



OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Evaluation Report

EPA Provided Quality and Timely Information Regarding Wastewater after Hurricane Katrina

Report No. 2006-P-00018

March 28, 2006



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Abbreviations

DHS	Department of Homeland Security
EPA	Environmental Protection Agency
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
NPDES	National Pollutant Discharge and Elimination System
OIG	Office of Inspector General
PCIE	President's Council on Integrity and Efficiency

Cover photo: Damaged wastewater treatment facility in St. Bernard Parish in Louisiana.
EPA OIG photo.



At a Glance

Catalyst for Improving the Environment

Why We Did This Review

This review was conducted in conjunction with the President's Council on Integrity and Efficiency as part of its examination of relief efforts provided by the Federal Government in the aftermath of Hurricanes Katrina and Rita. We conducted this review to assess whether the Environmental Protection Agency (EPA) provided quality and timely information to the States, wastewater treatment facilities, and public regarding wastewater.

Background

On August 29, 2005, Hurricane Katrina caused massive damage in Louisiana, Mississippi, and Alabama; affecting approximately 208 wastewater treatment facilities and causing damage to collection systems and raw sewage spills. Human exposure to raw sewage may cause illness ranging in severity from mild gastroenteritis to cholera.

For further information, contact our Office of Congressional and Public Liaison at (202) 566-2391.

To view the full report, click on the following link:

www.epa.gov/oig/reports/2006/20060328-2006-P-00018.pdf

EPA Provided Quality and Timely Information Regarding Wastewater after Hurricane Katrina

What We Found

EPA provided quality and timely information regarding wastewater to States, wastewater treatment facilities, and the general public. The damage to the wastewater treatment facilities and their collection systems created a potentially critical health concern due to the possibility that people living in these communities would be exposed to raw sewage. Due to the risk of serious illness associated with exposure to raw sewage, decisionmakers needed information to be able to evaluate the potential risk of exposure and take steps to protect their citizens. EPA did a good job supporting States and local communities in this function. The information that EPA provided to the public was augmented by significant efforts by other Federal agencies, State agencies, and the communities themselves.

Affected States used the information that EPA provided to help them determine how best to protect rescue workers and the general public. No sewage-related illnesses were reported in the affected areas. EPA publicly reported that only about 10 percent of wastewater treatment facilities were inoperable 4 weeks after the hurricane, most of which were in Louisiana due to flooding in the New Orleans area.

We have no recommendations and plan to address lessons learned in subsequent reports.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

March 28, 2006

MEMORANDUM

SUBJECT: EPA Provided Quality and Timely Information Regarding Wastewater
after Hurricane Katrina
Report No. 2006-P-00018

TO: Benjamin H. Grumbles
Assistant Administrator for Water

James I. Palmer, Jr.
Regional Administrator, EPA Region 4

Richard E. Greene
Regional Administrator, EPA Region 6

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). The evaluation did not identify any conditions requiring corrective actions and no recommendations are made. This report represents the opinion of the OIG and the findings contained in this report do not necessarily represent the final EPA position.

The Agency did not have comments on our draft report, but provided a response which can be found in Appendix C. Since our report made no recommendations, no further action is required.

We appreciate the cooperative efforts of EPA, Mississippi, Alabama, and Louisiana officials and staff as we carried out our work. If you or your staff have any questions regarding this report, please contact me at (202) 566-0847, or Carolyn Copper, at 202-566-0829.

Sincerely,

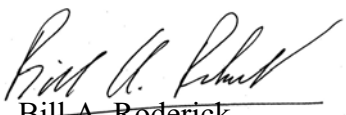

Bill A. Roderick
Acting Inspector General

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Purpose

The President's Council on Integrity and Efficiency (PCIE), a group of Federal audit and investigative organizations, is conducting multiple audits, evaluations, and investigations of the Federal Government's response to Hurricanes Katrina and Rita. This review was conducted in conjunction with the PCIE as part of its examination of relief efforts provided by the Federal Government in the aftermath of Hurricanes Katrina and Rita. As such, a copy of the final report will be forwarded to the PCIE Homeland Security Working Group, which is coordinating Inspector General reviews of this important subject. As a member of the PCIE, the Environmental Protection Agency (EPA) Office of Inspector General (OIG) was tasked with evaluating several issues related to EPA's response. One of these evaluations was to assess EPA's efforts in providing quality and timely information to the public and decisionmakers regarding wastewater. Our objectives were to answer the following questions:

1. Did EPA provide quality and timely information to the public and decisionmakers relative to the safety of individuals and the environment from wastewater?
2. How did the affected States use information provided by EPA?

Background

Hurricane Katrina hit on August 29, 2005, causing severe damage in Louisiana, Mississippi, and Alabama. The storm caused significant loss of life, disrupted power and drinking water systems, and damaged wastewater treatment plants and their collection systems. EPA initially responded, as did other agencies, by assisting with search and rescue operations and then by addressing immediate human health threats, such as hazardous waste and drinking water issues. Once immediate threats to life were addressed, EPA addressed other essential services to the public such as wastewater treatment.

Wastewater systems have two major components, the collection system and the treatment plant. The collection system carries wastewater (sewage) from homes and businesses through pipes to the treatment plant. There, the wastewater is treated to remove or neutralize its potentially harmful components, and the treated wastewater is then discharged to local waterways or used for agricultural irrigation. When a part of the system breaks down or gets overwhelmed by flooding, the untreated wastewater either escapes from the collection system, or the system operators have to release it untreated to the nearest drainage way. Wastewater treatment facilities can become flooded and stop treating sewage altogether.

Impact on Wastewater Treatment Facilities

According to EPA, Hurricane Katrina affected, to varying degrees, approximately 208 wastewater treatment facilities: 117 in Mississippi, 78 in Louisiana, and 13 in Alabama. EPA assisted States in assessing the damage to wastewater treatment facilities during the first few weeks after the hurricane. By the end of September, EPA reported that about 90 percent of the facilities were operational. Almost all of the facilities that were still non-operational were in Louisiana, due to the significant amount of flooding in the New Orleans area. EPA noted in its

news releases that even though facilities were classified as operational, they could still need repair or reconstruction to return to pre-Hurricane Katrina conditions. Certain facilities remained non-operational because of severe damage to their collection system and/or treatment plant, including breaks in pipes and damage to equipment.

Potential for Human Health Exposure

Hurricane Katrina caused damage to wastewater treatment facilities and collection systems causing wastewater spills and overflows of raw sewage in the affected States. Human exposure to raw sewage may cause illness ranging in severity from mild gastroenteritis to life-threatening ailments such as cholera. Potential pathways of exposure to raw sewage include:

- Direct contact, such as contact with floodwater or ingestion during recreation;
- Drinking water contaminated with raw sewage; and
- Consumption of shellfish harvested from areas contaminated by raw sewage.

According to the Louisiana, Mississippi, and Alabama State Epidemiologists, no sewage related illnesses were reported in the affected areas.

EPA's Role

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources¹ that discharge pollutants into the waters of the United States, such as wastewater treatment plants. While the three affected States are authorized to administer the NPDES program, EPA retains general oversight of State NPDES programs. EPA also retains enforcement authority for some facilities in Louisiana.

NPDES regulations require permittees to report any noncompliance that may endanger health or the environment to NPDES authorities within 24 hours of the time the permittee becomes aware of the circumstances. However, States and wastewater treatment facilities are not required to notify the public of potential human health concerns regarding instances of noncompliance, including discharges of untreated wastewater.

In responding to Hurricane Katrina, EPA and other Federal agencies work within the National Response Plan framework. In order to carry out work on wastewater treatment facilities, the Federal Emergency Management Agency (FEMA), within the Department of Homeland Security (DHS), gave EPA mission assignments under the National Response Plan's Emergency Support Functions (ESFs) #3 and #10. EPA serves as the coordinator and the Primary Agency for ESF #10 - Oil and Hazardous Materials Response. Under ESF #10, EPA was assigned to collect and maintain data on environmental impacts. Under ESF #3 - Public Works and Engineering, EPA supports the U.S. Army Corps of Engineers. EPA works with water and wastewater facilities to provide engineering support services including emergency repair of water and wastewater facilities. EPA also supports other ESFs, which are listed in Appendix A.

¹ Point source discharges are defined as discharges through a discrete conveyance for water such as a pipe or man-made ditch.

DHS has the public communication assignment under ESF #15. According to EPA, the Agency provided information to DHS on environmental issues for subsequent communication to State and local officials and the public. Although DHS has the lead for public communication, EPA has played a role in communicating directly with the public. EPA's Deputy Administrator testified that communication is a critical component of EPA's Hurricane Katrina response effort.

Scope and Methodology

Our report focused on the wastewater information provided by EPA to the affected States, selected wastewater treatment facilities, and the public. We reviewed EPA's responsibilities for informing the public and decisionmakers under the National Response Plan and Clean Water Act authorities. To determine what information was provided by EPA, we interviewed EPA headquarters officials from the Office of Wastewater Management, Office of Emergency Management, and Office of Public Affairs, as well as officials from Regions 4 and 6. We also reviewed information provided by EPA and on EPA's Web sites (Headquarters, Region 4, and Region 6) such as news releases, public service announcements, and informational flyers.

To determine the quality and timeliness of the information provided by EPA, we interviewed decisionmakers at the State and local levels only. We interviewed officials from the Louisiana Department of Environmental Quality, Mississippi Department of Environmental Quality, and Alabama Department of Environmental Management. We also spoke with the Louisiana, Mississippi, and Alabama State Epidemiologists to determine if any illnesses were reported relating to wastewater spills or overflows. We interviewed wastewater facility officials in Louisiana (New Orleans, St. Bernard Parish, and Ponchatoula) and in Mississippi (Wiggins, Poplarville, Diamondhead, and Harrison County). The facilities in Louisiana and Mississippi were selected based on information provided to us by EPA regional offices that indicated these facilities suffered overflows or severe damage to their plants or collection systems as a result of the hurricane. Since the wastewater systems we reviewed were not randomly selected, our observations regarding the quality and timeliness of information obtained by facilities from EPA is limited to the seven facilities we visited. While we assessed the information EPA made available to the public, we did not assess the extent to which it was received and understood. We did not obtain information from other decisionmakers or the public due to time limitations. This report did not address industrial wastewater or septage issues, including septic tanks and port-a-johns. While wastewater was discharged into the floodwater, our review did not focus on floodwater issues in general.

We conducted fieldwork from November 2005 through January 2006. We conducted our review in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States.

EPA Provided Quality and Timely Information to Affected States, Wastewater Treatment Facilities, and the Public

Based on assessments by State and wastewater treatment facility officials and the information we reviewed, EPA provided a variety of quality and timely information on wastewater to the States, wastewater facilities, and the public. Although not concerned with the quality and timeliness of EPA information on wastewater, the Louisiana Department of Environmental Quality noted that some information was duplicative.

Information EPA Provided to States and Wastewater Facility Operators

State and municipal wastewater treatment plant officials we interviewed were generally satisfied with the quality and timeliness of information provided by EPA regarding wastewater. For example:

- The Mississippi Department of Environmental Quality worked collaboratively with EPA on collecting water quality data near the Gulf Coast. One State official commented that the information received by EPA was of excellent quality and was available as promptly as circumstances allowed.
- Three wastewater treatment facilities (two in Louisiana and one in Mississippi) were satisfied with the direct technical/facility support assistance received from EPA. One wastewater facility in New Orleans was very pleased with the technical assistance it received from EPA staff members, who remained on site for an extended period of time.

The only decisionmakers we interviewed regarding the quality and timeliness of EPA information regarding wastewater were officials from States and wastewater treatment facilities. According to EPA, the Agency provided information to other decisionmakers as well, such as:

- Briefings to congressional staff;
- Briefings to media representatives;
- Meetings with parish and local government officials; and
- Other Federal agencies, such as FEMA.

Information EPA Provided to the Public

EPA used a variety of methods to directly communicate information to the public on potential health concerns regarding exposure to wastewater, including Web sites and radio announcements. The following are some examples of information EPA provided to the public:

- News releases, which included information addressing potential health concerns and other hazards;
- Press conference materials, speeches, and testimonies addressing EPA's activities;
- Public service announcements addressing general health issues in English, Spanish, and Vietnamese;

- Reports, such as *Environmental Health Needs & Habitability Assessment Report*²;
- Water quality data for surface water and floodwater;
- Assessments and status of wastewater treatment facilities; and
- Answers to frequently asked questions about wastewater systems located on EPA's Web site.

See Appendix B for more details.

At the same time EPA was providing this information, other Federal agencies, States, cities, and local wastewater treatment facilities also provided wastewater information to the public through various media including radio, newspapers, television, Web sites, and flyers. For example:

- Immediately after the hurricane, local wastewater treatment facilities provided direct information to the public about wastewater discharges and spills. Local officials participated in press conferences and posted flyers on community bulletin boards.
- One Louisiana wastewater facility communicated with the public in various ways including knocking on doors of houses near areas where wastewater spills occurred and by making announcements on the local radio station.

Affected States Generally Used Information Provided by EPA

Affected States generally used the information provided by EPA for various purposes including decisionmaking. Some of this information was jointly developed with the affected States. For example:

- Louisiana Department of Environmental Quality officials used water quality data collected by EPA to evaluate the potential health risks associated with short-term exposure to floodwaters. Louisiana officials used this data to make decisions regarding the level of protection required for rescue workers.
- Mississippi Department of Environmental Quality officials also used water quality data collected by EPA to make decisions. Mississippi officials used the data to confirm that wastewater treatment plants were functioning and that there were no major sources of contamination entering the State waters about which the public needed notification.
- The Alabama Department of Environmental Management and Mississippi Department of Environmental Quality provided EPA's information about funding sources for repairing wastewater facilities to the appropriate municipal wastewater treatment facilities.

² A September 2005 report prepared jointly by EPA and the Centers for Disease Control and Prevention. The report provided an initial assessment of the overarching environmental health and infrastructure issues faced by New Orleans to reinhabit the city after Hurricane Katrina.

- The Louisiana Department of Environmental Quality issued joint news releases with EPA to inform the public of the potential of environmental and health hazards due to exposure to wastewater.

While EPA provided quality and timely information, some State and wastewater facility officials said that they did not need much information from EPA regarding wastewater. Alabama Department of Environmental Management officials stated that they did not need any information from EPA because they learned how to handle disasters from their previous experiences with Hurricane Ivan. Wastewater facility officials in Mississippi and Louisiana told us that they did not need any information from EPA because (1) they could handle any technical issues that arose from damage to their plants and collection systems; and (2) they knew their role was to inform the public of any wastewater spills or overflows, which they did.

National Response Plan: Emergency Support Functions Supported by EPA

EPA and other Federal agencies work within the National Response Plan framework to ensure that work needed to help recover from disasters, such as hurricanes, is carried out. Specific missions are assigned through ESFs. EPA supports ESFs as shown below.

- **ESF #3 – Public Works and Engineering.** EPA’s role may include infrastructure protection activities for drinking water and wastewater facilities; assistance in determining suitability of drinking water sources; locating disposal sites for debris clearance activities; and assessments, technical assistance, and monitoring for contaminated debris management.
- **ESF #4 – Firefighting.** EPA’s role may include technical assistance for fires involving hazardous materials and also assistance in identifying uncontaminated water sources for firefighting.
- **ESF #5 – Emergency Management.** EPA’s role may include support to the Joint Field Office,³ and provision of staff liaisons and technical experts.
- **ESF #8 – Public Health and Medical.** EPA’s role may include technical assistance and environmental information for health/medical aspects of hazardous materials situations, technical assistance regarding drinking water supplies, and assistance identifying water supplies for critical care facilities.
- **ESF #10 – Oil and Hazardous Materials Response.** For incidents for which EPA is the primary agency, EPA coordinates, integrates, and manages the overall Federal effort to detect, identify, contain, decontaminate, clean up, or dispose of or minimize discharges of oil or releases of hazardous materials; or prevent, mitigate, or minimize the threat of potential releases. EPA’s role may include household hazardous waste collection, permitting and monitoring of debris disposal, water quality monitoring and protection, air quality sampling and monitoring, and protection of natural resources.
- **ESF #11 – Agriculture and Natural Resources.** EPA’s role may include technical assistance for biological and chemical agents regarding environmental monitoring, contaminated crops/animals, and food/product decontamination.
- **ESF #12 – Energy.** EPA’s role may include response to State or local requests for fuel waivers to address fuel shortages.
- **ESF #13 – Public Safety and Security.** EPA’s role may include assistance from specialized evidence response teams that can work in a contaminated environment, investigation of criminal violations of environmental statutes, and forensic analysis of industrial chemicals.
- **ESF #14 – Long-Term Community Recovery.** EPA’s role may include technical assistance for planning for contaminated debris management and environmental remediation.
- **ESF #15 – External Affairs.** EPA’s role may include appropriate support as required.

³ The Joint Field Office is a temporary Federal facility established locally to provide a central point to coordinate resources in support of State, local, and tribal authorities.

Examples of Wastewater Information Provided by EPA

News Releases	EPA issued about 17 news releases related to wastewater from September to December 2005. Many of the news releases provided a daily update of the response activities. These daily updates emphasized the activities conducted each day and included summary information about the number of wastewater treatment facilities that resumed operation. For example, on September 6, 2005, shortly after the hurricane hit, EPA and the Department of Health and Human Services issued a news release about the dangers of floodwater due to potentially elevated levels of contamination associated with raw sewage and other hazardous substances.
Public Service Announcements	EPA recorded public service announcements to provide information to people in the hurricane affected areas. These public service announcements were for use by the media and general public and were provided in English, Spanish, and Vietnamese. The public service announcements addressed general health concerns such as children playing around floodwater and wearing gloves and masks when cleaning homes.
Speeches and Testimonies	<p>EPA officials provided information to the public through speeches and testimonies. For example:</p> <ul style="list-style-type: none"> • The EPA Administrator participated in a press conference to inform the public about EPA’s Hurricane Katrina work. • The EPA Deputy Administrator testified before Congress at the end of September 2005. His testimony addressed the number of impacted wastewater systems and the activities EPA was undertaking to assist them. • The Assistant Administrator for the Office of Water also testified before Congress and spoke about the New Orleans East Bank wastewater treatment facility.
Reports	<p>EPA and the Centers for Disease Control and Prevention developed the <i>Environmental Health Needs & Habitability Assessment</i> report. The report provided an initial assessment of the overarching environmental health and infrastructure issues faced by New Orleans to reinhabit the city.</p> <p>EPA Region 4 and the State of Mississippi conducted ambient water quality monitoring in order to assess the impacts of Hurricane Katrina on the Gulf environment. A report was released on October 28, 2005, documenting the results, which showed few detectable priority pollutant compounds on the impacted bays and rivers.</p> <p>On December 6, 2005, EPA released the Environmental Assessment Summary for Areas of Jefferson, Orleans, St. Bernard, and Plaquemines Parishes Flooded as a Result of Hurricane Katrina. The assessment found that floodwater samples revealed elevated bacteria levels associated with untreated sewage. It also found that floodwaters no longer served as a source of exposure to residents returning to impacted areas.</p>

EPA Office of Water Comments

March 15, 2006

MEMORANDUM

SUBJECT: Response to Draft Evaluation Report *EPA Provided Quality and Timely Information Regarding Wastewater after Hurricane Katrina*, Assignment No. 2006-000260

FROM: Benjamin H. Grumbles
Assistant Administrator

TO: Bill Roderick
Acting Inspector General

Thank you for the opportunity to comment on your Office's draft report, *EPA Provided Quality and Timely Information Regarding Wastewater after Hurricane Katrina*. The hurricanes which struck the Gulf Coast region last fall were significant, not only in their effects, but in the response they required from all levels of government. The collaborative efforts of EPA, state, and local authorities, resulted in the prevention of serious illnesses associated with exposure to raw sewage as well as the rapid return to operations of the affected facilities. We are proud of the efforts made by personnel from utilities, state programs, non-governmental organizations and our own employees in working to restore wastewater treatment services after the storm.

The Agency is very appreciative of the cooperative approach used by the Inspector General's (IG) Waste Water Team during the investigation of the Agency's response to Katrina.

We appreciate the opportunity to review and provide comment on this draft report. We have no comments and do not believe that any additional points need to be raised for inclusion in the final report. We will continue to provide support to the state as needed to address long-term recovery needs for communities and wastewater utilities in the affected area.

Thank you again for the opportunity to comment on this final report. If you have further questions, please contact Jane Moore, Deputy Director of the Office of Wastewater Management at (202) 564-3944.

cc: Richard Green, Regional Administrator, Region VI
Jimmy Palmer, Regional Administrator, Region IV

Distribution

EPA Headquarters

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Assistant Administrator, Office of Solid Waste and Emergency Response
Agency Followup Official (the CFO)
Agency Followup Coordinator
Audit Followup Coordinator, Office of Water
Audit Followup Coordinator, Office of Solid Waste and Emergency Response
Associate Administrator for Congressional and Intergovernmental Relations
Associate Administrator for Public Affairs
General Counsel
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