

Florida Department of Environmental Protection
DIVISION OF WASTE MANAGEMENT
Bureau of Petroleum Storage Systems

**Petroleum Contamination
Cleanup
and
Discharge Prevention
Programs**



- February 2005 -

Florida Department of Environmental Protection
Bureau of Petroleum Storage Systems
2005 Program Briefing

PROGRAM ORIGINS

Regulation of underground petroleum storage tanks began in the early 1980s with the recognition that below and above ground tanks were leaking and there were possible threats to the drinking water of the State. In 1982, petroleum contamination from a leaking underground petroleum storage tank was documented in a well field for the City of Bellevue, in Marion County. The legislative response to the problem was the passage of the Water Quality Assurance Act of 1983. The law provided for:

- Prohibition against petroleum discharges
- Required cleanup of petroleum discharges
- State mandated cleanup if not done expeditiously
- Strict liability for petroleum contamination
- Required tank inspections and monitoring

The provisions of the 1983 Act were implemented by rule under the former Department of Environmental Regulation, but by 1985, the situation became clear that an incentive program was needed to accelerate the assessment and cleanup process. The Legislature considered the alternatives and created the State Underground Petroleum Environmental Response Act of 1986. The fiscal analysis that accompanied the legislation in 1986 predicted as many as 2,000 contaminated sites throughout the State. As of January 2004, the total number of contaminated sites exceeded 23,102 of which 18,027 are eligible for state funded cleanup.

The 1986 legislation also created the Inland Protection Trust Fund (ss. 376.3071 Florida Statutes) to pay for the expedited cleanup of petroleum contaminated sites. The Inland Protection Trust Fund (IPTF) is a non-lapsing revolving trust fund with revenues generated from an excise tax per barrel of petroleum products currently produced or imported into the State as defined in ss. 206.9935 Florida Statutes. The amount of the excise tax collected per barrel is dependent upon the unobligated balance of the IPTF according to the formula: thirty cents if the balance is between \$100 and \$150 million; sixty cents if the unobligated balance is between \$50 and \$100 million; and, eighty cents if the unobligated balance is less than \$50 million.

BUREAU'S MANAGEMENT APPROACHES TO SITE CLEANUP 1996 TO PRESENT

The Bureau has two basic missions. The first is to clean up, in a health threat priority order system, all known petroleum-contaminated sites eligible in one of the four legislative cleanup programs and to ensure that all non-eligible discharges are cleaned up in accordance with Chapter 62-770, FAC. The second mission is to reduce or eliminate future discharges to ensure that the State does not suffer a petroleum contamination relapse of the magnitude that was discovered in the late "1980's and early 1990's."

In 1996, the Bureau redirected activities to:

- Preapprove the scope and costs of cleanup activities for all state-funded eligible sites
- Utilize business-based approaches to operations
- Develop a "tool kit" of alternative cleanup strategies to fit various cleanup scenarios
- Provide for on-going program audits and accountability

The successful implementation of the Bureau's two missions has been largely due to the establishment of an innovative baseline program structure, and to constant refinements and improvements in the way operations are conducted, outsourcing initiatives are implemented, and training and standardized procedures are developed and instituted.

Risk-Based Corrective Action

Legislation in 1996 required formalization of Risk-Based Corrective Action (RBCA) procedures at petroleum contamination sites. RBCA considers the actual risk to human health, public safety, and the environment in determining whether alternative cleanup strategies can be utilized to provide for more cost-effective cleanups. RBCA allows for using alternative cleanup target levels, institutional and engineering controls, and remediation by natural attenuation in lieu of using conventional cleanup technologies on a case-by-case basis. These RBCA strategies allow the Bureau to make cleanup decisions that can reduce costs while protecting human health and the environment. RBCA concepts and strategies were folded into the Bureau's petroleum cleanup rule, Chapter 62-770, FAC. in 1997.

Cost Templating/Standardization

The heart of cleanup activities is to focus on the scope of work and to standardize the ways in which site rehabilitation work is conducted. The Bureau developed “templates” which provided for standardized forms and pricing schedules for activities conducted on a job site. This innovative structure and approach has significantly reduced or eliminated negotiation time with cleanup contractors, reduced or eliminated subcontractor bidding requirements, resulting in more sites being assessed and remediated. In addition, the Bureau established a standard operating procedure manual (SOP) and numerous geological and engineering technical guidance documents to ensure consistency throughout the program for both internal operations and the cleanup industry.

Program Audits

The Bureau continues to perform internal reviews and cooperates with independent auditors to be sure program cost items are fair and competitive and are accurately reported. The Legislature, through a direct appropriation to the Department’s Office of Inspector General (OIG), provides \$440,000 for auditing of sites and contracts under the present Preapproval Program to assure fiscal accountability.

COMPLIANCE AND ENFORCEMENT

Compliance Inspections

The Bureau’s successful wholesale and retail petroleum compliance program for monitoring how well registered sites are complying with the State’s storage and distribution engineering requirements as stipulated in Chapters 62-761 and 62-762, FAC., continues to produce outstanding results. In Fiscal Year 2003/2004, 94 percent of the State’s 20,112 active petroleum facilities were inspected. Inspectors ensure facilities maintain equipment upgrades, that leak detection systems are functioning, that reconciliation records are up to date, and that new discharges are handled appropriately. Inspectors work closely with owners and operators and provide expertise and advice on their petroleum storage and distribution systems. All inspectors receive initial and continuation training and must pass a test prior to participation in the inspection program.

Active Tank Facility Registrations

During Fiscal Year 2003/2004, the Bureau maintained site records on more than 51,500 underground and above ground tanks and issued 804 new registrations during the year.

Discharge Reports Filed

The Bureau requires that all new discharges of petroleum products be reported. Since 1993, the numbers of reported discharges has declined dramatically. This decrease can be attributed to engineering improvements such as double walled tanks and piping, secondary containment and leak detection systems, as well as diligence on the part of the inspectors, owners and operators. The number of total discharges per year is shown in figure 1.

As the program moves closer to the double walled requirement for Underground Storage Tanks (UST's), December 31, 2009, the number of discharge reports filed is expected to increase as old single walled tanks are removed and small leaks are discovered.

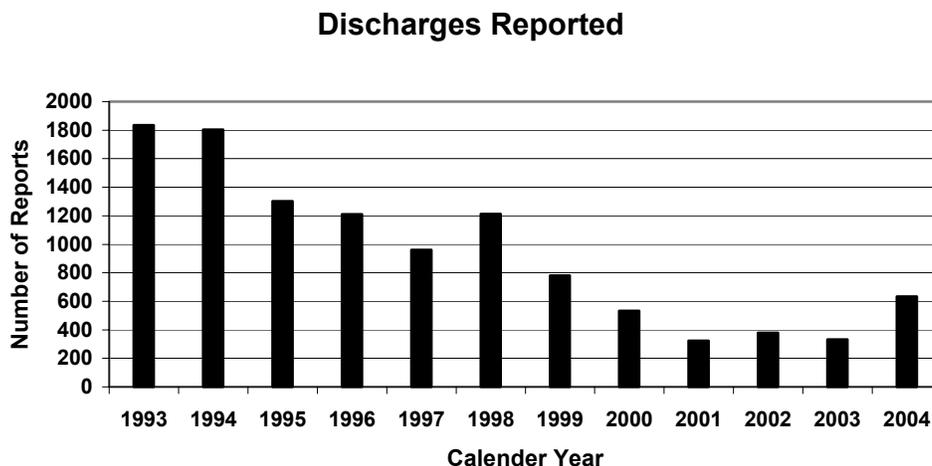


Figure 1

OUTSOURCING/CONTRACTING

Over the past four years, the Bureau has created an infrastructure consisting of State career service staff, county contracted staff, and private contractors to address the administrative and management issues, and complex technical issues associated with petroleum pollutant and hazardous materials discharge prevention and contamination cleanup.

County Compliance Contracting

In order to prevent or reduce future discharges of petroleum products, the Bureau established an aggressive and comprehensive inspection, compliance and enforcement program. The Bureau has 46 contracts with counties and local Department of Health Districts to establish and maintain inspections, compliance and enforcement covering all 67 counties at a cost of approximately \$10.0 million annually. The compliance contracts employ approximately 160 field inspectors. Florida's petroleum

inspection, compliance and enforcement program is the State's first line of defense for ensuring that petroleum storage and distribution systems are maintained and upgraded as required by law and that all new discharges are reported and cleaned up.

County Cleanup Contracting

Over the past few years, the Bureau has expanded its operations as the number of sites undergoing petroleum contamination cleanup has increased. In order to meet this challenge, the Bureau initiated contracts with counties to establish cleanup programs so that more sites could be managed at the local level. The Bureau has entered into contracts with 15 counties and local Department of Health Districts to manage petroleum cleanups covering 24 counties at an annual cost of approximately \$10.0 million. The contracted cleanup programs employ approximately 100 people, most of whom are geologists, engineers, and scientists. To maintain consistency, all staff associated with the program are required to use the program SOP manual and technical guidance documents. In addition, all staff are required to attend initial and refresher training on all aspects of petroleum assessment, remediation, and internal operations.

Private Sector Contracting

Over the past four years, the Bureau has increased its work output by utilizing private contractors to augment State career service employees. To supplement the Bureau's four operational cleanup teams that handle the review and oversight of the cleanup of contaminated sites, two additional contractor teams were hired. The contractor teams provide approximately 30 - 35 additional professional staff members, including engineers, geologists, and scientists, to implement the preapproval program and oversee cleanup work. The cost of the two contractor teams is \$4 - 5 million per year. In addition, the Bureau utilizes private contractors at a cost of approximately \$1.5 million per year to: augment Bureau staff for records handling; scoring and ranking of sites; reimbursement claims support; ability to pay analyses; legal support; and, capital equipment readiness and refurbishment. The use of contract staff has allowed the Bureau to dramatically increase its business volume without incurring long-term career service obligations, while more than doubling the number of sites in cleanup. In November 2002, the Bureau had approximately 5,450 active sites. Due to a loss of trust fund dollars (\$32 million) and a requirement to conduct unplanned cleanups totaling \$12 million, the Bureau had to reduce this number and by November 2003, the number of active sites had dropped to 3,200.

The funds in the Inland Protection Trust Fund have since stabilized and appropriation for FY 2003/2004 was \$143.7 million and for FY 2004/2005, it is \$150 million. The Bureau's conservative approach to score drops coupled with an internal real time accounting tracking system and expenditure caps on weekly obligations of cleanup funds has resulted in a slow, but steady expansion of the program. The number of active sites as of January 2005 is 4,211 and with continued out year funding the number of active sites could approach the November 2002 high of approximately 5,400 sites.

Department of Health Contracting

All petroleum contaminated sites are scored so that site prioritization based upon health risks and threats to human receptors can be maintained. In addition, potable wells adjacent to petroleum release sites need to be monitored for petroleum contaminants. Those found contaminated need to be treated or alternative sources of water provided. The Department of Environmental Protection has a direct legislative appropriation of approximately \$300,000 annually for potable water treatment and replacement. The Department of Health has a direct appropriation of \$1.2 million for drinking water well surveys, and sampling and analyses to ensure water integrity. In addition, the Bureau has established a supplemental contract with the Department of Health to provide additional well surveys at an annual cost of approximately \$700,000.

ACCELERATED FUNDING

Beginning with the restructuring of the petroleum cleanup and discharge prevention program in 1996, the Legislature began funding the preapproval program at higher levels each of the last nine years in order to accelerate cleanup activities. The performance measures discussed below are reflective of program improvements. The funding history to achieve these improvements is depicted in Figure 2.

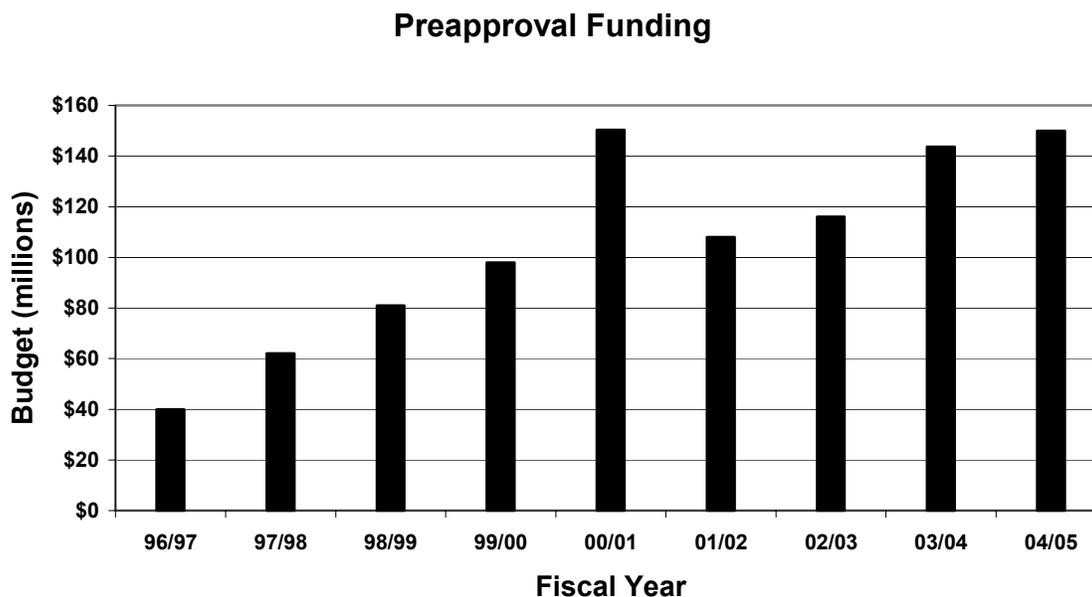


Figure 2

PERFORMANCE MEASURES

Overall Program Performance

There are 18,058 sites that have been identified, ranked, and determined to be eligible for cleanup under the various programs administrated by the Bureau. The program progress is summarized as follows:

- *Total Number of Contaminated Eligible Sites Identified from 1986 to 2005 – 18,058*
- *Eligible Sites Undergoing Cleanup in January 2005 – 4,211*
- *Eligible Sites Awaiting Cleanup January 2005 – 9,340*
- *Total Number of Eligible Site Closures (Cleanup Completed) – 4,475*
- *Total Number of Ineligible Site Closures (Cleanups Completed) – 3,522*

Number of Work Orders Issued

Two key indicators of performance within the petroleum cleanup program are the number of work orders issued for cleanup activities and the number of site closures. In other words, the tally of the number of work orders and site closures and the corresponding dollar value is the measure of program activity and intensity. Since the reorganization of the program in 1996, the workload and site closures have steadily increased. Figure 3 documents the ramp up of the workload by month since mid-1996 and Figure 4 documents the number of eligible and ineligible site closures since 1996.

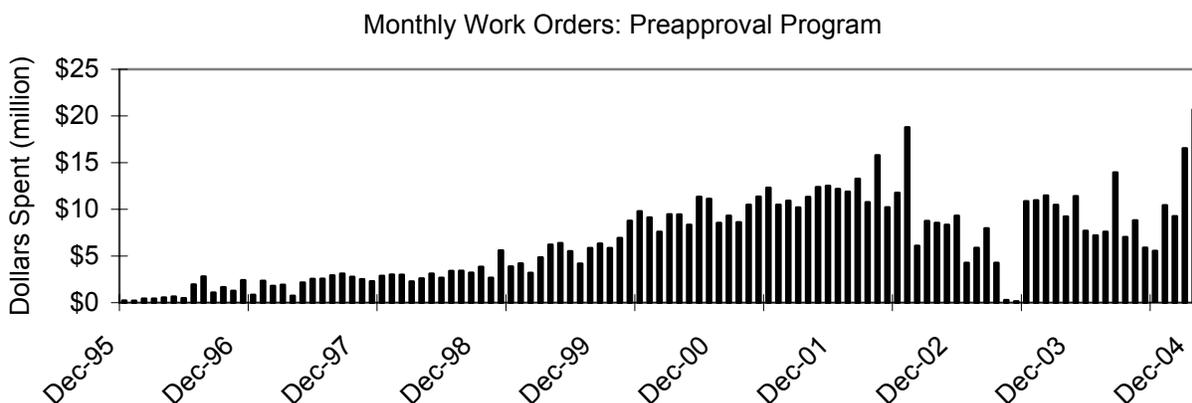


Figure 3

Cleanups Completed

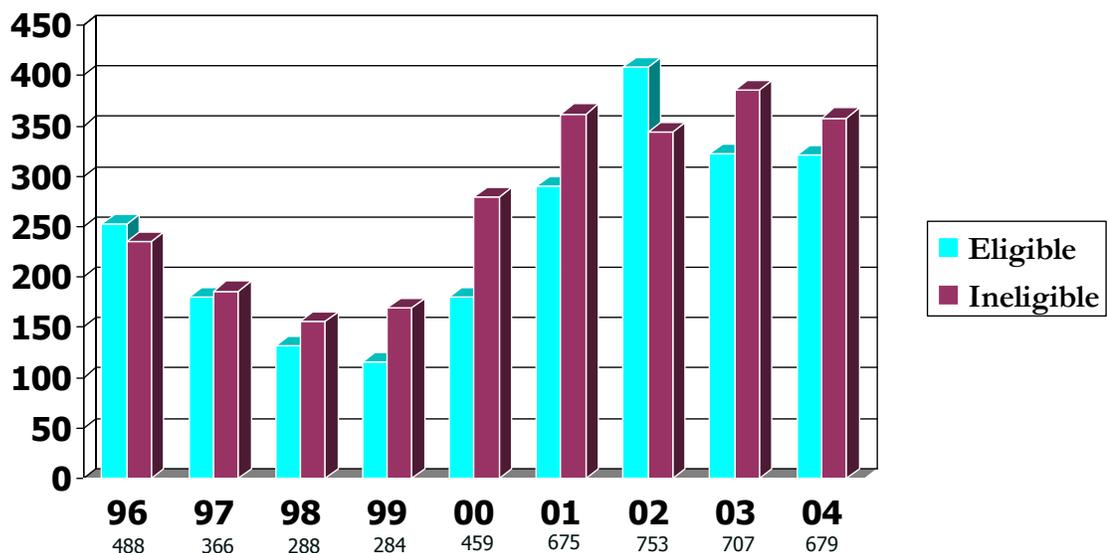


Figure 4

Cleanups Underway

Figure 5 depicts the number of sites where cleanup operations are underway. This graph shows the dramatic acceleration in program activity from 1996 to present.

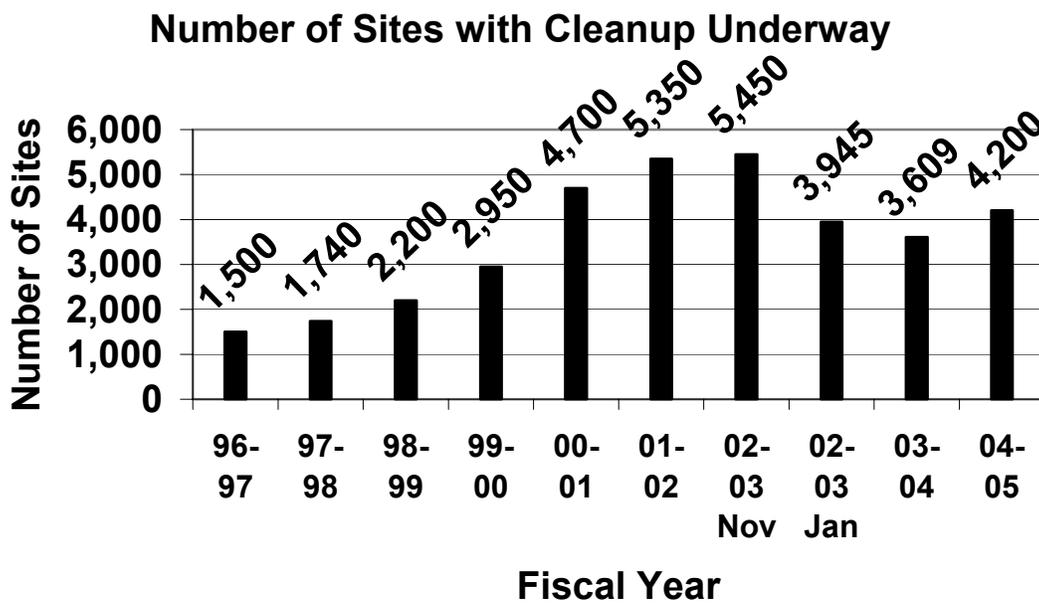


Figure 5

RECENT DEVELOPMENTS

In 2002 the Bureau instituted a streamlined Petroleum Contamination Assessment procedure which was designed to speed up the process of determining the vertical and horizontal extent of the contamination plume. This new streamlined assessment process has been very successful and contamination assessments that were previously taking 18 – 24 months are now completed in nine months or less.

In early 2003 the Bureau began an extensive review of the efficiency and effectiveness of the remediation systems used to remove petroleum contamination from soil and groundwater. The results of this study indicated that a more comprehensive approach to engineering design, component selection, construction, testing, operations and monitoring was essential to increased site closures and increased efficiency and effectiveness. In July of 2003 the Bureau instituted new standards for all phases of remediation operations and in March of 2004 instituted new payment standards. Contractor performance standards were also established, linking remediation performance to contractor performance/nonperformance criteria. Additionally, each cleanup team and county cleanup program has a designated engineer who reviews quarterly remediation system performance reports and provides recommendations to the site managers, and a systems field inspector who insures that the system is running and performing to design specifications. The Bureau fully anticipates that improved standards (which integrate design, component selection, construction, testing and operations) coupled with human and automation monitoring will vastly improve remediation system performance, resulting in more site closures per year.

Over the past few years, the Bureau has made several attempts to project and estimate the costs associated with site cleanups. There are multiple variables associated with each contaminated site and each site is best viewed as a separate assembly line with its own set of circumstances and variables. Each site requires some level of assessment to determine the depth and width of the plume, what geology is present and particulars on groundwater flow. Such assessments are done by physical drilling for soil and groundwater samples as deep as 100 feet or more. The plume is essentially chased across the source property and beyond until the laboratory analyticals indicate where the outer edge of the contamination plume is.

Once an assessment report is completed based upon the physical investigation at the site and which provides for vertical and horizontal contamination plume maps, groundwater flow, geology and laboratory analytical tables which show which contaminants are present, where they are and at what levels, and recommendations on how to approach the cleanup, the engineers and geologists decide on the best course of action to clean up the site. The costs for assessment can run as little as \$20,000 and as high as \$100,000 or more.

Depending on whether a mechanical system is to be installed, the soil will be removed, or a combination of approaches, the costs could run \$100,000 to \$150,000 for system construction and \$60,000 or more per year to operate a remediation system. Systems can run for several years before the site is ready for monitoring and closure.

Soil removals can cost up to several million dollars, depending on how deep and wide the contamination is and whether structures need to be moved or demolished.

Geology, vertical and horizontal extent of the plume, levels of contamination, whether petroleum in its liquid state is present and whether there is groundwater contamination are, in many cases, the main variables which determine the cleanup costs at a site. The total cost of a cleanup could be as low as \$20,000 - \$30,000, where no contamination is detected and as high as \$5 million where contamination has sunk deep into the ground requiring a massive soil removal and groundwater filtration effort. In 2002 the average cost of a cleanup was approximately \$460,000. In 2004 the average cost of cleanup dropped to \$380,000 per site. The Bureau fully expects the average cleanup costs to oscillate over the years. However, as the score drops and larger contamination plumes are discovered, the average costs could start to rise.

RECENT PROGRAM DIRECTIONS

Preapproval Advanced Cleanup Program

The Preapproval Advanced Cleanup Program (PAC) was created to provide an opportunity for site rehabilitation to be conducted on a limited basis in advance of the site's priority ranking. Applicants in this program bid a significant cost share for cleanup work, and successful projects are allowed to move forward in advance of other priorities. Table 1 below summarizes the number of participants and the cost sharing since 1996.

Table 1: Preapproval Advance Cleanup Program

Application Period	Winning Applicants	DEP Funding	Applicant Funding	Average Applicant Cost Share %
11/01/96 - 12/31/96	63	\$ 4,063,853.54	\$ 7,371,481.47	62.90%
05/01/97 - 06/30/97	69	\$ 4,262,593.40	\$ 6,575,902.70	60.02%
11/01/97 - 12/31/97	20	\$ 1,709,636.58	\$ 2,006,055.30	53.33%
05/01/98 - 06/30/98	38	\$ 5,658,372.35	\$ 7,088,115.90	53.76%
11/01/98 - 12/31/98	30	\$ 1,300,329.57	\$ 1,494,862.04	44.81%
05/01/99 - 06/30/99	8	\$ 2,643,793.14	\$ 1,121,681.06	33.02%
11/01/99 - 12/31/99	14	\$ 1,260,041.80	\$ 583,616.20	37.59%
05/01/00 - 06/30/00	13	\$ 1,561,743.80	\$ 664,581.12	29.54%
11/01/00 - 12/29/00	5	\$ 830,149.67	\$ 325,760.14	27.80%
5/01/01 - 6/30/01	15	\$3,074,144.05	\$1,208,845.09	27.18%
11/01/01 - 12/29/01	25	\$6,775,956.04	\$2,357,243.15	26.53%
5/01/02 - 6/30/02	6	\$1,086,489.77	\$391,786.83	27.50%
11/01/02 - 12/29/02	CANCELLED			
5/01/03 - 6/30/03	CANCELLED			
11/01/03 - 12/29/03	CANCELLED			
05/01/04 - 06/30/04	25	\$6,944,996.11	\$4,304,084.84	35.47%
11/01/04 - 12/31/04	7	\$1,176,112.12	\$657,074.88	36.00%

Cost Share Agreements

The Bureau developed Cost Share Agreements for handling the problem where new discharges occur at sites where there is an existing discharge, which is eligible in one of the State's four cleanup programs. The mixed plumes of old and new discharges could lead to awkward situations within the existing program areas with respect to the allocation of costs. To remedy this problem, the Legislature authorized the Bureau by statute in 1999 to negotiate cost sharing agreements with the responsible parties for new discharges. The cost sharing allows the Bureau to negotiate issues of prioritization and allocation of cleanup and funding responsibilities with the person accepting responsibility for the new contamination.

College Co-Op Program

The Bureau has established a college Co-Op program to attract and train science, geology, and engineering students in petroleum assessment and cleanup. These students are encouraged to move into industry once they graduate.

HISTORY OF STATE-ASSISTED PETROLEUM CLEANUP PROGRAMS

Early Detection Incentive Program: 1986-1988

Owners of underground petroleum tanks with suspected contamination that were reported to the Department between June 30, 1986, and December 31, 1988, were eligible for either state-contracted cleanup or reimbursement of costs for a privately managed cleanup. A critical component of the Early Detection Incentive (EDI) program was the creation of a "grace period" or exemption from departmental enforcement actions for sites that were reported. Approximately 10,000 contaminated sites were submitted under the EDI program with approximately 5,000 sites being submitted just prior to the deadline the last two weeks of 1988.

Petroleum Liability and Restoration Insurance Program: 1988-1998

The Petroleum Liability and Restoration Insurance Program (PLRIP) was created in its original form in 1988 in response to anticipated federal financial responsibility requirements. In the 1988 time period there were few, if any, private insurers writing coverage for petroleum-contaminated sites. PLRIP provided petroleum facilities that were in State regulatory compliance eligibility to purchase \$1 million in pollution liability protection from a state-contracted insurer. PLRIP also provided \$1 million worth of site restoration coverage either through reimbursement or state cleanup. In 1992, with commercial liability insurance available in the marketplace, legislation was passed to return the responsibility for site cleanup to the responsible party and to phase out the Department's participation in the restoration insurance program by the end of 1998.

Abandoned Tank Restoration Program: 1990-Present

The Abandoned Tank Restoration Program (ATRP) was created in 1990 by the Legislature to address the problem of out-of-service or abandoned tanks that have contamination associated with previous operations. The original program created in 1990 had a one-year application period. The application deadline to participate in the program subsequently was extended to 1992, 1994, and finally in 1996 the deadline was waived indefinitely for owners financially unable to comply with tank closure.

Petroleum Cleanup Participation Program: 1996-Present

In 1996, the Petroleum Cleanup Participation Program (PCPP) was created to implement a cost-sharing cleanup for properties or sites not otherwise eligible under EDI, ATRP, or PLRIP for which contamination occurred prior to January 1, 1995. Sites qualifying for the program are eligible for up to \$300,000 of site rehabilitation funding with a co-payment of 25% of the costs by the owner, operator, or person responsible. The co-payment percentage can be reduced if the owner demonstrates an inability to pay.

Inland Protection Finance Corporation

With the conclusion of the Petroleum Contamination Site Cleanup Reimbursement Program on December 31, 1996, the total backlog of unpaid claims for cleanup reimbursements amounted to \$551.5 million. The 1996 Legislature addressed the need to pay off this obligation in an expeditious manner since the collections from the Inland Protection Trust Fund (IPTF) were not enough to cover payback on a timely basis. The solution was the creation of the Inland Protection Finance Corporation (IPFC) that was authorized to issue bonds to finance repayment of the reimbursement claims. In February 1998, the IPFC obtained \$262 million in bond proceeds and by late 1999, the backlog had been paid off using a combination of bond proceeds and IPTF funds. By the end of FY 2002/2003 the Department closed out all remaining claims in the reimbursement program except for the Miami Airport claim. The bonds issued in 1998 were retired at a rate of approximately \$50 million per year and this obligation was satisfied in July 2003, six months ahead of schedule.

Reimbursement Program Audits

Throughout the years of the reimbursement program there were reoccurring questions by program managers and the Legislature as to the reasonableness of expenses and charges for cleanup work. For the budget years 1997 through 2000, the Legislature appropriated \$13 million for auditing services with certified public accounting firms to review reimbursement applications.