
Five-Year Review Complete; Follow-up Action Planned

The five-year review of the Pine Street Barge Canal Superfund Site was conducted between May and October 2006. This fact sheet summarizes the site background, the five-year review process, conclusions and recommendations, and site contacts. Based on the results of the five-year review, EPA concluded that conditions at the Pine Street Barge Canal are currently protective of human health and the environment throughout most of the site. The full report is available on the EPA website and in two Burlington libraries (see page 4).

Site Background and Cleanup Activities

The site consists of an abandoned barge canal and turning basin, surrounding vegetated wetlands, and upland areas. It is hydraulically connected to Lake Champlain and is subject to flooding from the lake. The site has been used for various industrial and commercial purposes since the mid-1800s. Around 1895, Burlington Gas Works, a manufactured gas plant, was constructed on Pine Street, just north of what is now the Burlington Electric Department. The plant used a coal gasification process to manufacture gas for the city. Burlington Gas Works reportedly disposed of large quantities of coal gasification wastes, such as coal tar, fuel oil, cyanide, contaminated wood chips, iron oxide, cinders, and metals at its former location along Pine Street and in the wetlands behind the plant. These waste materials are the primary source of contamination at the site.

In the 1970's, exploratory borings for the proposed Southern Connector highway revealed subsurface contamination. In 1983, the Pine Street Canal site was listed on the Superfund National Priorities List. In 1985, EPA conducted an emergency removal of soil contaminated with coal tar in the wetlands adjacent to the barge canal (Maltex Pond). EPA investigations at the site conducted from 1989 to 1992 revealed extensive coal tar contamination in the sediment and soils in the canal and adjacent wetlands. A remedy to remove the contaminated sediments and place them into a combined disposal facility on site was proposed by EPA in 1992, and withdrawn six months later due to considerable community opposition to the proposal. In response to the community opposition, the Pine Street Barge Canal Coordinating Council (PSBCC) was formed in 1993 to address the complex cleanup issues at the site. The advisory group included a cross-section of stakeholders—citizens, environmental groups, potentially responsible parties, the City of Burlington, State of Vermont, EPA, and the U.S. Fish and Wildlife Service. Additional studies were conducted from 1994-1998 under the auspices of the PSBCC, which recommended capping the contaminated sediment in place.

EPA adopted the recommendation of the Coordinating Council and issued a Record of Decision in 1998 that called for: capping the contaminated sediment and soil in the canal and adjacent wetlands to address risk to ecological receptors; long-term monitoring; and the imposition of certain land-use restrictions to prevent migration or unacceptable human exposure to contaminants. In February 2000, a Consent Decree was finalized in which Green Mountain Power, Vermont Gas and New England Electric System (now National Grid USA) agreed to perform the cleanup. The remedy was implemented in two phases. The first involved the installation of a weir where the canal empties into Lake Champlain. The weir will maintain desired water levels in the canal to prevent future erosion of the subaqueous cap. Construction of the weir was completed in November 2001.

The second phase involved capping contaminated soils at the southern end of the site, placing a sand cap over contaminated sediments in the canal and turning basin, making improvements to the storm-water control system, and wetlands restoration. Work began in July 2002, and was completed in March 2003. In June 2003, a breakout of coal tar was discovered in an uncapped area immediately adjacent to, but not in, the canal. During the summer of 2004, the sand cap was extended over a portion of the west bank of the canal where coal tar was believed to be being released to the ground surface via macropores (i.e. pathways created by historic cribbing, root systems of dead trees, etc). The expanded cap appeared to address the ongoing release of contamination until sheens and globules of coal tar were observed floating on the surface water at the southern end of the canal beginning in spring 2005 and continuing to the present. Environmental controls, such as absorbent booms, keep the contamination from entering Lake Champlain. The precise mechanism for these ongoing releases is not known, and is the subject of ongoing additional investigations. Elements of the remedy also include institutional controls to prohibit potable use of groundwater below the site, institutional controls for certain land-use development such as residential and children's day-care center, site boundary definition to allow for redevelopment of certain adjacent parcels, long-term performance monitoring, and five-year reviews.

Five-Year Review Process

A five-year review is typically done within five years of the start of construction of a Superfund response action and is repeated every five years at sites where waste has been left in place and use of the site remains restricted. Construction began at the Pine Street Barge Canal in October 2001. The following components of the five-year review were completed during 2006:

- ◆ Community Notification & Involvement
- ◆ Document Review
- ◆ Data Review
- ◆ Site Inspection

Community Notification & Involvement

On June 8, 2006, EPA issued a press release to the media outlets and to the Pine Street mailing list announcing that the five-year review was underway. During July 2006, EPA conducted a number of interviews with local officials, and members of the former Pine Street Barge Canal Coordinating Council to obtain their opinion and concerns about the status of the cleanup. A second press release announcing the outcomes and recommendations of the five-year review was issued on November 29, 2006.

Document Review

As part of the five-year review process, a review of relevant documents for the site was conducted. The documents that were reviewed to obtain information to assess performance of the cleanup action included the Record of Decision, construction completion reports, as-built drawings, and sampling and monitoring plans. Documents ranged in publication date from 1990 through 2006. Attachment 2 of the Five-Year Review Report lists the documents (28) that were reviewed.

Data Review

EPA also reviewed environmental monitoring data, operation and maintenance reports, and other documentation of remedy performance. Data review and technical analysis form the basis of determinations regarding remedy protectiveness.

Site Inspection

As part of the five-year review, several site inspections were performed by EPA staff and contractors, and VT DEC staff to visually confirm and document the conditions at the site and surrounding area. An inspection of the condition of on-site monitoring wells was performed on May 3 and 4, 2006. An inspection of the condition of the cap and weir was performed on May 10 and 16, 2006. An inspection of the habitat restoration areas was performed on June 12, 2006. Representatives of the performing defendants were also present at the June 12 inspection. The results of the site inspections are included in Attachment 3 of the Five-Year Review Report.

Conclusions and Issues

This five-year review concluded that the remedy is currently protective except for the subaqueous cap in the area between T9 and T14 (*see figure on back page*) because it does not meet the cap performance standard for isolation of contaminants due to the ongoing release of coal tar.

Three additional issues were noted based on the activities conducted during the five-year review:

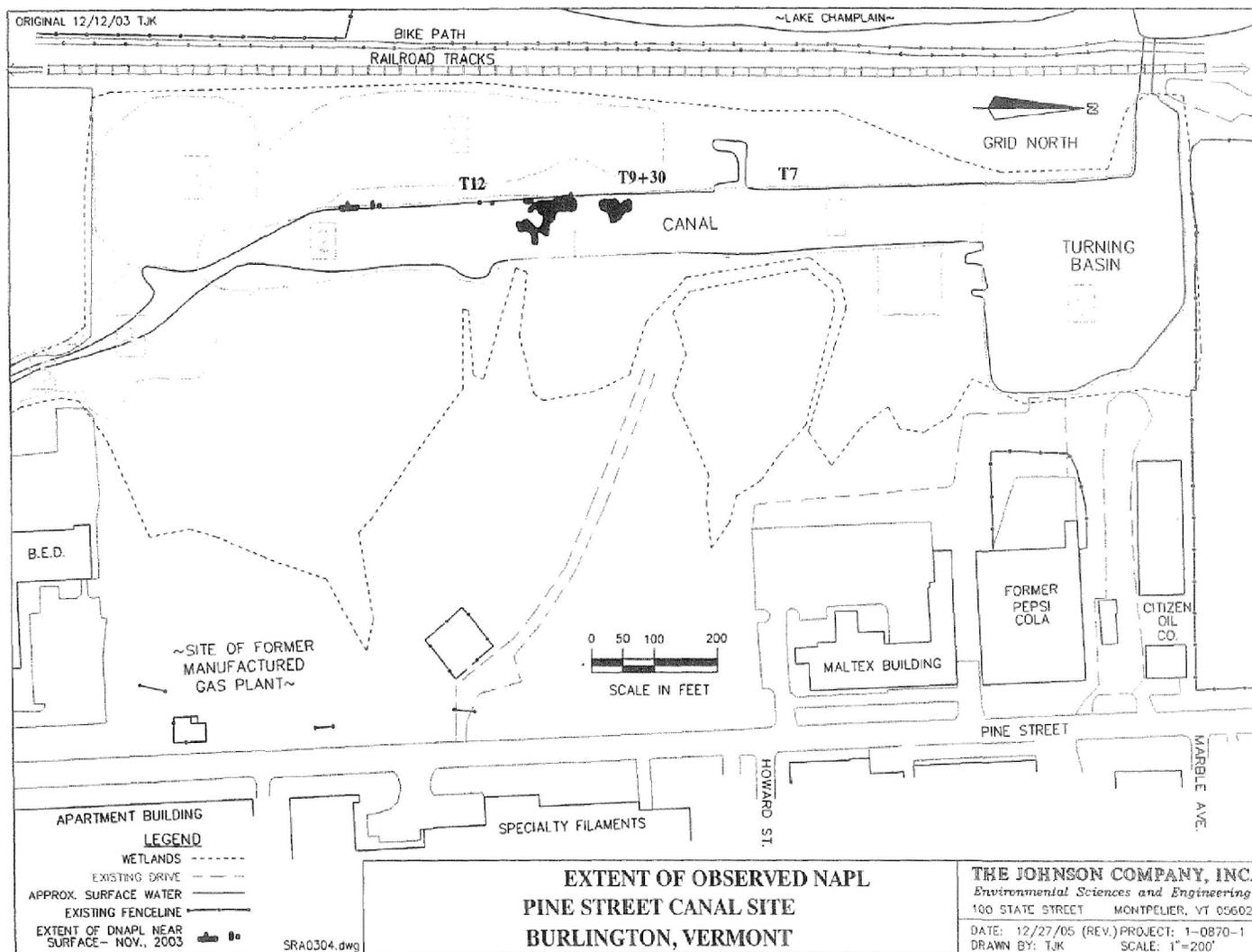
- ▶ Institutional controls to restrict the use of land and groundwater at the site have been established, however, there is no mechanism in place to determine future compliance with institutional controls.
- ▶ The subsurface vapor intrusion (i.e., indoor air) pathway was not evaluated in previous risk evaluations. A comparison of historical groundwater data and recently collected groundwater data to generic screening values for the vapor intrusion pathway indicated the possible presence of subsurface volatile chemicals in the vicinity of currently occupied buildings at levels exceeding screening criteria.
- ▶ An expanded Class IV boundary and new information regarding the location and potential mobility of a significant accumulation of non-aqueous phase liquid, or NAPL, in the subsurface at the southern portion of the site call into question the ability of the existing compliance monitoring program to adequately monitor performance standards for contaminant migration.

EPA will work during 2007 to address the issues documented in the Five Year Review.

FIVE-YEAR REVIEW RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Cap performance standard for isolation of contaminants has not been met and sediment benchmarks have been exceeded in the subaqueous cap between T9 and T14.	Develop a plan to control and eliminate ongoing NAPL releases. Reduce human exposure in the short-term.	Performing Defendants	EPA	Feb 2007	Yes	Yes
	Construction additional remedial measures for NAPL releases.	Performing Defendants	EPA	2008 Field Season		
Lack of mechanism to determine future compliance with ICs.	Develop and implement a plan to monitor ICs to determine compliance.	Performing Defendants	EPA	Oct 2007	No	Yes
Vapor intrusion to indoor air pathway was not evaluated in previous risk evaluations.	Evaluate the potential risk, if any, to current and future indoor receptors.	Performing Defendants	EPA	Oct 2007	Un-known	Un-known
Compliance monitoring program may not adequately assess contaminant migration off site.	Review and modify, as needed, compliance monitoring program.	Performing Defendants	EPA	Oct 2007	No	Yes

Next Steps: In addition to the follow-up action described above, EPA will seek input from the community on the options being considered to address ongoing releases of coal tar into the southern portion of the barge canal. It is anticipated that this will occur during the summer of 2007.



If you have any questions about the Pine Street Barge Canal Superfund Site or would like more information, you may contact:

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Information Repositories: The Five-Year Review Report and other technical reports and documents related to the Pine Street site are located in two information repositories in Burlington: the Fletcher Free Public Library, 235 College Street, and the Bailey-Howe Library at the University of Vermont. The public may also view site information at the EPA New England Records Center, One Congress Street, Boston, MA 02114. Call (617) 918-1440 to set up an appointment to see the site file.

EPA New England website for Pine Street Barge Canal
www.epa.gov/ne/superfund/sites/pinestreet