

# I. Introduction

## Underground Storage Tank Upgrades Protect Ground Water Resources and Potable Wells

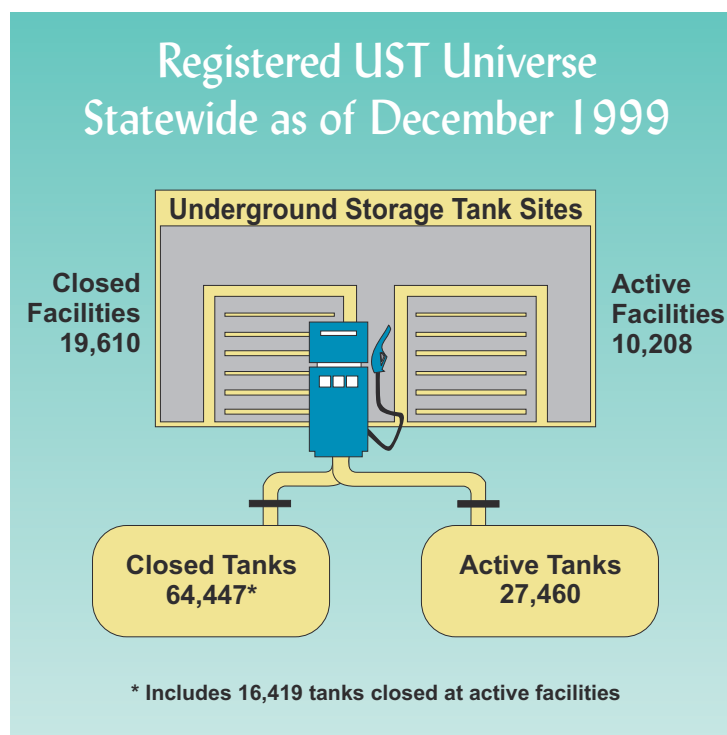
Thousands of non-compliant underground storage tank systems were upgraded or closed in 1999, protecting the state's ground water resources and potable wells used by residents from potential contamination. Numerous parties performing this work benefited from \$30 million in grants and loans disbursed in 1999 by the state from Corporate Business Tax monies dedicated for such actions. Furthermore, NJDEP's Site Remediation Program took enforcement actions against several tank owners who failed to achieve compliance with new state and federal upgrade regulations, identifying the parties through the Department's tank registration process.

More than 10,000 underground storage tanks not in compliance with state and federal regulations were reported closed by facilities statewide during 1999. The removal of these old tanks for replacement with upgraded models or their discontinued use clearly improved the environmental conditions in every county of the state. Removing potential sources of ground water and drinking water contamination protects these valuable water resources from the hazardous substances found in gasoline and other stored products.

Statewide, the number of active facilities decreased in 1999 from 11,367 to 10,208, a 10 percent reduction. The status of the registered underground storage tank universe is noted in Figure 1 as of December 1999. The number of active tanks declined from 31,804 to 27,460, a 13.5 percent drop. A large number of tanks were replaced while others were closed.

Some tank closings resulted in uncovering leaking tanks or associated piping. In December 1999, 3,172 cleanups were underway with NJDEP oversight across the state. Facilities unable to comply were putting the environment at risk and needed to close their tanks.

Since the passage of New Jersey's 1986 underground storage tank law, more than 60,000 tanks have been permanently closed thus reducing the threat of ground water contamination from this large number of unmonitored, substandard underground storage locations. More than 10,000 facilities reporting discharges have been cleaned up.

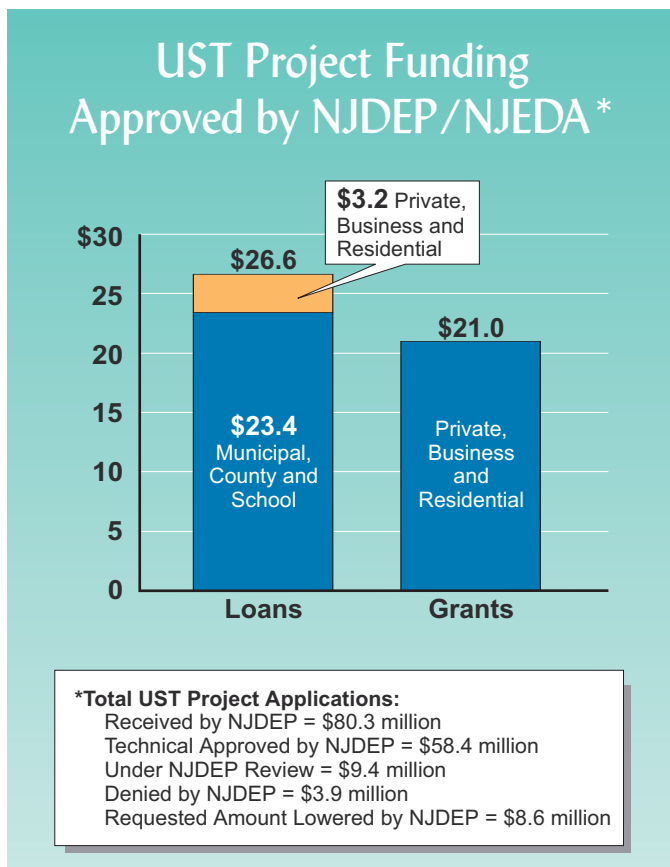


Schools, municipalities, counties, businesses and residents shared the benefits of \$30 million in grants and loans to help meet the underground storage tank upgrade requirements from NJDEP's Site Remediation Program and the New Jersey Economic Development Authority in 1999. Figure 2 shows the cumulative amount of

Figure 1

loans and grants provided by NJDEP and EDA since the monies became available in 1997 through a voter-approved dedication of Corporate Business Tax funds for such activities. Site Remediation Program staff initially review applications for technical merit and appropriate cost estimates for remedial work proposed. The Economic Development Authority reviews an applicant's financial status and issues funds when approved.

Figure 2



In 1999, the Legislature enacted a cap waiver on funds available for private parties conducting upgrades that encounter contamination during the process. This issue came to the Department's attention when owners and operators that received funding from the underground storage tank fund for removal and replacement of their tank systems discovered leaks and required additional funds to complete the

work. While monies existed in the overall fund, only a set amount was earmarked for private parties upgrading tank systems and removing contamination. The Department and EDA could only disburse a set amount of funds for upgrade and remedial activities each year as guided by statute. Because additional funding for such work was capped many upgrade efforts were halted.

The Department worked with the Legislature to enact a one-year cap waiver that became effective April 1999. This allowed hundreds of owners and operators who were approved for grants and loans from the underground storage tank fund to amend their applications to account for possible contamination problems. Simply put, if owners or operators were in the process of replacing their tank systems and leaks were found, they could immediately seek relief from the fund to pay for the cleanups and not have to wait months or years until funds under strict cap limitations became available. The cap waiver action kept many owners and operators in business.

Parties eligible for the funds under the cap waiver had to have submitted an initial application to the fund for basic upgrade work prior to January 1999. This action did not open up the fund to new applicants; it allowed owners and operators that already had met this criteria and received funds or were waiting for funds to apply for additional monies to address previously unknown contamination.

NJDEP contacted all active loan and grant applicants about these new changes and worked with these parties to ensure that remediation monies would be available, if needed, avoiding lengthy closures of their operations. NJDEP has addressed this issue with Legislative leadership in 2000 to determine whether the limit can

be waived for another year or removed entirely. Funds remain available for residents who need to perform cleanup actions at their residential properties when a home heating oil tank is found to be leaking.

More than 600 owners and operators of regulated tanks signed Administrative Consent Orders with NJDEP by December 1998 to allow them to continue to operate while they took measures to upgrade their system. As of December 1999, more than 200 of these parties have completed the upgrade requirements and an additional 400 still have plans to complete the required work. NJDEP fined the owners and operators \$2,000 a month allowing them to continue to operate and the penalty increased to \$3,000 a month in 2000 until all requirements are met. Furthermore, these facilities must document each month that their tank systems are not leaking; otherwise, they must close immediately.

Since all underground storage tank upgrade deadlines passed in December 1998, the Department's job of evaluating and insuring compliance was a primary focus throughout 1999 for the more than 10,000 locations that remained active. Overall, a high rate of compliance with the release detection, corrosion protection, spill prevention and overfill protection requirements by owners and operators of regulated systems was documented in 1999 by the Site Remediation Program. New measures to assure compliance included: requiring the submission of current tank(s) status during the permit renewal process; checking facilities that were out of compliance on the

Department's database; an internet web site listing of "compliant" facilities; a Hunterdon County pilot program to inspect all facilities within its borders; and, targeted NJDEP inspections.

### *Hunterdon County Pilot Inspection Program Successful*

In an attempt to have a strong field presence and supported with a \$25,000 grant from USEPA, the Hunterdon County Health Department agreed to inspect all regulated underground storage tank sites in the county during a one-year period. NJDEP and USEPA provided training and database support and the county hired a dedicated person to fulfill this obligation.

Preliminary data indicates that the county health department conducted 186 inspections and issued 44 notices of violation. The county's efforts proved successful in resolving all but one notice of violation, which is pending referral to NJDEP for enforcement action. The ability of the county health department to document and resolve nearly

*An inspector for the Hunterdon County Health Department tests an underground storage tank system at a service station in Raritan Township as part of a pilot program to ensure compliance with state and federal leak detection, spill, corrosion and overfill requirements.*



100 percent of the violations uncovered truly is the success story of this pilot project.

The remaining active underground storage tank locations have demonstrated compliance with applicable upgrade, leak detection, and other UST requirements. The county's efforts and a planned two-year cycle of leak detection compliance and record keeping inspections will go a long way in protecting the valuable watersheds, including drinking water resources, of Hunterdon County.

During the same time period, and funded with money from the County Environmental Health Act (CEHA), the counties of Union, Ocean, Gloucester and Hudson also participated in underground storage tank inspection training and committed to inspecting 316 locations. Data is pending from these counties as of April 2000.

In State Fiscal Year 2000, the Department received a \$50,000 USEPA grant to expand the newly created county underground storage tank inspection program. This grant combined with additional state and CEHA funds is expected to pay for inspection of more 950 underground storage tank locations; almost doubling the number of inspections planned from the prior year. Eleven counties have expressed an interest in participating, including Warren County which has agreed to inspect all regulated USTs within its borders.

The success of these coordinated federal, state and county efforts have laid the foundation for a comprehensive field presence in 2000 that will result in inspections at numerous underground storage tank facilities in New Jersey. The Department recognizes in the next few years that the inspection of all regulated underground storage tank sites in New Jersey is an important goal. During the past 15 years,

underground storage tank issues appeared on the legislative agenda for subject areas including upgrade requirements, loan and grant programs, deadlines, contractor certification, amnesty programs and federal consistency.

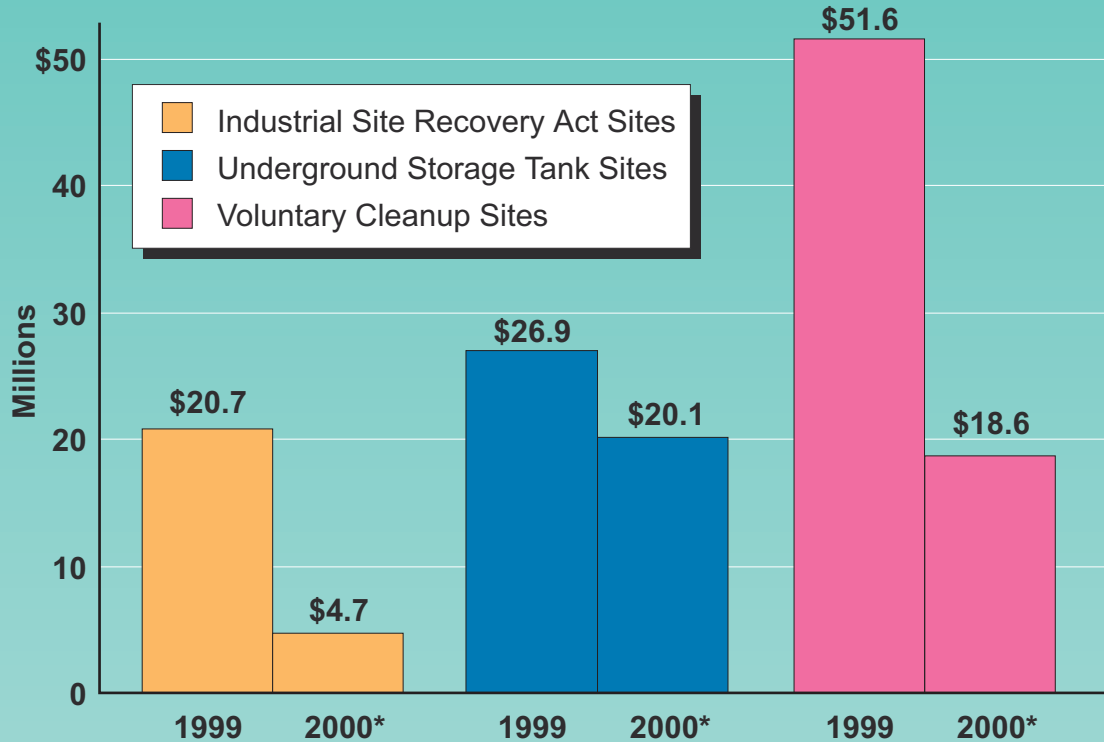
## Cost recovery has record year in 1999, direct billing declines with elimination of indirect charges

NJDEP collected more than \$37.1 million from private parties in State Fiscal Year 1999 either through cost recovery actions for past publicly funded cleanup projects or through direct billing for Department oversight costs on current privately funded remedial activities. Cost recovery efforts resulted in a record \$28.1 million recovered from responsible parties in State Fiscal Year 1999 for numerous past state cleanup actions. However, direct billing revenues of \$9 million for State Fiscal Year 1999 represent a \$4.9 million decrease from the previous year that was due to a statutory change eliminating the collection of indirect administrative charges.

## Cost Recovery

Cost recovery efforts occur within NJDEP's Site Remediation Program and Division of Law in the Department of Law and Public Safety using the authority provided by the state's Spill Compensation and Control Act. The Site Remediation Program is responsible for negotiating with responsible parties to attempt to reach settlements of outstanding cleanup costs, thus avoiding costly litigation. The Site Remediation Program reached \$487,000 in settlements with responsible parties for past NJDEP cleanup costs in State Fiscal Year

## Responsible Party Cleanup Costs at No Further Action Sites



Responsible parties complete \$99 million in cleanups under NJDEP oversight in SFY99, \$43 million in the first six months of SFY00

Under the state's Voluntary Cleanup, Underground Storage Tank and Industrial Site Recovery Act programs, NJDEP approved \$99 million in final cleanups by responsible parties in State Fiscal Year 1999, with No Further Action designations issued for all sites involved. In addition, \$43.4 million in final cleanups were approved the first six months of State Fiscal Year 2000. The Voluntary Cleanup Program provided oversight at cleanups completed worth \$51.6 million in State Fiscal Year 1999 and \$18.6 million in State Fiscal Year 2000. The Underground Storage Tank program oversaw final cleanup actions totaling \$18.1 million in State Fiscal Year 1999 and \$13.9 million in State Fiscal Year 2000, with an additional \$8.8 million in State Fiscal Year 1999 and \$6.2 million in State Fiscal Year 2000 in cleanups approved after responsible parties conducted the work without NJDEP oversight. The Industrial Site Recovery Act Program approved cleanups worth \$20.4 million in State Fiscal Year 1999 and \$4.5 million in State Fiscal Year 2000 after providing direct oversight and \$323,000 in State Fiscal Year 1999 and \$204,000 in State Fiscal Year 2000 in cleanups performed without prior NJDEP involvement. The regulated community reports these monetary amounts to NJDEP each year.

\*First six months

1999 and \$150,000 in the first half of State Fiscal Year 2000.

When an agreement cannot be reached, the Division of Law is requested to initiate legal action to effect an appropriate settlement or undertake litigation to recover the costs. The division's actions to recover NJDEP's costs in State Fiscal Year 1999 resulted in recovery of more than \$27.6 million, an increase of 74 percent from the previous year. In the first six months of State Fiscal Year 2000, more than \$3 million has been recovered. The largest settlement in State Fiscal Year 1999 involved the Chemical Control Superfund site in Elizabeth and brought \$17.4 million back to the Department. Often these cost recovery actions also result in future savings to the Department as responsible parties agree to implement any remaining remedial work required to complete a site cleanup. Several settlements warrant individual mention and are presented below. Also, a recent settlement involving the Amoco Service Station Garfield City site was completed in early State Fiscal Year 2000 and is featured on page nine.

### *LaPlace Chemical Company/Garfield Municipal Wells*

The City of Garfield experienced contamination at one of its municipal well fields located near several industries. The City of Garfield sought Spill Fund reimbursement for the \$2.2 million it spent on a water treatment system so that the impacted wells could continue to be used for public water supply. NJDEP began an investigation of several sites in the area in 1994 and determined that LaPlace Chemical Company was one of three companies responsible for such contamination. The Department then reached a settlement in which Garfield agreed to lower the amount of its claim and LaPlace reimbursed

NJDEP for \$850,000 of the total amount the state paid to the city. NJDEP will seek to recover the remainder of Garfield's damages against the other two responsible parties.

### *Lipari Landfill (United States and NJDEP v. Rohm and Haas, et al.)*

During 1999, a consent decree resolving NJDEP's claims for response costs against Owens-Illinois was entered in federal district court. Pursuant to the decree, the Department received \$515,000 from Owens-Illinois, the remaining defendant, in reimbursement of costs related to the cleanup of Lipari Landfill, a 16-acre closed landfill located in Gloucester County. For many years, the site retained the highest hazard ranking on USEPA's Superfund list, resulting in national notoriety. Entry of the decree brought to a close lengthy litigation that commenced in 1986 against Rohm and Haas Co., Owens-Illinois and several other defendants. As a result of the settlements in the matter, USEPA and NJDEP have recovered more than \$120 million in cash and work for the capping of the landfill, treating ground water and removing and replacing contaminated lake, marsh and creek soils. Cleanup of the landfill and areas adjacent to it has been completed and has resulted in the reopening of Alcyon Lake for recreational use.

### *Edgewood Village Mobile Home Park*

This state court suit was settled when a group of allegedly responsible parties and their insurers agreed to pay the state \$476,836 as reimbursement for past NJDEP cleanup costs. The Department completed a cleanup of a 5,400-gallon kerosene spill that occurred in 1989 at a mobile home park in Middle Township, Cape May County in 1993. The allegedly responsible parties had begun the cleanup under NJDEP's direction, removing con-

taminated soil, but ran out of money before ground water contamination was addressed. Consequently, NJDEP took over the work operating a ground water extraction and treatment system from 1989 to 1993 and it continues to monitor this site. The state sued those it believed were responsible for the discharge resulting in last year's settlement.

## Direct Billing

NJDEP also recovers its oversight costs when a responsible party conducts and pays for a cleanup with Site Remediation Program approval. Similarly, when a party undertakes a voluntary cleanup, often as part of a redevelopment project, and seeks the Site Remediation Program's input, the costs to the program are recovered. Here, the benefits derived from the Department's guidance and approval by developers, banks and other

## Amoco Assumes Garfield City Cleanup

In March 1993, gasoline-contaminated ground water migrated to a nearby 13-unit apartment building in the City of Garfield, causing explosive levels of gasoline vapors to accumulate in its basement. All 25 tenants were evacuated by local officials and NJDEP directed a nearby gas station owner to remedy leaking underground storage tanks and associated soil and ground water contamination. The owner removed a leaking tank, but failed to complete any additional remedial work. NJDEP implemented measures at the apartment complex to lessen the threat of explosion in this densely-populated neighborhood. More than 900 gallons of gasoline were recovered from the site by NJDEP through a soil vapor extraction system. The Department also studied the area to identify which of several neighborhood gasoline stations caused the discharge and how best to clean up soil and ground water contaminated with thousands of gallons of gasoline. NJDEP concluded that the con-

tamination had emanated from leaking underground storage tanks at an Amoco station about 150 feet away. After four years of negotiations, Amoco, without admitting liability, signed an Administrative Consent Order in September 1999 in which it agreed to pay NJDEP's past remedial and investigatory costs of \$1.5 million as well as to perform all necessary future remediation, which the Department estimated would have cost the state in excess of \$3 million.



parties not considered responsible for a site's contamination also are calculated and recouped.

The Site Remediation Program's semiannual billing system to recover its oversight costs from private parties conducting remedial activities achieved new efficiencies in State Fiscal Year 1999. The number of bills issued in State Fiscal Year 1999 increased to 8,219 from 4,791 in State Fiscal Year 1996, the year prior to implementing a new billing system. This 71 percent increase reflects the Department's efforts to collect its oversight costs on a timely basis. Overall, the improved billing system shifts the burden of paying NJDEP's administrative costs to review and approve investigation and cleanup reports from New Jersey taxpayers to responsible parties or developers.

However, direct billing revenues of \$9 million collected for State Fiscal Year 1999 represent a \$4.9 million decrease from the previous year due to a statutory change eliminating the collection of indirect administrative expenses by NJDEP for its oversight costs. In the first half of State Fiscal Year 2000, NJDEP collected approximately \$4 million in oversight costs that indicates a continued trend of lower revenue for the Department from direct billing. The elimination of the recovery of indirect administrative costs has decreased direct billing revenues about 35 percent, thus requiring the Department to identify other funds to cover this portion of its administrative costs.

## Soil blending at Camden County farm reduces pesticide levels to residential use criteria

Following recommendations issued by the Historic Pesticide Contamination Task Force in 1999, the Department allowed the blending of pesticide-contaminated soil with clean soil at a Camden County farm. The Task Force recommended soil blending as a remedial option only at sites with historical pesticide contamination.

A developer successfully blended topsoil containing pesticide residue with underlying soil reducing levels of dieldrin to meet NJDEP's residential soil criteria on a 55-acre tract of a Winslow Township farm in Camden County. About 90 single-family homes are proposed for the land adjacent to a portion of the farm that is still operating and selling produce.

Working under a Memorandum of Agreement with Site Remediation Program's Bureau of Field Operations, William Bowman Associates completed the blending project on the former apple orchard in about six weeks allowing for construction of the neighborhood's infrastructure. The work included blending the underlying three to four feet of soil, sampling to determine the reduction in contaminant levels and reporting these findings to NJDEP. Estimated costs of the blending project are \$6,000 to 8,000 per acre, according to the developer.

During the last 100 years, the agricultural community has routinely and consistently applied pesticides to control pests in order to increase crop yield. Application rates, duration of use and persistence in soil are the major factors contributing to the likelihood that residual pesticides may be present in soil at concentrations above the



Department's Residential Direct Contract Soil Cleanup Criteria.

Statewide, there were 10 other development projects underway in December 1999 using various methods to address historic pesticide contamination. The remedial options chosen included four blending projects, one consolidation and capping project and six removal projects. Clearly, sampling former agricultural areas, and any necessary remedial activities, should be conducted prior to, and integrated with, development of a site.

The Task Force recommendations also included remedial options for new and existing development sites such as the consolidation and covering of contaminated soil on site under roads and structures or capping contamination with clean soil. The report was finalized in March 1999 and distributed to mayors, school boards and legislative leaders. Other states have shown an interest in the Task Force's report as New Jersey is the first state in the nation to take actions to control exposure to historical pesticide contamination.

The primary concern with historical pesticide residues is human health risk from inadvertent ingestion of contaminated soil, particularly by children. NJDEP Commissioner Robert C. Shinn, Jr. formed the Task Force in April 1996 to help the Department identify technically and economically viable alternative strategies that will protect human health and the environment at sites with contamination due to historical use of pesticides.

The presence of moderately elevated pesticide residuals in soil presents not only potential health concerns, but also marketplace

concerns. The Department estimates that up to five percent of the state's acreage may be impacted by the historical use of arsenical pesticides. The pesticides of concern, which have not been widely used in many years, are arsenic, lead, DDT (and its metabolites, DDE and DDD), dieldrin and aldrin.

## Deed Notice Inspections Ensure Remedial Controls Remain Effective

In 1999, the Site Remediation Program began inspecting all sites that require environmental deed notices after completion of remedial activities to address site contamination and created a central repository for the deed notices within NJDEP. This effort includes inspections of the more than 320 sites that have engineering and institutional controls and received a no further action designation from the Department. Since the Site Remediation Program began tracking cleanup progress in the 1970s, more than 20,000 sites have received No Further Action letters without a

*A soil blending machine works the top four feet of soil at a former Winslow Township apple orchard to reduce historic pesticide contamination levels. Meeting the Department's residential soil cleanup criteria allowed development of the site without future restrictions.*



deed notice stipulation. All sites that have received No Further Action letters with deed notices will be included for the first time in the 2000 edition of the *Known Contaminated Sites in New Jersey* report issued by the Department that covers each municipality in the state.

As detailed in the recently revised Technical Requirements for Site Remediation and the 1998 Brownfield and Contaminated Site Remediation Act, biennial certification requirements must be met by parties required to uphold the deed notice stipulations. This requirement is necessary in order to maintain the parties covenant not to sue provision of the No Further Action letter. Property owners actually file Department approved deed notices with county and local officials as part of the remedy.

A deed notice, formerly known as a Declaration of Environmental Restriction, is the institutional control that provides notification of contamination remaining on a property that exceeds the Residential Direct Contact Soil Cleanup Criteria. The deed notice details the site specific engineering and/or institutional controls that have been approved as a protective barrier between remaining contamination and residents or the environment, such as nearby streams.

Some sites may require a protective cap that might consist of soil, asphalt or concrete, while others may only need fencing and restrictions on excavation. Periodic inspection and maintenance requirements ensure the continued protectiveness of the engineering and institutional controls.

The Site Remediation Program will inspect each property with a deed notice on a regular schedule to ensure the approved engineering controls are properly maintained

and remain protective. A report of the inspection is generated and sent to the person(s) responsible for meeting the requirements of the deed notice. The report includes a review of the information on file with NJDEP and either compliance or noncompliance with site specific requirements. Non-compliance with any requirements will result in appropriate action by NJDEP. Inspections may be more frequent based on NJDEP needs and/or a response to a complaint about a site.

Furthermore, the party responsible for meeting the provisions of a deed notice must submit a certification every two years documenting site conditions to the Department. The biennial certification requires a statement that the engineering and institutional controls are being properly maintained and continue to be protective of public health and the environment. The responsible party also must verify that any engineering control was inspected and remains protective of public health and the environment.

### *Private Resident Helps NJDEP Uncover Deed Notice Violation in Camden*

A private resident informed NJDEP that a previously installed cap was removed from a contaminated site in City of Camden and questioned if this work had been approved by the Department. The party responsible for the site received a No Further Action letter and filed a deed notice for the property that was required as part of the formal remedy approved for the site by the Department.

The responsible party notified the Site Remediation Program of the disturbance, as required, but had exceeded the time limit specified in its No Further Action letter for the site. An evaluation and inspection by NJDEP documented a breached cap with

recycled concrete aggregate covering the disturbed engineering control. Runoff from the site was entering a storm drain and flowing to a tidal creek.

After NJDEP notified the responsible party of the violation, the responsible party installed a temporary impermeable liner to reduce infiltration over the disturbed area and added silt fencing, filter fabric and crushed stone to control runoff. The responsible party also agreed to enter into a new Memorandum of Agreement with NJDEP outlining its future redevelopment schedule for the site.

NJDEP maintains an environmental hotline for residents to call when they see or learn about a potential pollution problem. The toll-free telephone number is 1-877-WARNDEP (927-6337).

## Mapping Electronic Environmental Data Enables Visual Analysis For Improved Remedial Decisions

Site Remediation Program staff has begun to analyze environmental sampling data from contaminated sites submitted electronically to the Department through new computer mapping efforts. Visually examining environmental data is a new trend that augments traditional paper report reviews.

For more than two years, Department regulations have mandated submission of electronic data for any phase of an investigation or cleanup. Private parties, local governments or the Department, when it uses public funds, each must submit all sampling and monitoring data collected in an electronic format. The data must include geographic coordinates as well as contaminant identification and concentrations.

Since February 1997, several thousand electronic data submissions have been received by NJDEP and more than 1,300 of these files have been loaded in to a data repository. Preliminary examination of the data submissions using Geographic Information System technology has begun, and while a number of case specific discrepancies with the data have been identified, a large number of data sets have spatial accuracy acceptable to NJDEP.

The implementation of the digital data requirements specified by the Technical Requirements for Site Remediation has been successful due to a high rate of compli-

ance by the regulated community at large and, in particular, the many environmental consulting firms responsible for implementation of the technical details that support electronic data submission. About 85 percent of the data submissions are passing an electronic data system checker the Department operates. The Site Remediation Program is engaged in training its staff in the use of the data management repository, and select core users have received initial exposure to the system.

NJDEP's experience with electronic data has generated a lot of interest from other states as well as USEPA. The Department



*A resident reported to NJDEP that a capped site in the City of Camden was disturbed. This led to the Department requiring the responsible party to correct the problem.*

has begun to plan for standardization of electronic data collection between state and federal agencies so that sharing of that data would be possible. In the future, the planning process could be expanded to include local municipal and regional environmental and planning agencies. An important issue that needs discussion and resolution between the agencies will be the structure and format for the electronic data. Standardizing digital data collection for an entire region and the country so that data is directly accessible between agencies with different jurisdictions will increase by orders of magnitude the base data that these agencies rely on for decision making. The concept that contaminated site data can be available in a visualization system such as a Geographic Information System to the business and environmental community has broad implications with respect to urban land recycling, land use decisions and for establishing preservation and protection priorities.

Once data is organized into an electronic format and stored in a relational database it can be rapidly accessed and subject to a number of interesting manipulations. Some of the projects that NJDEP believes will directly benefit from the collection and use of digital data are listed below:

- ❑ Assessment of the effectiveness of institutional and engineering controls—notably Classification Exception Areas and deed notice restrictions;
- ❑ Analysis of site data during management of remedial investigations, cleanups and monitoring activities by exporting the data to a Geographic Information System to generate graphic visualizations to identify trends or discrepancies in the results. Through use of this information, a

number of varied applications for the data will continue to develop;

- ❑ Direct measurements of environmental quality and its improvement or degradation that are being explored through Quantitative Environmental Indicators;
- ❑ Enabling public access to data on contaminated sites to assist in evaluating environmental conditions in particular areas of interest;
- ❑ Identification of areas in the state appropriate for well installation; and,
- ❑ Identification of point sources of ground water pollution sites for source water protection and watershed management areas.

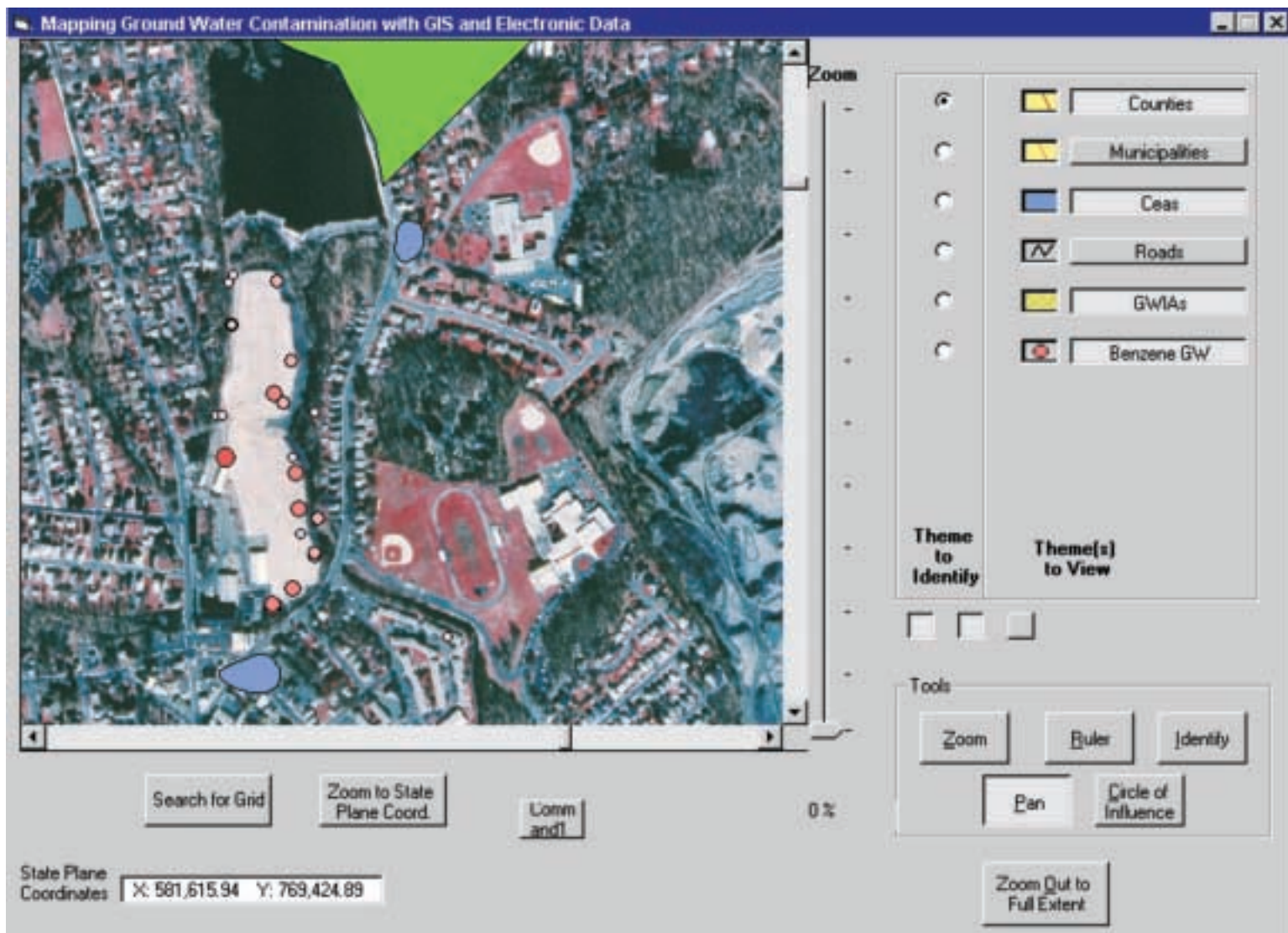
NJDEP also is interested in using the digital data being collected to assess the natural background concentrations of some of the common contaminants detected at industrial and contaminated sites. This approach is being extended to examine the kinds of contaminants found in areas where historic landfilling has occurred. The state geological survey is in the process of mapping historic fill areas throughout the state. The data that is collected electronically will be examined in order to determine the type and concentration range of contaminants that are typical of historic fill.

If a site is located in an area where there are elevated levels of natural contamination or historic contaminated fill, remediation of that contamination may not be required beyond institutional and engineering controls. This kind of assessment addresses many liability issues associated with a site and the potential use of less costly controls to eliminate exposure to contamination.

In an effort to insure full compliance with the submission of digital data, NJDEP will no longer issue No Further Action letters for parties that have failed to submit

## Electronic Data Mapping

The Site Remediation Program has been collecting environmental sampling data electronically since 1997. Recently, through an innovative pilot project, data from various sites has been mapped using associated geographic information system data to provide a visual representation of the information. In coming years as the project progresses, this information will be used to help guide remedial activities and prepare maps for public use. The map shown includes several features: ground water sampling data on a specific contaminant from a former industrial site that has been closed and is undergoing ground water cleanup; orthophotography; Classification Exception Areas (CEAs) outlining the extent of ground water contamination from two additional sites; and, a ground water impact area (GWIA) where an unknown source of ground water contamination was found affecting private wells that have since been hooked up to treatment systems to provide safe water.



data in the electronic formats specified under N.J.A.C. 7:26E and its associated guidance in the near future. Acceptable data relates to the spatial accuracy of samples as specified in the referenced guidance not on analytical accuracy of the samples.

Further information and guidance regarding these issues can be obtained at the Site Remediation web page at <http://www.state.nj.us/dep/srp/regs/hazsite/hazsite.htm>.

### *Benefits to Quality Assurance/Control Practices in a Digital Data Environment*

A central objective of electronic data collection by the Site Remediation Program is to ensure the process incorporates quality assurance in the daily environmental data management habits of the agency. The collection of digital data enables the application of supporting third party electronic systems for the assessment and verification of electronic data. New software products are available and are being developed that will allow electronic data submissions to undergo verification and limited data validation.

A key planning concept for electronic data submissions is the development of a system that builds quality assurance measures into the data management process. Paper-based data management mechanisms can address a portion of all data submitted to an agency; new personal computer/local access network based information management technologies have the potential to make it practical to screen all data submissions. This process includes a fundamental shift in agency practices away from the way data has been reviewed in the past, where data quality determinations are assessed at the end of the data collection and analytical process.

The strategy is to develop quality assurance routines in advance of electronic data submission system deployment in order to eliminate the occurrence of data errors at the end of the remedial review process. Also, functioning systems must be flexible enough to permit the identification and correction of unforeseen discrepancies with data using existing electronic screening tools. The application of these concepts as part of the Site Remediation Program's efforts will permit the inclusion of corrective design elements with the final employment of a system and also will promote a strategy flexible enough for continual improvement of electronic data submissions. This permits quality assurance staff to identify errors in the data at key points in the review, rather than waiting until the receipt of the final data submission.

### *Natural Resource Damage Settlements Nearly \$1.2 Million*

NJDEP settled eight natural resource damage cases in 1999 amounting to nearly \$1.2 million in recoveries as noted in Figure 3. The Site Remediation Program works closely with the Office of Natural Resource Damages, part of the Department's natural resource program, to reach these settlements with responsible parties during oil spills and the remediation of contaminated sites.

Using monies from the new damage recoveries and previous settlements, NJDEP expended \$700,000 in 1999 for a variety of projects related to past natural resource damages. These projects included: the purchase and protection of 57 acres of aquifer recharge area and ecologically valuable land; funding research in support of habitat restoration; endangered species management; and, constructing

permanent boom anchors at the mouths of five tributaries to the Delaware River, allowing rapid deployment of booms to remote areas during potential oil spills that will protect hundreds of acres of upstream wetland ecosystems.

The primary mission of the Office of Natural Resource Damages is to provide for the assessment and restoration of New Jersey's natural resources that have been injured by the release of oil or other hazardous substances. Restoration projects must have a demonstrable link to injuries caused by specific releases.

Figure 3 – 1999 Natural Resource Damage Settlements

Spills	Injury Category	Damage Recovery
Cibro Savanna	Wetlands, lost public use	\$240,000
Camden County MUA	Fisheries, Lost public use	\$25,000; Erosion control and endangered species protection implemented by responsible party at \$100,000
Sun Pipeline	Small stream	Monitoring, stream revegetation and trash removal implemented by responsible party at \$75,000
Vane Bros.	Wetlands	3 sets of boom anchors and osprey nesting platforms implemented by responsible party at \$40,000
New Ideal	Wetlands	\$15,034
Coastal Eagle	Wetlands	3 sets of boom anchors implemented by responsible party at \$25,000
Spring Bee	Wetlands	\$3,594
<b>Hazardous Sites</b>		
Chemsol	Ground water	\$650,000

*A 1,200-foot boom stretches across the Shark River Inlet from a permanent anchor on the Belmar side to the U.S. Coast Guard Station in Avon during a drill in October 1999 using rice husks to simulate an oil spill. Overall, the boom project is designed to keep offshore oil spills from impacting New Jersey's 12 inlets and connecting back bay environments.*

