

# **Findings of Fact & Reclassification Order**

**Proposed Revision to the Boundaries of the Class IV Groundwater at the Pine  
Street Barge Canal Superfund Site  
Burlington, Vermont**

Prepared by:

The Vermont Agency of Natural Resources and the  
Vermont Groundwater Coordinating Committee

## **FINDINGS OF FACT & RECLASSIFICATION ORDER PINE STREET BARGE CANAL, BURLINGTON, VERMONT**

### **INTRODUCTION**

This document represents the Vermont Agency of Natural Resources findings and determination to revise and expand the Class IV groundwater at the Pine Street Barge Canal Superfund site in Burlington, Vermont.

The present 1993 Class IV boundaries and proposed expansion of the Class IV groundwater area are shown on the map in Attachment 1.

The findings are based on the considerations outlined in Section 12-403 of the Vermont Groundwater Protection Rule and Strategy, effective February 25, 2005.

A copy of the rule is available online at [www.vermontdrinkingwater.org](http://www.vermontdrinkingwater.org) or by contacting the Department of Environmental Conservation, Water Supply Division, 103 South Main Street, Waterbury, Vermont 05671-0403 or at (802) 241-3400.

Copies of the scientific data used to delineate and support the move to expand the boundaries of the Class IV groundwater at the Pine Street Barge Canal are available at the Waterbury Office of the Department of Environmental Conservation, Waste Management Division.

### **BACKGROUND**

The Pine Street Barge Canal is located on the west side of Pine Street in Burlington, VT. The site is the location of an old coal gasification plant that operated on site from the 1800's through the early 1950's. The site is presently wetland and scrub woodland surrounded by commercial and industrial development. The remnants of an old barge canal that was used as a means to transport goods to and from Burlington on Lake Champlain run through the center of the site and connect it to Lake Champlain.

During the years the coal gasification plant operated, manufacturing wastes (primarily coal tar and other similar and related fluids) from the gasification plant were disposed of on site on the ground surface, in at least one surface impoundment, and into the barge canal. Wastes generated in the gasification process included heavier than water nonaqueous liquids, neutrally buoyant nonaqueous liquids, and lighter than water nonaqueous liquids. The hazardous constituents of these fluids include metals (cyanide, etc), semi-volatile organics (benzo-a-pyrene and other PAH's), and volatile organics (benzene, etc). These wastes seeped into the subsurface contaminating soils and groundwater to depths of as much as 100 feet below the ground surface, and settled onto the canal bottom and mixed with the sediments. Some light nonaqueous phase liquids existed within the waste and much of these likely flowed into Lake Champlain during the periods the plant operated. These lighter liquids are not usually found at the site.

The US EPA and the State have been involved in investigating this site, developing a remedy,

and constructing a remedy since the 1980's. A final remedy was agreed upon by the US EPA, the State, and the Potentially Responsible Parties and constructed in the early 2000's. The remedy acknowledges the fact that it is technically infeasible to remove the contaminants from the groundwater and subsurface soils at the site, and works to prevent risk to human health and the environment by preventing contact with the contaminated materials. There are deed restrictions on all affected properties to prevent contact through preventing residential development, the use of the properties as daycares or schools, groundwater use, and to minimize excavation into contaminated soils and to inform workers that may contact soils to develop protective measures prior to construction. The Class IV classification is part of the methodology used to prevent contact with contaminated groundwater. Contact with contaminated sediments in the canal was prevented by the installation of a sub-aqueous cap. The construction is complete however there is ongoing work being done to insure that the sub-aqueous cap works as intended.

#### AGENCY REVIEW

Below is the Agency of Natural Resources review of the Pine Street Barge Canal Site with respect to the Groundwater Protection Rule and Strategy Section 12-403 Class I, II, III and IV Groundwater Reclassification Process. This information is based on the information available in the Waste Management Division site files for the Pine Street Barge Canal site and the General Electric Lakeside site.

In determining whether or not to reclassify groundwater as Class I, II, III, or IV, the Secretary shall consider the following:

(1) The use or potential future use of the groundwater as a public water supply source

Municipal water is available to the properties within the Class IV Groundwater area and easements are in place to restrict groundwater use. However, the overburden aquifer is slightly transmissive and could represent a water supply opportunity to individuals unaware of contaminant risks. Bedrock groundwater could also potentially represent a water supply. Drilling through the contaminated sediments into the bedrock would likely drag the contaminants down and potentially contaminate the bedrock aquifer. A Class IV designation for the groundwater in the area would provide another institutional control to prevent future groundwater supply development.

(2) The extent of activity which poses a risk to the groundwater

Onsite disposal of coal gasification process wastes caused the present contamination to soil and groundwater. The facility ceased operations in the mid 1950s. The subsurface soil contamination serves as a continuing source of groundwater contamination.

(3) The current water quality of the groundwater

Numerous rounds of groundwater sampling have been performed at the Pine Street Barge Canal over the past 20 years. Over 100 wells have been drilled and tested. The contaminant zone boundaries have been defined using a 95% confidence level statistic for monitoring points which

exceed the Vermont Groundwater Enforcement Standards (VGES). The contaminants in groundwater do not appear to be migrating in groundwater. The area is in a zone where contaminant migration is in a dynamic equilibrium between the upgradient groundwater flow towards the lake and the groundwater flow from the lake towards the canal. There is some discharge to the canal water but this is diluted before it reaches the lake.

(4) The availability of groundwater in quantities needed for beneficial use

According to the Vermont Groundwater Protection Rule and Strategy, beneficial use refers to specific groundwater uses deemed appropriate for a designated groundwater class. Class IV groundwater is not considered to be a potable water source but may be suitable for some agricultural, commercial, or industrial uses.

As noted above, the groundwater in the Class IV Groundwater Area has no beneficial uses at present. Although the subsurface water resource could be capable of yielding a supply, the groundwater in the unconsolidated materials will be unsuitable for any beneficial use unless it receives very high levels of chemical and physical treatment or until present levels of contamination are substantially reduced. If a well were to be drilled into the bedrock, it is likely that it would drag down or allow contaminants to migrate in to the bedrock aquifer.

Reclassification of the groundwater to Class IV is necessary to protect future users from inappropriate use of the groundwater for potable supplies. Other protections, such as deed restrictions or landowner agreements, will prevent other inappropriate beneficial uses of the on-site groundwater. The Secretary will not issue permits for drinking water supplies within the Class IV boundary.

(5) The consequences of potential groundwater contamination and the availability of alternate sources of water

Use of any onsite water source must be avoided until contaminant concentrations are reduced over time by natural attenuation. This will not be for the foreseeable future. A Class IV designation will help prevent development of any water supply requiring a permit from the Secretary. Municipal water is available as an alternative water source within the Class IV Groundwater Area.

(6) The classification of adjacent surface waters

The site groundwater discharges to the barge canal and flows to Lake Champlain. . The State of Vermont has classified these waters as Class B. Class B waters are considered suitable for the following uses: water supply with filtration and disinfection; irrigation and other agricultural uses; swimming, and recreation.

The surface water data indicates that the groundwater contamination is not adversely affecting the water quality of Lake Champlain.

(7) The probability for use as a public water supply source

It is unlikely that the site could provide a public water supply considering the low transmissivity of the unconsolidated materials. It is possible that a water supply well could be drilled into the bedrock, but it would be difficult to locate a high yielding well considering the thickness of the overburden, and it is unlikely that a public water supply well will be needed in the foreseeable future. The City of Burlington public water supply is Lake Champlain which should be sufficient to supply all of the city's water needs for the foreseeable future. In the case of an unanticipated need for an additional public water supply source in the area, a Class IV designation will prevent the inappropriate development of a public water supply at the Pine Street Barge Canal.

(8) Other factors relevant to determining the maximum beneficial use of the groundwater

As part of the Pine Street Barge Canal Superfund site remedy, the parcels of land that are and will have Class IV groundwater are subject to institutional controls to prevent inappropriate uses of contaminated land and water at the site.

RECLASSIFICATION AREA

The Class IV reclassification area has been delineated using generally accepted methods of delineating groundwater as per 10 V.S.A. § 1394 and the Groundwater Protection Rule and Strategy. Supporting documentation outlining the basis for the delineation is available in the Pine Street Barge Canal superfund site files in the Waste Management Division.

The Class IV Groundwater Area is shown on the map in Attachment A. A list of the affected property owners and their contact information is in Attachment B.

MONITORING AND MANAGEMENT REQUIREMENTS

Restrictions on groundwater use and additional monitoring requirements for a Class IV area may be applicable under Sections 12-401(7) of the Groundwater Rule and Strategy which states:

*Any classification or reclassification decision issued by the Secretary may include special conditions for the management of the classified groundwater area which shall apply to activities regulated by the Secretary.*

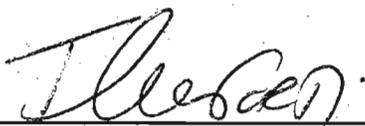
Long-term monitoring of groundwater and maintenance of the remedy at the site is required by the U.S. Environmental Protection Agency and detailed in the Consent Decree and Record of Decision for this site. There is an existing network of monitoring wells on and off site that are monitored periodically. As specified in the Record of Decision, if monitoring indicates that the contamination is migrating past its present boundaries, there will be activities taken in response to the migration. The Class IV boundary delineation shall be evaluated if monitoring data indicate that the contamination is or will migrate past the Class IV boundaries.

## Findings of Fact

The Secretary of the Vermont Agency of Natural Resources makes the following findings regarding the reclassification of the groundwater at the Pine Street Barge Canal site, Burlington, Vermont.

1. The quality of the groundwater beneath the Pine Street Barge Canal site as indicated in the site file does not meet drinking water standards.
2. Use of the affected groundwater for domestic drinking water is unlikely in that the area is provided with piped drinking water by the City of Burlington, Vermont.
3. It is likely technically infeasible to restore the groundwater to drinking water standards.
4. If it were technically feasible to restore the groundwater quality beneath the Pine Street Barge Canal to drinking water standards, the costs would be prohibitive given the extent and nature of the contamination.
5. The degraded groundwater is in a dynamic equilibrium and is not migrating outside of the boundaries of the Class IV groundwater area.
6. The Agency of Natural Resources reviewed the site data and determined that the groundwater beneath an Pine Street Barge Canal and surrounding properties as detailed on the attached map meets the criteria for reclassification from Class III to Class IV in accordance with the Groundwater Protection Rule and Strategy.

I hereby make the Findings of Fact identified above and reclassify the groundwater to Class IV under the Pine Street Barge Canal and surrounding property as identified in this document.



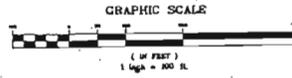
Thomas Torti  
Secretary,  
Vermont Agency of Natural Resources

Date 1/23/06

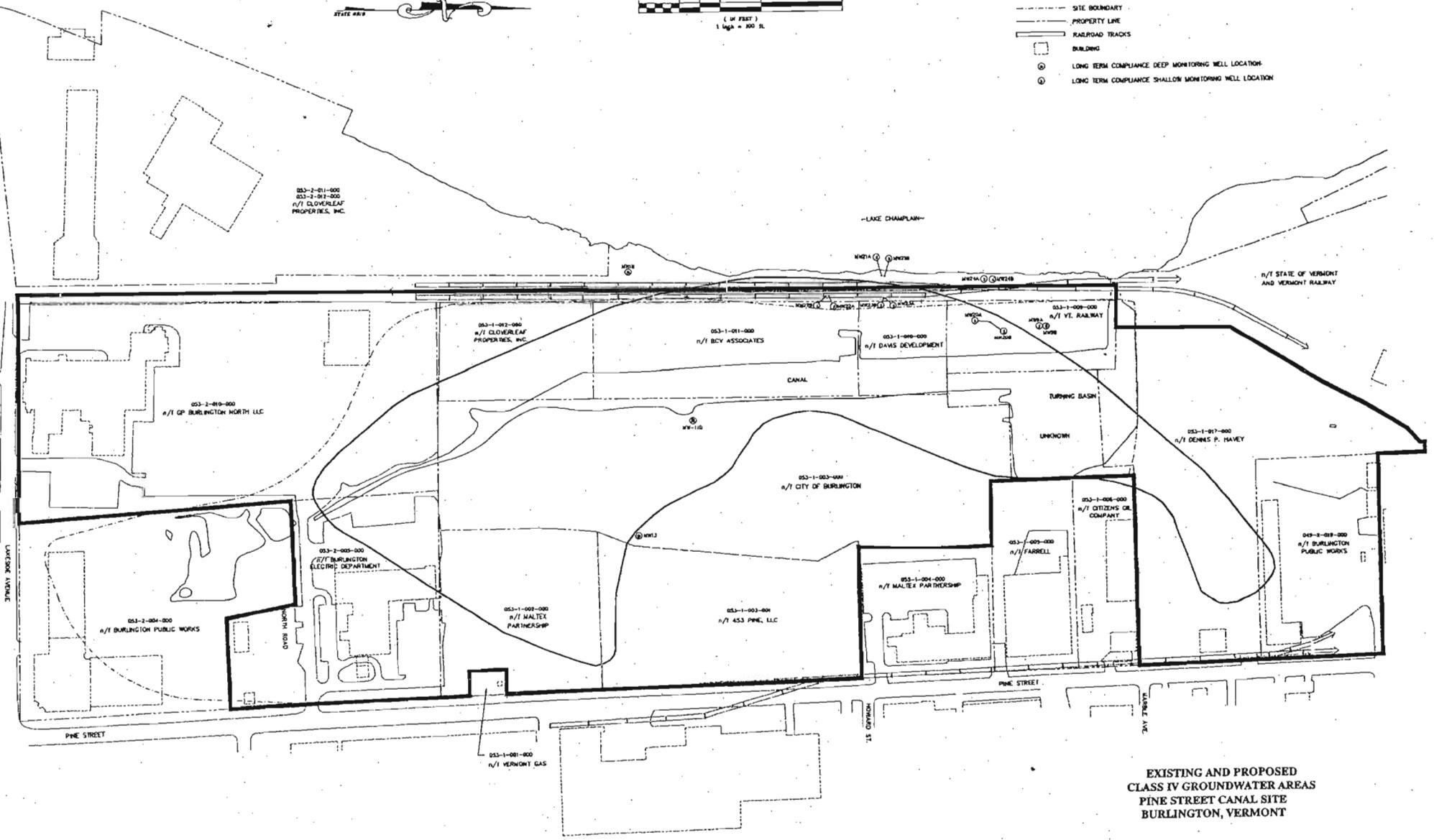
**Findings of Fact & Reclassification Order for the Pine Street Barge Canal**

**Attachment A**

**Site Location Map showing Class IV Area**



- LEGEND**
- PROPOSED CLASS IV GROUNDWATER BOUNDARY
  - - - EXISTING CLASS IV GROUNDWATER BOUNDARY
  - - - SITE BOUNDARY
  - - - PROPERTY LINE
  - ▭ RAILROAD TRACKS
  - ▭ BUILDING
  - ⊙ LONG TERM COMPLIANCE DEEP MONITORING WELL LOCATION
  - ⊙ LONG TERM COMPLIANCE SHALLOW MONITORING WELL LOCATION



**EXISTING AND PROPOSED  
CLASS IV GROUNDWATER AREAS  
PINE STREET CANAL SITE  
BURLINGTON, VERMONT**

**Findings of Fact & Reclassification Order for the Pine Street Barge  
Canal**

**Attachment B**

**Property Owners List**

## Pine Street Barge Canal Class IV Property Owners

PROPERTY OWNERS WITHIN PINE STREET CANAL SUPERFUND SITE CLASS IV GROUNDWATER AREA AS PROPOSED IN JANUARY, 2005 Data checked on January 11, 2005 at the Burlington City Records Department		
Property Owners and Location	Contacts	Lot No
Fortieth Burlington, LLC c/o Lewiston Investment Company 67 Lewiston Road Grosse Point Farms, MI 48236 (this sale not yet recorded) <u>128 Lakeside Avenue</u>	Chip Myers GP Burlington North LLC 128 Lakeside Avenue Burlington, Vermont 05402 Phone: (802)863-6903 Fax: (802) 863-6901 <a href="mailto:cmeyers@gilbaneco.com">cmeyers@gilbaneco.com</a>	053-2-010-000
Vermont Railway, Inc. <u>405 Pine Street (rear)</u>	Charles LeMeaux Vermont Railway One Railway Lane Burlington, Vermont 05401 Phone: (802) 343-9207 Fax: (802) 742-1511	053-1-009-000
Burlington Electric Department <u>585 Pine Street</u>	Roger Donegan Burlington Electric Department 585 Pine Street Burlington, Vermont 05401 Phone: (802) 865-7470 Fax: (802) 865-7400 <a href="mailto:rdonegan@burlingtonelectric.com">rdonegan@burlingtonelectric.com</a>	053-2-005-000
Davis, Derrick H. Charitable Remainder Trust <u>453 Pine Street</u>	Derrick H. Davis 431 Pine Street Burlington, Vermont 05401 (802) 658-6561 <a href="mailto:DDavis8957@aol.com">DDavis8957@aol.com</a>	053-1-003-001
The Maltex Partnership <u>501 Pine Street</u>		053-1-002-000
BCV Associates <u>453 Pine Street (rear)</u>	Liam L. Murphy, Esq. Murphy Sullivan Kronk 275 College Street Burlington, VT 05401 (802) 861-7000 <a href="mailto:lmurphy@mskvt.com">lmurphy@mskvt.com</a>	053-1-011-000
Davis Development Corporation <u>431 Pine Street (rear)</u>		053-1-010-000
Dennis P. Havey <u>345 Pine Street</u>	Dennis P. Havey 295 Brook Drive Bristol, Vermont 05443 Phone: (802) 453-4522  Christopher Marraro Wallace, King, Marraro & Branson PLLC 1050 Thomas Jefferson Street, N.W. Washington, D.C. 20007 (202) 204-1000 <a href="mailto:cmarraro@wallaceking.com">cmarraro@wallaceking.com</a>	053-1-017-000
Cloverleaf Properties, Inc. <u>501 Pine Street (rear)</u>	Martin Lindsay The Middleby Corporation 1400 Toastmaster Drive Elgin, IL 60120 (847) 741-3300 <a href="mailto:mlindsay@middleby.com">mlindsay@middleby.com</a>	053-1-012-000

PROPERTY OWNERS WITHIN PINE STREET CANAL SUPERFUND SITE  
CLASS IV GROUNDWATER AREA AS PROPOSED IN JANUARY, 2005  
Data checked on January 11, 2005 at the Burlington City Records Department

Property Owners and Location	Contacts	Lot No
Burlington Public Works Department <u>339 Pine Street</u>	William F. Ellis, Esquire McNeil, Leddy & Sheahan 271 South Union Street Burlington, VT 05401 (802) 863-4531 <a href="mailto:wellis@mcneilvt.com">wellis@mcneilvt.com</a>	049-2-019-000
Burlington Public Works Department <u>431, 453, and 501 Pine Street (middle)</u>		053-1-003-000

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copy of letter sent

Dear

As you are likely aware, in 1993, the Agency of Natural Resources (ANR) reclassified groundwater below your property to Class IV. This classification is essentially a statement of the fact that this groundwater is contaminated by the Pine Street Barge Canal superfund site. These contaminants are related to the coal gasification plant that operated in this area from the 1800's until the 1950s.

The boundaries of the reclassified area were delineated to be the full extent of Benzene groundwater contamination above groundwater enforcement standards. The boundaries are therefore irregular and very difficult to identify on the ground surface. This was the first groundwater reclassified by the ANR. Since this time, the boundaries of other reclassified groundwaters have been drawn at property lines or geographic features that enclose the contaminated area and are which can be located on the ground either visually or by a simple survey.

As part of the Pine Street Barge Canal Superfund remedy, the US Environmental Protection Agency (EPA) has worked with the state and property owners to place certain deed restrictions on properties within the superfund site boundary. These are intended control access to the contamination and to help prevent the contamination from causing a health threat to present and future site workers and land owners. The deed restrictions generally cover the entire affected property.

The ANR is proposing expanding the boundaries of the Pine Street Class IV groundwater area to be equivalent to the area covered by the deed restrictions. This is generally the property lines on the north, east and south of the canal, and to the center of the railroad tracks located directly west of the canal. This will make it possible for the Class IV boundary to be easily located on the ground. The proposed extension of the Class IV area will not affect any proposed land use or redevelopment. Any effects on land use or redevelopment this already exist and are controlled by the existing deed restrictions developed as part of the EPA Pine Street Barge Canal superfund remedy.

As part of the reclassification process, the ANR would like to hear comments from potentially affected property owners. Through this letter, we are soliciting comments from property owners whose properties are within the Class IV area. Please contact us if you have any comments or questions about the proposed expansion of the Class IV groundwater area. We can be reached by telephone to:

\_\_\_\_\_, at: (802) 241-\_\_\_\_\_, by email to: \_\_\_\_\_, or by US  
Postal service to: \_\_\_\_\_.

Thank you for your help with this issue and for your comments on the proposed expansion of the Class IV area.

Sincerely,

\_\_\_\_\_  
Representing the Agency of Natural Resources