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CLEAN WATER INFRASTRUCTURE

A Variety of Issues
Need to Be
Considered When
Designing a Clean
Water Trust Fund



GAO

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Highlights of [GAO-09-657](#), a report to congressional requesters

Why GAO Did This Study

The Environmental Protection Agency (EPA) has estimated that a potential gap between future needs and current spending for wastewater infrastructure of \$150 billion to \$400 billion could occur over the next decade. A number of entities are involved in planning, financing, building, and operating this infrastructure. Some of these stakeholders have suggested a variety of approaches to bridge this potential gap. One such proposal is to establish a clean water trust fund. In this context, GAO was asked to (1) obtain stakeholders' views on the issues that would need to be addressed in designing and establishing a clean water trust fund and (2) identify and describe potential options that could generate about \$10 billion in revenue to support a clean water trust fund. In conducting this review, GAO administered a questionnaire to 28 national organizations representing the wastewater and drinking water industries, state and local governments, engineers, and environmental groups and received 22 responses; reviewed proposals and industry papers; interviewed federal, state, local, and industry officials; and used the most current data available to estimate the revenue that could potentially be raised by various taxes on a range of products and activities.

GAO is not making any recommendations. While this report identifies a number of funding options, GAO is not endorsing any option and does not have a position on whether or not a trust fund should be established.

View [GAO-09-657](#) or key components. For more information, contact Anu Mittal at (202) 512-3841 or mittala@gao.gov.

CLEAN WATER INFRASTRUCTURE

A Variety of Issues Need to Be Considered When Designing a Clean Water Trust Fund

What GAO Found

In designing and establishing a clean water trust fund, stakeholders identified three main issues that would need to be addressed: how a trust fund should be administered and used; what type of financial assistance should be provided; and what activities should be eligible to receive funding from a trust fund. While a majority of stakeholders said that a trust fund should be administered through an EPA partnership with the states, they differed in their views on how a trust fund should be used. About a third of stakeholders responded that a trust fund should be used only to fund the existing Clean Water State Revolving Fund (CWSRF), which is currently funded primarily through federal appropriations, while a few said it should support only a new and separate wastewater program. A few stakeholders supported using a trust fund to support both the CWSRF and a separate program, while others did not support the establishment of a trust fund at all. In addition, more than half of the stakeholders responded that financial assistance should be distributed using a combination of loans and grants to address the needs of different localities. Finally, although a variety of activities could be funded, most stakeholders identified capital projects as the primary activity that should receive funding from a clean water trust fund.

A number of options have been proposed in the past to generate revenue for a clean water trust fund, but several obstacles will have to be overcome in implementing these options, and it may be difficult to generate \$10 billion from any one option by itself. Funding options include a variety of excise taxes as shown in the table below.

Estimated Revenue from Excise Taxes on Products That May Contribute to the Wastewater Stream (in millions of 2009 Dollars)

Product groups	Tax base	1% tax	5% tax	10% tax	Tax rate to generate \$10 billion
Beverages	\$95,551	\$956	\$4,778	\$9,555	10.5%
Fertilizers and pesticides	26,088	261	1,304	2,609	38.3%
Flushable products, including soaps, detergents, cooking oils, and toiletries	63,241	632	3,162	6,324	15.8%
Pharmaceuticals	156,069	1,561	7,803	15,607	6.4%
Water appliances and plumbing fixtures	25,517	255	1,276	2,552	39.2%

Source: GAO analysis of U.S. Census Bureau data from the 2006 Annual Survey of Manufactures and Foreign Trade Division.

In addition, Congress could levy a tax on corporate income. An additional 0.1 percent corporate income tax could raise about \$1.4 billion annually. Congress also could levy a water use tax. A tax of 0.01 cent per gallon could raise about \$1.3 billion annually. Regardless of the options selected, certain implementation obstacles will have to be overcome. These include defining the products or activities to be taxed, establishing a collection and enforcement framework, and obtaining stakeholder support for a particular option or mix of options.

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Abbreviations

CBO	Congressional Budget Office
CEIT	Corporate Environmental Income Tax
Census	U.S. Census Bureau
CWSRF	Clean Water State Revolving Fund
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
IRS	Internal Revenue Service
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
TRI	Toxics Release Inventory
USGS	United States Geological Survey

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United States Government Accountability Office
Washington, DC 20548

May 29, 2009

The Honorable James L. Oberstar
Chairman
The Honorable John L. Mica
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Eddie Bernice Johnson
Chairwoman
Subcommittee on Water Resources and Environment
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Earl Blumenauer
House of Representatives

More than 220 million people in the United States are served by wastewater systems that are composed primarily of a network of sewer pipes and treatment plants that carry and treat wastewater before it is discharged into surface water. Many of these systems were constructed more than 50 years ago and are reaching the end of their useful lives. In addition to the deterioration in the condition of this infrastructure, some of these systems also lack the capacity to adequately treat increasingly large volumes of wastewater, particularly during periods of wet weather. As a result, these systems are releasing large quantities of untreated wastewater into surface waters, which can pose a threat to human and aquatic health. For example, according to Environmental Protection Agency (EPA) estimates, wastewater systems annually discharge over 850 billion gallons of untreated sewage into U.S. surface waters. Although federal, state, and local governments invest billions of dollars annually in wastewater infrastructure—a total of about \$40 billion in 2006—EPA and others have estimated that current spending levels may not be adequate to cover the costs of maintaining and replacing pipes, treatment plants, and other parts of this infrastructure. According to EPA's estimates, a potential gap of about \$150 billion to \$400 billion between projected future infrastructure needs and current levels of spending could occur over the

next decade.¹ Without additional investment in the nation's wastewater infrastructure, EPA and other groups have asserted that the environmental and public health gains made under the Clean Water Act² during the last three decades could be at risk.

A variety of approaches have been proposed to help bridge a potential gap between projected future infrastructure needs and current levels of spending. For example, one approach would be to increase federal funding for the Clean Water State Revolving Fund (CWSRF) program, which is the largest source of federal assistance for wastewater infrastructure. About \$689 million was appropriated in both fiscal years 2008 and 2009 for the CWSRF program, and an additional \$4 billion was appropriated by the American Recovery and Reinvestment Act of 2009.³ Under the CWSRF program, EPA provides capitalization grants to the states, which in turn use these funds to make loans to local communities or utilities for various water quality projects. As loans are repaid, the funds are cycled back into the state-level programs to fund additional projects. New funding for the CWSRF program is dependent on federal appropriations. In addition, EPA has promoted its sustainable infrastructure initiative for water infrastructure management, called the Four Pillars, to help meet infrastructure needs. Among other things, the Four Pillars calls for wastewater and drinking water utilities to charge rates for the service they provide that are high enough to enable them to fund future capital needs in addition to their routine operations and maintenance. Still another approach that has been considered to bridge a potential gap between projected future infrastructure needs and current spending levels is to establish a clean water trust fund. In general, federal trust funds collect revenue and distribute funds that have been set aside for specific purposes. A clean water trust fund would provide a dedicated source of funding for wastewater infrastructure that would be similar to some of the trust funds that Congress has established for other infrastructure and environmental programs, such as highway infrastructure construction and

¹EPA, *The Clean Water and Drinking Water Infrastructure Gap Analysis* (Washington, D.C., September 2002). In the report, EPA noted that this gap is not inevitable and could be addressed in part if wastewater utilities raised the rates they charge consumers. EPA estimates a potential gap for drinking water infrastructure as well.

²The Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, § 2, 86 Stat. 816 (commonly referred to as the Clean Water Act).

³Pub. L. 111-5, Div. A, Tit. VII, 123 Stat. 115, 169.

coastal wetlands restoration. Some of the revenue for federal trust funds is generated through federal excise taxes on specific products and services.⁴

In this context, you asked us to provide information on the issues that would need to be addressed if Congress decided to establish a clean water trust fund to help meet the potential gap between projected future wastewater infrastructure needs and current spending levels. Specifically, this report (1) describes stakeholders' views on the issues that would need to be addressed in designing and establishing a clean water trust fund and (2) identifies and describes potential options that Congress could consider that could generate revenues of \$10 billion annually to support a clean water trust fund.

To determine stakeholders' views on the issues that would need to be addressed in designing and establishing a clean water trust fund, we reviewed past legislative proposals and wastewater industry position papers on establishing such a fund. In addition, we interviewed a variety of stakeholders, both individuals and groups, with knowledge of wastewater infrastructure issues, including those from the wastewater industry and federal, state, and local government. Based on the information gathered from these interviews, we developed and administered a questionnaire to obtain the views of these and other stakeholders on the issues that need to be addressed in designing and establishing a trust fund. We sent this questionnaire to national organizations representing the wastewater industry, drinking water industry, state and local governments, engineers, and environmental groups. We sent out 28 questionnaires and received 22 responses, for a response rate of 79 percent. Some stakeholders did not answer all of the questions on the questionnaire, so the number of responses for each question can vary. We also reviewed reports and documents on the CWSRF and interviewed federal and state officials responsible for implementing this program to gain an understanding for how this program might interact with a clean water trust fund. Finally, we visited three states—Arizona, Maryland, and Wisconsin—and the District of Columbia, where we interviewed state and local officials about their wastewater infrastructure needs and how a clean water trust fund could be designed to meet these needs. We chose these locations because they were geographically dispersed, had different wastewater infrastructure needs, and used various approaches to finance wastewater projects.

⁴An excise tax is a tax levied on the manufacture, sale, or consumption of various commodities.

To identify potential options for funding a clean water trust fund that could generate \$10 billion annually, we reviewed past legislative proposals and position papers from wastewater industry groups that discussed specific funding options. We also reviewed reports on how existing federal environmental and infrastructure trust funds are funded and conducted Internet searches to identify funding options that states are using to finance wastewater projects. We used our questionnaire to gauge stakeholders' support for various funding options for a clean water trust fund and to obtain their views on the extent of the connection between these funding options and wastewater infrastructure use. In addition, we interviewed federal and state officials to identify the challenges likely to be associated with implementing these funding options. To estimate the revenue that these options could potentially generate, we used the most recent government data available to estimate the value of products or activities that could be subject to a federal tax and applied a range of tax rates to these values based on current or past taxation policies. The estimates presented in our report are not official revenue estimates as would be prepared by the Joint Committee on Taxation, and they are subject to various limitations. For example, we did not model or estimate consumer or market responses to these funding options, possible noncompliance, or the cost of implementing and enforcing these options. As a result, our revenue estimates may be higher than actual receipts that would be generated from these funding options. Moreover, we do not endorse any option and do not have a position on whether or not a clean water trust fund should be established.

A more detailed description of our scope and methodology is presented in appendix I. We conducted our work from June 2008 to May 2009 in accordance with all sections of GAO's quality assurance framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions.

Background

Americans rely on wastewater systems to protect public health and the environment. These systems are composed of a network of pipes, pumps, and treatment facilities that collect and treat wastewater from homes, businesses, and industries before it is discharged to surface waters. EPA

sets standards for the quality of wastewater that can be discharged under the Clean Water Act.⁵ Under this law, the National Pollutant Discharge Elimination System (NPDES) program limits the types and amounts of pollutants that industrial and municipal wastewater treatment facilities may discharge into the nation's surface waters. During the wastewater treatment process, solid materials, such as sand and grit; organic matter from sewage; and other pollutants are removed from wastewater before it is discharged to surface waters. This treatment helps to ensure that the quality of surface water is not degraded and that it can continue to be used for drinking water, fishing, and swimming. About 16,000 publicly owned wastewater treatment plants exist in the United States, and the American Society of Civil Engineers estimates that between 600,000 and 800,000 miles of sewer pipe help to deliver wastewater to these treatment plants. These systems are primarily publicly owned and provide wastewater service to more than 220 million Americans.

Local communities have the primary responsibility to provide funding for wastewater infrastructure. According to U.S. Census Bureau (Census) estimates, in fiscal year 2006⁶ local communities spent about \$38 billion on wastewater operations and capital projects, while states spent about \$1.3 billion. In addition, the federal government provides financial assistance for wastewater infrastructure, with EPA providing the largest amount through its CWSRF program. Under the CWSRF program, which was established in 1987, the federal government provides capitalization grants to states, which in turn must match at least 20 percent of the federal grants. The states then use the money to provide low-interest loans to fund a variety of water quality projects, and loan repayments are cycled back into the program to be loaned out for other projects. In 2007, states provided CWSRF loans totaling about \$5.3 billion to communities and other recipients.

⁵Wastewater treatment generally involves two steps, called primary and secondary treatment. During primary treatment, solid materials such as sand and grit are removed from wastewater. Secondary treatment usually involves using bacteria to remove organic material from wastewater. Under the Clean Water Act, municipal wastewater treatment plants are required to provide secondary treatment for wastewater. In addition, over 30 percent of wastewater treatment plants also provide advanced treatment for wastewater, which can purify wastewater to even greater levels.

⁶Fiscal year 2006 includes data for each individual government's fiscal year that ended between July 1, 2005, and June 30, 2006.

Several studies have documented the deterioration in the condition of the U.S. wastewater infrastructure. According to EPA, the majority of the nation's sewer pipe network was installed after World War II and is reaching the end of its useful life. Similarly, many of the wastewater treatment plants that were upgraded in the 1970s to comply with the Clean Water Act are aging and will need to be upgraded or replaced in the future. The American Society of Civil Engineers recently described the condition of the nation's wastewater infrastructure as "poor," and cited a lack of investment in critical components of this infrastructure as a contributing factor to this condition.⁷ The deteriorating condition of the nation's wastewater infrastructure has direct impacts on human and aquatic health. Specifically, many older wastewater systems lack the capacity to treat increasingly large volumes of wastewater, particularly during periods of wet weather. In addition, cracks in sewer pipes allow rain or snowmelt to enter the wastewater system and overwhelm its capacity to adequately treat wastewater. Untreated wastewater can be released during the resulting sewer overflows associated with these wet weather events and introduce significant levels of pollution into local water bodies, which can pose risks to human health and result in beach closures and fish kills. EPA estimates that over 850 billion gallons of untreated wastewater are released annually into U.S. surface waters.

Although local, state, and federal governments have invested billions in wastewater infrastructure over the years, studies by EPA and the Congressional Budget Office (CBO) suggest a potential gap exists between what is currently being spent on wastewater infrastructure and estimated future infrastructure needs. EPA's 2002 analysis estimated a potential gap for wastewater infrastructure capital improvements, along with operations and maintenance, of about \$150 billion to \$400 billion over the period from 2000 to 2019.⁸ CBO estimated a gap of about \$60 billion to \$220 billion in capital funding alone over this same period.⁹ Without additional investment in the nation's wastewater infrastructure, EPA and other groups have asserted that the environmental and public health gains made under the Clean Water Act during the last three decades could be at risk.

⁷American Society of Civil Engineers, *2009 Report Card for America's Infrastructure* (Reston, Va., Mar. 25, 2009).

⁸EPA, *The Clean Water and Drinking Water Infrastructure Gap Analysis* (Washington, D.C., September 2002).

⁹CBO, *Future Investment in Drinking Water and Wastewater Infrastructure* (Washington, D.C., November 2002).

However, these studies by EPA and CBO note that this gap is not inevitable, and policy makers and wastewater groups have proposed a variety of approaches to help bridge this gap, including the following:¹⁰

- *Implement EPA’s Sustainable Water Infrastructure Initiative.* This initiative, which is called the Four Pillars, encourages wastewater and drinking water utilities to improve the management of their systems, to systematically plan ahead for infrastructure needs, and to charge the full cost of the service they provide to customers. Charging the full cost would require utilities to charge prices that reflect the costs of building, maintaining, and operating a wastewater system over the long term.¹¹
- *Increase funding for the CWSRF.* Federal CWSRF capitalization grants to the states had been declining in recent years, despite growing wastewater infrastructure needs. In both fiscal years 2008 and 2009, \$689 million was appropriated for the CWSRF program, which was below the average from 2000 to 2007 of about \$1.2 billion. Some proponents of the CWSRF have recommended increasing federal appropriations for this program and the program has recently received additional federal funding. The American Recovery and Reinvestment Act of 2009 appropriated \$4 billion in funding for the CWSRF program, and the President’s budget request for fiscal year 2010 asks for an increase in funding for the program. In addition, some have suggested increasing the pool of available CWSRF funds by encouraging more states to use their federal capitalization grants as collateral in the public bond market.¹² This practice, known as “leveraging” allows states to borrow additional money to lend out through the CWSRF. Currently, about 27 states leverage their capitalization grants.

¹⁰Many of these options were discussed by stakeholders at an EPA forum. See EPA, *Closing the Gap: Innovative Solutions for America’s Water Infrastructure Forum* (Washington, D.C., Jan. 31, 2003).

¹¹Our past work has found that many utilities were not routinely charging the full cost for the wastewater services they provided. See GAO, *Water Infrastructure: Information on Financing, Capital Planning, and Privatization*, [GAO-02-764](#) (Washington, D.C.: Aug. 16, 2002). In addition, we have found that the practice of systematically identifying and planning for wastewater infrastructure improvements, known as asset management, could help these wastewater utilities better address their infrastructure needs. See GAO, *Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments*, [GAO-04-461](#) (Washington, D.C.: Mar. 19, 2004).

¹²Environmental Financial Advisory Board, *Relative Benefits of Direct and Leveraged Loans in State Revolving Loan Fund (SRF) Programs* (Aug. 28, 2008).

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- *Establish a national infrastructure bank.* Three bills were introduced in the 110th Congress that proposed establishing a national infrastructure bank or other entity that would provide financing for a variety of infrastructure projects, including wastewater infrastructure projects.¹³ This entity would independently evaluate projects and determine the most appropriate way—through loans, grants, or other financial tools—to finance them.
 - *Encourage public-private partnerships.* Historically, wastewater infrastructure has commonly been owned and operated by public entities, such as local municipalities. However, other approaches exist where private entities can provide services such as designing, constructing, or operating infrastructure projects, including wastewater systems. In recent years, these partnerships have become more common in the transportation sector.¹⁴
 - *Lift private activity bond restrictions on wastewater projects.* Private activity bonds are tax-exempt bonds issued by state or local governments to provide special financing benefits for qualified projects. These bonds are used to provide financing to private businesses for certain facilities, such as airports, electric and gas distribution systems, mass transit systems, solid waste disposal sites, and wastewater plants. Because private activity bonds are exempt from federal tax, states and municipalities can borrow money at lower interest rates. However, states are limited in the amount of private activity bonds that they can issue annually. While certain projects such as airports and solid waste disposal facilities are exempt from this cap, wastewater infrastructure facilities are subject to this cap. Removing this restriction could increase the level of low-interest financing available for wastewater projects.¹⁵

¹³In the 110th Congress, three bills were introduced to create such a bank or entity: National Infrastructure Bank Act of 2007 (S. 1926 and H.R. 3401); the National Infrastructure Development Act of 2007 (H.R. 3896); and the Build America Bonds Act of 2007 (S. 2021).

¹⁴Our previous work has found that public-private partnerships can entail potential costs and tradeoffs and should be reviewed to determine whether they are appropriate in specific circumstances and, if so, how best to implement them. See GAO, *Highway Public-Private Partnerships: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest*, [GAO-08-44](#) (Washington, D.C.: Feb. 8, 2008).

¹⁵H.R. 6194, which was introduced in the 110th Congress, The Sustainable Water Infrastructure Development Act of 2008, proposed lifting the caps on private activity bonds for water and wastewater projects.

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- *Create a federal clean water trust fund.* Establishing a clean water trust fund could help to provide a dedicated source of federal funding for wastewater infrastructure. Federal trust funds, such as the Highway and the Airport and Airways Trust Funds, are used to account for funds that are dedicated for spending on a specific purpose. Unlike trustees of private trust funds, a federal agency may exercise a greater degree of control over its trust fund. As authorized by law, the federal government may control the fund as well as its earnings and raise or lower future trust fund collections and payments or change the purposes for which collections are used.

Stakeholders Identified Three Key Issues That Would Need to Be Addressed in Designing and Establishing a Clean Water Trust Fund

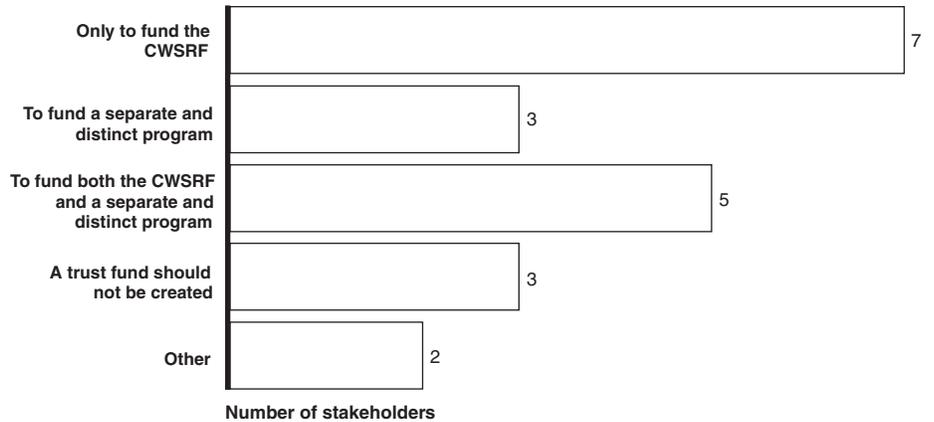
Three main issues would need to be addressed in designing and establishing a clean water trust fund, according to stakeholders.¹⁶ These issues include: how a trust fund should be administered and used; what type of financial assistance should be provided for projects; and what activities should be eligible for funding.

Administration and use of a trust fund. Stakeholders told us that designing a clean water trust fund would involve deciding what agency or entity would administer the fund and whether the trust fund would be used to fund the CWSRF or a separate program. A majority of stakeholders (15 of 20) responding to our questionnaire expressed the view that a trust fund should be administered through an EPA-state partnership like the current CWSRF program.¹⁷ However, as figure 1 shows, stakeholders differed in their views on how a trust fund should be used.

¹⁶In addition, some stakeholders we interviewed raised the issue of how a clean water trust fund would be funded. We discuss potential revenue sources for a clean water trust fund in the next section of this report.

¹⁷Twenty-two stakeholders responded to our questionnaire; however, because not all stakeholders responded to each question, the total number of responses can vary for each question.

Figure 1: Stakeholder Views on How a Trust Fund Should Be Used



Source: GAO analysis of stakeholder responses. For additional information on stakeholder views, see appendix II.

About a third of stakeholders (7 of the 20) expressed the view that a trust fund should be used only to fund the existing CWSRF. Stakeholders cited several reasons for this view, including their interest in building on the success of the CWSRF program, avoiding the redundant administrative costs associated with establishing a new wastewater infrastructure program, and providing a dedicated funding source to increase available funding for the CWSRF program.

Three of 20 stakeholders that responded to our questionnaire said that a trust fund should not be used to support the existing CWSRF, but rather to fund a separate and distinct wastewater infrastructure program. One of these stakeholders told us that the CWSRF does not prioritize funding to wastewater systems with the greatest needs. Stakeholders we interviewed said that CWSRF loan amounts can sometimes be inadequate to meet the needs of large urban areas that have large and costly infrastructure projects and that smaller communities may lack the administrative capacity to go through the process of applying for a CWSRF loan. In addition, our past work has found that states vary in the way they allocate CWSRF funds for small or economically disadvantaged communities and

that some states have placed limits on the amount of CWSRF funding any one borrower can receive in a single year.¹⁸

Twenty-five percent of questionnaire respondents (5 of 20) supported using a trust fund to both fund the CWSRF and establish a separate and distinct program. These stakeholders said the CWSRF needed a dedicated source of funding, but that the flexibility of a new program could help to address some of the CWSRF's limitations.

Finally, 3 of 20 stakeholders responding to our questionnaire were opposed to the creation of a clean water trust fund to support the nation's wastewater infrastructure. According to these stakeholders, utilities should be self-sustaining through the rates they charge their customers and by more efficiently managing their systems. These stakeholders also attribute the potential gap between projected future wastewater infrastructure needs and current spending to the reluctance of wastewater utilities to charge the full cost of the services they provide. Charging the full cost would require utilities to charge prices that reflect the costs of building, maintaining, and operating a wastewater system over the long term. Our past work has highlighted similar concerns with the management of local wastewater utilities. Specifically, we found that many utilities were not routinely charging the full cost for wastewater services and that the practice of systematically identifying and planning for infrastructure improvements, known as asset management, could help utilities better address their infrastructure needs.¹⁹

Type of financial assistance. Another design issue that stakeholders identified was specifying the type of assistance—grants or loans—that a clean water trust fund would provide. Over half of the stakeholders responding to our questionnaire (13 of 21) favored distributing funding to wastewater infrastructure projects using a combination of loans and grants. According to many of these stakeholders, the type of assistance provided by a trust fund should be tailored to the applicant's needs and capacity. Some of these stakeholders explained that while some communities can take on debt and pay back loans for wastewater projects, others may need grants because they are unable to pay back loans. Other stakeholders who we talked to also stated that loans impose discipline on

¹⁸See GAO, *Clean Water: How States Allocate Revolving Loan Funds and Measure Their Benefits*, [GAO-06-579](#) (Washington, D.C.: June 5, 2006).

¹⁹[GAO-02-764](#) and [GAO-04-461](#).

borrowers, who are responsible for repayment, but that grants may be needed for certain communities that cannot make loan repayments, such as those with declining or low-income populations. These stakeholder views are consistent with some of the policy debate surrounding the reauthorization of the CWSRF, in which certain groups have supported the distribution of grants, as well as loans, for certain wastewater projects, through the CWSRF as is currently allowed under the Drinking Water State Revolving Fund. A provision allowing some funding to be distributed as grants would be similar to recent legislation; specifically, some of the funding provided to the CWSRF by the 2009 American Recovery and Reinvestment Act can be distributed in the form of grants.

In contrast, 3 of 21 stakeholders who responded to our questionnaire told us that funding to support wastewater infrastructure projects should be distributed using loans only while 2 said that only grants should be used. The stakeholders supporting the use of loans said that the funds from the repayment of these loans provide a source of funding to meet future infrastructure needs, and that below-market interest rates can be offered on these loans as an affordable way for communities to fund wastewater infrastructure. One of the stakeholders who said that funding to support wastewater infrastructure projects should be distributed using grants stated that a grant program will help lower costs for municipalities and allow them to offer more affordable wastewater utility rates.

Eligible activities. Finally, stakeholders said that designing and implementing a clean water trust fund would involve determining the type of wastewater infrastructure activities that the fund would support. Most stakeholders who responded to our questionnaire supported using a trust fund for planning and designing wastewater projects (18 of 21) and for capital costs (19 of 21). Some stakeholders noted that these two activities are closely linked—planning and designing are essential components of carrying out capital projects. Stakeholders that supported using the trust fund for capital costs identified many of the activities that are currently eligible for funding under the CWSRF as those that should be eligible to receive support under a clean water trust fund. These activities include expanding wastewater systems to meet existing needs, replacing or rehabilitating wastewater collection systems or treatment facilities, and correcting wastewater overflows from wastewater systems. Many of these stakeholders said that capital costs should be given priority because these are major costs and represent the most pressing needs for utilities. Moreover, according to some stakeholders, capital costs should be eligible for funding because communities may incur significant costs when upgrading or rehabilitating their wastewater systems in order to comply

with Clean Water Act requirements or other federal mandates. In addition to capital costs, stakeholders identified other activities that should be eligible for funding, including providing rate-payer assistance to low-income households, supporting green infrastructure and nonpoint source pollution projects, and training wastewater plant operators. Only 2 stakeholders responded that a trust fund should be used to support operations and maintenance for wastewater utilities.

Appendix II provides the full range of stakeholder responses to the questionnaire on design issues. Appendix III provides a list of stakeholder groups that responded to our questionnaire.

Various Options for Funding a Clean Water Trust Fund Could Generate a Range of Revenues, but Each Option Poses Certain Obstacles

Although a variety of options have been proposed in the past to generate revenue for a clean water trust fund, generating \$10 billion from any one of these alone may be difficult. In addition, each funding option poses various implementation challenges, including defining the products or activities to be taxed, establishing a collection and enforcement framework, and obtaining stakeholder support.

A Variety of Options Are Available That Could Generate a Range of Revenue to Support a Trust Fund

Various funding options, including excise taxes on products that may contribute to the wastewater stream, an additional tax on corporate income, a water use tax, and an industrial discharge tax, could generate a range of revenues for a clean water trust fund. However, it may be difficult to raise \$10 billion for a clean water trust fund from any one of these options because of the small size of the tax bases of many of these options.

Excise Taxes on Products That May Contribute to the Wastewater Stream

Excise taxes on products that may contribute to the wastewater stream could be used to generate revenue for a clean water trust fund. These products include beverages, fertilizers and pesticides, flushable products, pharmaceuticals, and water appliances and plumbing fixtures. While past proposals for funding a clean water trust fund have identified these products as contributing to the wastewater stream, limited research has been done on their specific impact on wastewater infrastructure,

according to EPA.²⁰ See table 1 for a description of these product groups and how these products may contribute to the wastewater stream.

Table 1: Product Groups that May Contribute to the Wastewater Stream

Product group	Description
Beverages	Products include soft drinks, bottled water, ice, beer, wine, and liquor. After consumption, beverages as well as their containers can end up in the wastewater stream.
Fertilizers and pesticides	Products include substances used to fertilize soil or control plant or animal pests. Fertilizers and pesticides can contribute to nonpoint source pollution—pollution that comes from diffuse sources when rain or snowmelt washes pollutants off the ground. For example, fertilizers can introduce large amounts of nutrients such as nitrogen and phosphorous into water bodies, leading to excessive growth of algae, which in turn blocks out sunlight and decreases dissolved oxygen in water, a necessity for plants and other aquatic life. Pesticides can introduce harmful chemicals into water bodies as well. In 2009, EPA reported that agriculture was a leading source of water impairments in a sample of the nation's rivers, streams, lakes, ponds, and reservoirs. ^a
Flushable products	Products include soaps and detergents; cooking oils; and shampoos, lotions, and perfumes. Some of these products can introduce pollutants into the wastewater stream. For example, some dishwashing detergents contain phosphorous, a nutrient that in excessive quantities can lead to excessive growth of algae in surface waters. In addition, a 2002 study by United States Geological Survey (USGS) detected household chemicals found in detergents, soaps, and cosmetics in streams that received discharge from wastewater treatment plants. ^b Cooking oils also can cause pipe blockages.
Pharmaceuticals	Products include over-the-counter and prescription drugs. When consumed, pharmaceuticals are not entirely absorbed by the body and can be excreted into wastewater. In addition, some pharmaceuticals are flushed down the toilet for disposal. According to EPA, studies have shown that pharmaceuticals are currently present in our water bodies, and some may cause ecological harm. For example, a 2002 study by USGS detected chemicals, including pharmaceuticals, in streams that receive discharge from wastewater treatment plants. ^b Currently, wastewater systems are not equipped to remove pharmaceuticals, and additional research is needed to better understand the impact of pharmaceuticals on wastewater and the environment.
Water appliances and plumbing fixtures	Products include dishwashers, washing machines, and other plumbing fixtures. These products typically introduce wastewater into the system. The volume of wastewater that a utility must treat impacts the capacity of the wastewater plant needed.

Source: GAO summary of EPA and USGS reports along with interviews with stakeholders.

^aEPA, *National Water Quality Inventory: Report to Congress 2004 Reporting Cycle* (Washington, D.C., January 2009).

²⁰A 1996 study by EPA provided information on using some of these products to provide funding for wastewater infrastructure. It noted that “Currently, little empirical data exist by which to document the volume and toxicity of most potential fee targets. This limitation, which research might address over time, results in a significant selection bias when products are selected for their link to water pollution.” EPA, *Alternative Funding Study: Water Quality Fees and Debt Financing Issues* (June 1996).

^bUSGS, Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in US Streams, USGS Fact Sheet FS-027-02, June 2002.

The tax base for each group of products in 2006—the value of products manufactured domestically as well as those imported, but excluding exports—varied from about \$26 billion for water appliances and plumbing fixtures to about \$156 billion for pharmaceuticals, after adjusting these tax bases to 2009 dollars. In addition, raising \$10 billion from a tax on any individual product group would require tax rates varying from a low of 6.4 percent for pharmaceuticals to a high of 39.2 percent for water appliances and fixtures.²¹ Alternatively, a lower tax rate could be levied on a number of these product groups that would collectively generate about \$10 billion. Table 2 shows the tax bases for the product groups along with the revenue that could be generated from a range of tax rates. Appendix IV presents additional information on the tax bases for these funding options.

Table 2: Tax Bases for Product Groups and Estimated Revenue from Range of Excise Tax Rates, in Constant 2009 Dollars

Dollars in millions

Product groups	Tax base	1% tax	3% tax	5% tax	10% tax	Tax rate to generate
						\$10 billion
Beverages	\$95,551	\$956	\$2,867	\$4,778	\$9,555	10.5%
Fertilizers and pesticides	26,088	261	783	1,304	2,609	38.3%
Flushable products	63,241	632	1,897	3,162	6,324	15.8%
Pharmaceuticals	156,069	1,561	4,682	7,803	15,607	6.4%
Water appliances and plumbing fixtures	25,517	255	766	1,276	2,552	39.2%

Source: GAO analysis of Census data from the 2006 Annual Survey of Manufactures and Foreign Trade Division.

Alternatively, a per unit excise tax could be levied on these products. For example, according to the Container Recycling Institute, there were about 215 billion bottled and canned beverages sold in 2006.²² Levying a 1 cent tax on these bottles and cans could yield about \$2.2 billion, and raising \$10 billion would require a tax of about 5 cents.

²¹If any of the products in these product groups were excluded or exempted from an excise tax, the tax base would decline and higher tax rates would be needed to raise similar amounts of money. For example, if the excise tax on beverages did not include alcoholic beverages, the tax base for this product group would decline by over 50 percent to about \$44 billion, and the tax rate required to raise \$10 billion would increase to about 25 percent.

²²Container Recycling Institute, *Wasting and Recycling Trends: Conclusions from CRI's 2008 Beverage Market Data Analysis* (Glastonbury, Conn., December 2008).

Additional Tax on Corporate Income

Another option that could be used to fund a clean water trust fund is to levy an additional tax on the incomes of corporations. This tax would be similar to the Corporate Environmental Income Tax (CEIT) that helped fund the Superfund program until 1995.²³ Increasing the current corporate income tax by levying an additional 0.1 percent on the \$1.4 trillion in corporate taxable income reported in 2006, after adjusting for inflation, could raise about \$1.4 billion annually. Higher tax rates would need to be levied to generate a larger amount of revenue. For example, a 0.5 percent tax could raise \$6.9 billion and to raise \$10 billion from this option, an additional tax of about 0.7 percent would need to be levied. However, this level of taxation would exceed the 0.12 percent CEIT that was in place under Superfund when it expired in December 1995.

Water Use Tax

Another option to fund a clean water trust fund is a tax on water usage. A tax on water use could involve a volume-based charge or a flat charge added to local residential, commercial, and industrial water utility rates paid by water customers. For a volume-based charge, levying a tax of 0.01 cent per gallon on the 13.4 trillion gallons of water that were delivered to domestic, commercial, and industrial users from public supplies in 2000 could raise \$1.3 billion annually, while a tax of about 0.1 cent per gallon could raise about \$13 billion annually.²⁴ Alternatively, a flat charge could be added to household wastewater bills, similar to Maryland, which charges households \$30 annually to help fund wastewater infrastructure in the state.²⁵ At a national level, imposing a flat charge of \$30 annually on the approximately 86 million households that receive wastewater service from wastewater utilities could raise about \$2.6 billion annually. Raising \$10 billion from a flat charge on households would require a charge of about \$116 per year per household.²⁶ Based on EPA estimates from 2003,

²³The Superfund program, which Congress established in 1980 to address the threats that hazardous waste sites pose to human health and the environment, was funded partly by an environmental tax on corporations that was imposed in 1986 and expired in 1995. The proceeds of this tax went to the Hazardous Substance Superfund Trust Fund and it was the fund's largest single source of revenue. The tax raised \$612 million in fiscal year 1995.

²⁴USGS Circular 1268, *Estimated Use of Water in the United States in 2000* (Reston, Va., 2004) and USGS Circular 1200, *Estimated Use of Water in the United States in 1995* (Denver, Colo., 1998).

²⁵This \$30 charge, known as the Bay Restoration fee, helps to provide funding to upgrade wastewater treatment plants and septic systems in Maryland. In addition to households, commercial and industrial customers also are charged this fee.

²⁶A flat charge also could be applied to industrial and commercial users, but data are not available on the number of these system users.

American households paid about \$474 annually for water and wastewater services; therefore, imposing an annual charge of \$116 on households would represent an approximately 25 percent increase in customers' water and wastewater bills.

Industrial Discharge Tax

A final option that we identified that could raise revenue to fund a clean water trust fund is an industrial discharge tax. A tax on industrial discharge could potentially be levied in two ways. The first would be to levy a fee on National Pollutant Discharge Elimination System (NPDES) permits. These permits, required under the Clean Water Act, allow a point source to discharge specified pollutants into federally regulated waters. A second approach would be to levy a tax on toxic chemical releases to water reported by industrial facilities to the Toxics Release Inventory (TRI), which contains data on the quantities of toxic discharges to air, water, or land for 581 chemicals and 30 chemical categories.²⁷ However, it is unclear what level of taxation could be levied to generate \$10 billion from either of these approaches because of data limitations. Specifically, EPA lacks complete and reliable data on the number of NPDES permits issued nationwide. Similarly, EPA does not have complete data on all of the toxic releases because TRI data are based on self-reporting by facilities that release chemicals above certain thresholds. In addition, these reports can be based on estimates of their toxic releases instead of actual measurements.²⁸

Each Funding Option Poses Certain Implementation Challenges

Implementing any of the funding options discussed above poses a variety of challenges, including defining the products or activities to be taxed and establishing a collection and enforcement framework, according to interviews we had with agency officials and other stakeholders.

Excise Taxes on Products That May Contribute to the Wastewater Stream

According to Internal Revenue Service (IRS) officials, implementing excise taxes on products requires the agency to develop clear and precise definitions of the products to be taxed, as authorized by Congress. These

²⁷Under the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, certain facilities must submit an annual report to EPA for each TRI chemical that they manufacture, process, or otherwise use in excess of certain thresholds. Pub. L. No. 99-499, § 313, 100 Stat. 1728, 1741.

²⁸In order to provide the information EPCRA requires, the owner or operator of a facility may use readily available data (including monitoring data) collected pursuant to other provisions of law, or, where such data are not readily available, reasonable estimates of the amounts involved.

definitions determine whether taxpayers are required to pay excise taxes and how much tax they owe. In implementing excise taxes in the past, the IRS has developed these definitions after receiving comments from relevant industries. As part of this process, a decision also would need to be made regarding whether the tax would be levied on a per unit basis or a percentage of sales basis. Of the \$71.3 billion that the federal government collected from federal excise taxes in 2007, many items are taxed on a per unit basis—a gallon of gasoline, for example—but some items are taxed on a percentage of sales—such as an airline ticket, which is taxed at 7.5 percent of the ticket price. The larger the number of taxable products covered by an excise tax, the greater the challenge of defining these products, according to IRS officials. In addition, any exemptions to the excise tax would also need to be defined. According to IRS officials, a large number of exemptions could present additional implementation challenges because the agency would have to process applications from taxpayers seeking refunds for taxes paid on exempted products. IRS officials told us that the administrative costs associated with designing and implementing any new excise taxes could be substantial and this process could take more than a year to complete.

In addition, once the taxable product(s) have been defined, IRS also would need to modify its excise tax collection and enforcement framework. Implementing new excise taxes would require the IRS to update the forms currently used to submit excise taxes and its computer systems to document these receipts, as well as training agency staff on administering the new excise taxes. Moreover, implementing new taxes would increase the auditing and enforcement responsibility of the IRS. In addition, to increase compliance the IRS conducts outreach to those who would be required to pay these excise taxes. All of these activities—making changes to forms and computer systems, training staff, and conducting outreach—would need to occur well in advance of the start of the tax filing season to eliminate possible confusion and could increase the agency's administrative costs, according to IRS officials. In addition, the challenge in collecting and enforcing excise taxes can be impacted by the point at which the tax is collected and the number of taxpayers. According to IRS officials, collecting and enforcing an excise tax at the manufacturing level is preferable because it involves fewer taxpayers than a tax that is levied at the retail level.

Additional Tax on Corporate Income

According to IRS officials, implementing an additional tax on corporate income would require defining the types of corporations and the portions of their income that would be subject to this tax. For example, under Superfund, the CEIT was levied only on corporations that had income in

excess of \$2 million.²⁹ In addition, while the current collection system for corporate income taxes could be used to collect this additional tax, this change would need to be communicated to both corporate taxpayers and IRS tax examiners to promote compliance.

Water Use Tax

Implementing a tax on water use also would pose challenges such as developing a collection system, deciding how to structure the tax, and determining the tax base or which users to tax. Collecting this tax could be difficult, because according to water and wastewater officials we spoke with, it would most likely involve relying on some of the billing systems in place for the nation's existing 50,000 community water systems and over 16,000 publicly owned wastewater plants along with other local government entities.³⁰ However, all of these water and wastewater suppliers do not uniformly bill their customers based on the volume of water use. Instead, some charge a flat fee or have other types of rate structures. Some stakeholders said that a flat charge on households would be easier to administer, but that a volume-based charge on water use would be more equitable. In addition, decisions would need to be made regarding which users of the system—households, commercial, and industrial—would be subject to the tax.

Industrial Discharge Tax

Implementing an industrial discharge tax also could be difficult because there is no federal system currently in place to charge and collect such a tax. As a result, key steps, including defining the tax base—whether to tax discharge permits or actual discharge—determining a tax rate, and developing a collection and enforcement framework, would need to be completed before such a tax could be implemented. These efforts would likely be complicated by a lack of complete and accurate data on the number of permit holders and quantity of industrial discharge. Implementing such a tax would include the following specific challenges:

- *Permit-based tax.* Determining which of the two types of NPDES permits—individual or general—would be taxed and setting a tax rate

²⁹In particular, the CEIT was levied on corporations' modified alternative minimum taxable income over \$2 million.

³⁰Also, to the extent that collection of such a tax on behalf of the federal government constitutes local government administration of a federal regulatory program, there may be constitutional issues associated with this option. We express no view as to how these issues may best be avoided.

could be difficult.³¹ Individual permits are typically issued for single facilities, such as wastewater treatment plants, while a single general permit can cover multiple facilities that are engaged in similar types of activities and located in a specific geographic area, such as construction sites. According to EPA officials, the types of effluent and levels of discharge covered by these two types of permits can vary significantly and charging a flat tax to all permit holders may not be equitable. In addition, because EPA currently does not collect any taxes or fees on NPDES permits, the agency would have to develop a basis for establishing a tax rate and put in place a collection and enforcement framework before a permit-based tax could be implemented.

- *Discharge-based tax.* Currently, EPA does not collect any taxes on industrial discharges, and to implement such a tax would require EPA to put in place a collection and enforcement framework. Developing such a framework could be difficult because EPA does not have complete data on the industrial discharges that are occurring or on the environmental and human health hazards posed by such discharges. For example, while the TRI has information on approximately 265 chemicals that are discharged to water, these data are based on annual reports submitted by industrial facilities. Moreover, EPA has limited national data on the discharge of conventional pollutants to water because many facilities that discharge these pollutants are not required to report this information to EPA.³² In addition, determining a basis for a tax rate could be difficult because of the potentially large number of chemicals and their varying characteristics. While EPA has developed toxic weighting factors that provide a relative measure of the toxicity for most of the TRI chemicals, EPA officials told us that there are inherent scientific difficulties in using existing toxicity weighting systems to compare toxicity among chemicals. Specifically, they told us that these systems may not adequately distinguish between cancer and non-cancer hazards and considering all such hazards together can be misleading. In addition, EPA has not developed toxic weighting factors for all chemicals in the TRI. EPA officials pointed out that these weighting factors were not developed for taxation purposes, and they expressed concern that using the TRI for this purpose could potentially discourage industries from reporting their full discharges to the TRI. Such

³¹NPDES permits generally allow a point source to discharge specified pollutants into federal regulated water under specific limits and conditions. These permits are issued by EPA or a state agency authorized to implement the NPDES program. Currently, 46 states are authorized to administer the NPDES program.

³²The five conventional pollutants are biological oxygen demand, pH, oils and greases, total suspended solids, and fecal coliform bacteria.

an outcome would be a significant concern given that one of the TRI program's primary goals is to increase the public's access to the best available information on toxic chemical releases in their communities.

Obtaining Stakeholder and Industry Support for Funding Options Could Pose Additional Challenges

Consideration of stakeholders' and industry views is important in developing a new taxation system, because voluntary compliance with any tax is influenced by whether taxpayers view a tax as being transparent, credible, and logical. While a majority of stakeholders supported three of the eight funding options, we identified some stakeholders who had not yet taken a position on these options, making it difficult to gauge their level of support for these options.³³ In addition, industry groups representing most of the product groups that we identified as potential funding options were generally opposed to levying excise taxes on these products. Furthermore, obtaining widespread stakeholder support may be difficult because many stakeholders do not perceive a strong connection between most of these funding options and wastewater infrastructure use.

Excise Taxes on Products That May Contribute to the Wastewater Stream

The proportion of stakeholders supporting excise taxes on the five product groups ranged from over a half to about a third. Specifically, over half of stakeholders responding to our questionnaire supported excise taxes on fertilizers and pesticides and flushable products, and about half supported excise taxes on beverages and pharmaceuticals. In contrast, only about a third of stakeholders supported an excise tax on water appliances and plumbing fixtures. More importantly, we identified some stakeholders who had not yet taken a position on any of the five excise tax options—they neither supported nor opposed these options or did not know or had no opinion on these options—making it unclear what their level of support would be if excise taxes on these product groups were proposed. Specifically, half of stakeholders responding to our questionnaire had not yet taken a position on taxing water appliances and plumbing fixtures, while about a third of stakeholders did not have a position on taxing beverages or pharmaceuticals. Table 3 shows the level of stakeholders' support for excise taxes on each of the five product groups that we identified.

³³We sent out questionnaires to 28 stakeholders and received 22 responses. However, not all stakeholders responded to each question, so the total number of responses can vary for each question.

Table 3: Stakeholder Support for Excise Taxes

(Number of stakeholders)

Product group	Strongly support or support	Neither support nor oppose	Strongly oppose or oppose	Don't know/ no opinion	Included multiple responses	Total responses
Beverages	10	6	2	1	1	20
Fertilizers and pesticides	11	4	3	0	1	19
Flushable products	12	4	2	0	1	19
Pharmaceuticals	9	5	4	1	0	19
Water appliances and plumbing fixtures	7	8	3	2	0	20

Source: GAO analysis of stakeholder responses.

Note: Not all stakeholders responded to each question, so the total number of responses can vary. In addition, 1 stakeholder provided multiple responses.

Obtaining stakeholder support for some of these excise taxes may be difficult because stakeholders did not always see a strong connection between these products and wastewater infrastructure use. For example, about half of stakeholders did not see a strong connection between pharmaceuticals and water appliances and plumbing fixtures and wastewater infrastructure use. On the other hand, stakeholders saw a strong connection between fertilizers and pesticides and flushable products and wastewater infrastructure use. Taxing these two product groups to fund a clean water trust fund also garnered the greatest level of stakeholder support. Table 4 shows stakeholders' views on the extent of the connection between wastewater infrastructure use and the five product groups.

Table 4: Stakeholder Views on the Extent of the Connection between Wastewater Infrastructure Use and Product Groups

(Number of stakeholders)

Product group	Great extent or very great extent	Moderate extent	Little or no extent	Don't know/ no opinion	Included multiple responses	Total responses
Beverages	8	4	3	2	1	18
Fertilizers and pesticides	12	2	1	2	1	18
Flushable products	12	3	0	2	1	18
Pharmaceuticals	6	7	2	3	0	18
Water appliances and plumbing fixtures	5	7	3	2	1	18

Source: GAO analysis of stakeholder responses.

Note: Not all stakeholders responded to each question, so the total number of responses can vary. In addition, 1 stakeholder provided multiple responses.

In addition, industry groups were consistently opposed to a tax on their specific product groups to support a clean water trust fund. In their view, their products did not contribute significantly to the deterioration of wastewater infrastructure and therefore should not be taxed. Stakeholder and industry reasons for their support or opposition to these excise taxes, along with the views of wastewater utility operators, are summarized in table 5.

Table 5: Stakeholder and Industry Reasons for Support or Opposition to Excise Taxes on Specific Product Groups Along with Views of Utility Operators

Excise Tax	Reasons for stakeholder support ^a	Reasons for stakeholder opposition ^a	Views of utility operators	Reasons for industry opposition ^b
Beverages	<ul style="list-style-type: none"> The process for manufacturing relies heavily on clean water as an input. Production and consumption of beverages generates waste. Purchases are discretionary. 	<ul style="list-style-type: none"> These products do not pose much of a burden to wastewater systems. Unfair to single out one industry for taxation. Producers already pay taxes and other fees for wastewater services. 	<ul style="list-style-type: none"> Bottles can enter the wastewater stream and need to be removed and disposed of. 	<ul style="list-style-type: none"> Amount of water that beverage companies use is small. Companies already pay for the water they consume. Federal excise tax is already levied on alcoholic beverages and there are state and local taxes on beverages. These companies already pay corporate and state income taxes.

Excise Tax	Reasons for stakeholder support ^a	Reasons for stakeholder opposition ^a	Views of utility operators	Reasons for industry opposition ^b
Fertilizers and pesticides	<ul style="list-style-type: none"> These products contribute to nonpoint source pollution. 	<ul style="list-style-type: none"> This would be an unfair tax on a product that does not impact wastewater infrastructure. Unfair to single out one industry for taxation. Producers already pay taxes and other fees for wastewater services. 	<ul style="list-style-type: none"> These are nonpoint source pollutants that affect surface waters and do not necessarily go through wastewater treatment plants. 	<ul style="list-style-type: none"> It was unlikely that fertilizers and pesticides applied on agricultural land would enter a municipality's wastewater infrastructure system and it would not be fair to tax these products in order to fund this infrastructure. EPA already charges a fee to register pesticides, and several states charge fees on fertilizers and pesticides.
Flushable products	<ul style="list-style-type: none"> These products contribute to the wastewater burden faced by utility operators and must be removed during the treatment process. 	<ul style="list-style-type: none"> The additional cost of treating these products is trivial during the wastewater treatment process. Producers already pay taxes and other fees for wastewater services. These products include necessities. 	<ul style="list-style-type: none"> Certain products in this group can pose a burden to wastewater treatment plants, while others do not. 	<ul style="list-style-type: none"> While some of these products could enter the wastewater stream, not enough research had been done to determine the impact these products have had on wastewater infrastructure. Levying a similar tax on all of these products would not be fair.
Pharmaceuticals	<ul style="list-style-type: none"> Impact the quality of the nation's waters. Investment was already being made in drinking water infrastructure to help remove these contaminants and similar investment may be needed in wastewater infrastructure in the future. 	<ul style="list-style-type: none"> Pharmaceuticals are an essential product that is already expensive for consumers. Unfair to single out one industry for taxation. Producers already pay taxes and other fees for wastewater services. 	<ul style="list-style-type: none"> Removal of pharmaceuticals during wastewater treatment is not currently required and if a tax were levied on pharmaceuticals to fund wastewater infrastructure, the public could expect that pharmaceuticals would be removed by wastewater treatment plants. 	<ul style="list-style-type: none"> Could increase cost for consumers. Federal fees are in place for the registration of some prescription drugs, and state sales taxes are in place for over-the-counter pharmaceuticals. A tax focused on one industry is not broad based.

Excise Tax	Reasons for stakeholder support ^a	Reasons for stakeholder opposition ^a	Views of utility operators	Reasons for industry opposition ^b
Water appliances and plumbing fixtures	<ul style="list-style-type: none"> These appliances and fixtures can introduce flushable products into the wastewater stream. 	<ul style="list-style-type: none"> Unfair to single out one industry for taxation. Producers already pay taxes and other fees for wastewater services. 	<ul style="list-style-type: none"> Food scraps have to be removed during the wastewater treatment process which is generally introduced into the waste stream by dishwashers and garbage disposals. Higher efficiency appliances can release stronger effluents which require additional treatment. 	<ul style="list-style-type: none"> Would be a disincentive for consumers to buy newer, more efficient appliances that conserved water and helped to lower the burden on wastewater infrastructure.

Source: GAO analysis of stakeholder views.

^aThe views presented in these columns are from stakeholders that responded to our questionnaire. They are national groups that represent wastewater and drinking water industries, state and local governments, engineers, and environmental groups.

^bThe views presented in this column are from industry groups we interviewed that represented the manufacturers of some of the products that were identified as potential funding options.

Additional Tax on Corporate Income

About a third of stakeholders responding to our questionnaire (6 of 19) opposed or strongly opposed this option. Another 7 stakeholders had not taken a position on this funding option, making it unclear what their level of support would be. Furthermore, of the eight funding options, stakeholders saw the least connection between this funding option and wastewater infrastructure use, with nearly two-thirds of stakeholders (11 of 18) responding that there was little or no connection. In fact, stakeholders' inability to see the connection was one of the reasons they cited for their opposition to this funding option. Other reasons that stakeholders provided for opposing this option were the current economic crisis and that corporations already pay taxes and fees to local systems for wastewater treatment services. Among the reasons that stakeholders gave for supporting this option were that the nation, and all industrial sectors, benefit from clean water, and this tax would be spread across a number of different polluting industries.

Water Use Tax

Stakeholder opposition to this funding option was the strongest of the eight funding options we identified. Over half of stakeholders (11 of 21) that responded to our questionnaire opposed a water use tax to fund a clean water trust fund. Some of these opponents said that such a tax would infringe on the ability of local utilities to raise rates for their own

needs. Drinking water industry officials said that many communities have adopted comprehensive asset management plans and raised their water rates to pay for infrastructure needs, and it would be unfair to tax all communities and then distribute money to those communities that have not managed their systems well. In addition, stakeholders we interviewed said that redistribution of tax revenue would be a concern with this option if communities contributed more to the trust fund than they received back in funding.³⁴ They also told us that a water use tax could disproportionately affect low-income households because these households pay a larger portion of their income for their water bills. On the other hand, 5 stakeholders supported this funding option and some said that rates are still relatively low in many parts of the country and local ratepayers should pay for the costs of the infrastructure they use.

Industrial Discharge Tax

Over a third of stakeholders (7 of 19) supported or strongly supported an industrial discharge tax, while another 7 stakeholders neither supported nor opposed this option. The most common reasons that stakeholders gave for supporting this option was that industries should pay for the pollution they discharge. Among the reasons that stakeholders provided for opposing this option was that industrial facilities already pay for wastewater services.

Agency Comments

We provided a draft of this report to EPA and IRS for review and comment. Neither agency provided written comments to us. EPA provided technical comments, which we have incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the Administrator of EPA, the Commissioner of IRS, and interested congressional committees. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>.

³⁴Under the Highway Trust Fund, the users of highways from some states contribute more to the fund than they receive in return, also known as "donor states." Meanwhile, "donee states" are those that receive more from the trust fund than they contribute. See Congressional Research Service, *Federal-Aid Highway Program: "Donor-Donee" State Issues* (Washington, D.C., June 10, 2005).

If you or your staffs have any questions regarding this report, please contact me at (202) 512-3841 or mittala@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix V.



Anu Mittal
Director,
Natural Resources and Environment

Appendix I: Scope and Methodology

To determine stakeholders' views on the issues that need to be addressed in designing and establishing a clean water trust fund, we reviewed past legislative proposals and wastewater industry position papers on establishing a clean water trust fund. In addition, we interviewed over 50 different stakeholders with knowledge of a variety of wastewater infrastructure issues, including individuals and groups from the wastewater industry; industry associations; and federal, state, and local government; and obtained their views on establishing and designing a clean water trust fund. During this process, we identified other relevant stakeholders to speak to by asking interviewees to identify other knowledgeable stakeholders in this area that we should contact, a process known as the "snowball" approach.

Based on the information obtained through these interviews and our review of reports, we developed and sent a questionnaire to 28 national organizations with expertise in one or more of the following areas: financing of wastewater projects, constructing and maintaining wastewater infrastructure, local and state wastewater infrastructure needs, and environmental protection. Prior to sending out this questionnaire, we pretested the questionnaire with stakeholders and made changes based on their input. This questionnaire asked for their views on how a clean water trust fund should be administered, the types of activities it should fund, and how funding should be distributed. We received responses from 22 of these stakeholders. Of the 6 stakeholders that did not respond, 4 of these told us they could not come to a consensus on behalf of their organization. For a list of the groups that responded to the questionnaire, see appendix III. We also reviewed information on the Clean Water State Revolving Fund (CWSRF) program and interviewed federal and state officials responsible for implementing this program to gain an understanding for how this program might interact with a clean water trust fund.

We also visited three states—Arizona, Maryland, and Wisconsin—and the District of Columbia where we interviewed state and local officials about their wastewater infrastructure needs and how a clean water trust fund could be designed to meet these needs. We selected these states because they were geographically dispersed, had different wastewater infrastructure needs, and used various approaches to finance wastewater projects. On these visits, we toured wastewater facilities in large and small cities and spoke with local and state officials about how they were financing wastewater projects.

To identify and describe potential options for funding a clean water trust fund that could generate \$10 billion annually, we reviewed past legislative proposals and position papers from wastewater industry groups that discussed specific funding options for such a fund. We also reviewed reports on how existing federal trust funds that support environmental and infrastructure projects are funded and conducted Internet searches to identify funding options that some states were using to finance wastewater projects. Finally, we interviewed stakeholders with knowledge of wastewater infrastructure issues, including those from the wastewater industry and federal, state, and local government to identify other options that could be used to generate revenue for a clean water trust fund.

To estimate the revenue that these options could potentially generate, we used the most recent government data available to estimate the value of products or activities that could be subject to a federal tax—the tax base—and applied a range of tax rates to these bases, which were based on current or past taxation policies.

- For the five excise taxes we identified, we used the U.S. Census Bureau (Census) data from the 2006 Annual Survey of Manufactures, which provides data on the value of products manufactured domestically by different industrial codes, known as North American Industry Classification System (NAICS) codes.¹ We identified specific NAICS codes for the five groups of products that could be subject to an excise tax. For three of our excise taxes—beverages, fertilizers and pesticides, and pharmaceuticals—these products are captured in a discrete set of NAICS codes according to Census officials. For the two other product groups—flushable products, and water appliances and plumbing fixtures—we examined prior reports to examine how these products were defined, analyzed these NAICS codes along with their descriptions, and worked with Census officials to ensure our list of NAICS codes was reasonable. To this value of products produced domestically, we added the value of products imported and subtracted the value of products that were exported to determine the tax base for these product groups.² We made

¹NAICS was developed as the standard for use by federal statistical agencies in classifying business establishments for the collection, analysis, and publication of statistical data related to the business economy of the United States. NAICS was developed under the auspices of the Office of Management and Budget and adopted in 1997 to replace the Standard Industrial Classification system.

²The value of products that were imported or exported came from the Foreign Trade Division of Census.

this calculation because according to Internal Revenue Service (IRS) officials, federal excise taxes are generally levied on imports but not on exports. We then converted the values of these tax bases to 2009 constant dollars. Certain limitations exist with regard to our use of these data to estimate potential revenue from the funding options. Specifically, our use of NAICS codes for these groups of products may include a wider range of products than would be part of actual excise taxes on these products. In addition, due to data limitations, there are certain products that are not captured in our tax bases. For example, toilet paper is not included in our tax base for flushable products because this product is grouped under a NAICS code with other sanitary paper products that most likely would not impact wastewater infrastructure, such as disposable diapers. To determine the reliability of these data, we reviewed documentation from Census, interviewed relevant officials, and conducted some basic logic testing of the data, and we determined the data were sufficiently reliable for our purposes. For our estimate of a per container charge on bottled and canned beverages, we used Container Recycling Institute data on the number of packaged beverages sold in the United States in 2006.³ To determine the reliability of these data, we spoke with officials familiar with these data and reviewed relevant documentation on the data. We determined the data were sufficiently reliable for our purposes.

- For our estimate of the corporate income tax, we used data from the IRS 2006 Statistics of Income and identified the value of taxable income that corporations had in this year. The amount of income subject to tax at the corporate level includes taxable income less certain deductions such as a corporation's net operating loss or other special deductions. To determine the reliability of these data, we reviewed documentation from IRS and interviewed relevant officials. We determined the data were sufficiently reliable for our purposes.
- For our estimate of the water use tax, we used 1995 and 2000 data from the United States Geological Survey (USGS) on estimates of water delivered by public and private suppliers to domestic, commercial, and industrial users.⁴ After consulting with USGS officials, we estimated the use for residential, commercial, and industrial uses for 2000 based on information available in 1995. Specifically, we used the 2000 estimate for

³Container Recycling Institute, *Wasting and Recycling Trends: Conclusions from CRI's 2008 Beverage Market Data Analysis* (Glastonbury, Conn., 2008).

⁴These data are available in USGS Circular 1268, *Estimated Use of Water in the United States in 2000* (Reston, Va., 2004) and USGS Circular 1200, *Estimated Use of Water in the United States in 1995* (Denver, Colo., 1998).

total public supply water deliveries and the 1995 estimate of the proportion of total water deliveries to domestic, commercial, and industrial users in 1995 because the 2000 USGS report included information on total water deliveries but did not include information on types of users.⁵ To determine the reliability of these data, we interviewed USGS officials and reviewed relevant documentation on the data. We determined the data were sufficiently reliable for our purposes. For our estimate of a flat charge on household wastewater bills, we used Environmental Protection Agency (EPA) data on the population served by publicly owned treatment works to estimate the number of households that receive wastewater services.⁶ To determine the reliability of these data, we spoke with EPA officials and reviewed relevant documentation on the data. We determined the data were sufficiently reliable for our purposes.

- For our estimate of an industrial discharge tax, we examined data from the National Pollutant Discharge Elimination System (NPDES) permit system and the 2006 Toxics Release Inventory (TRI). For the NPDES permit system, we determined there were not reliable national data on the total number of NPDES permits issued. For the TRI, we determined that these data were based on self-reported information from only certain facilities that discharged above a certain level. Moreover, these reports can be based on estimates rather than actual measurements. The TRI also does not contain data on discharges of conventional pollutants. Due to these data limitations, we determined that these data were not sufficiently reliable to make an estimate of the revenue that could be generated from a tax on industrial discharge.

After identifying the taxable bases for these different funding options, we applied various tax rates to these bases based in part on existing or past taxation policies. Our review of existing federal excise taxes found that most excise taxes levied as a percentage of sales range from 3 percent to 12 percent so we applied the rates of 1 percent, 3 percent, 5 percent, and 10 percent to our tax bases. For the tax on corporate income, we used 0.1 percent because a 0.12 percent on corporate income had been used to fund Superfund. For the water use tax, we used existing and proposed water taxes as the basis for the tax rates we applied. For all of the funding

⁵We excluded estimates for water delivered for thermoelectric power and public uses or losses because these uses typically do not impact the wastewater stream and generally public use water is not billed by the public supplier.

⁶These data are available in EPA's *Clean Watersheds Needs Survey 2004* (January 2008).

options, we also calculated the tax rate that would be needed to generate \$10 billion annually.

The revenue estimates presented in our report are not official revenue estimates as would be prepared by the Joint Committee on Taxation, and they are subject to various limitations. For example, we did not model consumer or market responses to these funding options, the potential extent of noncompliance, or estimate the cost of implementing and enforcing these options. As a result, our revenue estimates may be higher than actual receipts that would be generated from these funding options. Ultimately, the amount of revenue that any of these options would generate would depend heavily on the number of products that would be taxed, the tax rate used, and the compliance with the tax.

To identify the challenges associated with implementing these different funding options, we interviewed federal and state officials who might be involved in collecting and enforcing these taxes. At the federal level, we spoke with IRS officials who collect and enforce excise taxes and corporate income taxes. For the water use tax, we also spoke with representatives of wastewater and drinking water utilities to learn about how they collect fees from the users of their systems and how a federal tax on water might make use of these systems. We also spoke with officials who were involved in taxing some of these products already. At the federal level, we spoke with officials in the Alcohol and Tobacco Tax Trade Bureau regarding the federal excise tax on alcoholic beverages, and we also spoke with EPA officials about the fees the agency levies on pesticides. On our state visits, we spoke with officials who had experience with implementing some of these funding options as well.

To identify stakeholders' views of these funding options, we examined position papers that discussed these funding options. We also used our questionnaire to gauge stakeholder support for these options and to learn about their views on the connection between these options and wastewater infrastructure use. In addition, we spoke with industry groups that represented some of the products that could be targeted by excise taxes for their views. In particular, we spoke with groups representing many of the manufacturers in the following industries: beverages, fertilizers and pesticides, flushable products, pharmaceuticals, and water appliances and plumbing fixtures.

We conducted our work from June 2008 to May 2009 in accordance with all sections of GAO's quality assurance framework that are relevant to our objectives. The framework requires that we plan and perform the

engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions.

Appendix II: Summary of Stakeholder Responses to Questionnaire

This appendix provides information on stakeholders' responses to our questionnaire about their views on the issues that need to be addressed in designing and establishing a trust fund as well as their views on the potential funding options that could be used for this fund. A list of stakeholders that responded to the questionnaire is presented in Appendix III.

Table 6: Stakeholder Views on Administration

Which entity or entities should administer a clean water trust fund?	Number of Stakeholders
EPA only	0
EPA partnership with the states (like the current CWSRF)	15
Independent, non-governmental board of trustees	0
Other	4
Don't know/no opinion	1
Total responses	20
No response	2

Source: GAO analysis of stakeholder responses.

Table 7: Stakeholder Views on Use of a Trust Fund

In your opinion, how, if at all, should a clean water trust fund be used?	Number of Stakeholders
A trust fund should be used only to fund the existing CWSRF.	7
A trust fund should not be used to fund the existing CWSRF but rather a separate and distinct program to support wastewater infrastructure.	3
A trust fund should be used partially to fund the existing CWSRF along with a separate and distinct program to support wastewater infrastructure.	5
A trust fund should not be created for the purpose of funding wastewater infrastructure.	3
Other	2
Don't know/no opinion	0
Total responses	20
No response	2

Source: GAO analysis of stakeholder responses.

Table 8: Stakeholder Views on Funding Distribution

How should funding from a clean water trust fund be distributed to support wastewater projects?	Number of Stakeholders
Loans only (like the current CWSRF)	3
Grants only	2
Combination of loans and grants	13
Other	3
Don't know/no opinion	0
Total responses	21
No response	1

Source: GAO analysis of stakeholder responses.

Table 9: Stakeholder Views on What Activities Should be Eligible for Funds

In your opinion, what wastewater infrastructure activities should be eligible for funding from a clean water trust fund?			Don't know/ no opinion	Indicated both Yes and No	Total responses	No response
	Yes	No				
Routine operations and maintenance	2	17	1	1	21	1
Planning and design of wastewater projects	18	2	0	1	21	1
Ratepayer assistance to low-income households	10	9	1	0	20	2
Capital costs	19	1	0	1	21	1

Source: GAO analysis of stakeholder responses.

Table 10: Stakeholder Views on Eligible Capital Costs

If, in your opinion, capital costs should be eligible for funding from a clean water trust fund, which of the following activities should be included as capital costs?	Number of Stakeholders
Replacement or rehabilitation of wastewater collection systems or treatment facilities (beyond normal maintenance)	20
Expansion of wastewater collection systems or treatment facilities for existing needs	18
Expansion of wastewater collection systems or treatment facilities for population growth	10
Construction of new wastewater treatment facilities	17
Secondary wastewater treatment	17
Advanced wastewater treatment	18
Combined sewer overflow correction or elimination	19
Infiltration/inflow correction	18
Other	8
Don't know/no opinion	0

Source: GAO analysis of stakeholder responses.

Table 11: Stakeholder Views on Eligibility for Funds

What factors should be considered in determining what entities should be eligible for receiving funding from a clean water trust fund?	Number of Stakeholders
Wastewater infrastructure needs	15
Priority of environmental problem to be addressed	12
Priority of waters or watersheds involved	11
Population	4
Median household income	9
Other (please specify).	9
Don't know/no opinion	0

Source: GAO analysis of stakeholder responses.

Appendix II: Summary of Stakeholder Responses to Questionnaire

Table 12: Stakeholder Support for Funding Options

Do you support or oppose the following funding options?	Strongly support	Support	Neither support nor oppose	Oppose	Strongly oppose	Don't know/no opinion	Included multiple responses	Total responses	No response
Beverages (beverages manufactured for consumption including soft drinks, bottled water, ice, beer, wine, and liquor but excluding fruit and vegetable juices and concentrates)	8	2	6	0	2	1	1	20	2
Fertilizers and pesticides	7	4	4	1	1	0	1	18	4
Flushable products (including products introduced directly into wastewater, such as soaps, detergents, toilet paper, and cooking oils)	7	5	4	0	2	0	1	19	3
Pharmaceuticals	3	6	5	2	2	1	0	19	3
Water appliances and plumbing fixtures (including fixtures and appliances that introduce flow into the wastewater system, such as washing machines, dishwashers, and showerheads)	2	5	8	0	3	2	0	20	2
Additional tax on corporate income (tax on the incomes of corporations in addition to any existing corporate income tax)	4	1	7	3	3	1	0	19	3
Water use tax (water consumption by local utility users)	3	2	3	4	7	1	1	21	1
Industrial discharge tax (tax on industrial pollutants released into water and/or fee on permits allowing these releases)	4	3	7	1	2	1	1	19	3

Source: GAO analysis of stakeholder responses.

Appendix II: Summary of Stakeholder Responses to Questionnaire

Table 13: Stakeholder Views on Funding Options

In considering funding options for a clean water trust fund, to what extent is there a connection between wastewater infrastructure use and the following products or activities?	Little or no extent	Moderate extent	Great extent	Very great extent	Don't know/no opinion	Included multiple responses	Total responses	No response
Beverages (beverages manufactured for consumption including soft drinks, bottled water, ice, beer, wine, and liquor but excluding fruit and vegetable juices and concentrates)	3	4	3	5	2	1	18	4
Fertilizers and pesticides	1	2	5	7	2	1	18	4
Flushable products (including products introduced directly into wastewater, such as soaps, detergents, toilet paper, and cooking oils)	0	3	4	8	2	1	18	4
Pharmaceuticals	2	7	2	4	3	0	18	4
Water appliances and fixtures (including fixtures and appliances that introduce flow into the wastewater system, such as washing machines, dishwashers, and showerheads)	3	7	3	2	2	1	18	4
Additional tax on corporate income (tax on the incomes of corporations in addition to any existing corporate income tax)	11	0	2	2	3	0	18	4
Water use tax (water consumption by local utility users)	1	6	1	4	2	1	15	7
Industrial discharge tax (tax on industrial pollutants released into water and/or fee on permits allowing these releases)	3	2	6	5	2	0	18	4

Source: GAO analysis of stakeholder responses.

Appendix III: Stakeholders Responding to Questionnaire on a National Clean Water Trust Fund

The following stakeholders responded to our questionnaire regarding the issues that need to be addressed in designing and establishing a national clean water trust fund as well as potential funding options that could be used for this fund.

American Council of Engineering Companies
American Public Works Association
American Rivers
American Society of Civil Engineers
American Water Works Association
Associated General Contractors of America
Association of Metropolitan Water Agencies
Clean Water Action
Clean Water Construction Coalition
Council of Infrastructure Financing Authorities
Environmental Financial Advisory Board
Food & Water Watch
National Association of Clean Water Agencies
National Association of Counties
National Association of Water Companies
National Governors Association
National League of Cities
Natural Resources Defense Council
National Rural Water Association
National Utility Contractors Association
Water and Wastewater Equipment Manufacturers Association
Water Environment Federation

Appendix IV: Estimated Tax Bases for Excise Tax Funding Options

To estimate the tax base for products that may contribute to the wastewater stream, we added the value of products manufactured domestically and the value of products imported and subtracted the value of products exported. This appendix provides information on (1) the specific industrial classification codes we used to define product groups, (2) the value of products manufactured from the U.S. Census Bureau's (Census) 2006 Annual Survey of Manufactures, and (3) the value of imports and exports from Census' Foreign Trade Division that we used to develop the tax bases for the five product groups discussed in this report.

Table 14: Estimated Tax Bases for Excise Tax Funding Options

Industry code	Description of U.S. industry	Value of products manufactured ^a (\$1,000)	Value of products imported (\$1,000)	Value of products exported (\$1,000)	Estimated tax base (\$1,000)
Beverages					
312111 — Soft Drink Manufacturing	Establishments primarily engaged in manufacturing soft drinks and artificially carbonated waters.	\$33,390,638	\$1,444,530	\$330,652	\$34,504,516
312112 — Bottled Water Manufacturing	Establishments primarily engaged in purifying and bottling water (including naturally carbonated).	5,726,380	276,634	58,418	5,944,596
312113 — Ice Manufacturing	Establishments primarily engaged in manufacturing ice.	541,298	21,631	43,303	519,626
312120 — Breweries	Establishments primarily engaged in brewing beer, ale, malt liquors, and nonalcoholic beer.	21,490,482	3,595,158	382,596	24,703,044
312130 — Wineries	Establishments primarily engaged in one or more of the following: (1) growing grapes and manufacturing wine and brandies; (2) manufacturing wine and brandies from grapes and other fruits grown elsewhere; and (3) blending wines and brandies.	11,258,241	4,870,764	899,739	15,229,266

**Appendix IV: Estimated Tax Bases for Excise
Tax Funding Options**

Industry code	Description of U.S. industry	Value of products manufactured^a (\$1,000)	Value of products imported (\$1,000)	Value of products exported (\$1,000)	Estimated tax base (\$1,000)
312140 — Distilleries	Establishments primarily engaged in one or more of the following: (1) distilling potable liquors (except brandies); (2) distilling and blending liquors; and (3) blending and mixing liquors and other ingredients.	5,647,946	3,826,417	941,313	8,533,050
Total in 2006 dollars		\$78,054,985	\$14,035,134	\$2,656,021	\$89,434,098
Total in 2009 dollars					\$95,551,292
Fertilizers and Pesticides					
325311 — Nitrogenous Fertilizer Manufacturing	Establishments primarily engaged in one or more of the following: (1) manufacturing nitrogenous fertilizer materials and mixing ingredients into fertilizers; (2) manufacturing fertilizers from sewage or animal waste; and (3) manufacturing nitrogenous materials and mixing them into fertilizers.	4,623,263	4,090,027	3,202,041	5,511,249
325312 — Phosphatic Fertilizer Manufacturing	Establishments primarily engaged in one of the following: (1) manufacturing phosphatic fertilizer materials or (2) manufacturing phosphatic materials and mixing them into fertilizers.	4,923,271	1,581,435	100,860	6,403,846
325320 — Pesticide and Other Agricultural Chemical Manufacturing	Establishments primarily engaged in the formulation and preparation of agricultural and household pest control chemicals (except fertilizers).	13,977,846	632,346	2,107,493	12,502,699

**Appendix IV: Estimated Tax Bases for Excise
Tax Funding Options**

Industry code	Description of U.S. industry	Value of products manufactured^a (\$1,000)	Value of products imported (\$1,000)	Value of products exported (\$1,000)	Estimated tax base (\$1,000)
Total in 2006 dollars		\$23,524,380	\$6,303,808	\$5,410,394	\$24,417,794
Total in 2009 dollars					\$26,087,944
Flushable products					
325611 — Soap and Other Detergent Manufacturing	Establishments primarily engaged in manufacturing and packaging soaps and other detergents, such as laundry detergents, dishwashing detergents, toothpaste gels and tooth powders, and natural glycerin.	19,329,678	1,240,295	2,116,075	18,453,898
325620 — Toilet Preparation Manufacturing	Establishments primarily engaged in preparing, blending, compounding, and packaging toilet preparations, such as perfumes, shaving preparations, hair preparations, face creams, lotions (including sunscreens), and other cosmetic preparations.	32,212,490	4,273,115	5,146,411	31,339,194
311225 — Fats and Oils Refining and Blending	Establishments primarily engaged in one or more of the following: (1) manufacturing shortening and margarine from purchased fats and oils; (2) refining and/or blending vegetable, oilseed, and tree nut oils from purchased oils; and (3) blending purchased animal fats with purchased vegetable fats.	9,622,999	145,283	369,123	9,399,159
Total in 2006 dollars		\$61,165,167	\$5,658,693	\$7,631,610	\$59,192,251
Total in 2009 dollars					\$63,240,936
Pharmaceuticals					

**Appendix IV: Estimated Tax Bases for Excise
Tax Funding Options**

Industry code	Description of U.S. industry	Value of products manufactured^a (\$1,000)	Value of products imported (\$1,000)	Value of products exported (\$1,000)	Estimated tax base (\$1,000)
325412 — Pharmaceutical Preparation Manufacturing	Establishments primarily engaged in manufacturing in-vivo diagnostic substances and pharmaceutical preparations (except biological) intended for internal and external consumption in dose forms, such as ampoules, tablets, capsules, vials, ointments, powders, solutions, and suspensions.	128,015,626	38,054,220	19,992,646	146,077,200
Total in 2006 dollars		\$128,015,626	\$38,054,220	\$19,992,646	\$146,077,200
Total in 2009 dollars					\$156,068,719
Water Appliances and Plumbing Fixtures					
333312 — Commercial Laundry, Drycleaning, and Pressing Machine Manufacturing	Establishments primarily engaged in manufacturing commercial and industrial laundry and drycleaning equipment and pressing machines.	621,459	b	b	621,459
335224 — Household Laundry Equipment Manufacturing	Establishments primarily engaged in manufacturing household-type laundry equipment.	5,087,524	1,708,490	964,516	5,831,498
335228 — Other Major Household Appliance Manufacturing	Establishments primarily engaged in manufacturing electric and nonelectric major household-type appliances (except cooking equipment, refrigerators, upright and chest freezers, and household-type laundry equipment). Illustrative examples of these appliances include dishwashers, garbage disposals, and hot water heaters.	3,944,090	1,379,618	746,113	4,577,595

**Appendix IV: Estimated Tax Bases for Excise
Tax Funding Options**

Industry code	Description of U.S. industry	Value of products manufactured^a (\$1,000)	Value of products imported (\$1,000)	Value of products exported (\$1,000)	Estimated tax base (\$1,000)
327111 — Vitreous China Plumbing Fixture and China and Earthenware Bathroom Accessories Manufacturing	Establishments primarily engaged in manufacturing vitreous china plumbing fixtures and china and earthenware bathroom accessories, such as faucet handles, towel bars, and soap dishes.	728,507	855,586	125,778	1,458,315
332998 — Enameled Iron and Metal Sanitary Ware Manufacturing	Establishments primarily engaged in manufacturing enameled iron and metal sanitary ware.	1,438,325	488,088	91,995	1,834,418
326191 — Plastics Plumbing Fixture Manufacturing	Establishments primarily engaged in manufacturing plastics or fiberglass plumbing fixtures, such as plastic or fiberglass bathtubs, hot tubs, portable toilets, and shower stalls.	4,527,048	158,960	68,068	4,617,940
332913 — Plumbing Fixture Fitting and Trim Manufacturing	Establishments primarily engaged in manufacturing metal and plastics plumbing fixture fittings and trim, such as faucets, flush valves, and shower heads.	3,821,468	1,341,991	221,516	4,941,943
Total in 2006 dollars		\$20,168,421	\$5,932,733	\$2,217,986	\$23,883,168
Total in 2009 dollars					\$25,516,750

Source: GAO analysis of Census data from the 2006 Annual Survey of Manufactures and Foreign Trade Division.

^aThis column represents the "Value of Product Shipments," which Census defines as the value of products produced domestically.

^bImport and export data for NAICS code 333312 are reflected in NAICS code 335224.

Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

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