe these discussions satisfy the intent of a "multi-year monitoring strategy" as recommended in EPA's *Section 106 and 604(b) Grant Guidance* discussed in Chapter 1.

CHAPTER 3
IMPROVEMENTS TO WATER QUALITY STANDARDS WOULD ENSURE FURTHER PROTECTION OF STATE WATER QUALITY

Louisiana has developed water quality standards that are generally protective of the State's water quality. Louisiana was proactive in the development and adoption of water quality criteria for pollutants, in the absence of EPA criteria, to make certain its citizens were protected against dangerous pollutants found in State waters. The standards setting process, however, could be improved by:

- using more sensitive analytical test methods than currently used to assess water quality needs,
- adopting EPA recommended *E. coli* and/or enterococci bacteria criteria, and
- clarifying procedures in the State's antidegradation implementation plan.

ADOPTING CRITERIA IN THE ABSENCE OF EPA CRITERIA

Louisiana proactively developed and adopted water quality criteria for several priority and non-priority pollutants in the absence of EPA criteria. Using a variety of sources, such as fish tissue studies and documented fish kills, Louisiana realized that these pollutants had the potential to interfere with attainment of designated uses and responded by developing and adopting new criteria. Louisiana's adoption of these criteria help to protect both human health and aquatic life use designations.

Examples of pollutants which Louisiana developed and adopted criteria for include: Lindane (gamma BHC, hexachlorocyclohexane), Silvex (2,4,5-trichlorophenoxy) and 2,4-D (2,4-dichlorophenoxyacetic acid), and eight other compounds.

Lindane	Louisiana adopted more stringent human health criteria for Lindane because it was detected in fish tissue and believed to have the potential for detrimental impacts on both human health and aquatic life. Lindane, a priority pollutant, accumulates in fish tissue and is considered "persistent" in the aquatic environment.
Silvex and 2,4-D	The adoption of Silvex and 2,4-D, both non-priority pollutants, were prompted by detections in drinking water and the concerns for the potential to impact aquatic life and human health. Fish kills were also associated with the use of these herbicides.
Other Compounds	Louisiana developed criteria for eight compounds detected in the Mississippi River, including: Bromodichloromethane and Dibromochloromethane, 1,3-Dichloropropene, and five Chlorinated Phenols. Louisiana determined that these compounds, resulting from spills and/or unpermitted discharges, were potentially harmful to human health.

USING MORE SENSITIVE TEST METHODS IS NEEDED TO BETTER ASSESS WATER QUALITY NEEDS

Louisiana used analytical test methods that may not be sensitive enough to adequately assess the State's water quality needs and protect human health. Test methods should measure toxic pollutants at levels required to determine the need for state water quality criteria, and detect pollutants in wastewater discharges at or below the lowest EPA or state water quality criteria. Generally, test methods used in Louisiana were sensitive enough to confidently measure toxic pollutants at these levels. However, the test methods used were not always sensitive enough to determine if certain pollutants identified in their permits were present at low levels in discharges. As a result, the need for state water quality criteria may go unheeded, and the impairment of water quality due to toxic pollutants may go undetected.

EPA and Louisiana used guidance researched and developed by EPA Region 6 for establishing its test methods and minimum quantification levels. The

guidance established minimum levels of sensitivity from which the Region could establish a legal base for enforcement and a threshold for reporting. The guidance further acknowledged that the these minimum levels may not be the most sensitive analysis for some pollutants.

We reviewed the limitations for parameters for which EPA had established water quality criteria (*Quality Criteria for Water 1986, as Amended*) in 10 permits. The purpose of the review was to determine if 40 CFR 136 analytical methods were required which were sensitive enough to measure down to the lowest published EPA water quality criteria level. Our review identified nine toxic pollutants (all suspected carcinogens) where test methods were used that were not sensitive enough to measure this concentration level. The nine pollutants are listed in Exhibit 3. Permittee self-monitoring (discharge monitoring report) data provided to Louisiana only indicated that the pollutants were not discharged at levels greater than the enforceable quantification level. As a result, information was not available to ascertain whether the State should have established appropriate state water quality standards and permit limitations for these parameters; rather, only technology based limits were established.

Using EPA's permit writers guidance and EPA's published water quality criteria document, in the absence of state standards for these parameters, we calculated water quality based requirements for the pollutants hexachloroethane and benzo(b)floranthene in four permits. The requirements calculated were more stringent than the technology limitations established in the permit. In these instances, more sensitive analytical methods should have been required to determine if there was potential for the pollutants to be discharged at a level which would result in a water quality problem. If the potential for a toxic problem was found, appropriate water quality standards and permit limitations should have been established.

Without requiring measurements in NPDES discharges and ambient waters down to the most stringent published EPA

water quality criteria level, the State may not be able to determine whether: the pollutants are present, water quality based criteria are needed, or if designated uses are being impaired.

ADOPTING *E. COLI* AND/OR ENTEROCOCCI CRITERIA WOULD MEET EPA REQUIREMENTS

Louisiana had not taken actions to adopt EPA recommended *E. coli* and/or enterococci bacteria criteria. Although Region 6 had worked diligently with the State to adopt the criteria recommended in the *Ambient Water Quality Criteria for Bacteria - 1986*, Louisiana had retained the use of fecal coliform as its indicator organism for waterbodies with primary contact recreation or "high use bathing waters" use designations. To date, the two agencies responsible for protecting high use bathing waters have been unable to reach an agreement on an appropriate indicator organism.

On March 7, 1986, EPA published *Ambient Water Quality Criteria for Bacteria - 1986*, which recommended *E.coli* and/or enterococci as the indicator organisms, and addressed fecal coliform as an inadequate indicator to provide protection from swimming in bacteriologically contaminated waters. In February 1998, EPA issued its *Clean Water Action Plan* stating that the Agency would develop a specific plan and schedule for the development of a new generation of microbiological criteria. In March 1999, the Office of Research and Development and the Office of Water issued the *Action Plan for Beaches and Recreational Waters*, advising states that EPA would promulgate the *Ambient Water Quality Criteria for Bacteria - 1986* bacteria criteria by 2003 unless actions were taken by the states to adopt the EPA recommended criteria, or scientifically defensible alternatives.

Elevated bacteria levels can be hazardous to people using water for recreational activities. EPA's current recommended water quality criteria for bacteria are for the protection from gastrointestinal illness; however, pathogens can also cause illnesses ranging from sore throats to meningitis and encephalitis. Given the potential for these

illnesses, it would be in the best interest of the public if Louisiana initiated actions to adopt the appropriate criteria prior to EPA's proposed promulgation in 2003.

CLARIFYING PROCEDURES WOULD STRENGTHEN ANTIDEGRADATION IMPLEMENTATION PLAN

Although Louisiana has established an antidegradation policy that meets the requirements of 40 CFR 131.12, the State could strengthen its antidegradation implementation plan with further clarification of its procedures. The implementation plan does not contain specific details on the process the State will use to approve actions that may impact water quality. Without specific implementation procedures, Louisiana cannot determine how, on a case-by-case basis whether, and to what extent, water quality may be lowered.

Although states must follow the antidegradation policy requirements of 40 CFR 131.12, EPA has not provided national guidance to assist states in the development of their implementation plans. In the absence of national guidance, Region 6 proposed the use of Region 8 guidance to assist Louisiana in the development of their implementation plan.

Louisiana's implementation plan contains basic information on how the State will implement its antidegradation policy; however, the plan does not contain specific details on the processes the State will use to approve actions that may impact water quality. To ensure consistency of policy implementation and the protection of high quality waters, Louisiana should consider providing further clarification of its plan, including the:

- identification of specific activities being reviewed;
- identification of the sequence of steps in the review process;
- differentiation between procedures used for Outstanding Natural Resource Waters, high quality waters, and all others; and
- utilization of more detail on documentation, public

review, and intergovernmental coordination efforts.

CONCLUSION

Louisiana has developed water quality standards that should protect public health and the environment by supporting safe drinking water sources, fish consumption, safe recreation, and healthy aquatic life use designations.

The use of more sensitive test methods, the adoption of EPA's water quality criteria for bacteria, and the clarification of the antidegradation implementation plan will help Louisiana ensure further protection of the State's water quality.

RECOMMENDATIONS

We recommend the Regional Administrator:

3-1. Consult with the Office of Water regarding the development of new, or clarification to, existing policies and/or regulations that would require permittees to use the most sensitive 40 CFR 136 test methods to determine the existence, in point source discharges and ambient waters, of toxic pollutants for which the State or EPA has published final criteria.

3-2. Continue efforts to encourage Louisiana to initiate actions to adopt *E.coli* and/or enterococci criteria prior to EPA's proposed promulgation in 2003.

3-3. Consult with the Office of Water regarding the development of national guidance on antidegradation implementation plans.

3-4. Assist Louisiana in providing further clarification of its antidegradation implementation plan.

AGENCY AND STATE COMMENTS AND OIG EVALUATION

Region 6 and Louisiana provided comments to clarify portions of the chapter. We have incorporated the comments and modified the chapter as appropriate.

Using More Sensitive Analytical Test Methods

Region 6 generally agreed that the use of more sensitive test methods could be more protective of state and EPA water quality standards. However, Region 6 also agrees with Louisiana that implementation of more sensitive test methods would result in substantially increased costs to permittees. Louisiana questioned whether higher costs of more sensitive methods would provide additional environmental benefit. Louisiana also raised other valid concerns about the technical feasibility of using the more sensitive tests. Both Region 6 and Louisiana have expressed a willingness to use more sensitive test methods where water quality problems have already been identified.

Based on the concerns raised by both Region 6 and Louisiana, the Region should consult with EPA's Office of Water over the need for additional Agency policy that addresses this issue. It is our opinion that Agency policy is needed to address various implementation issues including the selection of the most appropriate test method, cost benefit analyses supporting use of more sensitive test methods, resolution of various technical issues raised by the states, and the need for new or alternative test methods.

Adopting E. coli and/or Enterococci

Region 6 generally agreed with our recommendation and noted that they are working diligently with Louisiana on the matter. Region 6 noted further that there is one triennial review remaining in which Louisiana may adopt the EPA recommended criteria, or scientifically defensible alternatives, before EPA will promulgate criteria in 2003.

Louisiana's response highlighted the complexity in changing indicator organisms, the problems in coordinating their efforts with the Department of Health and Hospitals regulations, and their need to progress in a determined manner to ensure they make the correct decision. Louisiana indicated that they would continue current studies seeking a solution.

OIG commends Region 6 and Louisiana for their current effort in addressing the matter. It is our opinion that it would be in the best interest of Louisiana to continue actions toward establishing an approved indicator organism that more appropriately addresses State needs.

Clarifying Antidegradation Implementation Procedures

Region 6 provided no specific comments to this issue. Louisiana generally disagreed with the issue and provided that the established antidegradation policy meets the requirements of 40 CFR 131.12. The antidegradation policy, along with the implementation plan, had been approved by Region 6. Louisiana further provided that procedures that serve to implement the antidegradation policy are integrated into all water quality related activities within the Department and, as such, serve to accomplish the intent of an antidegradation review. The response included a discussion of each of the items identified for clarification. Louisiana expressed an overall concern that a recommendation is being made to document a process for which there is no Region 6 or national guidance.

Louisiana's comments are acknowledged and we agree, as stated in the report, that the antidegradation policy meets the requirements of 40 CFR 131.12. The report has been modified to reflect four items that we believe need clarification in order to ensure consistency of policy implementation and the protection of high quality waters.

Regarding the absence of national guidance, it is our understanding that Region 6 has previously proposed the use of Region 8 guidance to assist states in the development of implementation plans. We support Region 6's use of the Region 8 guidance, pending the issuance of national guidance. An additional recommendation, directed at the Office of Water and the development of national implementation plan guidance, has been included in the report.

CHAPTER 4
WATER QUALITY MONITORING AND ASSESSMENT PROGRAM COULD BE IMPROVED

Louisiana generally implemented procedures to effectively monitor and assess the quality of State waters. The water quality reports issued by Louisiana of its monitoring and assessment activities were submitted to Region 6 as required. The program, however, could be improved with the use of biological monitoring, and updated and complete water quality planning documents. Without the use of biological monitoring, Louisiana cannot ensure that its water quality standards are protective of all designated uses. Without timely and complete planning documents, the State may not be focusing its water quality efforts on priority areas.

BIOLOGICAL MONITORING WOULD ENHANCE PROGRAM

The overall usefulness and accuracy of the Louisiana monitoring and assessment program would be enhanced with the collection and analysis of biological data. Louisiana's water quality assessments were conducted primarily using chemical-specific data obtained from the State's ambient monitoring network. Although Region 6 has encouraged Louisiana to implement a biological monitoring program, the State does not believe that widespread ambient biological monitoring is an effective or defensible way to assess designated uses. Louisiana has expressed to Region 6 that it does not intend to initiate a costly and intensive biological monitoring program that does not help accurately assess waterbodies. Louisiana, however, will continue to use biological monitoring in conjunction with use attainability analyses, fish consumption investigations, ecoregion program surveys, fish kill investigations, and other special studies and surveys.

Additional monitoring data would provide Louisiana with a better basis for determining the effectiveness of its water management program and help in determining the actual

condition of the State's waters. Chemical-specific testing alone does not provide the necessary information to assess the biological condition of the water. Emphasis only on chemical testing could result in Louisiana not identifying impaired waters.

EPA strongly recommends using an integrated assessment process involving biological, habitat, physical/chemical, and toxicity monitoring. Biological indicators are beneficial in revealing whether an ecosystem is functioning properly and is self-sustaining. Specifically, biological data provide a good measure of what has happened in a waterbody, whereas chemical and toxicity data are a better measure of what could happen in a waterbody.

WATER QUALITY PLANNING DOCUMENTS NOT UPDATED OR COMPLETE

Louisiana did not update its water quality planning documents to reflect significant changes to its monitoring strategy, as required by 40 CFR 130.5. Additionally, the State's *Surface Water Monitoring Program Quality Assurance Project Plan* includes sections that do not meet applicable EPA requirements. Without updated and appropriate planning documents, the potential exists that the State may not be focusing its water quality efforts on priority areas.

Continuing Planning Process

Louisiana had not updated its *Continuing Planning Process* to reflect revisions to its monitoring program, as required by 40 CFR 130.5. In 1998, the State's monitoring program was revised from that of a traditional fixed station approach to the EPA recommended rotating basin approach. Louisiana, however, had not documented the change as part of its continuing planning process and had not submitted it to Region 6 for review and approval.

The continuing planning process should include a strategy that describes how the monitoring program design will meet the informational requirements of §305(b), over a specified period of time, with either a comprehensive assessment of all waters or a representative selection of

waters. The proposed design should be consistent with the methodology in the most recent §305(b) reporting guidance for comprehensive assessments and EPA's quality assurance requirements and guidance.

Quality Assurance Project Plan

Louisiana's quality assurance project plan was not updated timely and includes sections that do not meet applicable EPA requirements. Similar to the continuing planning process, Louisiana had not updated its quality assurance plan since 1994 to reflect changes made in 1998 to its monitoring strategy. It was not until September 16, 1999, that Louisiana submitted its revised quality assurance plan to EPA, incorporating the changes.

The revised plan as submitted, however, included sections that do not meet applicable EPA requirements. Without an adequate quality assurance plan, the integrity of the State's monitoring and overall water quality program may be jeopardized.

In a memorandum to Louisiana, dated February 8, 2000, Region 6 noted that some sections of the quality assurance project plan were excellent; however, other sections did not meet applicable EPA requirements delineated in EPA Order 5360.1, and EPA QA/R5. The Region 6 technical review identified issues that must be resolved for the plan to be technically approved. In general, Region 6 noted that while there was a considerable amount of useful information in the plan, the study design portion of the plan does not provide sufficient information regarding connections between the stated objectives, sample collection activities, and data assessment. Both short-term and long-term corrective actions were proposed by the Region in its review.

WATER QUALITY REPORTS SUBMITTED AS REQUIRED

Louisiana submitted to EPA the required 1998 *Water Quality Inventory Report (305(b))* and the *Water Quality Limited Waterbodies - 303(d) List*.

§305(b) of the Act requires each state to assess and report to EPA every 2 years on the condition of its waters. The §305(b) report is used as a report to Congress to meet the Act requirements, to help states focus resources on priority areas, and to provide useful and accessible data to decision makers. §303(d) of the Act requires each state to prepare a prioritized list of impaired water bodies that do not fully support their designated use.

Louisiana consistently applied appropriate methods and procedures in performing its river and stream water quality assessments for the 1998 reporting period. Our review, which included 18 judgementally selected waterbodies, disclosed no significant discrepancies or inconsistencies with the assessment process.

Louisiana's water quality assessments were conducted primarily from data obtained from the ambient monitoring network. Additionally, other data resulting from special studies and investigations, and water quality data from other agencies was used in the assessment process. To determine the support or non-support of designated uses, Louisiana compared monitoring data with specific water quality criteria protective of those uses. The criteria used was taken from the State's water quality standards.

The assessments were appropriately presented in the State's 1998 §305(b) report. Louisiana's §303(d) list, which is generated from the §305(b) report, was approved by EPA on September 14, 1998.[1]

1 The 1998 §303(d) list was subject to a lawsuit styled Sierra Club et al. v. Clifford et al., No. 96-0527 (E.D. La), which is currently on appeal in the United States Court of Appeals for the Fifth Circuit. The 1998 §303(d) list has been subsequently modified a number of times in accordance with that lawsuit.

CONCLUSION

The use of biological monitoring would provide Louisiana with a better basis for determining the effectiveness of its water quality management program. Also, updated and appropriate planning documents would help ensure that Louisiana is focusing its water quality efforts in priority areas.

RECOMMENDATIONS

We recommend the Regional Administrator assist Louisiana in:

4-1. Formulating a long range plan to expand its monitoring program to include biological monitoring that will meet EPA requirements.

4-2. Developing and updating required water quality planning documents, including the Continuing Planning Process, Quality Assurance Project Plan, and a State monitoring strategy.

AGENCY AND STATE COMMENTS AND OIG EVALUATION

Region 6 and the State provided comments to clarify portions of the chapter. We have incorporated these comments and modified the chapter as appropriate.

Biological Monitoring

Region 6 agrees with the recommendations and further provides that Louisiana's standards program should also include the development and adoption of numeric biological criteria for wadeable streams in regions that lie north of the coastal plains. According to Region 6, Louisiana has completed the process of stream classification and conducted multiple years of reference stream sampling to characterize fish and macroinvertebrate communities in these regions. Louisiana has also developed preliminary biological criteria based on these results. The next step for Louisiana would be the adoption of biological criteria into the State standards.

Louisiana generally did not agree with the recommendation. Although Louisiana acknowledges that biological monitoring would be a benefit to water quality assessment, they contend the State's water quality is protected by the State's standards because the standards: (1) were designed to be protective of all designated uses, (2) are continuously revised as needed to improve upon that protection, (3) have been publicly noticed and approved for publication as Louisiana regulation, and (4) have been approved by EPA.

Louisiana expressed concern with the lack of clear guidance or regulation concerning the proper combined use of physical, chemical and biological monitoring. Louisiana also expressed a concern related to problems throughout the State with dissolved oxygen levels. Many if not most Louisiana water bodies support fish and vertebrate populations that are both diverse and abundant, despite the fact that dissolved oxygen does not meet the EPA approved standard. Louisiana questions the use of biological monitoring in this instance.

We acknowledge Louisiana's comments and recognize the difficulties and challenges the State faces in implementing a biological monitoring program. We continue to maintain, however, that biological monitoring would enhance the overall usefulness and accuracy of the State's monitoring and assessment program.

Water Quality Planning Documents

Region 6 requested clarification on several points related to the finding and recommendation for this issue. Louisiana's comments focused on the reference to EPA's §305(b) reporting and quality assurance guidance in preparing a monitoring strategy. Louisiana emphasized that EPA cannot impose its will on the states based on guidance and states are not required to follow EPA guidance.

Louisiana's comments are acknowledged; however, the regulations for State and Local Assistance (40 CFR 35.141) include a provision for approval that proposed outputs, under continuing program grants, be consistent with EPA guidance. Furthermore, EPA guidance, as it applies to

water quality, is developed to assist states with the implementation of provisions described in the Act and the water quality standards regulations (40 CFR Part 131). When a state decides to use an approach different from the one which EPA recommends, its reasoning should be based on EPA guidance methodology, and/or other sound scientific processes.

Water Quality Assessment and Reporting Requirements

Based on comments from both Region 6 and Louisiana, we have modified the report to include issues regarding the 305(b) Report and the 303(d) list. Because the report contained no recommendation and required no actions on the part of Region 6 or Louisiana, we did not consider it necessary to solicit additional comments.

EXHIBIT 1

SCOPE AND METHODOLOGY

We reviewed Louisiana's internal controls over water quality standards setting, monitoring, and reporting. We analyzed internal controls to assure compliance with federal statutory and regulatory criteria and with Louisiana policies and procedures. Our audit disclosed areas needing improvement and areas of commendation for both Louisiana and Region 6, which are discussed in Chapters 2 through 4.

To determine Louisiana's processes for establishing water quality standards, we interviewed Louisiana's Department of Environmental Quality staff and documented their processes for developing and adopting water quality standards. We reviewed Louisiana's water quality standards activities from 1994 through the November 1998 triennial review as adopted in Louisiana environmental law Title 33, *Environmental Quality*, Part IX *Water Quality Regulations*, Chapter 11, *Surface Water Quality Standards*. We reviewed policy and guidance papers to determine if established water quality standards were in compliance with the Clean Water Act and applicable federal regulations.

In reviewing the program, we interviewed Louisiana Department of Environmental Quality staff and documented their process for monitoring and assessing water quality data. We also documented processes for preparing and reporting on the water quality assessment report and the impaired waterbody list. We reviewed Louisiana's 1998 303(d) list and the 305(b) report and assessed whether the reports for reporting water quality were consistent with federal regulations and EPA guidance.

We judgementally selected 18 waterbodies to test and evaluate the processes for setting use classifications, establishing water criteria, monitoring and assessing waterbodies, recording monitoring data in STORET, and reporting on water quality. The sample, which included a mix of both impaired and supporting waters, included a waterbody from each of the twelve basins. We reviewed NPDES permits for ten major facilities in Louisiana. We reviewed the permits to determine if they included permitted discharges of pollutants for which Louisiana did not have water quality standards. Other than for the purpose stated, we did not perform nor did we intend to perform a review of Louisiana's permitting process or of Louisiana's permit backlog.

To determine if Region 6 implemented effective procedures to approve water quality standards and evaluate Louisiana's water quality standards setting, monitoring, and reporting program, we interviewed Region 6 officials to determine how they ensured compliance with the Act and applicable federal regulations. We identified Region 6's processes for reviewing the State's water quality standards, water quality inventory report, and the impaired waterbodies list.

EXHIBIT 2

PREVIOUS OIG WATER QUALITY REPORTS

1. *Missouri's Water Quality Standards and Monitoring*
   E1HWF7-07-0023-8100080, March 31, 1998

2. *Colorado Water Quality Standards, Monitoring and Reporting Program*
   E1HWF8-07-0004-9100093, March 10, 1999

3. *Oregon's Water Quality Program*
   E1HWF8-10-0024-9100119, March 31, 1999

4. *Region III Water Quality Standards, Monitoring, and Reporting*
   E1HWF7-03-0160, March 31, 1999

5. *Ohio's Water Quality Program*
   99P00210, June 30, 1999

6. *New Jersey's Water Quality Monitoring Program*
   1998-1-00225, July 21, 1999

7. *Arkansas Water Quality Standards, Monitoring, and Reporting Program*
   1999-R6-0001321-100245, August 19, 1999

8. *Mississippi's Water Quality Standards, Monitoring and Reporting*
   1999-P00219, September 29, 1999

EXHIBIT 3

POLLUTANTS REQUIRING THE USE OF MORE SENSITIVE TEST METHODS

No.	Pollutant
1	Acrylonitrile
2	Benzo(a)anthracene
3	Benzo(b)fluoranthere
4	Benzo(k)fluoranthene
5	BIS-2 Ethylhexyl Phthalate
6	Chrysene
7	2,4 Dinitrotoluene
8	Hexachloroethane
9	N-Nitrosodimethyla-mine

APPENDIX I

AGENCY RESPONSE

September 18, 2000

MEMORANDUM

SUBJECT: Response to Draft Report of Audit No. 1999-0000185
Improvements to Louisiana's Water Quality Program

FROM: Lynda F. Carroll
Assistant Regional Administrator
for Management (6MD)

TO: Randy P. Holthaus
Audit Manager
Dallas Office of Inspector General

Attached is our response to the draft report on Louisiana's's water quality standards, monitoring, and reporting program. After reviewing the report, consulting with your staff and addressing our concerns, it is our understanding that Chapter 4 of your draft will be dropped. Therefore, no comments are provided on this portion of the draft audit report. General comments and comment on the remaining chapters are attached.

We will look forward to receiving your revised draft report at which time we will indicate our concurrence or non-concurrence with each finding.

Thank you for the opportunity to provided comments. If you have any questions, regarding these comments, please feel free to give me a call or have your staff contact Diane Taheri, Regional Audit Resolution Coordinator at x7460.

Attachment

cc: Louisiana Department of Environmental Quality

WATER QUALITY PROTECTION DIVISION
Comments on OIG Draft Report of Louisiana's Water Quality Standards

GENERAL COMMENTS

There are some concerns that the title may be inappropriate considering that the water program is comprised of several other programs that are not addressed in this report. We recommend replacing *water quality program* with *water quality standards, monitoring, and reporting program*.

CHAPTER 1

Background, Criteria Requirements, page 3

The establishment and revision of water quality standards is discussed in the second paragraph in addition to suggestions for assisting with identifying the need for numeric criteria. This discussion would be more accurate if the section beginning with "In identifying the need for numeric criteria..." were replaced with all available options for establishing criteria.

Section 131.11(b) of the water quality standards regulations provides states the option to establish criteria by (1) adopting criteria published by EPA under §304(a) of the Act; (2) modifying §304(a) guidance to reflect site-specific conditions; (3) use other scientifically defensible methods; or (4) establish narrative criteria or criteria based on biomonitoring methods where appropriate numerical criteria cannot be established.

CHAPTER 2

Sensitive Test Methods, page 8

EPA Region 6 understands the expressed concern of the OIG Report as it relates to testing methodology for effluent discharge monitoring. While Region 6 agrees that the blanket use of the most sensitive test methods could be more protective of state and EPA water quality standards, such testing would result in very substantial increases in monitoring costs for municipal and industrial facilities. We agree that the decision to develop policy or regulations requiring the use of the most sensitive test methods would need to be addressed on a national basis. Region 6 agrees to consult with the EPA Office of Water on requiring such methods. We will also continue to encourage the State to use more sensitive analytical test methods for specific chemicals in cases where the water body is listed as impaired or threatened for such chemicals, or where there is specific information to support such analytical methods.

***E. coli* and Enterococci Criteria, page 10**

In this section, the upcoming promulgation of water quality criteria for bacteria should be addressed properly. Reference is made to the federal register notice that published EPA's recommended bacteria criteria. We suggest adding the title of the criteria document, *Ambient Water Quality Criteria for Bacteria - 1986*, in addition to the following statements. The Office of Research and Development and the Office of Water issued the *Action Plan for Beaches and Recreational Waters* (EPA/600/R-98/079, March 1999) advising the states that EPA would promulgate the *Ambient Water Quality Criteria for Bacteria - 1986* by 2003, unless actions were taken by the states to adopt the EPA recommended criteria, or scientifically defensible alternatives. The transition to *E. coli* and/or enterococci indicators are also a priority for the triennial reviews of water quality standards that will occur in FY 2000-2002.

The OIG recommends that the Regional Administrator "encourage Louisiana... to adopt *E. coli* and/or enterococci criteria" prior to the anticipated promulgation in 2003. EPA Region 6 has worked diligently with the State on this very matter. Most recently a meeting was held on August 30, 2000, with representatives from the Louisiana Department of Environmental Quality, the Louisiana Department of Health and Hospitals, the U.S. Geological Survey (Baton Rouge office), and EPA Region 6. Current studies, monitoring, data collection, and test methods were discussed, in addition to EPA's recent DRAFT Implementation Guidance for *Ambient Water Quality Criteria for Bacteria - 1986* (EPA-823-D-00-001).

CHAPTER 3

Biological Monitoring, page 13

EPA disagrees with the statement that "biological monitoring is costly and more resource intensive..." than water chemistry monitoring (page 14). Cost comparisons have shown that biological monitoring is often less costly than either water chemistry monitoring or toxicity testing (Karr and Chu 1999, Yoder and Rankin 1995). It is inappropriate to compare the cost of a single water chemistry sample to the cost of a single biological sample. Water chemistry monitoring requires multiple repeated sampling events over time to adequately characterize water quality (Sanders et al. 1983). On the contrary, biological monitoring integrates conditions over time and may be conducted with effective results, under stable low flow conditions, once or twice per year (Mount 1994).

Recommendations for the standards program should include the completion of development and adoption of numeric biological criteria for wadable streams in regions that lie north of the coastal plains. LDEQ has completed the process of stream classification and conducted multiple years of

reference stream sampling to characterize fish and macroinvertebrate communities in these regions. The LDEQ also developed preliminary biological criteria, based on these results. The next step is the adoption of biological criteria into standards.

CHAPTER 5

Timely Submittal of Water Quality Planning Documents, page 19

This section discusses water quality planning documents in general with one reference to Chapter 3. Since there are a number of water quality planning documents that relate to the activities discussed in Chapter 5, we would recommend that the report specify which planning documents are referenced here to avoid confusion.

It is not clear in this chapter as to which grant requirements the OIG believes are not being met that may make it necessary to withhold grant funds. Additionally, since most reporting requirements are negotiated in work plans, we would prefer to have the recommendation ask for Section 106 grant commitments rather than conditions. If the OIG recommends that EPA withhold grant funds, a rationale to support this recommendation should be discussed within the report.

REFERENCES

Karr, J.R. and E.W. Chu. 1999. Restoring Life in Running Waters: Better Biological Monitoring. Island Press. Washington, D.C.

Mount, D. 1994. A Comparison of Strengths and Limitations of Chemical Specific Criteria, Whole Effluent Toxicity Testing, and Biosurveys. Prepared for Science Applications International Corporation. Submitted to Environmental Protection Agency Office of Wastewater Enforcement and Compliance. Washington, D.C.

Sanders, T.G., R.C. Ward, J.C. Loftis, T.D. Steele, D.D. Adrian, and V. Yevjevich. 1986. Design of Networks for Monitoring Water Quality. Water Resources Publications. Highlands Ranch, CO.

Yoder, C.O. and E.T. Rankin. 1995. Biological Criteria Program Development and

Implementation in Ohio *in* Davis, W.S. and T.P. Simon. Biological Assessment and Criteria: Tools for Water Resource Planning and Decision-Making. Lewis Publishers. Boca Raton, FL.

APPENDIX II

ABBREVIATIONS

Act	Clean Water Act
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
NPDES	National Pollutant Discharge Elimination System
OIG	Office of Inspector General
303(d) List	Impaired Water Body List
305(b) Report	Water Quality Assessment Report
the Department	Louisiana Department of Environmental Quality

APPENDIX III

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