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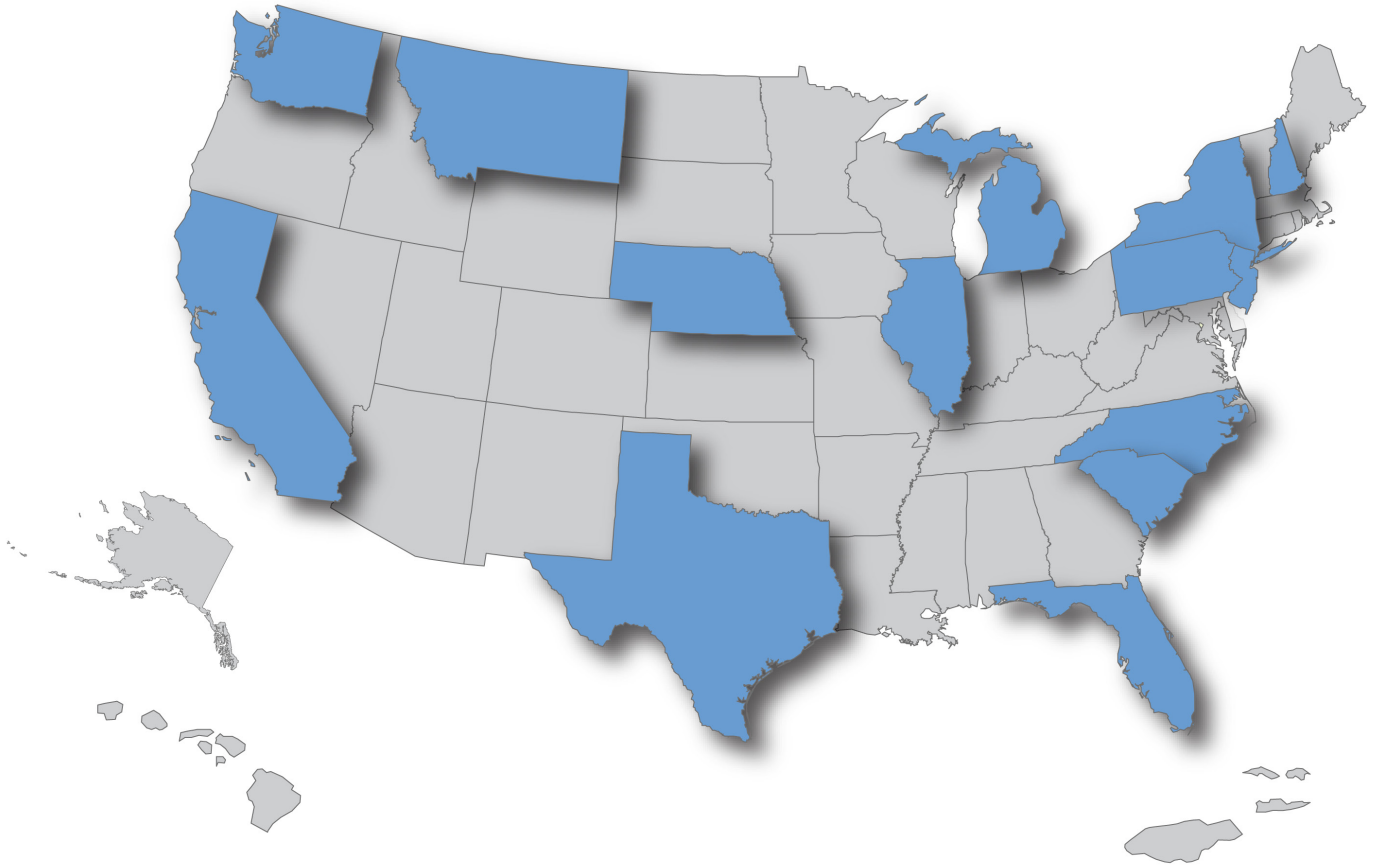
The National LUST Cleanup Backlog:
A Study of Opportunities



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THE NATIONAL LUST CLEANUP BACKLOG: A STUDY OF OPPORTUNITIES

STATE SUMMARY CHAPTER: NEW HAMPSHIRE

Office of Solid Waste and Emergency Response
Office of Underground Storage Tanks
September 2011

LIST OF ACRONYMS

DES	New Hampshire Department of Environmental Services
EDB	Ethylene Dibromide
EPA	United States Environmental Protection Agency
FY	Fiscal Year
LUST	Leaking Underground Storage Tank
MNA	Monitored Natural Attenuation
MSA	Multi-Site Agreement
MTBE	Methyl Tertiary Butyl Ether
NA	Not Applicable
ODD	Oil Discharge and Disposal Cleanup
RBCA	Risk-Based Corrective Action
RP	Responsible Party
RSA	Revised Statutes Annotated
SRCIS	Spill Response and Complaint Investigation Section
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Leaks from underground storage tanks (USTs) threaten America's groundwater and land resources. Even a small amount of petroleum released from a leaking underground storage tank (LUST) can contaminate groundwater, the drinking water source for nearly half of all Americans. In surveys of state water programs, 39 states and territories identified USTs as a major source of groundwater contamination.[2] As the reliance on our resources increases due to the rise in population and use, there is a correspondingly greater need to protect our finite natural resources.

From the beginning of the UST program to September 2009, more than 488,000 releases were confirmed from federally-regulated USTs nationwide. Of these confirmed releases over 100,000 needing cleanup remained in the national LUST backlog. These releases are in every state, and many are old and affect groundwater. To help address this backlog of releases, the United States Environmental Protection Agency (EPA) invited 14 states to participate in a national backlog characterization study.

ANALYSIS OF NEW HAMPSHIRE DATA

New Hampshire's Department of Environmental Services (DES) has made significant progress toward reducing its LUST cleanup backlog. As of March 2009, DES had completed 1,553 LUST cleanups, which is 67 percent of all known releases in the state. At the time of data collection, there were 745 releases remaining in its backlog.[4] To most effectively reduce the national cleanup backlog, EPA believes that states and EPA must develop backlog reduction strategies that can be effective in most states as well as those with the largest backlogs. EPA invited New Hampshire to participate and represent EPA Region 1 in its national backlog study.

In this chapter, EPA characterized releases in New Hampshire that have not been cleaned up, analyzed these releases based on categories of interest, and developed potential opportunities for DES and EPA to explore that might improve the state's cleanup progress and reduce its backlog. Building on the potential cleanup opportunities identified in the study, EPA will continue to work with DES to develop backlog reduction strategies.

In New Hampshire, as in every state, many factors affect the pace of cleaning up releases, such as the availability and mechanisms of funding, statutory requirements, and program structure. The recent economic downturn has also had an impact on the ability of many states to make progress on cleanups.

EPA included potential cleanup opportunities in this report even though current circumstances in New Hampshire might make pursuing certain opportunities challenging or unlikely. Also, in some cases, DES is already using similar strategies as

New Hampshire LUST Data By the Numbers[1]

National Backlog Contribution	< 1%
Cumulative Historical Releases	2,298
Closed	1,553/67%
Open	745/33%
Stage of Cleanup	
Pre-remediation[3]	128/17%
Remediation	617/83%
Media Contaminated	
Groundwater	732/98%
Soil	6/1%
Other	1/ <1%
Unknown[5]	6/1%
Median Age of Open Releases	14.2 years

1 Data were provided in March 2009 by DES staff and are not identical to the UST performance measures reported on EPA's website, available at: www.epa.gov/oust/cat/camarchv.htm.

2 EPA, *National Water Quality Inventory: 2000 Report*, pp. 50-52. www.epa.gov/305b/2000report/chp6.pdf.

3 Available data do not distinguish between whether a release is in the Confirmed Release or the Site Assessment stage.

4 EPA tracks individual releases rather than sites in its performance measures. Therefore, the analyses in this report account for numbers of releases, not sites.

5 Unknown media releases include those releases where the media is unknown as well as those releases where, based on available data, it was not possible to identify the media contaminated.

part of its ongoing program. The findings from the analysis of DES's data and the potential cleanup opportunities are summarized below in eight study areas: stage of cleanup, media contaminated, use of passive remediation, cleanup financing, type of contamination, number of releases per responsible party (RP), geographic clusters, and data management.

Stage of Cleanup *(see page NH-10 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
63 percent of releases: • are in remediation; and • are 10 years old or older.	Continue to use a systematic process to explore opportunities to accelerate cleanups and reach closure, such as periodically reviewing release-specific treatment technologies.	469

New Hampshire assessed most of its confirmed releases but releases are taking a long time to move through remediation. The majority of open releases are 10 years old or older. There are several reasons why many releases in the backlog are old including: releases are complex and therefore take a long time to address; releases where active remediation has concluded and the remaining contamination is being addressed through passive remediation; and limited availability of state fund resources for cleanups. DES has made significant efforts at backlog management and reduction. Nevertheless, EPA believes it is important for DES to continue to explore opportunities to accelerate cleanups at older releases and to make progress toward bringing these releases to closure.

Media Contaminated *(see page NH-13 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
63 percent of releases: • contaminate groundwater; • are in remediation; and • are 10 years old or older.	Systematically evaluate cleanup progress at old releases with groundwater impacts and consider alternative cleanup technologies or other strategies to reduce time to closure.	468

Releases contaminating groundwater have always been the largest part of the national backlog and 98 percent of releases in New Hampshire are documented as contaminating groundwater. In general, groundwater contamination is more technically complex to remediate and also takes longer to clean up than soil contamination. For old, complex cleanups where long-term remediation is underway, EPA believes it is important to have a system in place for periodic reevaluation of cleanup progress and to reconsider whether the cleanup technology being used is still optimal. DES is faced with a large number of releases with groundwater impacts and has very few soil-only cleanups remaining. Nevertheless, EPA believes DES should continue to make progress toward closure for all cleanups.

Use of Passive Remediation *(see page NH-14 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
75 percent of releases with groundwater contamination and that are in the Remediation stage are in passive remediation.[6]	• Continue to look for cost savings measures to address additional releases. • When resources permit, evaluate the effectiveness of cleanups using passive remediation and consider using active remediation technologies for releases with potential receptors.	459

Due to resource limitations, DES no longer has a formal monitored natural attenuation (MNA) program, which is typically characterized by a carefully controlled and monitored process to achieve site-specific remedial objectives within a timeframe that is comparable to more active methods. DES made a strategic decision to limit expensive monitoring and now uses a passive remediation approach (identified as releases with groundwater monitoring permits) at releases where the source has been addressed. DES monitors these releases, but on a less frequent basis than a formal MNA program requires. DES believes that many of the releases in long-term groundwater monitoring will naturally attenuate within the next 10 years.[7] This decision potentially contributes to the backlog but it also allows DES to actively address additional releases by spending less reimbursement fund money on groundwater monitoring and more on remediation. If passive remediation does not address contamination in a reasonable timeframe, EPA encourages the use of other strategies such as active remediation technologies as resources permit.

6 The data submitted identified 75 percent of releases as currently using a passive remediation approach. Since that time, DES clarified that this is actually two subsets of sites. One subset of releases is in passive remediation or in long-term groundwater monitoring. The other subset contains lower priority releases that are awaiting funding to enter active remediation.

7 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.

Cleanup Financing *(see page NH-15 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
94 percent of releases are eligible for state funding.	Continue to explore opportunities to move state-funded cleanups to closure, including: • continuing to look for cost saving incentives and approaches to cleanup; • continuing to reevaluate remedial plans to identify releases where more cost-effective plans could be implemented; and • continuing to encourage the use of other sources of public and private funding such as petroleum brownfields grants to move relatively low risk releases toward closure.	703

EPA and state programs are interested in exploring successful financing strategies for completing cleanups quickly. EPA acknowledges that the recent economic downturn has impacted cleanup financing. New Hampshire has indicated that limited availability of state fund resources impacts the cleanup of its backlog, particularly for funding remediation activities. EPA also believes the availability of funding for cleanup is essential to reducing the backlog, so in addition to this study, EPA is increasing its focus on oversight of state funds as well as conducting a study of private insurance.

All state programs are experiencing resource limitations, and progress toward backlog reduction is dependent on their ability to apply existing resources to their backlogs. DES is already pursuing strategies to efficiently expend state funds including evaluating the cost-effectiveness of remedial plans at state-funded cleanups in remediation. DES also considers cost saving approaches to cleanups and makes effective use of the petroleum brownfields program and other funding sources to move releases into remediation.

Type of Contamination *(see page NH-16 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
Of releases with groundwater impacts that are in remediation and have methyl tertiary butyl ether (MTBE) contamination: • 75 percent use passive remediation.	Reevaluate the current remedial plan and utilize optimal remedial technologies for the removal of MTBE, as resources permit.	543
9 percent of releases: • impact groundwater; and • have ethylene dibromide (EDB) contamination.	• Continue to monitor and report the presence of lead scavengers (e.g., EDB) in groundwater at appropriate LUST sites; • Analyze EDB using EPA methods with the appropriate detection limits; • Remediate lead scavengers aggressively when such constituents could threaten a source of drinking water; and • Share information with EPA on the presence and remediation of these constituents.	65

MTBE can be a complicating factor at LUST releases. Because MTBE is not easily degraded in groundwater, releases involving MTBE require more aggressive management and remediation than releases where MTBE is not present. As with any release in remediation, it is important to have a system in place for regular re-evaluation of the cleanup strategy to ensure that optimal strategies are employed, as resources permit.

DES has recently undertaken an effort to investigate levels of EDB contamination at LUST releases. Due to resource limitations, DES is targeting EDB sampling to known leaded gas releases, and focusing its sampling effort on a case-by-case basis to releases requiring the highest level of oversight. If lead scavengers are present and could threaten a source of drinking water, EPA strongly advises that states, tribes, and EPA regions take or require UST owners and operators to take aggressive remedial action to address the contamination and prevent human consumption of contaminated drinking water.

Number of Releases per RP *(see page NH-18 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
11 percent of releases are associated with five RPs each with 10 or more releases.	Continue to explore possibilities for multi-site agreements (MSAs) with RPs associated with multiple open releases.	79

EPA analyzed the number of releases per RP to identify the largest potential contributors to New Hampshire's backlog. In New Hampshire, five RPs are each responsible for 10 or more releases and account for 11 percent of the New Hampshire backlog. DES uses MSAs with RPs. DES and EPA can use this information to identify possible participants for additional multi-site strategies to clean up groups of releases.

Geographic Clusters *(see page NH-18 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
38 percent of releases are clustered within a one-mile radius of five or more releases.	Continue to target releases within close proximity for resource consolidation opportunities.	Targeted number of releases[8]

Another multi-site approach DES uses is targeting cleanup actions at geographically-clustered releases. This approach might offer opportunities for new community-based reuse efforts, using economies of scale, and addressing commingled contamination. DES has been assigning clusters of sites to project managers for at least five years to facilitate coordination and minimize the expenditure of funds. EPA believes that highlighting geographic clusters of releases and working with state and local governments in area-wide initiatives improves New Hampshire's pace of cleaning up releases. To this end, DES has already secured a petroleum brownfields revolving loan fund grant and is working with regional planning commissions on redevelopment issues in the state. EPA intends to work with the states to conduct further geospatial analyses on clusters of open releases in relation to RPs, highway corridors, local geologic and hydrogeologic settings, groundwater resources, and/or communities with environmental justice concerns. These analyses might reveal additional opportunities for backlog reduction.

Data Management *(see page NH-19 for more details)*

New Hampshire Finding	Potential Opportunity	Releases
Several key data fields were not included, consistently maintained, or routinely tracked in the OneStop database.	Continue to implement changes in the OneStop database to enhance program management.	Variable number of releases[9]

Data management limitations prevented a full assessment of New Hampshire's backlog. Because of data limitations, EPA used a combination of data sources to identify the current stage of cleanup at releases. In February 2010, DES added functionality to the OneStop database and assigned all open releases a status indicating their cleanup progress. The added functionality allows DES to track detailed status information within the backlog and will assist DES with reporting on its various backlog reduction approaches.

CONCLUSION

This chapter contains EPA's data analysis of New Hampshire's LUST cleanup backlog and identifies potential opportunities to reduce the backlog in New Hampshire. EPA discusses the findings and opportunities for New Hampshire, along with those of 13 additional states, in the national chapter of this report. EPA will work with states to develop potential approaches and detailed strategies for reducing the backlog. Development of strategies could involve targeted data collection, reviewing particular case files, analyzing problem areas, and sharing best practices. Final strategies could involve EPA actions such as using additional program metrics to show cleanup progress, targeting resources for specific cleanup actions, clarifying and developing guidance, and revising policies. EPA, in partnership with states, is committed to reducing the backlog of confirmed UST releases and to protecting the nation's groundwater, land, and communities affected by these releases.

8 Opportunities marked as "targeted number of releases" relate to geographic opportunities that will address a limited number of releases within select designated geographic areas.

9 Opportunities marked as "variable number of releases" relate to programmatic opportunities and affect an unknown number of releases, potentially including all open releases.

PROGRAM SUMMARY

State LUST Program Organization and Administration

The Petroleum Remediation Program within New Hampshire's Department of Environmental Services (DES) Waste Management Division oversees the remediation of releases from leaking underground storage tanks (LUSTs) and aboveground storage tanks, as well as other petroleum-contaminated sites. All petroleum remediation sites are assigned to project managers for oversight, including the review of site assessment reports, oversight of remedial activities, approval of work scopes and budgets, and review of reimbursement claims associated with state fund eligible releases.

Cleanup Financing

Administered by the Oil Fund Disbursement Board, DES's Petroleum Reimbursement Fund program is composed of four separate funds.[11] The Oil Discharge and Disposal Cleanup (ODD) Fund finances 94 percent of cleanups (703 cleanups) in the state. The remaining 6 percent of cleanups (42 cleanups) not covered by the fund might be located at facilities not in compliance or might not yet have applied for coverage. All releases from tanks at facilities that are in compliance with local, state, and federal standards are eligible for state funding. An initial cost deductible applies to all facilities except on-premise-use fuel oil. New Hampshire made a series of policy and legislative changes resulting in near universal availability of state funding for LUST sites. The number of releases covered by public funding will increase with the passage of last year's legislation that expands coverage from tank facility owners to also include property owners. Near universal coverage of funding for LUST sites means there is no orphan or abandoned site issue in New Hampshire.

Cleanup Standards

New Hampshire's Groundwater Protection Statute requires that all groundwater must meet state drinking water standards, without exception. No contaminated site can be closed until those standards are met. Risk-based cleanup standards for releases with soil contamination are used but because most of New Hampshire's releases impact groundwater as well as soil, the risk-based standards for soil rarely speed the pace of cleanup.[13] DES allows the use of institutional controls to prevent direct exposure and allows contaminated soil to be managed on site. However, only four LUST releases have records of closure with institutional controls in place.

New Hampshire LUST Program At a Glance

Cleanup Rate
In fiscal year (FY) 2009, DES confirmed 38 releases and completed 78 cleanups.[10]

Cleanup Financing
Of open releases, 94 percent (703 releases) are state fund eligible.

Cleanup Standards
Stringent groundwater cleanup standards must be met for all releases. Risk-based corrective action (RBCA) can be used for soil remediation.

Priority System
DES does not currently prioritize releases.

Average Public Spending on Cleanup
$182,829 for open releases and $47,612 for closed releases.[12]

Releases per Project Manager
Each project manager is on average responsible for 90 open releases.[14]

Administrative Funding (FY 2008)
$1.8 million.[15]

10 Based on FY 2009 *UST Performance Measures End of Year Activity Report*.
11 The program is composed of four separate funds authorized by state statute: the Oil Discharge and Disposal Cleanup Fund (under Revised Statutes Annotated (RSA) 146-D), the Fuel Oil Discharge Cleanup Fund (under RSA 146-E), the Motor Oil Discharge Cleanup Fund (under RSA 146-F), and the Gasoline Remediation and Elimination of Ethers Fund (under RSA 146-G).
12 Based on New Hampshire's January 2009 Petroleum Reimbursement Funds Activity Report.
13 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
14 Estimate provided by Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
15 This amount does not include reimbursement staff, UST staff, or other non-LUST expenses.

Release Prioritization

The DES OneStop database is able to track release priority and all releases are assigned a default value in this field when the release is entered in the system, but DES has not used its release priority system since 2002, at which time the program had enough resources to fund cleanup of all releases. Case workers make informal decisions about which releases get the highest level of oversight. DES also performs expedited environmental site assessment reviews for a fee if they are needed for time-critical real estate transfers or financial transactions.[16] DES might prioritize releases again in the near future to use its limited resources most effectively.

State Backlog Reduction Efforts

The total number of LUST releases in New Hampshire peaked in 1993 and declined sharply as the first two backlog reduction initiatives were implemented in that year. The two initiatives were: 1) the use of risk-based decision making for soil standards (previously the standard was 1 part per million total volatile organic compounds and 100 parts per million of total petroleum hydrocarbons) and 2) a review of inactive files to determine whether actions should be taken or sites closed. In 1998, DES reviewed the files of every open release in the OneStop database to determine the status of work underway. Where records showed no current activity, DES ran queries to identify releases with overdue submittals. DES staff contacted responsible parties (RPs) and contractors for these releases and used a variety of strategies to move the releases forward, including performing site visits, implementing enforcement actions, referring releases to brownfields programs, and helping RPs achieve state fund eligibility. This long-term initiative was funded in part by supplemental LUST Trust Fund awards. Of the 1,003 open releases in the backlog in 1998, 518 releases (52 percent) were addressed as part of this initiative and, of those releases, 333 releases (64 percent) have since been closed. During this initiative, many of the closures were achieved using the RBCA standards for soil, as the releases occurred at a time when DES used stringent standards for total volatile organic compounds and total petroleum hydrocarbons, which had been changed in the interim. Sites were also addressed during the initiative by resolving eligibility for the ODD Fund, enforcement, persuasion, and referral to USTfields or brownfields programs. This initiative was a major multi-year effort involving existing staff, and the queries used in this initiative to keep track of overdue work are now performed semi-annually or more frequently if staff resources are available.

16 Expedited environmental site assessment reviews were required by RSA 485:3-b, passed during the 1993 state legislative session. More information is available online at: des.nh.gov/organization/commissioner/pip/factsheets/rem/documents/rem-10.pdf.

ANALYSIS AND OPPORTUNITIES

In this study, EPA analyzed New Hampshire's federally-regulated releases that have not been cleaned up (open releases). EPA conducted a multivariate analysis on New Hampshire's data. However, this technique did not identify strong underlying patterns in the data.[17] Next, EPA divided the open releases into groups that might warrant further attention. EPA used descriptive statistics to examine the distribution of releases by age of release and stage of cleanup and highlighted findings based on DES's data.[19] EPA then identified potential opportunities for addressing particular groups of releases in the backlog. Many releases are included in more than one opportunity. These opportunities describe actions that EPA and DES might use as a starting point for collaborative efforts to address the backlog. Although EPA's analysis covered all releases in New Hampshire, there are 26 releases that are not included in any of the subsets identified in the findings or opportunities due to the way EPA structured the analysis. These releases might also benefit from some of the suggested opportunities and strategies.

EPA's analyses revealed eight areas of New Hampshire's backlog with potential opportunities for its further reduction:

- Stage of cleanup
- Media contaminated
- Use of passive remediation
- Cleanup financing
- Type of contamination
- Number of releases per RP
- Geographic clusters
- Data management

LUST Data Source

Electronic data for LUST releases occurring between June 1975 and February 2009 were compiled with DES staff in 2008 and 2009.[18] Data were obtained from the DES OneStop database and selected based on quality and ability to address areas of interest in this analysis.

17 The analytic tree method, a multivariate technique used to identify underlying patterns among large data sets, did not reveal strong patterns within the data. For more information on analytic trees, see Appendix A.

18 For a detailed description of the New Hampshire data used in this analysis, see the Chapter Notes section.

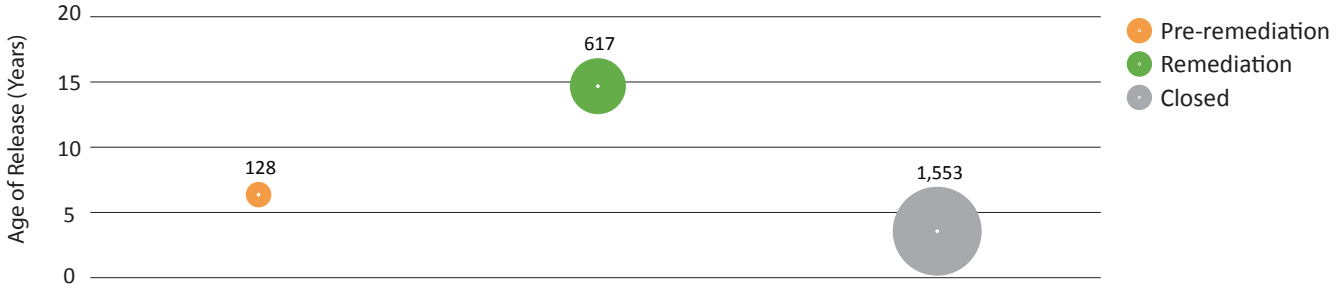
19 For a detailed description of release stages, see the Chapter Notes section (Stage of Cleanup Reference Table).

STAGE OF CLEANUP

As of March 23, 2009, the New Hampshire backlog consisted of 745 open releases. EPA analyzed the age of these LUST releases and their distribution among the stages of cleanup. To facilitate analysis, EPA classified New Hampshire's open releases into two stages of cleanup: the Pre-remediation stage (releases where assessments have either not begun or have not been completed) and the Remediation stage (releases where remedial activities have begun).[20] While EPA grouped the releases into linear stages for this analysis, EPA recognizes that cleanups might not proceed in a linear fashion. Cleanup can be an iterative process where releases go through successive rounds of site assessment and remediation. However, in the long run, this approach might be both longer and more costly. Acquiring good site characterization up front can accelerate the pace of cleanup and avoid the extra cost of repeated site assessment.

Since New Hampshire's LUST program began, DES has closed 1,553 releases; half of these releases were closed in fewer than 3.4 years (Figure 1 below). The young median age of closed LUST releases might be attributable to rapid closure of relatively easy-to-remediate releases. Also, national program policy allows states to report confirmed releases that require no further action at the time of confirmation as "cleanup completed." Therefore, some releases are reported as confirmed and cleaned up simultaneously.

Figure 1. Age of Releases among Stages of Cleanup



The white dot at the center of each circle represents the median age of releases. Each circle is labeled with, and scaled to, the number of releases within each stage. Included in the release counts and size of circles are 12 closed releases for which it was not possible to calculate age. These releases are not part of the median age calculation.

New Hampshire has been working to reduce its backlog since the early 1990s and has a well developed and mature program to address this issue. The first two backlog reduction initiatives were implemented in 1993: 1) the use of risk-based decision making for soil standards and 2) a review of inactive files to determine whether actions should be taken or releases closed. In 1998, DES undertook a dormant site effort to reduce New Hampshire's backlog by identifying opportunities to move releases toward remediation and closure; the effort resulted in the closure of 333 releases.

On the heels of the dormant site initiative, DES committed to permanently assigning all LUST releases to a project manager. The past practice was to leave low priority releases unassigned and only work on them when a report came in to DES.

20 Releases were classified into stages based on available data and discussion with DES staff. Data were not available to distinguish between the Confirmed Release and Site Assessment stages. For more information, see the Chapter Notes section.

Dormant releases were the consequence of this previous approach to low priority releases. Permanent assignment of sites and improved project management is one of DES's key backlog reduction steps.[21]

DES did not track stage of cleanup in its database at the time of data collection. Therefore, EPA extrapolated the early stages of cleanup by using reports to identify the releases in remediation and then, by process of elimination, identified every release as a pre-remediation release that was not in one of the remediation reports. After the data were collected, DES conducted a separate analysis and began tracking stage of cleanup in its OneStop database. Reviewing each release file, DES developed a more accurate report on the status of its releases, particularly for the releases in the Pre-remediation stage. EPA was not able to use these revised data in the analysis because the analysis for the report had already been completed when the data were shared. However, EPA modified the discussion of the findings and included DES's revised table (Table 1 below).

Table 1. Stage of Cleanup as of October 6, 2010

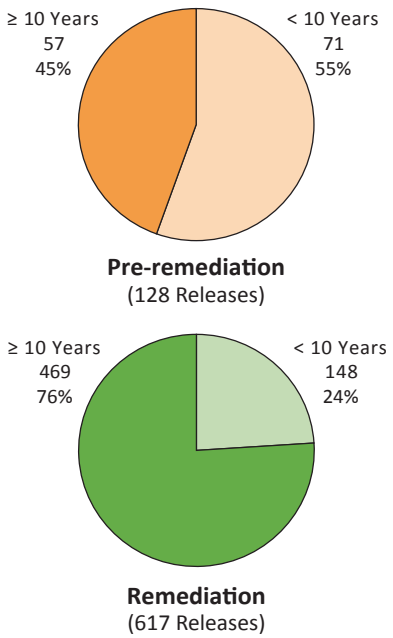
Phase Codes	Number of Releases in Stage	Percentage of Releases	Releases Less than 10 Years Old	Releases Greater than 10 Years Old
SI	49	7%	32	17
GM	327	46%	84	243
IR	3	< 1%	3	0
RA	98	14%	23	75
RA-H	232	33%	55	177
Totals	**709**	**100%**		

Notes: This table presents data based on release status as of 10/6/2010.

1. All of the SI releases greater than 10 years old have completed at least an initial site investigation. These releases are at the supplemental SI step.
2. The Phase Codes are as follows:
   - IR includes: initial response action, emergency services, product recovery immediately post-release. IR generally applies to new projects that stay with Spill Response and Complaint Investigation Section (SRCIS) from start to closure.
   - SI means more investigation is needed after IR to characterize the magnitude and extent of contamination, and the project probably cannot be closed in the near term. The SI phase also includes supplemental site investigation activities. Projects may be coded SI by SRCIS after IR to request further investigations, but will likely transition to a project manager to achieve closure.
   - RA and RA-H means likely post-investigation, a remediation plan was requested, a remediation plan is under review/approved, an approved remediation plan is being implemented, or a presumptive remediation plan is being implemented. This includes soil excavations, in-situ treatment systems, long-term product recovery, etc. LUST projects in this category are assigned to a project manager. For the -H category, this means the release is low risk and work is not being sought at this time by the state due to insufficient state funding. Owners with their own resources may proceed, but are at risk of not receiving reimbursement.
   - GM means no further investigations are needed and remediation is completed. There is no need for more source removal and only monitoring toward eventual closure is necessary. Projects in this category are likely assigned to a project manager and not SRCIS.
   -

21 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.

Figure 2. Release Age Distribution among Stages of Cleanup



Not all LUST releases in New Hampshire have begun remediation although New Hampshire has made progress moving most of its releases into remediation. Figure 2 to the left shows the backlog of releases by age and stage of cleanup and includes 128 releases in the Pre-remediation stage (17 percent of the backlog) that EPA identified in the original analysis. As seen in DES Table 1, the 128 releases include releases that are not actually in the Pre-remediation stage. Based on the DES table, New Hampshire has very few releases (52 releases) that are in site assessment and initial response. According to DES, these releases in site assessment tend to be much younger than the backlog population as a whole and there is no evidence that there are any old sites that have not had a full initial assessment.[22] DES also stated that site assessments are typically completed within a year and that the 17 releases noted as 10 years old or older have already completed the initial site assessment and now have additional site investigation work ongoing. In New Hampshire, additional assessment activities occur after the completion of the initial assessment activities, particularly to support remedial action proposals or to finalize groundwater management zones prior to issuance of a groundwater management permit.[23]

Most of New Hampshire's releases are in the Remediation stage. According to EPA's analysis, 63 percent of New Hampshire's releases (469 releases) are in remediation and are 10 years old or older (Figure 2). This older group of releases represents 76 percent of the releases in remediation. The DES table shows a more refined look at the releases classified by EPA as being in the Remediation stage. According to the DES table, 98 releases are actively undergoing remediation and of that group, 75 are 10 years old or older. An additional 232 releases will have remediation actions but are considered lower priority and are awaiting funding. Another sizable group of 327 releases is in post-remediation long-term groundwater monitoring. These releases are discussed below in the passive remediation section. DES reviews releases in its database on a semi-annual basis to determine if there is any overdue work. DES could also consider including a systematic evaluation of releases in remediation to determine if cleanup approaches are optimized, including choice of technology to address the release. This process might save DES resources and bring releases to closure more quickly.

New Hampshire Finding
63 percent of releases: • are in remediation; and • are 10 years old or older.

Potential Opportunity	Releases
Continue to use a systematic process to explore opportunities to accelerate cleanups and reach closure, such as periodically reviewing release-specific treatment technologies.	469

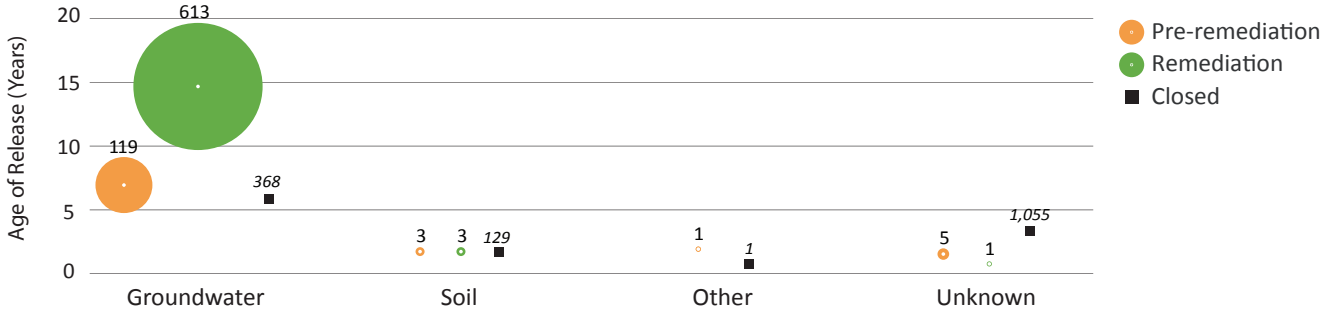
22 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
23 Ibid.

MEDIA CONTAMINATED

Groundwater is an important natural resource that is at risk from petroleum contamination. Old releases impacting groundwater make up the majority of New Hampshire's backlog. In general, groundwater contamination takes longer and is more expensive to clean up than soil contamination. In this study, EPA examined media as a factor contributing to the backlog. The following analysis classified media contamination into four categories: groundwater (732 open releases); soil (six open releases); other media, which includes surface water (one open release); and unknown media, which includes releases with no media specified (six open releases).[24]

In New Hampshire, 98 percent of open releases (732 releases) involve groundwater contamination and have a median age of 14.3 years (Figure 3 below). The age of open releases contaminating groundwater is significantly older than the 5.9-year median age at closure for groundwater cleanups (Figure 3). Of the 613 Remediation stage releases that impact groundwater, 76 percent (468 releases) are 10 years old or older (Figure 4 below, right). Groundwater contamination might be complex and difficult to remediate. However, using a systematic process to evaluate the cleanup progress, current contaminant levels, and treatment technologies might identify releases where revised remediation methods or other strategies to accelerate closure can be implemented.

Figure 3. Age of Releases, by Media Contaminated and Stage of Cleanup

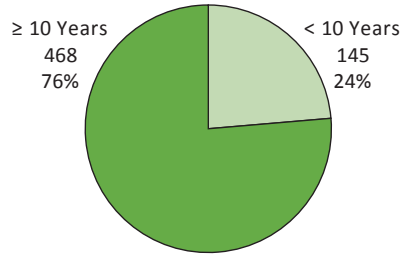


Squares indicating closed releases are not scaled to the number of releases in that stage.

New Hampshire Finding
63 percent of releases: • contaminate groundwater; • are in remediation; and • are 10 years old or older.

Potential Opportunity	Releases
Systematically evaluate cleanup progress at old releases with groundwater impacts and consider alternative cleanup technologies or other strategies to reduce time to closure.	468

Figure 4. Age Distribution of Remediation Stage Releases with Groundwater Impacts



24 For a detailed description of media contamination classifications, see the Chapter Notes section.

USE OF PASSIVE REMEDIATION

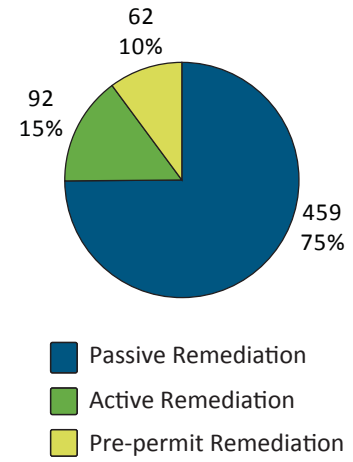
To minimize costs and make funding available for other cleanups, DES made a strategic decision to reduce monitoring schedules at cleanups where contaminant plumes are stable and are expected to remain stable in the future. Prior to this decision, DES operated a formal monitored natural attenuation (MNA) program. The MNA program involved sampling for natural attenuation parameters and electron receptors, and analyses were performed to determine whether MNA would achieve remedial objectives in a reasonable timeframe. The extra expense incurred by maintaining this program was not fruitful according to DES, because collection of additional monitoring data did not move releases toward closure. As a result, DES discontinued the formal MNA program and redirected the funds saved toward other cleanups. DES uses a permitting process to move groundwater Remediation stage releases into passive remediation. DES project managers believe that these releases will naturally attenuate in less than 10 years because contaminated source areas have been addressed.[25] This approach potentially contributes to New Hampshire's backlog but it also allows DES to actively address additional releases by spending less reimbursement fund money on groundwater monitoring and more on moving additional releases into remediation.

New Hampshire Finding

75 percent of releases with groundwater contamination and that are in the Remediation stage are in passive remediation.

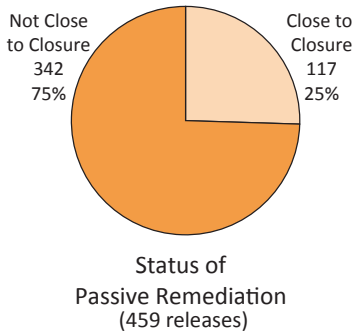
Potential Opportunity	Releases
• Continue to look for cost savings measures to address additional releases. • When resources permit, evaluate the effectiveness of cleanups using passive remediation and consider using active remediation technologies for releases with potential receptors.	459

Figure 5. Remediation Stage Releases with Groundwater Contamination, by Type of Remediation



EPA identified 75 percent of the releases in remediation (459 releases) as using passive remediation (Figure 5 to the immediate left).[26] DES clarified that this number includes two subsets of sites. The first set is comprised of the releases in post-remediation groundwater monitoring. DES reported there are 327 releases in this category (44 percent of the backlog). The remaining releases are lower priority releases where remedial action is necessary to close the releases and the remedial action is on hold pending the availability of funding. According to DES, these sites do not pose a significant threat to public health or the environment and are on hold to ensure that reimbursement fund money is available for higher priority releases. All of these releases are actively managed and many of them have limited groundwater contamination and are in areas served by public utilities.[27] These releases remain in a natural attenuation mode until remediation dollars are available to accelerate closure. According to the data originally submitted to EPA, 10 percent of groundwater Remediation stage releases (62 releases) have not been permitted (Figure 5). DES monitors the progress of cleanups in passive remediation, which might be moved into active remediation at any time depending on DES's evaluation of current contaminant levels and availability of funding.

Figure 6. Status of Remediation Stage Releases Where Passive Remediation Is Used



Of releases where passive remediation is currently being used, 25 percent (117 releases) are considered close to closure; the remaining 75 percent (342 releases) are expected to require long-term monitoring or active remediation prior to achieving cleanup standards due to the amount of contamination present (Figure 6 above, far left).[28] DES should continue to evaluate the progress and effectiveness of cleanups using passive remediation and, when resources are available, determine if an alternative cleanup approach is more appropriate.

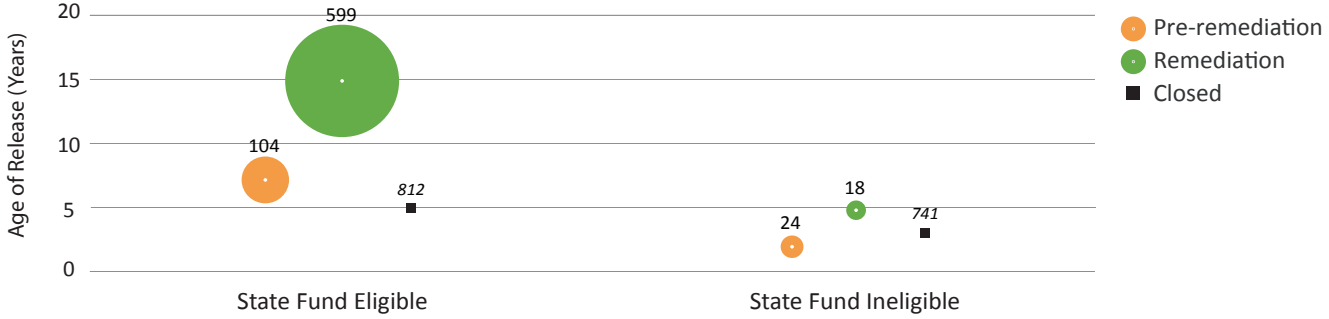
25 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
26 Passive remediation is identified by releases with New Hampshire groundwater monitoring permits.
27 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
28 Releases that have low concentrations of contaminants in one or two monitoring wells are identified as "close to closure." Gary Lynn, Coordinator of the DES Petroleum Remediation Program, tracks these releases manually in a spreadsheet.

CLEANUP FINANCING

EPA and state programs are interested in exploring successful financing strategies for completing cleanups quickly. EPA acknowledges that the recent economic downturn has impacted cleanup financing. New Hampshire has indicated that limited availability of state fund resources impacts the cleanup of its backlog, particularly for funding remediation activities. EPA also believes the availability of funding for cleanup is essential to reducing the backlog, so in addition to this study, EPA is increasing its focus on oversight of state funds as well as conducting a study of private insurance.

In New Hampshire, 94 percent of the open releases (703 releases) are eligible for the state fund (Figure 7 below). The New Hampshire legislature expanded coverage of the state fund from tank facility owners to also include property owners in 2010, which could increase this number.[29] The small number of tanks ineligible for the fund is likely from facilities not in compliance at the time of release or where the RPs might not have applied for eligibility. The median age of releases ineligible for the state fund is younger than the median age of state fund eligible releases.

Figure 7. Age of Releases, by State Fund Eligibility and Stage of Cleanup



DES has made a significant effort to maximize the funds available for cleanup in New Hampshire. DES noted that the current fee of 1.5 cents per gallon is among the top tier of state funding levels, although it is unlikely that additional funds will be granted to the program in the near future because the New Hampshire legislature recently rejected a proposed increase to the fee. DES reported that the availability of funds for active remediation sets the pace for backlog reduction. Remedial action is currently delayed at 33 percent of releases (232 releases) due to a lack of available funds.[30] DES also noted that the costs for remediation activities are typically much higher than those for assessment.

DES has pursued several approaches to make more funds available for remediation activities. The first was discussed above in the passive remediation section where DES cut funds used for expensive groundwater monitoring practices to fund additional remediation activities. In addition, DES states that it has a standard practice of considering cost-effectiveness when making remedial decisions and makes this practice a training priority for the program. DES has also championed the use of integrated funding sources since 2000.[31] According to DES, it is not unusual for them to blend two or three funding sources to move projects forward. For example, DES has made effective use of the petroleum brownfields program and has

New Hampshire Finding
94 percent of releases are eligible for state funding.

Potential Opportunity	Releases
Continue to explore opportunities to move state-funded cleanups to closure, including: • continuing to look for cost saving incentives and approaches to cleanup; • continuing to reevaluate remedial plans to identify releases where more cost-effective plans could be implemented; and • continuing to encourage the use of other sources of public and private funding such as petroleum brownfields grants to move relatively low risk releases toward closure.	703

29 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
30 Ibid.
31 Ibid.

provided brownfields-type assistance at abandoned releases or at sites that are undergoing redevelopment. This effort has been extended to approximately 10 percent of the LUST releases.[32] Interestingly, a key finding reported by DES is that using petroleum brownfields funds generated nearly as many new LUST sites as it closed. As discussed below in the geographic clusters section, DES has encouraged the use of petroleum brownfields assessment grants by municipalities and regional planning commissions. DES has also secured petroleum brownfields cleanup revolving loan fund grants to provide additional funds to clean up and reuse lower priority releases.

TYPE OF CONTAMINATION

New Hampshire Finding

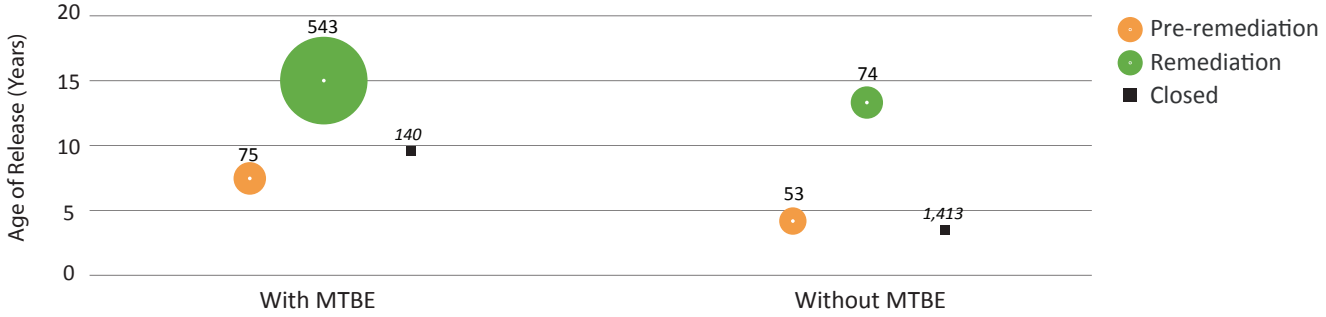
Of releases with groundwater impacts that are in remediation and have methyl tertiary butyl ether (MTBE) contamination:

- 75 percent use passive remediation.

Potential Opportunity	Releases
Reevaluate the current remedial plan and utilize optimal remedial technologies for the removal of MTBE, as resources permit.	543

Presence of MTBE contamination might be contributing to the ongoing cleanup backlog. DES reports that releases with MTBE contamination take longer to clean up. Open releases contaminated with MTBE constitute 83 percent of the backlog (618 releases) (Figure 8 below). Of the 543 releases with groundwater impacts and MTBE contamination, 75 percent (408 releases) are currently using passive remediation (Figure 9, page 17). Because MTBE is not easily degraded in groundwater, releases involving MTBE require more aggressive management and remediation than releases where MTBE is not present.[33] DES should consider requiring active remediation of releases with MTBE present as funding permits. DES can consider employing innovative technologies to reach closure faster for these releases as resources permit.

Figure 8. Age of Releases, by Presence of MTBE and Stage of Cleanup



DES has recently undertaken an effort to investigate levels of ethylene dibromide (EDB) contamination at LUST releases, resulting in the identification of EDB contamination at 9 percent of releases with groundwater impacts (65 releases) (Figure 10, page 17). EDB contamination had previously been found at only three releases. Due to resource limitations, DES is targeting EDB sampling to known leaded gas releases, and focusing its sampling effort on a case-by-case basis to releases requiring the highest level of oversight.[34]

32 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.
33 For more information, see: www.clu-in.org/contaminantfocus/default.focus/sec/Methyl_Tertiary_Butyl_Ether_(MTBE)/cat/Treatment_Technologies.
34 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.

Figure 9. Type of Remediation in Use at Releases with Groundwater Impacts and MTBE Contamination

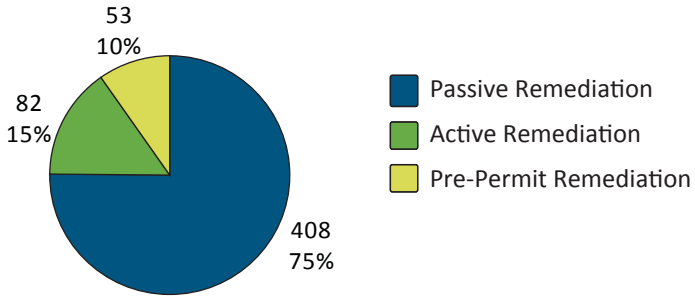
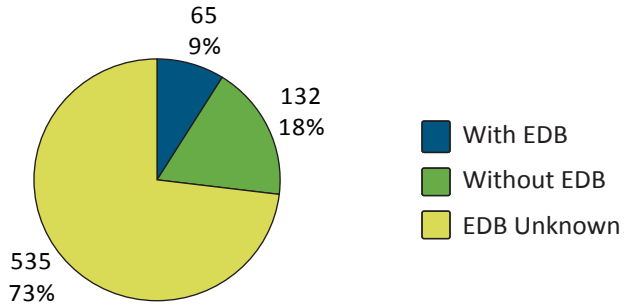


Figure 10. Presence of EDB Contamination at Releases with Groundwater Impacts



EPA provides recommendations for states, tribes, and EPA regions to investigate and clean up lead scavengers when present at LUST releases. Because the primary threat posed by lead scavengers at LUST releases is to drinking water sources, EPA recommends particular attention be paid to releases where the presence of lead scavengers could threaten sources of drinking water. If lead scavengers are present and could threaten a source of drinking water, EPA strongly advises that states, tribes, and EPA regions take or require UST owners and operators to take aggressive remedial action to address the contamination and prevent human consumption of contaminated drinking water.

New Hampshire Finding
9 percent of releases: • impact groundwater; and • have EDB contamination.

Potential Opportunity	Releases
• Continue to monitor and report the presence of lead scavengers (e.g., EDB) in groundwater at appropriate LUST sites; • Analyze EDB using EPA methods with the appropriate detection limits; • Remediate lead scavengers aggressively when such constituents could threaten a source of drinking water; and • Share information with EPA on the presence and remediation of these constituents.	65

Number of Releases per RP

New Hampshire Finding
11 percent of releases are associated with five RPs each with 10 or more releases.

Potential Opportunity	Releases
Continue to explore possibilities for multi-site agreements (MSAs) with RPs associated with multiple open releases.	79

EPA analyzed the number of releases per RP to identify RPs that are the largest potential contributors to the state's cleanup backlog.[35] DES staff has been able to identify RPs for all releases, so orphan releases do not pose a problem for the state. A total of five RPs are responsible for 10 or more releases each and account for 11 percent of the New Hampshire backlog (79 releases); these RPs are all gasoline retailers, distributors, or refiners (Table 2 below).[36] DES has worked with RPs to address multiple sites. DES and EPA can use these data to identify possible participants for additional multi-site strategies to clean up these groups of releases.

Table 2. RPs with 10 or More Open Releases

RP Type	Number of Releases	Number of RPs
Gasoline - Retail/Distribution/Refining	79	5

Geographic Clusters

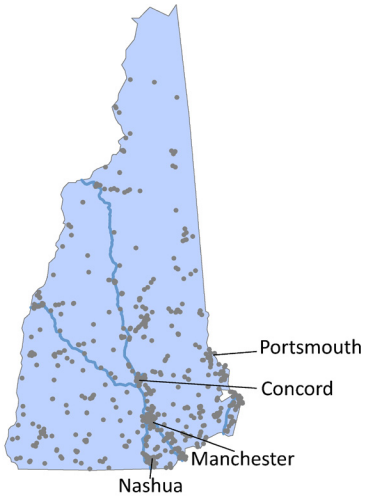
New Hampshire Finding
38 percent of releases are clustered within a one-mile radius of five or more releases.

Potential Opportunity	Releases
Continue to target releases within close proximity for resource consolidation opportunities.	Targeted number of releases[37]

EPA performed a geospatial analysis to look for alternative ways to address the backlog. While releases in geographic clusters might not have the same RP, they tend to be located in densely populated areas and might present opportunities to consolidate resources and coordinate efforts. Geographic proximity can call attention to releases in areas of interest such as redevelopment, environmental justice, and ecological sensitivity.

EPA's analysis identified 285 releases (38 percent of releases) located within a one-mile radius of five or more releases (Figure 11 to the right). Of these releases, 137 (18 percent of all releases) are located within a one-mile radius of 10 or more releases. Approaching the assessment and cleanup needs of an area impacted by LUSTs can be more effective than focusing on individual sites in isolation from the adjacent or surrounding area. Considering geographically-clustered releases might pave the way for new community-based revitalization efforts, utilize economies of scale to yield benefits such as reduced equipment costs, and present opportunities to develop multi-site cleanup strategies, especially at locations with commingled contamination. DES worked on a multi-site closure initiative recently with one company and is wrapping up a multi-site chemical oxidation pilot project that seeks economies of scale by awarding multiple sites at once.[38] Finally, DES has been assigning clusters of sites to project managers for at least five years to facilitate coordination and minimize the expenditure of funds.

Figure 11. Map of Releases



35 DES provided data on parties legally responsible for releases (i.e., RPs).
36 No federal government entities were identified as RPs for 10 or more releases.
37 Opportunities marked as "targeted number of releases" relate to geographic opportunities that will address a limited number of releases within select designated geographic areas.
38 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.

State and local governments can also utilize geographic clusters for area-wide planning efforts. In fact, DES encouraged New Hampshire's regional planning commissions to work with local governments to apply for petroleum brownfields assessment grants. Approximately 80 percent of the regional planning commissions and municipalities admitted the need and subsequently applied for assessment grants for targeted lower priority releases within their communities. In 2005, DES secured its initial petroleum brownfields cleanup revolving loan fund grant to support cleanup and reuse of these lower priority releases. DES estimates that approximately 10 percent of its LUST releases are addressed through this process.[39] EPA would like to work with DES to explore opportunities to promote and enhance the understanding and use of planning commissions and revolving loan funds to address LUST releases. EPA encourages states to look for opportunities for resource consolidation and area-wide planning such as New Hampshire's approach to assessment and cleanup using petroleum brownfields grants and other resource consolidation efforts, but also recognizes that this approach is best geared to address targeted groups of releases as opposed to a state-wide opportunity for every cluster of releases. EPA intends to conduct further geospatial analyses on clusters of releases in relation to RPs, highway corridors, local geologic and hydrogeologic settings, groundwater resources, and/or communities with environmental justice concerns. These analyses might reveal additional opportunities for backlog reduction.

DATA MANAGEMENT

Database limitations prevent a full assessment of the backlog and associated strategies for backlog reduction. At the time of data collection, the DES OneStop database did not track the stage of cleanup. DES staff manually tracked the stage of cleanup and data for releases that were close to closure in spreadsheets, including details of required final monitoring events and EDB contaminant levels. In February 2010, this functionality was added to the OneStop database and all open releases were assigned a status indicating their cleanup progress. This will allow for easier overall program management as well as provide an improved tool for developing strategies to reduce the cleanup backlog. DES also intends to improve its ability to track and project spending commitments.

New Hampshire Finding
Several key data fields were not included, consistently maintained, or routinely tracked in the OneStop database.

Potential Opportunity	Releases
Continue to implement changes in the OneStop database to enhance program management.	Variable number of releases[40]

39 According to Gary Lynn, Coordinator, Petroleum Remediation Program, DES.

40 Opportunities marked as "variable number of releases" relate to programmatic opportunities and affect an unknown number of releases, potentially including all open releases.

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des.nh.gov/organization/divisions/waste/orcb/ocs/ustp/index.htm

CONCLUSION

In this state chapter, EPA presented the analysis of LUST data submitted by DES and highlighted information on New Hampshire's LUST program. Based on the analytic results, EPA identified potential opportunities that could be used to address specific backlog issues in New Hampshire. Over the course of the entire study, EPA also analyzed data from 13 other states. Findings and opportunities that apply to all 14 states are discussed in the national chapter of the report. Each opportunity represents one potential approach among many to address the backlog. Discussion of the opportunities as a whole is intended as a starting point for further conversations among EPA, New Hampshire, and the other states on strategies to reduce the backlog. EPA will work with states to develop detailed strategies for reducing the backlog. Development of the strategies might include targeted data collection, reviewing particular case files, analyzing problem areas, and sharing best practices. The strategies could involve actions from EPA, such as using additional program metrics, targeting resources for specific cleanup actions, clarifying and developing guidance, and revising policies. EPA, in partnership with the states, is committed to reducing the backlog of confirmed underground storage tank releases and to protecting the nation's groundwater, land, and the communities affected by these releases.

CHAPTER NOTES

NEW HAMPSHIRE DATA BY ATTRIBUTE

The following table provides details on the data elements of interest in this analysis. Data were provided by DES staff in 2008 and 2009 for use in this analysis. Several data elements of interest could not be addressed with the information available. All available data elements were analyzed and only those data elements that revealed informative patterns of interest are included in the report.

Data Element	New Hampshire Data	Use in Analysis
Administrative Cost	Data were obtained from totals calculated by DES staff and provided in correspondence.	Included in the "Program Summary" section and in the national chapter.
Age	Age was calculated for closed releases by subtracting the confirmed release date from the closure date and dividing by 365. Age was calculated for open releases by subtracting the confirmed release date from the data date and dividing by 365. Any values less than -.1 were left blank. Values between -.1 and 0 were counted as 0. All dates were rounded to one decimal point. Ages of releases with insufficient or invalid data were left blank.	Variable in all analyses.
Cleanup Standards	No site-specific data available.	State-wide standards examined in the national chapter.
Closure Date	Data were obtained from the "DATE_ASSIGNED" field in the "Lust data.xls" file. This date was applied to all closed releases. This is the date that the project manager was assigned. Because "Closed" is a valid "Project Manager" entry, this is the closed date for all releases.	Included in the calculation of release age.
Confirmed Release Date	Data were obtained from the "Project_Start_Date" field in the "Lust data.xls" file.	Included in the calculation of release age.
Cooperative Agreement Requirement	Data were obtained from the "CNFA" field in the "ClosureBacklog.xls" file. These data indicate that DES negotiated a site closure target. These data are maintained at the facility level, so all releases from a single facility are treated the same way.	No informative patterns were identified.
Data Date	March 23, 2009 is used for all records. This date is when the data were sent.	Included in the calculation of release age.
Ethyl Dibromide (EDB)	Data were obtained from the "EDB" field in "lust data.xls" file and from "edb_orig.xls" file, a list of releases with EDB contamination.	Examined in the "Type of Contamination" section.
Federally-Regulated LUST Releases	DES staff included only relevant releases in the "lust data.xls" file, indicated by the presence of a "LUST" entry in the "PROJECT_TYPE" field.	Identifies the appropriate universe of releases for analysis.
Free Product	No data available.	Not applicable (NA).
Institutional and Engineering Controls	Data were obtained from the "PROJECT_MANAGER" field in the "lust data.xls" file. A "Closed-AUR" entry in this field indicates that the release was closed with institutional controls. Only four releases have this type of entry and age is unknown for all four releases.	Data not suitable for analysis.
Latitude and Longitude	Data were obtained from "LAT" and "LNG" fields in the "Lust data.xls" file. Where possible, coordinates for releases without existing latitude and longitude values were obtained by EPA staff by geocoding address and street locations.	Used in geospatial analysis calculating the number of open releases within a one-mile radius of other open releases.

Data Element	New Hampshire Data	Use in Analysis
Media	Data were obtained from "MI_AIR," "MI_DRINKING_WATER," "MI_GROUNDWATER," "MI_PUBLIC_WATER," "MI_SOIL," and "MI_SURFACE_WATER" fields in the "lust data.xls" file. Releases with groundwater contamination marked (in addition to any other media) were counted as "groundwater." Releases with only soil contamination marked were counted as "soil." Releases with any other combination of media were counted as "other." "Unknown" releases might include those releases for which there are no data available in the database, but for which information is available in other files, and releases for which the type of media contaminated is truly unknown.	Examined in the "Media Contaminated" section.
Methyl Tertiary Butyl Ether (MTBE)	Data were obtained from the "MTBE" field in the "lust data.xls" file.	Examined in the "Type of Contamination" section.
Number of Releases per RP	Calculated as the total number of open releases associated with a unique RP name.	Examined in the "Number of Releases per RP" section.
Orphan	There are no releases in New Hampshire for which a RP cannot be identified.	NA
Owner Type	Owner type data were obtained from the "OWNER_TYPE" field in the "lust_data.xls" file.	No informative patterns were identified.
Passive Remediation	Data were obtained from the "Site #" field in the "permits.xls" file, a list of facilities with groundwater monitoring permits. Releases with facility IDs in this list are counted as releases where passive remediation is used.	Examined in the "Use of Passive Remediation" section.
Proximity	Geospatial analysis performed by EPA revealed the number of other open releases located within a one-mile radius of each open release.	Examined in the "Geographic Clusters" section.
Public Spending	DES provided two sets of data related to public spending. The first data set included spending records at releases between 2004 and 2008. Because these data covered only a limited timeframe, they did not offer opportunities for comparative analyses. The second data set included aggregate spending at sites. Because each site can include multiple releases and aggregate totals could not be adjusted for inflation, these data were not suitable for analysis.	Data not suitable for analysis.
Region	Data not tracked by administrative regions.	NA
Release Priority	No data available. DES has not used its release priority system since 2002.	NA
RP	Data were obtained from the "RP_COMPANY" field in the "lust_data.xls" field.	Used to calculate the number of releases associated with each unique RP.
RP Recalcitrance	Data were obtained from the "overdue list.xls" file, a list of releases that are currently overdue. This list is not a history of all sites that have ever been recalcitrant. The overdue list had both facility number and PERM_ELIG to indicate the release. When those data matched with data in "Lust list.xls," all those releases were treated the same way. Only 12 releases were identified with recalcitrant RPs. Due to the small sample size, these data were not analyzed.	Data not suitable for analysis.
Staff Workload	Estimate provided by Gary Lynn, Coordinator, Petroleum Remediation Program, DES.	Examined in the "Program Summary" section and in the national chapter.
Stage of Cleanup	Data were obtained from the "Remediation_for_09-10.xls," "Delayed_Projects_ODD__GREE_Funds_with_RM_edits.xls," "permits.pdf," and "ClosureBacklog.xls" files. These files are lists of facilities that are undergoing remedial activities, have delayed remedial activities, are in monitoring, or are close to closure, respectively. The presence of a facility ID in any of these lists indicates that the release is in the Remediation stage. The remaining open releases were assigned to the "Pre-remediation" stage.	Variable in all analyses.
State Fund Eligibility	Data were obtained from the "PERM_ELIGIBLE" field in the "lust data.xls" file. Releases marked "P" (permanently eligible) or "Y" (yes) were marked as state fund eligible.	Examined in the "Cleanup Financing" section.
Status	Data were obtained from the "PROJECT_MANAGER" field in the "lust data.xls" file. A "Closed" entry in this field indicates that the release is closed.	Identifies the appropriate universe of releases for tree analysis.
Voluntary Cleanup Program	New Hampshire does not have a voluntary cleanup program. The state uses the Petroleum Reimbursement Fund to ensure that releases are addressed.	NA