South Carolina Drycleaning Restoration Trust Fund Program Status Report January 26, 2009





South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Division of Land Revitalization

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Definitions:

South Carolina Drycleaning Restoration Trust Fund Act of 2004
Dichloroethylene
South Carolina Department of Revenue
Direct-Push
Expanded Initial Assessment
Feasibility Study
South Carolina Drycleaning Restoration Trust Fund
Fiscal Year (July 1-June 30)
Perchloroethylene, tetrachloroethylene, or "perc"
parts per billion
South Carolina Department of Health and Environmental Control

1. Introduction

This report is provided to the South Carolina General Assembly as part of the requirement of Article 4 of Title 44, Chapter 56 of the 1976 Code of Laws, Section 44-56-430 Part C. It contains the financial obligations as well as a 5-year budget projection, as required.

In 1995, the South Carolina General Assembly created the South Carolina Drycleaning Restoration Trust Fund (the Fund) to address environmental contamination resulting from drycleaning activities in South Carolina. The South Carolina Department of Health and Environmental Control (SCDHEC) is responsible for administering the Fund. The South Carolina Department of Revenue (DOR) is responsible for drycleaner registration and collection of money into the Fund.

The Fund was formed at the urging of the drycleaning industry to protect drycleaners from the potentially devastating financial responsibility of environmental problems at their facilities. Many of these problems date back many years and have resulted from past operational and disposal practices that did not consider the potential for environmental impacts.

Several hundred drycleaners initially joined the Fund, but not every drycleaner in South Carolina participated. Drycleaners who used petroleum-based solvents were given a one-time opportunity in 1995 to "Opt-Out" of the Fund. These businesses are not required to pay the annual fees or solvent taxes paid by participating drycleaners, but by not participating, they cannot access the Fund if contamination is ever discovered on their property. Over the years, some of these original "Opt-Outs" have since chosen to participate in the Fund, which was allowed for by statute. There are currently 121 sites that have "Opted-Out" of the Fund.

When the Fund was created, it was expected that contamination would be found, but the extent of the problem has proven to be larger than initially anticipated. SCDHEC has identified drycleaning-related groundwater contamination at the majority of the 190 sites either fully or partially assessed to date, and has confirmed that contaminated groundwater from drycleaning operations has impacted public and private water supply systems in several of those cases.

There are several reasons for the presence of solvents in the soil and groundwater around drycleaning facilities. The most commonly used drycleaning solvents, perchloroethylene (PCE, or "perc") and various compounds derived from petroleum (Stoddard solvent), easily pass through many materials, such as the concrete floors common at drycleaning plants. Most of the older drycleaning transfer machines, which require solvent-laden clothes to be moved from the machine to a dryer, were a source of release to the environment. Regulations now require that the floors in drycleaning plants be sealed with epoxy paint or other impermeable surface. Newer dry-to-dry drycleaning machines are designed to both wash and dry clothes in the same machine, thus avoiding drips and spills occurring during the transfer of clothes from the washer to the dryer.

In addition to solvent waste generated from operational procedures, other releases came from waste by-products created by the filtering and distillation processes necessary for the re-use of solvent in the drycleaning plant. These waste by-products contain varying amounts of solvent and are now collected by hazardous waste disposal companies. Before the disposal companies began operating in the late 1980's, the wastes were commonly discarded directly onto the ground, into the sewer system, or into leaky dumpsters. Also, since older drycleaning machines vent solvent vapors to the outside, solvents would condense in cool weather and collect on nearby exposed soil.

Drycleaning solvents like PCE do not break down quickly in the environment. This means that solvents can remain trapped in soil for many years and continue to contaminate groundwater. As a result, a drycleaning plant may be an ongoing source of contamination long after it has stopped operating or has implemented containment measures to prevent further releases.

Since the Fund has limited revenue, it cannot immediately address all the environmental problems at every participating site. SCDHEC initially developed a priority list based on detailed information gathered on each participating drycleaning site, in order to ensure that the sites most likely to cause significant health impacts are addressed first. SCDHEC will continue to evaluate these priorities as sites are assessed and new data becomes available. This prioritization process is discussed further in Section 4.

SCDHEC has recognized that the traditional assessment process is resource intensive, and time consuming. In order to make the best use of available funds and ensure that impacts to human health are addressed in a timely manner, SCDHEC has instituted the use of the Expanded Initial Assessment or EIA process at drycleaner sites. This allows staff to rapidly identify sites where people are likely to be affected by contamination, and to prevent or eliminate human exposures. The EIA process is described in detail in Section 3.

One of the most positive program outcomes is the enhancement of environmentally sustainable business practices by participating drycleaners. The Act requires participating drycleaning operators to certify to SCDHEC that they are handling their drycleaning solvents in an environmentally responsible manner. As a result, drycleaners participating in the Fund have maintained or implemented containment measures that do not allow solvents to be released to the soil or groundwater. While these practices will not remove contamination that has already been released into the environment, these measures will greatly reduce the probability of future releases, therefore lessening the impact that the drycleaning solvents have on human health and the environment.

2. Fund Status and Five-Year Funding Projection

Funding Source

Revenue for the Fund has historically been derived from two sources: 1) Annual registration fees; and 2) A surcharge assessed on every gallon of drycleaning solvent purchased for use in the state. The annual fees are based on a sliding scale that depends on the number of employees at each drycleaning business. These surcharges and fees are not collected from non-participating drycleaners.

As a result of declining revenues to the Fund (Figure 1), a legislative change enacted in May 2004 added a 1% sales tax on drycleaning sales at participating dry cleaning businesses as a third source of revenue. Imposition of the 1% tax began on July 1, 2004 (FY05). With the addition of the 1% tax, revenue into the Fund increased from \$655,000 in FY04, to \$1,284,000 in FY05, to \$1,610,701 in FY06, and to \$1,621,127 in FY07. In FY08 revenue into the Fund decreased to \$1,454,856 commensurate with the wider economic downturn. FY09 revenue is projected to decrease further to \$1,050,000 based on actual receipts through November 2008.

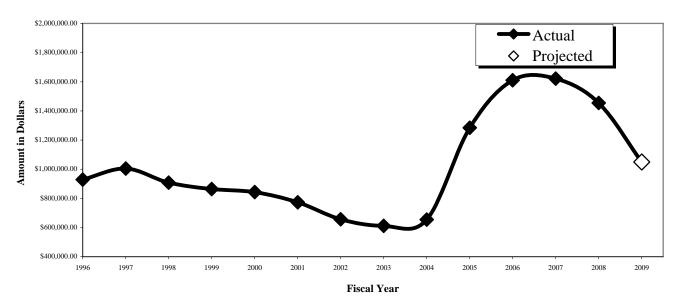


Figure 1: Drycleaning Restoration Trust Fund Yearly Income

The total income into the Fund through July 1, 2008 is \$13,218,162 and total expenditures through July 1, 2008 have been \$10,709,985 (Figure 2). As of December 31, 2008, all but \$1,137,343 has been committed to current projects. An additional \$747,000 will be committed in 2009 to complete the Expanded Initial Assessments for the 83 sites not addressed to date.

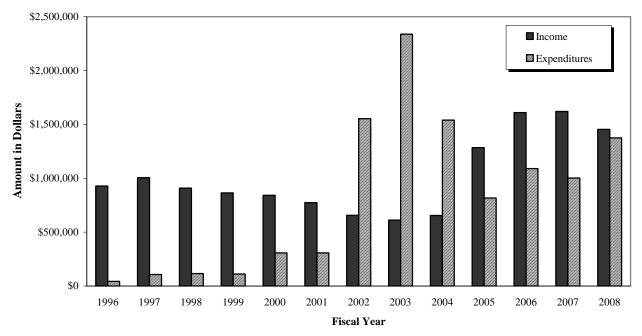


Figure 2: Comparison of Income versus Expenditures

Funding Needs

There are 272 drycleaning plants that have registered into the Fund as of July 1, 2006. Not all of these plants are still operating. There are also 182 former drycleaning plants that stopped operating prior to 1995, when the original legislation was enacted. These sites are also eligible for the Fund. Altogether, there are 454 known drycleaning sites where funds may be spent. As of November 27, 2006 only owners and/or operators of new drycleaning facilities may apply for eligibility to the Fund; therefore, no additional old drycleaning sites that may be discovered are being added to the Fund's liability. As noted earlier, petroleum users were allowed to withdraw from Fund eligibility in 1995. Otherwise, they were required to register with the Department of Revenue and pay into the Fund.

Based on experience, SCDHEC staff estimate that \$156 million will be required to assess and clean up eligible sites. This amount may be considerably under-estimated because it does not consider new sites and it is based on assumptions that future assessments and remedial actions will not require the level of funding expended thus far and has not been adjusted for inflation. This figure includes estimates of \$39 million for assessment costs and \$117 million for remediation costs, including long-term operations and maintenance. More details about these projections are outlined below.

Assessment Costs

Assessment costs are incurred during activities to investigate and define the nature and extent of contamination. A large portion of the assessment costs at drycleaning plants is due to the expense of investigating groundwater contamination. Of the 454 sites, 273 have had a documented release of contaminants to the environment. SCDHEC has spent \$5,839,556 from the Fund on assessment of these sites. Of the 273 sites with documented releases, 29 have been fully assessed. An additional 161 sites have undergone partial assessments through the EIA process. To date, the costs for completed assessments range from \$51,000 to \$477,000. The average cost of fully assessing each site is \$182,000. It is anticipated that the average cost will drop at least 10% due to increased efficiencies of the program as experience is gained with more sites. Assuming the average assessment cost can be decreased to \$161,000, and that 244 additional sites will require a full-scale assessment, at least \$39 million will be needed for assessment costs to investigate the remaining known sites.

Remediation Costs

Once the sites are assessed, they usually require remediation in order to meet the regulatory standards. Contamination has been identified at virtually all of the sites assessed to date. It is likely that less than 5% of all sites investigated will not need any follow-up expenditure for comprehensive assessment, remediation and/or long-term monitoring.

To date, SCDHEC has spent a total of \$3,295,802 on remedial activities at 12 drycleaning sites. The average remediation cost to date is \$274,650. This includes removal actions, cleanup system design, installation, operation and maintenance. Ground water remediation systems have been fully implemented at five of these sites, including three ozone systems, one potassium permanganate injection and one air sparging/soil vapor extraction system. The average cost to date for these five sites is \$557,787, and costs will increase as those sites currently in remediation proceed toward closure.

To estimate future liability, SCDHEC staff has projected that 75% of the sites where soil and groundwater contamination has been identified to date will require active remediation. The

remaining 25% of sites may potentially be addressed through removal actions, passive remedies, and institutional controls. Using these assumptions, SCDHEC estimates that \$117 million will be needed for remediation costs over the lifetime of the Fund.

Five-Year Funding Projection

As of December 1, 2008, SCDHEC has commitments for assessment and remediation totaling \$1,236,936, leaving an uncommitted balance of \$1,137,343. An additional \$747,000 will be committed in 2009 to complete EIAs at the remaining 83 sites. The EIA process is discussed further in Section 3.

In order to complete the funding projection, the income into the Fund was estimated over the next five fiscal years. The historical trend shows income declining steadily from a high in 1997 until the sales tax was implemented (Figure 1). Trend analysis conducted during prior years projected that income to the Fund would remain steady at a level of \$1,600,000 through FY12. This projection has been revised downward based on current economic conditions (Table 1) and makes no assumptions regarding further declines or economic recovery. For the purposes of this report, income to the fund is projected to remain near \$1,200,000 through FY13.

Table 1 includes a five-year projection of expenditures. This projection indicates that expenditures in FY09 will exceed the income into the Fund. Actual expenditures will not exceed income into the fund plus remaining funds carried over from previous years. Projects will be prioritized for remedial activities just as they were for assessment.

Fiscal Year	Income	Expenditures
1996	\$928,545.65	\$42,582.84
1997	\$1,005,142.60	\$106,383.46
1998	\$908,516.14	\$115,929.62
1999	\$864,553.81	\$111,067.06
2000	\$842,913.75	\$308,156.47
2001	\$773,511.14	\$308,078.22
2002	\$657,242.36	\$1,553,734.08
2003	\$612,189.97	\$2,337,642.77
2004	\$654,508.34	\$1,540,095.94
2005	\$1,284,353.96	\$816,404.12
2006	\$1,610,701.00	\$1,090,890.57
2007	\$1,621,127.21	\$1,003,163.01
2008	\$1,454,856.48	\$1,375,857.27
2009	\$1,200,000.00	\$1,896,182.00
2010	\$1,200,000.00	\$1,200,000.00
2011	\$1,200,000.00	\$1,200,000.00
2012	\$1,200,000.00	\$1,200,000.00
2013	\$1,200,000.00	\$1,200,000.00

Table 1: Income and expenditures for the Fund, 1996-2008. Data for 2009-2013 (in *italics*) are projected.

3. Expanded Initial Assessments

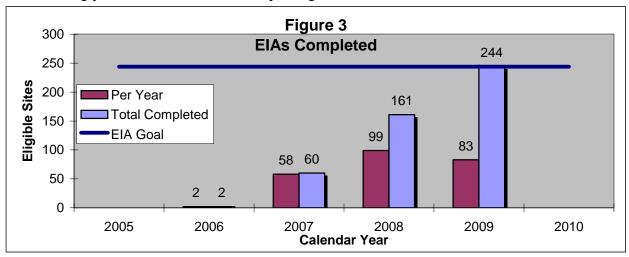
As noted earlier, SCDHEC is continuing its efforts to assess and prioritize the known sites for health risk abatement and remediation through the EIA process. Under this approach, data is evaluated in the field, as it is gathered. This allows project managers to identify data gaps and reduce uncertainties, resulting in better, cheaper, and faster assessment of the extent of contamination. It also allows SCDHEC to determine if any immediate efforts are needed to address actual exposures.

With field staff capable of making approach decisions, a contractor to handle the sampling and coordination of laboratory data, an in-house direct-push drill rig and a field screening method that gives quantitative results almost instantly, sites are rapidly evaluated and prioritized. Once all potential exposure pathways are identified at a site, SCDHEC works to reduce or eliminate risks to human health. SCDHEC personnel have received necessary training and certification to directly operate the systems employed by the EIA approach.

Of the first ten sites investigated through the EIA process, four had drinking water impacts. At one site in Florence, seven private drinking water wells were impacted by PCE. SCDHEC provided bottled water to these residents while working with the City of Florence to connect them to the city water system. Two residences were connected to the St. Johns Water Company on Johns Island near Charleston. Three public wells in Bamberg were also taken offline. A public water line was installed to three homes in Pawleys Island that have been impacted by drycleaning solvent or have the potential to be impacted.

During 2007, the first full year using the EIA process, SCDHEC evaluated 58 sites. Our strategic goal was to complete the exposure pathway assessments by 2010 while continuing full-scale assessment and remediation at the highest priority sites as funding allows. During the 2008 calendar year 99 EIAs were conducted. As indicated in Figure 3, the agency is on target to complete the remaining 83 EIAs during the 2009 calendar year.

The EIA Process has also been utilized to assess soil and surface water impacts. These have the potential for human health risks based on direct contact exposure. SCDHEC identified hazardous levels of PCE in soils at two sites. Soils were excavated from these sites to remove or reduce the risk of exposure. There are also numerous surface water impacts. These impacts will be evaluated in the coming year to determine if stream posting would be beneficial.





Direct-push (DP) drilling methods have allowed contractors to rapidly delineate plumes on most sites. This technology requires use of a small drill rig that pushes and hammers a sampling device into the ground. Soil and groundwater samples are acquired by DP technology for rapid screening in the field a*nd eventual laboratory analysis. Unlike permanent groundwater monitoring wells, which are installed and can be re-sampled many times, DP wells are designed to be temporary and inexpensive. Between 5 and 15 of these wells may be drilled, sampled, and abandoned in the same day.

4. Eligibility and Prioritization

Eligibility Application Scoring System

Drycleaners that have registered with DOR are not eligible for the Fund until a completed eligibility application is submitted to SCDHEC. The eligibility application documents such information as which solvents are used at the site, how long the drycleaner has been in operation, and how the waste products from the cleaning process are disposed. The applicant (usually the drycleaning business owner or land owner) certifies in the application that the drycleaning plant meets all of the eligibility criteria specified in the law. SCDHEC assigns a priority ranking to the site using information provided in the eligibility application.

SCDHEC determines the priority ranking of a drycleaning site by use of a scoring system that emphasizes potential threats to human health that can occur from drycleaning solvent contamination. The scoring system makes assumptions about the potential human exposures to contamination from a site. One common assumption used in scoring the sites is that if public water lines do not serve the area nearby residents use private wells as their source of drinking water. Other assumptions are based on site-specific information about the age of the plant, the types of solvents used, regional geology, and surrounding land use. Unless a particular exposure pathway from the site is known to be absent, it is assumed that a potential threat is present via that mechanism. In late 2006, SCDHEC implemented the EIA procedure discussed in the previous section of this report. This process has allowed SCDHEC to gather reliable field data for each site

and to reduce reliance on assumptions.

EIA Superfund Tier Ranking System

SCDHEC also applies the Superfund Tier Ranking System to sites in the Fund. While the scoring system described above prioritizes eligible sites in the fund, the Tier Ranking System categorizes each site into one of 5 tiers, and is designed to identify sites which require action to prevent or eliminate human exposure to contaminants. After an EIA is conducted, a site is assigned a Tier value ranging from Tier I (most urgent), to Tier N (no further action). Most of the drycleaning sites that have been ranked were initially assigned to Tier IIA, meaning that they have contamination and need to be further investigated. If SCDHEC determines through the EIA process that there is an imminent health risk then the site is immediately moved up to the Tier I rankings and the health risk is dealt with accordingly. For example, if private drinking water wells are impacted, then the residents are provided with bottled water for consumption until an alternate water source is established. Once the risk from contaminated drinking water is eliminated, the site is re-ranked for assessment/remediation and is usually moved down to the Tier III level, reflecting that there is contamination present at the site but there are no imminent health risks.

5. Public Participation in the Drycleaning Program

One of SCDHEC's goals for the Drycleaning Restoration Trust Fund Program is to encourage public participation in the remedy selection/cleanup process. Community involvement in the program is important for several reasons. Primarily, it gives local residents an opportunity to have input into choosing a remedial strategy and allows them to address any concerns that they may have about the site. People living near a site may be aware of conditions that could influence the effectiveness of the available remedies. On several occasions, sharing of such important information has substantially aided SCDHEC's understanding of the site and has influenced remedial decisions.

When SCDHEC conducts an EIA at a site it is sometimes necessary to address the potential migration of contamination onto adjacent properties. Field personnel meet with homeowners and business owners in the area surrounding the site when there is a likely risk to drinking water supply wells. SCDHEC may conduct sampling to determine if the wells have been affected by contamination emanating from a drycleaner property. If drinking water supplies have been contaminated an alternate source of drinking water is provided, eliminating the threat to human health. The site is then reprioritized for complete assessment and remediation.

Once appropriate analytical information has been collected on a drycleaning site, SCDHEC may assign a contractor to review the various technologies that may be effective for remediation. A Feasibility Study (FS) from the contractor provides an in-depth evaluation of the site characteristics and information on the remedies that can be used. Early in the process SCDHEC, along with their contractor, eliminates those remedies that are impractical for the site. The contractor further develops other remedies with detailed information on implementation strategies and cost estimates. While the FS will usually point to one or two remedies as clear-cut choices, public input is sought before final selection of a remedy.

SCDHEC distributes information about the site and its upcoming remediation to the public via a legal notice in the local newspaper and letters to area residents, local government officials, and locally elected members of the S.C. General Assembly. SCDHEC schedules a public meeting at a

location near the drycleaning site, and advertises the time and place as a legal notice. SCDHEC also sends individual letters to those in the vicinity of the site in question. At the meeting, a SCDHEC spokesperson presents an overview of site conditions and explains the potential remedies that have been considered. An open forum with a question-and-answer session follows this presentation. A court reporter compiles an official transcript of the meeting, and people are encouraged to call the program's toll-free telephone number (1-866-343-2379) if they have further questions.

6. Web Links

- http://www.scdhec.net/environment/lwm/html/drycleaner.htm
- www.scdhec.gov/eqc/lwm/forms/dryclean_guide.pdf
- http://www.scstatehouse.gov/code/t44c056.htm
- www.scstatehouse.net/regs/2071.doc
- www.scdhec.gov/eqc/lwm/forms/funding.pdf
- www.scdhec.gov/eqc/lwm/forms/drycleaningcontractors.pdf
- www.scdhec.gov/eqc/lwm/forms/drycleaningrank.pdf
- www.drycleancoalition.org