



Reuse Assessment

**Tinkham Garage
Londonderry, NH**



**Office of Site Remediation and Restoration
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PURPOSE

EPA New England is responsible for the cleanup of over 100 Superfund sites throughout New England. Although protecting human health and the environment is the primary objective of these cleanups, EPA also recognizes the value in helping to return Superfund sites to beneficial reuse. Understanding the current and likely future uses of a site are fundamental to achieving both objectives.

Most importantly, accurate information on the likely uses of a Superfund site and the surrounding area is necessary to make reasonable assumptions about possible exposures to contaminants. These assumptions form the basis for establishing site-specific cleanup levels and, ultimately, for designing protective remedies. Uncertainty in this information makes it difficult to appropriately tailor the site investigation and cleanup, and oftentimes leads to increased project costs and delays.

From the standpoint of facilitating site reuse, details regarding current or planned uses can enable EPA to consider those uses in the selection, design and implementation of a remedy. For instance, it may be possible to locate a soil or groundwater treatment system so as not to physically restrict the construction of future buildings. In other cases, the cleanup might be phased in a way that allows certain portions of the Site to be available sooner. There are numerous Superfund sites across the country where reuse has already been facilitated in this manner. Such accommodations will only be considered if they do not compromise the protectiveness of the cleanup.

This Reuse Assessment summarizes information on the current and potential future uses of the Tinkham Garage Superfund site (the Site) in Londonderry, New Hampshire. Potential future reuse-related issues are also described. EPA will continue to work on future reuse issues with the Site owner, state, local community and other stakeholders.

This Reuse Assessment is presented in two sections:

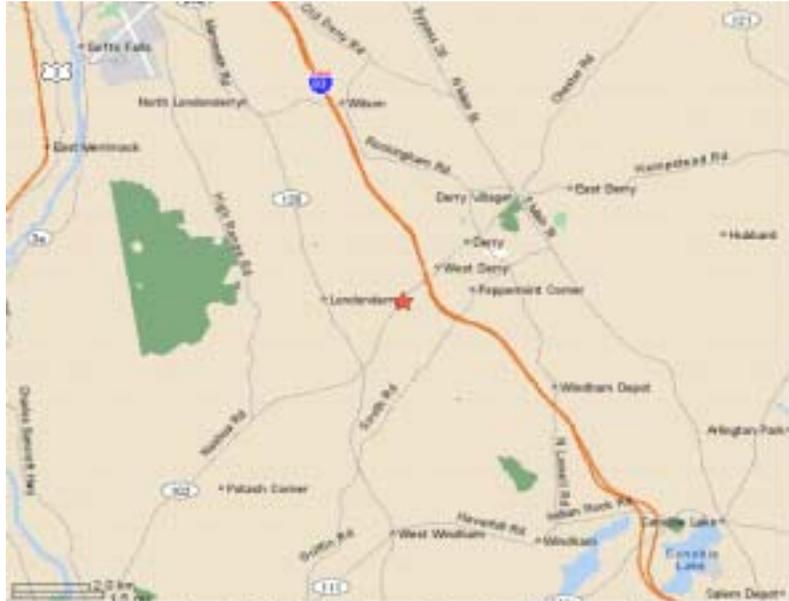
- Section 1 - Site Background: Describes the physical, historical and environmental context of the Site.
- Section 2 - Use/Reuse Status: Describes the current and potential future uses of the Site, potential use/reuse considerations, and a general summary of relevant findings and potential issues.

SECTION 1 - SITE BACKGROUND

Physical Characteristics

The Tinkham Garage Superfund site (The Site) situated in Londonderry, New Hampshire, is approximately one mile southwest of the intersection of interstate Route 93 and state Route 102. It is bounded by state Route 102 to the north, Gilcreast Road to the east, Ross Drive to the south and the Woodland Village

Condominium complex to the west. The Site includes various developed areas. Undeveloped land features include wooded areas, open fields and wetlands. The topography of the Site is



Site Location Map - Tinkham's Garage Superfund Site, Londonderry, NH

relatively flat with surface drainage from north to south. An unnamed tributary and an attached intermittent stream branch through the condominium complex on-Site and discharge off-Site to Beaver Brook south of Ross Drive. In turn, Beaver Brook discharges to the Merrimack River farther to the south. The 100 year flood plain on the Site extends from Route 102 and follows the unnamed tributary along to its confluence with Beaver Brook. The floodplain is generally 100 feet wide along its path through the condominium complex. This area forms an approximately two acre wetland. Beyond the Site boundaries, south of the condominium complex, and before the tributary's confluence with Beaver Brook, the flood plain widens considerably forming a sixty-six acre wetland. In addition, there is a fifty-seven acre wetland at the southeast corner of the Site (see Figure 1).

QUICK FACTS

Location: One mile southwest of the intersection of interstate Route 93 and state Route 102.

Londonderry NH (Rockingham County)

ID Number: NHD062004569

Site Area: 375 acres

Current Uses: Commercial, residential, and 125-units of active senior housing are currently under construction.

Ownership: Private

Cleanup Status: Cleanup is complete. Groundwater will be monitored until the aquifer is again safe to drink. Redevelopment of the site is underway.

Land and Resource Use

The Site encompasses 375 acres of residential, commercial and undeveloped land. In addition to the Woodland Village Condominium complex, there are single family homes along Mercury and McAllister Drives in the northern portion of the Site, and along Gilcreast Road and Ross Drive

Site History	
Date	Event
4/78	Discovery of the problem
1/83	Residential wells shut down
9/8/83	Final listing on NPL
11/83	Water line installed
9/30/86	RI/FS completed
9/30/86	ROD signature
9/11/87	Administrative Order on Consent for pre-design studies
7/88	Pre-Design Study completed
3/10/89	Amended ROD changing source control remedial technologies
9/14/89	Consent Decree for Remedy Implementation
1/21/92	ESD addressing onsite gw treatment
4/7/94	Construction start
11/28/94	Start of source control and ground water treatment plant operation
4/7/95	Construction completion
7/96	Bedrock extraction wells temporarily shut down
11/02	All extraction wells shut down
3/31/03	ESD documenting ground water remedy change to natural attenuation

bordering the southern boundary of the Site. The Tinkham Realty office and Tinkham Garage are located in the northeastern portion of the Site. In late 2002, Home Depot, Staples, 99 Restaurant, and Dunkin' Donuts completed construction of a retail facility on the northern portion of the Site.

Prior to the installation of a permanent waterline in 1983, the primary source of drinking water to the Site area was the bedrock aquifer. The ground water flow in bedrock appears to take place largely in fracture zones which have a northeast/southwest orientation. Ground water in bedrock discharges to the unnamed tributary on Site from both east and west of the tributary. Additionally, there exist several flowing bedrock wells along Mercury Drive and within the condominium complex. Ground water discharging to the surface from these wells migrates to the unnamed tributary via surface flow.

History of Contamination

It is believed that waste disposal took place at the Tinkham Garage Superfund site during 1978 and 1979. In April of 1978, complaints of foam and odors occurring in a small unnamed brook which crosses Ross Drive led representatives of the Londonderry Health Department to the Site. Their investigation concluded that liquids and sludge from tank truck washings had been dumped behind Tinkham Garage directly to the ground surface. A subsequent citizen complaint to the New Hampshire Water Supply and Pollution Control Commission (NHWSPCC,

now NHDES) resulted in an order to remove surface contamination. Additionally, a trench was

excavated to divert surface run-off from behind the garage area away from the residential area on Ross Drive.

In January of 1983, the drinking water supply well servicing the Londonderry Green Apartments (currently Woodland Village Condominiums) and residential wells along Mercury and McAllister Drives were taken out of service because of documented or potential contamination. The EPA temporarily supplied water until a permanent water line was installed by the NHWSPCC under a cooperative agreement between the state and the EPA in November of 1983.

Basis for Taking Action

Ground water used as a potable water supply, as well as soil and surface water, were contaminated by volatile organic compounds. The principal threats were from ingestion of contaminated ground water and direct contact and incidental ingestion of contaminated soils.

Remedial Actions

A. Remedy Selection

The remedial action objectives presented in the Record of Decision (ROD) issued September 30, 1986, for source control and management of migration were developed to mitigate existing and future potential threats to public health and the environment.

The remedial action objectives for source control were:

- ☛ Mitigating further release of contaminants to the surrounding environmental media, and
- ☛ Eliminating or minimizing the threat posed to public health, welfare and the environment from the source area.

The remedial action objectives for management of migration were:

- ☛ Mitigating further migration of contaminants beyond their current extent, and
- ☛ Eliminating or minimizing the threat posed to public health, welfare and the environment from the current extent of contaminant migration.

To meet these objectives, the ROD included the following components:

- ☛ Excavation of contaminated soils with onsite treatment,
- ☛ Removal of contaminated ground water from the overburden and bedrock aquifers with off-Site treatment at the Derry wastewater treatment facility which may be preceded by on-Site pretreatment, with monitoring; and
- ☛ Development of legislation by the Town of Londonderry, New Hampshire and/or the State of New Hampshire which prevents the present and future use of the on-Site aquifer.

Based on conclusions presented in the July 1988 Pre-Design Study Report, EPA issued an Amended ROD for the Site on March 10, 1989, which changed the source control remedial technology for soils to vacuum extraction. This amendment further specified the management of migration remedy to extract contaminated deep ground water from two of the Woodland Village Condominium wells, LGAW and LGSW, as well as the contaminated shallow ground water from the vacuum extraction process. The contaminated shallow ground water pumped during the vacuum extraction remediation would be pre-treated on-Site before being mixed with the water from the condominium wells and conveyed via a sewer to the Derry wastewater treatment facility. Problems arose concerning funding of the sewer, so EPA issued an ESD (Explanation of Significant Differences) on January 21, 1992, which allowed for the on-Site treatment of all contaminated ground water. Before that remedial component could be implemented, however, the sewer was funded and completed allowing the amended ROD remedy to be accomplished. This was documented in a second ESD issued on March 31, 2003, which retracted the first ESD. In addition, it determined that after several years of active ground water extraction and treatment, thenceforth natural attenuation could achieve the objectives of the management of migration remedy. Furthermore, it established that the use of a New Hampshire Ground Water Management Permit satisfied the institutional control requirements of the ROD.

B. Remedy Implementation

Following issuance of the 1986 ROD, EPA negotiated an agreement in September 1987 to have a group of PRPs conduct a Pre-Design study. The results of this study were presented in the Pre-Design Study Report issued in July 1988. Based on conclusions presented in the July 1988 Pre-Design Study Report, EPA issued an Amended ROD for the Site in March of 1989.

A Consent Decree which, in part, required the PRPs to implement the remedial action, was entered by the District Court and became effective on September 14, 1989. Following entry of the Decree, the PRPs began the remedial design and planning for remedial action.

Implementation of the remedy required off-Site treatment of extracted ground water at the Derry wastewater treatment facility. Conveyance of extracted ground water to the Derry wastewater treatment facility required construction of a new sewer line between the Site in Londonderry and the wastewater treatment facility located just over the town line in Derry (a total distance of about one mile). Responsibility for construction of the sewer line was assigned to the Site owner under the Consent Decree. The Site owner partnered with a local developer who planned to construct the sewer line as part of a public/private construction project planned by Londonderry. As a municipal project, the sewer line was designed with a capacity to serve existing and planned residential and commercial needs, in addition to the extracted groundwater from the Site.

In March of 1991, the towns of Londonderry and Derry finalized an inter-municipal agreement by which Derry agreed to accept additional sewage from Londonderry for treatment at the Derry wastewater treatment facility. This agreement was a necessary condition prior to initiating construction of the new sewer line. However, in a March, 1991 Town Meeting, the town of Londonderry voted to rescind the bond authorization for construction of highway improvements related to the planned expansion of the sewer system. As a result of this vote to rescind, the developer ceased planning for construction of the sewer line to the Site.

This action on behalf of the developer, and the resulting inability to initiate remedial action, prompted EPA to issue an ESD for the Site on January 21, 1992. The ESD required the PRPs to design and construct an on-Site treatment and ground water recharge system for shallow ground water. This would have allowed the PRPs to begin vacuum extraction of soils, which required dewatering. However, in order to minimize the volume of ground water requiring on-Site treatment, the ESD allowed for a delay in the implementation of the active extraction of ground water from the bedrock until the sewer was constructed.

An evaluation of the feasibility of installing a subsurface infiltration recharge system at the Site concluded that the extremely low soil hydraulic conductivities would require installation of an unreasonably large infiltration field, rendering on-Site recharge of treated ground water infeasible. However, shortly following this evaluation, an agreement between the developer and the town of Londonderry was reached and construction of the sewer line began in March of 1993.

The vacuum extraction system was designed and constructed and began operation in November of 1994. In addition to soils treatment, ground water extraction from both the shallow and bedrock aquifers was also initiated. Bedrock ground water was extracted from two former supply wells, LGAW and LGSW, and was conveyed back on-Site via a dedicated sewer line. Shallow ground water was extracted through the vacuum extraction wells and was pretreated on-Site. The bedrock and shallow ground water was then mixed and the combined flow was discharged to the Derry wastewater treatment facility through the newly constructed municipal sewer.

Analytical results confirmed that the vacuum extraction system achieved the soil remediation goal of total VOCs less than 1 mg/kg in September of 1995. In November of 1995, the vacuum extraction system was dismantled and the shallow ground water extraction system was modified to operate independently via six shallow extraction wells. Pre-treatment was also discontinued at this time since contamination levels in the extracted ground water were less than the influent limits imposed by the wastewater treatment facility.

A temporary shutdown of the two bedrock ground water extraction wells was granted in July of 1996 since sampling indicated that contaminants had achieved steady-state conditions in LGSW, LGAW and other bedrock monitoring wells located throughout the area. Monthly monitoring of VOC levels in wells LGSW and LGAW was performed from July 1996 through February 2001. VOC levels in both wells, and other bedrock monitoring wells throughout the Site, remained statistically constant, further supporting the conclusion that a steady-state condition was present in the bedrock.



Furthermore, sampling results documented evidence of active bioremediation and assessment of the data indicated that natural attenuation would attain ground water remediation goals in the shallow aquifer within a 15 year period. In May 1997, consistent with the ROD, the PRPs requested EPA to evaluate the permanent shutdown of the entire ground water extraction system based on evidence of natural attenuation in the shallow aquifer and attainment of steady-state conditions in the bedrock aquifer. As discussed previously, issuance of the 2003 ESD was a result of EPA's and NHDES' evaluation.

System Operations/Operation and Maintenance (O&M)

Currently, the remedy is monitored natural attenuation. The monitoring program includes a combination of semi-annual and annual monitoring of key wells and one surface water station. The following locations are monitored semi-annually; FW28D, ERT04, OW2D, and SW2. The following wells are monitored annually; ERT01, FW11D, FW21D, FW25, NAI-M1, NAI-K2, DVE-3, DVE-7 and LGSW. Ground water monitoring data indicates that the cleanup of the ground water is progressing as anticipated.

SECTION 2 - USE/REUSE STATUS

Background

The Home Depot® :

On January 9, 2001, The Home Depot® purchased 30 acres in the north-east corner of Site. The Home Depot® is a home improvement center, and a publicly-owned corporation. Founded in 1978 in Atlanta, Georgia, The Home Depot® is the world's largest home improvement retailer. At the end of its fiscal year 2003, the company's portfolio includes more than 1,700 warehouse-style stores, and several diversified businesses. This area is zoned commercial according to the Town of Londonderry.



The Nevins

On January 7, 2003, Gilcreast Realty Holdings II, LLC purchased a 95-acre portion of the Site as part of a 125-unit Active Senior Housing Development called The Nevins. This area is in the southern part of the Site and abuts a condominium complex and single family homes. The developer has a proposed purchaser agreement with EPA. This area is zoned residential according to the Town of Londonderry.

Current Use

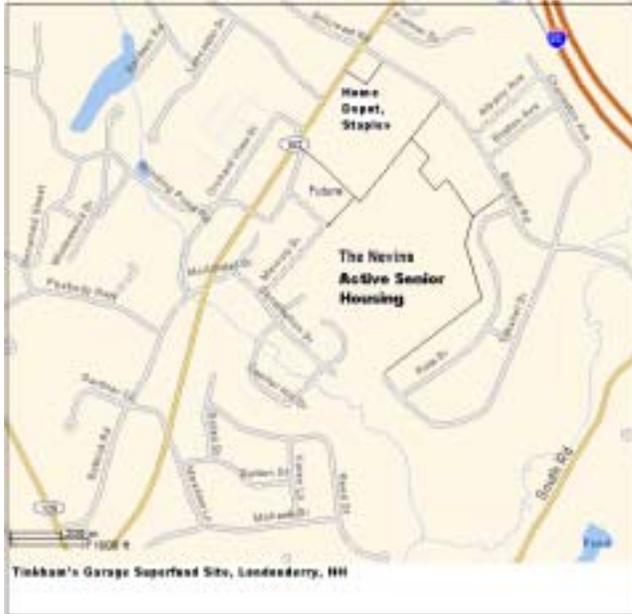
The Home Depot® constructed a retail plaza which includes: Staples, Dunkin Donuts, and a Ninety-Nine Restaurant. The development consists primarily of several free standing buildings. A mitigated wetland was constructed east of the plaza. All stores are currently operating and are open to the public for business.



The Nevins housing project is an “active senior” community and is currently under construction and is starting the sales process. It is anticipated that the first phase of homes will be ready for occupancy in November 2004.

Potential Future Use

There remains approximately 9 acres available for development immediately behind the Tinkham Realty Office and Tinkham Garage; adjacent to the commercial property owned by the Home Depot® plaza. The property is owned by the Tinkham family and includes two existing residential homes that exist. This property is likely to be used for another retail store and will likely have access through the plaza property. Access will be through the plaza, and on McAllister / Mercury Drives.



Home Depot, Staples
The River's Active Senior Housing
I-93
I-495
McAllister Dr
Mercury Dr

Potential Use/Future Reuse Considerations

Institutional Controls, in the form of deed restrictions that run with the land, are in place at the Site. These restrictions and future reuse considerations are discussed as follows:

In 1993, the State of New Hampshire adopted rules (Groundwater Management and Groundwater Release Detection Permits, Env-

Ws 410) that govern investigation, remediation and management of contamination for sites where discharges of regulated contaminants have occurred. DES issued a Groundwater Management Permit (GMP) for this site in 2002. The permit must be renewed every five (5) years for as long as groundwater contaminant concentrations exceed one or more of the State's Ambient Groundwater Quality Standards (AGQS). As part of the GMP, a groundwater management zone (GMZ) was delineated over the footprint of the impacted groundwater plume. Owners of property where alternate potable water is available and who's property resides within the GMZ (twelve property owners in this case), are notified that the impacted groundwater beneath their property should not be consumed. For properties that do not have an alternate water source, the GMP requires restricting groundwater use for drinking water via an easement or ownership.

In addition, a restriction has been placed on the deeds of the previously undeveloped parcels which states that ground water can not be used as a potable source.

EPA, NH DES and the PRP's have an access agreement in place to ensure that the monitoring program can continue as required.

Although the contaminated ground water poses no direct threat to public health since an off-Site

water source is in use, there is a potential for vapors to migrate into indoor air space above the groundwater. Though not required, the developer has mitigated this possibility through the installation of passive ventilation systems in all buildings to be constructed at the Nevins.

General Findings/Recommendations

Reasonably-Anticipated Future Land Uses (RAFLUs): There is every indication the current retail / commercial stores and active senior housing development will continue operating at the Site into the foreseeable future. The property is well-maintained and access is sufficient to sustain business activity.

Based on EPA's Five Year Review of the Site completed in March, 2004, the current retail / commercial store operations do not appear to be adversely impacting the Site cleanup. The groundwater monitoring wells are in good working condition. It is likely that the large development interest and current retail presence at the Site has minimized the likelihood of nuisance trespassers and vandalism that might otherwise occur.



EPA is unaware of any recent or planned changes in the surrounding land uses that would significantly impact the groundwater flow conditions at the Site. Based on the five year review, the above uses at the site are protective of human health and the environment.

