



New York State Department of Health  
Center for Environmental Health

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## Public Health Assessment

# LITTLE VALLEY SITE

Village of Little Valley and the City of Salamanca,  
Cattaraugus County, New York

**PUBLIC COMMENT DRAFT**

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Prepared under a Cooperative Agreement with  
U.S. Department of Health & Human Services  
Public Health Service  
Agency for Toxic Substances and Disease Registry

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## TABLE OF CONTENTS

SUMMARY .....	1
PURPOSE AND HEALTH ISSUES .....	3
BACKGROUND .....	3
A. Site Description and History .....	3
B. Site Visit .....	5
C. Demographics .....	5
COMMUNITY HEALTH CONCERNS .....	6
PATHWAYS ANALYSIS .....	7
PUBLIC HEALTH IMPLICATIONS .....	8
A. Health Outcome Data .....	8
B. ATSDR Child Health Initiative .....	9
CONCLUSIONS .....	9
RECOMMENDATIONS .....	10
PUBLIC HEALTH ACTION PLAN .....	10
PREPARERS OF THE REPORT .....	13
REFERENCES .....	15
APPENDIX A .....	17
Figures .....	17
APPENDIX B .....	21
New York State Department of Health Procedure for Evaluating Potential Health Risks for Contaminants of Concern .....	21
APPENDIX C .....	25
Public Health Hazard Categories .....	25

## SUMMARY

The Little Valley site is in a rural area between the Village of Little Valley and the City of Salamanca in Cattaraugus County, New York. Groundwater is contaminated with trichloroethene (TCE) and people using private well water have been exposed to TCE in their water. Contamination was discovered in 1982 (levels did not exceed the drinking water guideline that existed at that time) and treatment systems were installed starting in March 1997 to reduce levels of contamination in drinking water. As of December 1999, the United States Environmental Protection Agency (US EPA) is maintaining ninety (90) individual air stripping treatment units on residential wells that are contaminated with TCE above the Federal and State maximum contaminant level standards (MCL) of 5 micrograms per liter (mcg/L). Also, about twenty-five drinking water wells are contaminated with TCE at levels below the MCL of 5 mcg/L and many more are potentially threatened.

The New York State Department of Health (NYS DOH) completed a Health Consultation in March 1996 (ATSDR 1996) under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The consultation concluded that the site posed a public health hazard because of past, present, and possible future exposures to volatile organic compounds in private water supplies, and that without efforts to remediate the groundwater, the contaminant levels in private water supplies may increase. The consultation also recommended that actions should be taken to dissociate people from the contaminated water and that monitoring of the affected and threatened private wells should continue. This public health assessment concurs that past exposures represented a public health hazard; however, the site currently presents no apparent public health hazard because treatment systems were installed and are being maintained by the US EPA to reduce exposures to below levels of public health concern. Moreover, future exposures could occur if groundwater is not remediated and TCE migrates to and contaminates additional wells, if new wells are installed in the contaminated plume, or if treatment systems are not maintained. The US EPA periodically monitors potentially threatened wells.

The primary community health concerns at the site are the potential health risks from being exposed to TCE in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater. Since 1989, and before treatment systems were installed, the Cattaraugus County Health Department (CCHD) issued health advisories to residents exposed to contaminants in drinking water in the form of letters accompanying laboratory data. In addition, state and county health officials have explained potential health risks and conveyed health-related recommendations at several community meetings. As evaluated in this public health assessment, the chance that someone would get a cancer or non-cancer adverse health effect from their past exposures to TCE in drinking water is low and minimal, respectively.

Current recommendations include: maintaining the installed treatment systems and monitoring the quality of the treated water; installing additional treatment systems when TCE levels in tap water

exceed the MCL; pursuing a more permanent, long-term groundwater remedy; and possibly extending municipal water service to site residents. Residents who were exposed in the past to VOCs in drinking water will be asked to participate in the New York State Volatile Organic Exposure Registry. The NYS DOH will continue community health education activities people whose drinking water supplies are contaminated with trichloroethene in the Little Valley study area. These activities will include meeting with the public and providing information on ways to reduce exposures to trichloroethene in drinking water.

## PURPOSE AND HEALTH ISSUES

The purpose of this public health assessment is to evaluate human exposure pathways from contaminants at the Little Valley site. This health assessment fulfills the congressional mandate for a public health assessment for each site being proposed to the National Priorities List (NPL). This public health assessment (PHA) will focus primarily on exposure to trichloroethene in private drinking water supplies, the only known potential exposure pathway at the site. No source of the contamination has yet been identified, so information on source-related exposures, such as contaminated soils, cannot be evaluated. The actions taken to date to identify those potentially exposed and provide an alternate source of drinking water for the homeowners with wells contaminated above the maximum contaminant level standards (MCL) will be discussed in this document.

The primary community health concerns at the site are potential health risks from being exposed to trichloroethene (TCE) in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater.

## BACKGROUND

### A. Site Description and History

The Little Valley study area (site) lies between the Village of Little Valley and the City of Salamanca in Cattaraugus County. The site area is rural and agricultural with a number of active and inactive small industries within one mile. There are over 200 residential properties in the study area along Route 353, the main transportation route between communities. The study area is underlain by a groundwater contaminant plume of TCE which extends approximately six miles from the Village of Little Valley to the northern edge of the City of Salamanca (and likely beyond), which is partially within the boundary of the Seneca Nation of Indians, Allegany Reservation. Since 1982, chemical analyses confirmed the presence of TCE in groundwater samples collected from monitoring wells and private residential wells throughout the study area. Between January 1989 and January 1997, sampling by the Cattaraugus County Health Department (CCHD), New York State Department of Health (NYS DOH), and United States Environmental Protection Agency (US EPA) found TCE in approximately 100 residential drinking water wells. Potential sources of this groundwater TCE contamination are still under investigation.

In 1982, the New York State Department of Environmental Conservation (NYS DEC) and CCHD investigated trichloroethene contamination around Luminite, a small manufacturing facility along Route 353 (refer to Figure 1. Appendix A). The company used trichloroethene. Trichloroethene was found in nearby private wells; however, the levels did not exceed the NYS DOH drinking water guideline of 50 micrograms per liter (mcg/L) in effect at that time. In January of 1989, the US EPA and NYS DOH established a drinking water standard of 5 mcg/L for trichloroethene in public water supplies.

In February 1989, groundwater monitoring wells on and near the Luminite property were sampled. In addition, the NYS DEC sampled the process wastewater effluent and septic system at Luminite. The data indicated groundwater contamination both upgradient and downgradient of the Luminite facility, suggesting other possible sources of contamination.

Possible sources of groundwater contamination in the Little Valley area include active and inactive industrial sites such as the former Envirotech drum storage area, a private disposal site, and an inactive municipal landfill (refer to Figure 2, Appendix A). These facilities were investigated as possible sources of trichloroethene contamination in groundwater. There is little information about the former Envirotech drum storage area except that it was a temporary drum storage area. A private disposal site next to the former Envirotech drum storage area contains junk truck parts, machinery and rock debris and previously contained fifty-five gallon drums. Reports indicated that the drums contained waste oils. These drums were removed and properly disposed of by the NYS DEC. The 9<sup>th</sup> Street Landfill, an inactive municipal landfill, accepted industrial waste.

Other facilities that were investigated include King Windows and Bush Industries. Former employees of King Windows allege that chemicals were improperly disposed at the facility. An abandoned well was found at the site that contained a thick oil. The NYS DEC sampled this well and only trace levels of trichloroethene were found. Bush Industries is a wood and metal furniture manufacturer. Mineral spirits, toluene, acetone and methyl ethyl ketone, but not trichloroethene, are used at the site. Bush Industries occupies an area where an old cutlery manufacturer once operated. During a 1992 environmental assessment of the facility, significant concentrations of trichloroethene and its degradation products were detected in on-site groundwater monitoring wells. No volatile organic compounds (VOCs) were in the upgradient well.

The NYS DOH and the CCHD surveyed the countryside around Little Valley to investigate possible illegal dump sites. No obvious sources of trichloroethene contamination were found; however, numerous small, isolated areas of junk disposal were observed.

To define the extent of groundwater contamination in the Little Valley area, the CCHD and the NYS DOH sampled private drinking water supply wells between Little Valley and Salamanca for trichloroethene and other organic chemicals in 1990. Trichloroethene was the only volatile organic compound detected in these wells at levels above the NYS drinking water standards for public water supplies. Some of the highest concentrations were found south of the Village of Little Valley near the triangle formed by the intersections of Route 242, Route 353 and Baker Road (refer to Figure 2, Appendix A). Trichloroethene concentrations generally decrease southward, toward Salamanca. The highest trichloroethene levels are found in the northern portion of the study area. The Village of Little Valley municipal wells to the northwest are not affected by the trichloroethene contamination.

Since 1990, the state and county health departments have continued to sample private wells on a

regular basis. Trichloroethene concentrations vary slightly between sampling events, however, the data do not show any significant trends.

In September 1995, the ATSDR and New York State requested that the site be added to the NPL. On October 2, 1995, the Little Valley site was proposed for addition to the NPL by the US EPA. The site was listed on the NPL as Little Valley Superfund Site in June 1996.

In August 1996, the US EPA developed a focused feasibility study report which identified and evaluated remedial alternatives to treat the affected private water supplies. A Superfund Record of Decision was signed in September 1996 for the first operable unit to install water treatment units (individual air strippers) on private drinking water wells (residences and businesses) where the TCE concentration exceeds the MCL of 5 mcg/L. Between January and February of 1997, the US EPA sampled 149 private wells to determine the number of homes and businesses requiring treatment units to remove contaminants from the drinking water. Water samples from 73 wells exceeded the MCL for TCE. Another 23 wells contained TCE, but at levels below the MCL of 5 mcg/L. Since then, TCE levels have surpassed the MCL in an additional 16 wells. The maximum concentration detected was 50 mcg/L.

To reduce exposures, the US EPA is maintaining 90 individual air stripping treatment units on the affected private water supply wells that are contaminated with TCE above the MCL. A source identification and control remedial investigation and feasibility study (RI/FS), which was initiated in September 1996, is currently underway. It is anticipated that the RI/FS will be completed in late 2000.

## **B. Site Visit**

Representatives of the NYS DOH have visited the Little Valley site area on numerous occasions since contamination of private wells was initially detected. The most recent visit of the site area was completed by Mr. Cameron O'Connor of the NYS DOH in April 1999. Site conditions have not changed significantly since investigations began.

## **C. Demographics**

The NYS DOH estimated from the 1990 Census (US Bureau of the Census 1991) that 3,116 people live within one mile of the site. This population is 92.8% white and 6% American Indian. The percent of persons of Hispanic origin is 1.2%. Of the population 11.5% is under 6 years of age, 19.4% is 6-19 years of age, 55.2% is 20-64 years of age, and 14% is 65 years or older. In 1990 there were 646 females of reproductive age (ages 15-44) in the area. The median household income was \$19,778 in 1989, with 18.1% of the population living below the poverty level (US Bureau of the Census 1992).



The following chart compares these demographics with statewide averages. There are several schools and no nursing homes in the area.

	NYS	Little Valley
<b>Age Distribution</b>		
<6	8.3%	11.5%
6-19	18.4%	19.4%
20-64	60.2%	55.2%
>64	13.1%	14.0%
<b>Race Distribution</b>		
White	74.4%	92.8%
Black	15.9%	0.3%
Asian	3.9%	0.3%
Am Indian	0.3%	6.0%
Other	5.5%	0.7%
<b>Ethnicity Distribution</b>		
Percent Hispanic	12.3%	1.2%
<b>Median Income</b>	\$32,965	\$19,778
<b>% Below Poverty Level</b>	13.0%	18.1%

### COMMUNITY HEALTH CONCERNS

On July 28, 1992, a public meeting was held to discuss the history of the investigation and to answer questions and address health concerns that residents had about contamination of their wells. Residents expressed concerns about the possible source(s) of contamination, remediation of the problem and responsibility for costs associated with the clean-up or supply of an uncontaminated drinking water source to well owners.

Several public meetings have been held since July 1992 to address community health concerns about trichloroethene contamination in drinking water in the Little Valley study area. The most recent public meeting was held on September 11, 1996. The purpose of this meeting was to update residents and citizens in the Little Valley area on the status of the US EPA efforts to provide a source of safe drinking water to residents whose private water supplies were contaminated. The primary community health concern expressed by citizens at this meeting was related to exposure to trichloroethene in their water supplies. Additional public meetings will be scheduled as new information is obtained.

Before treatment systems were installed, residents with contaminated water supplies were advised by state and county health department officials of the health effects of prolonged exposure to low levels of trichloroethene. We recommended that they could boil their drinking water using

adequate ventilation, seek an alternative drinking water source (bottled), install carbon filtration systems, and limit showers to minimize dermal and inhalation exposures to trichloroethene.

A source or responsible party for the Little Valley site has not been identified, nor has the presence of "hazardous waste", as defined by Part 375 of the New York State Environmental Conservation Law, been documented. Because of this, New York State Superfund monies cannot be used for further investigation or to provide affected residences with alternate drinking water supplies. However, because of differences in the state and federal Superfund Laws, investigation of the site could be conducted by the US EPA if the site were listed on the NPL. The site was nominated to the NPL in October 1995 and adopted onto the NPL in June 1996. Public health concerns include continued exposures to trichloroethene in private water supplies in the Little Valley study area. Residents of the Town of Salamanca petitioned the town board to investigate the feasibility of extending the public water supply from the City of Salamanca; however, to date this has not been done. The US EPA is proceeding with its investigation of potential contaminant sources.

### PATHWAYS ANALYSIS

This section of the PHA identifies completed exposure pathways associated with past, present and future use of the site. An exposure pathway is the process by which an individual may be exposed to contaminants originating from a site. An exposure pathway is comprised of five elements including: (1) a contaminant source, (2) environmental media and transport mechanisms, (3) a point of exposure, (4) a route of exposure, and (5) a receptor population.

The source of contamination is the source of contaminant release to the environment (any waste disposal area or point of discharge); if the original source is unknown, it is the environmental media (soil, air, biota, water) which are contaminated at the point of exposure. Environmental media and transport mechanisms "carry" contaminants from the source to points where human exposure may occur. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (i.e., ingestion, inhalation, dermal absorption). The receptor population is people who are exposed or may be exposed to contaminants at a point of exposure.

For the Little Valley site there is one completed exposure pathway, exposure to trichloroethene in private drinking water. Exposure to contaminants in drinking water supplies can occur via ingestion; dermal contact and absorption during showering, bathing, or other household uses; and inhalation of aerosols and vapors from water used in the household. For an undetermined period of time, well owners have been exposed to trichloroethene in their drinking water supply. Prior to 1989, it is not known how long or at what concentrations people were exposed to these contaminants. However, trichloroethene was first detected in one private well (48 mcg/L) as early as 1982. Therefore, residents may have been exposed to volatile organic compounds in drinking water for 15 years or more years before treatment systems were installed in 1997.

There are no other known exposure pathways at this site because no specific source of the contamination has been identified. The only known contaminated medium is the groundwater.

## **PUBLIC HEALTH IMPLICATIONS**

Trichloroethene causes cancer in laboratory animals exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed to lower levels over long periods of time. Some limited data from studies of people who ingested this and other chemicals in drinking water are suggestive, although inconclusive, that exposure to trichloroethene in drinking water may increase the risk of cancer in humans. The highest TCE level in wells at this site is about 50 mcg/L. Based on the human and animals studies and limited sampling of private wells, people drinking water over a period of 30 years containing trichloroethene at levels ranging from 5 mcg/L up to 500 mcg/L may have a low increased risk of developing cancer.

Trichloroethene also produces noncarcinogenic toxic effects, primarily to the liver, kidneys and nervous system. Chemicals that cause effects in humans and/or animals at high levels of exposure may also pose a risk to humans who are exposed to lower levels over long periods of time. Although the risks of noncarcinogenic effects from past and present exposures are not completely understood, the existing data suggest that they would be minimal for exposure to trichloroethene. For additional information on how the NYS DOH determined and qualified health risks applicable to this health assessment, refer to Appendix B.

### **A. Health Outcome Data**

The Little Valley site has been selected as one of the initial sites for inclusion in the NYS VOC Exposure Registry. Residents of households who were exposed in the past to VOCs from private well drinking water supplies are being asked by the NYS DOH to participate.

Following contact by mail and a brief interview to determine eligibility, potential registrants are being asked to complete a mailed questionnaire seeking information about exposures during the time period before contamination was detected and before intervention occurred to prevent exposure. Information about other health risk factors such as alcohol and tobacco use, detailed information about registrant health status before and after potential exposure, and basic demographic information such as age, education and occupation will be collected. Health status questions seek information about cancer as well as respiratory, neurological, cardiovascular, gastrointestinal, musculo-skeletal, endocrine and reproductive symptoms and diseases. Enrollees will be contacted approximately every two years regarding their health status.

The exposure registry allows long-term follow-up on the health status of persons with documented exposures to VOCs from this site as well persons exposed to VOCs at other selected sites in New York State. An exposure registry such as this one is a resource for research that may help us learn



# STATE OF NEW YORK DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180 -2216

Antonia Novella, M.D., M.P.H.  
Commissioner

Dennis P. Whalen  
Executive Deputy Commissioner

July 13, 2000

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Dear Interested Party:

Enclosed is a copy of the public comment version of the Public Health Assessment for the **Little Valley** site in Cattaraugus County, New York. This document was developed by the New York State Department of Health (NYS DOH), in cooperation with the U. S. Agency for Toxic Substances and Disease Registry (ATSDR). The purpose of the health assessment is to evaluate whether the site represents a health hazard to the residents of the area. Citizens' questions and comments are an important part of the review process and we encourage you to read the document carefully. Please send us your comments by **August 15** so that they can be considered as the health assessment is finalized. Attached is a reply form for your use. Please return the completed form to:

Mark A. VanDeusen  
New York State Department of Health  
Outreach Unit  
547 River Street, Flanigan Square, Room 316  
Troy, New York 12180-2216

Comments will also be accepted via e-mail at: [cehout@health.state.ny.us](mailto:cehout@health.state.ny.us)

For any additional questions or to obtain additional copies of the draft health assessment, please do not hesitate to contact me at the toll-free number, 1-800-458-1158, extension 27530.

Sincerely,

Mark A. VanDeusen  
Outreach Unit  
New York State Department of Health

Enclosure

# New York State Department of Health

## Draft Public Health Assessment Reply Form Little Valley Site

Thank you for taking the time to review this draft health assessment. The purpose of the comment period is to give you a chance to let us know if you have questions or additional information related to the site that should be included in this document. Also, is it accurate, clear, readable, understandable, factual and correct?

This reply form is broken into sections that correspond to the main headings in the report. Please write any questions on the assessment in the appropriate place shown below.

### OPTIONAL INFORMATION

Name \_\_\_\_\_  
Address \_\_\_\_\_  
Home Phone \_\_\_\_\_ Work Phone \_\_\_\_\_  
Best time to contact you \_\_\_\_\_

### HEALTH ASSESSMENT SECTIONS

Please refer to page numbers on the report when writing your questions or comments.

#### Background

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#### Community Health Concerns

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#### Pathways Analysis

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**Public Health Implications**

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**Conclusions**

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**Recommendations**

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**Public Health Action Plan**

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Attach additional sheets of paper if needed. **Please return by August 18, 2000.**

Return to: Mark A. VanDeusen  
Outreach Unit  
New York State Department of Health  
Flanigan Square  
547 River Street, Rm. 316  
Troy, New York 12180 - 2216

whether exposures to VOCs are related to health effects. People who are enrolled in the Registry will be kept informed of any research results that come from the Registry data.

## **B. ATSDR Child Health Initiative**

The ATSDR Child Health Initiative emphasizes examining child health issues in all of the agency activities, including evaluating child-focused concerns through its mandated public health assessment activities. The ATSDR and the NYS DOH considers children when evaluating exposure pathways and potential health effects from environmental contaminants. We recognize that children are of special concern because of their greater potential for exposure from play and other behavior patterns. Children sometimes differ from adults in their susceptibility to hazardous chemicals, but whether there is a difference depends on the chemical. Children may be more or less susceptible than adults to health effects from a chemical and the relationship may change with developmental age.

The potential for large amounts of trichloroethene (a chemical detected at the Little Valley site) to cause adverse effects in the offspring of pregnant laboratory animals has been assessed in several studies. When pregnant laboratory animals are exposed to high levels of trichloroethene, adverse effects on the normal development of the offspring are observed. In most, but not all of these cases, the high levels of trichloroethene also cause adverse health effects on the parent animal. Thus, the possibility that children may have increased sensitivity to trichloroethene was taken into account when evaluating the potential health risks associated with the Little Valley site.

The area encompassing the Little Valley site includes homes that have children in their household who may ingest contaminated drinking water, bathe in contaminated tap water, or inhale contaminated vapors from water use in the home.

## **CONCLUSIONS**

The site posed a public health hazard in the past because persons were exposed (via inhalation, ingestion, and dermal absorption) to VOCs in private water supplies, above the Federal and State drinking water standards, which required action to reduce or eliminate these exposures. Residents drinking contaminated groundwater have been exposed for up to 15 years or possibly longer. The chance that someone would actually get a cancer or non-cancer adverse health effect from their past exposures is low and minimal, respectively. The site currently presents no apparent public health hazard because treatment systems were installed to reduce exposures to below levels of public health concern. However, future exposure could occur if groundwater is not remediated and trichloroethene migrates to additional wells, new wells are installed in the contaminated plume, or if treatment systems are not maintained.

Analytical data indicate a plume of trichloroethene that stretches from the southern end of the Village of Little Valley to the northern portion of the City of Salamanca. The groundwater contaminant plume may extend further since groundwater south of the northern portion of the City

of Salamanca has not been sampled due to the lack of groundwater monitoring points. The highest contaminant concentrations in groundwater are in the area bounded by Routes 242 and 353 and Baker Road known as the triangle area. A single source of contamination has not been found, and there may be multiple sources. Trichloroethene concentrations in private wells range from 1 mcg/L to 50 mcg/L, and are generally lower southward, toward the Allegheny River. In some cases, there are individual water supplies that show no trichloroethene contamination in areas where their neighbors have high levels of trichloroethene. Such differences may be due to differences in the depth and construction of individual wells.

The primary community health concerns at the site are the potential risks from being exposed to TCE in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater. Since 1989, and before treatment systems were installed, the CCHD issued health advisories to residents exposed to contaminants in drinking water in the form of letters accompanying laboratory data. In addition, state and county health officials have explained potential health risks and conveyed health-related recommendations at several community meetings.

### **RECOMMENDATIONS**

1. Actions taken to reduce exposures to contaminated water should continue.
2. Installed treatment systems must be maintained and the quality of the treated water monitored until contamination stops or an alternative water supply is provided.
3. Monitoring of potentially affected private wells should continue, with treatment systems added, when trichloroethene levels in tap water exceed the MCL.
4. A more permanent, long-term remedy for groundwater users should be sought (i.e., public water line extension).
5. Continue with periodic public meetings or public informational fact sheets to keep the community informed of local, state, and federal activities.
6. The remedial investigation should be completed and remedial alternatives evaluated.

### **PUBLIC HEALTH ACTION PLAN**

The Public Health Action Plan (PHAP) for the Little Valley site contains a description of actions to be taken by ATSDR and/or the NYS DOH following completion of this health consultation. For those actions already taken at the site, please refer to the Background section of this public health assessment. The purpose of the PHAP is to ensure that this health consultation identifies public health hazards and provides a plan of action designed to mitigate and prevent adverse human health effects resulting from the past, present and/or future exposures to hazardous substances at or near the site. Included is a commitment on the part of ATSDR and/or the NYS DOH to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR and/or the NYS DOH are as follows:

1. The NYS DOH will coordinate with the appropriate environmental agencies to develop a



- plan to implement the recommendations contained in this public health assessment.
2. ATSDR will provide follow-up to this PHAP, as needed, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this public health assessment and will be provided to people who request it.
  3. Residents who were exposed in the past to VOCs in drinking water will be asked to participate in the New York State Volatile Organic Exposure Registry.
  4. The NYS DOH will continue community health education activities to people whose drinking water supplies are contaminated with trichloroethene in the Little Valley study area. These activities will include meeting with the public and providing information on ways to reduce exposures to trichloroethene in drinking water.

ATSDR will reevaluate and expand the PHAP when needed. New environmental, toxicological, or health outcome data, or the results of implementing the above proposed actions, may determine the need for additional actions at this site.



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## REFERENCES

Agency for Toxic Substances and Disease Registry. 1996. Health Consultation for the Little Valley Site. US Department of Health and Human Services. Atlanta, Georgia: US Public Health Service.

US Bureau of the Census. 1991. *1990 Census of population and housing summary tape file 1B*. US Department of Commerce.

US Bureau of the Census. 1992. *1990 Census of population and housing summary tape file 3A* CD-ROM. US Department of Commerce.



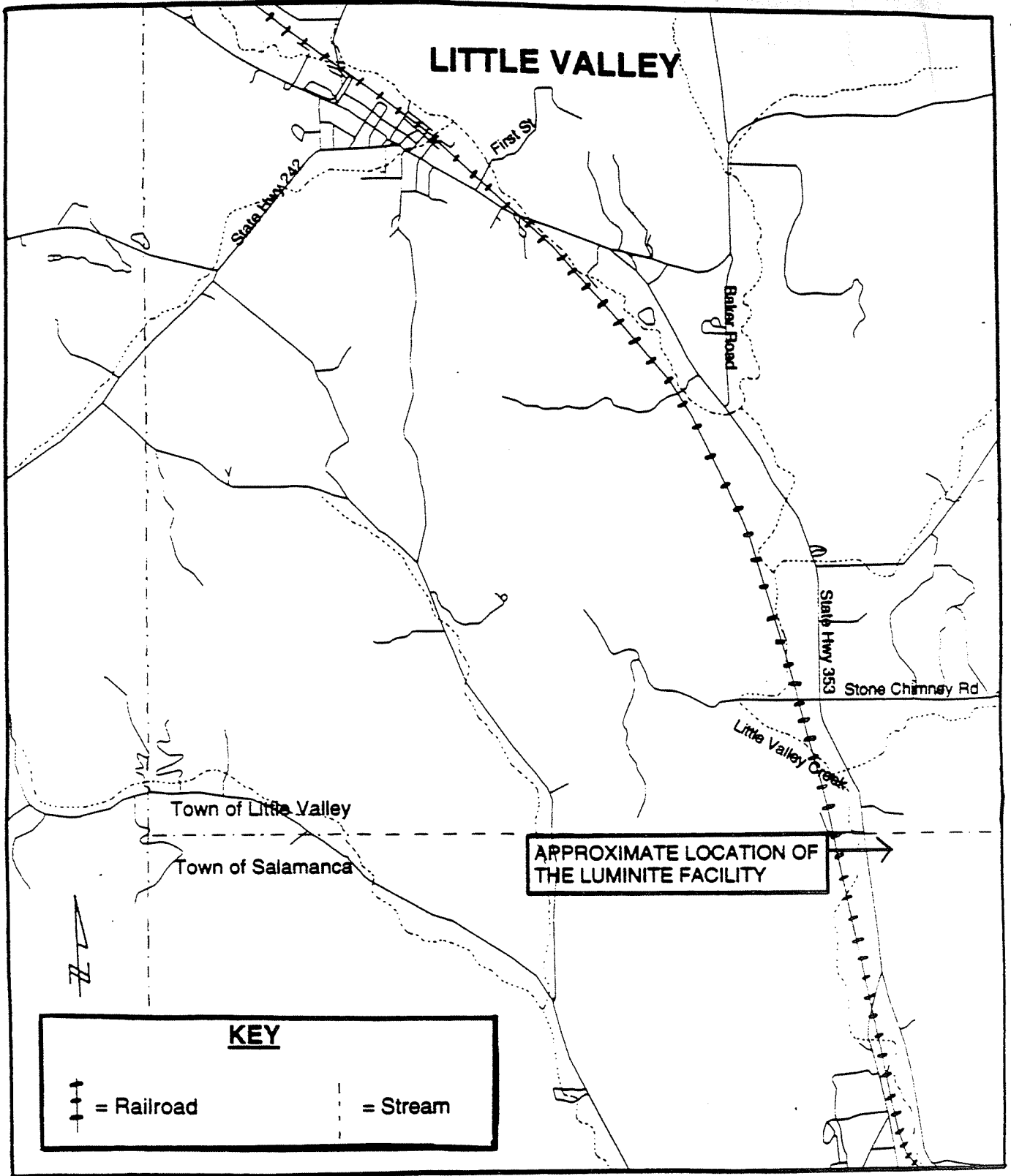
**APPENDIX A**

**Figures**



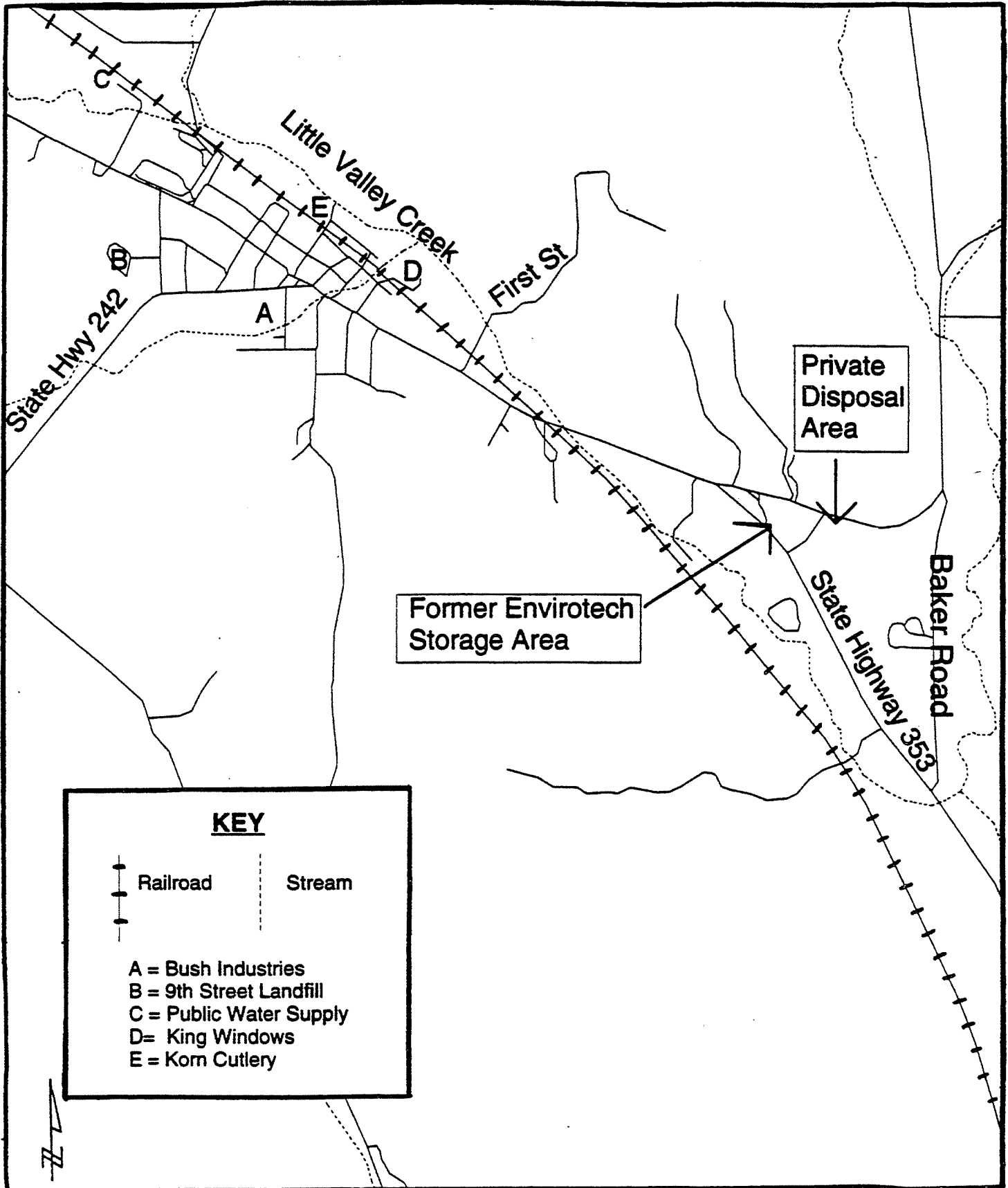


FIGURE 1. Northern Study Area





# FIGURE 2. Investigation Areas





**APPENDIX B**

**New York State Department of Health  
Procedure for Evaluating Potential Health Risks  
for Contaminants of Concern**



**NEW YORK STATE DEPARTMENT OF HEALTH  
PROCEDURE FOR EVALUATING POTENTIAL HEALTH RISKS  
FOR CONTAMINANTS OF CONCERN**

To evaluate the potential health risks from contaminants of concern associated with the Little Valley site, the New York State Department of Health assessed the risks for cancer and noncancer health effects.

Increased cancer risks were estimated by using site-specific information on exposure levels for the contaminant of concern and interpreting them using cancer potency estimates derived for that contaminant by the US EPA or, in some cases, by the NYS DOH. The following qualitative ranking of cancer risk estimates, developed by the NYS DOH, was then used to rank the risk from very low to very high. For example, if the qualitative descriptor was "low", then the excess lifetime cancer risk from that exposure is in the range of greater than one per million to less than one per ten thousand. Other qualitative descriptors are listed below:

Excess Lifetime Cancer Risk

<u>Risk Ratio</u>	<u>Qualitative Descriptor</u>
equal to or less than one in a million	very low
greater than one in a million to less than one in ten thousand	low
one in ten thousand to less than one in a thousand	moderate
one in a thousand to less than one in ten	high
equal to or greater than one in ten	very high

An estimated increased excess lifetime cancer risk is not a specific estimate of expected cancers. Rather, it is a plausible upper bound estimate of the probability that a person may develop cancer sometime in his or her lifetime following exposure to that contaminant.

There is insufficient knowledge of cancer mechanisms to decide if there exists a level of exposure to a cancer-causing agent below which there is no risk of getting cancer, namely, a threshold level. Therefore, every exposure, no matter how low, to a cancer-causing compound is assumed to be associated with some increased risk. As the dose of a carcinogen decreases, the chance of developing cancer decreases, but each exposure is accompanied by some increased risk.

There is general consensus among the scientific and regulatory communities on what level of estimated excess cancer risk is acceptable. An increased lifetime cancer risk of one in one million or less is generally considered an insignificant increase in cancer risk.

For noncarcinogenic health risks, the contaminant intake was estimated using exposure assumptions for the site conditions. This dose was then compared to a risk reference dose (estimated daily intake of a chemical that is likely to be without an appreciable risk of health effects) developed by the US EPA, ATSDR and/or NYS DOH. The resulting ratio was then compared to the following qualitative scale of health risk:

Qualitative Descriptions for  
Noncarcinogenic Health Risks

<u>Ratio of Estimated Contaminant Intake to Risk Reference Dose</u>	<u>Qualitative Descriptor</u>
equal to or less than the reference dose or minimal risk level	minimal
greater than one to five times the reference dose or minimal risk level	low
greater than five to ten times the reference dose or minimal risk level	moderate
greater than ten times the reference dose or minimal risk level	high

Noncarcinogenic effects unlike carcinogenic effects are believed to have a threshold, that is, a dose below which adverse effects will not occur. As a result, the current practice is to identify, usually from animal toxicology experiments, a no-observed-effect-level (NOEL). This is the experimental exposure level in animals at which no adverse toxic effect is observed. The NOEL is then divided by an uncertainty factor to yield the risk reference dose. The uncertainty factor is a number which reflects the degree of uncertainty that exists when experimental animal data are extrapolated to the general human population. The magnitude of the uncertainty factor takes into consideration various factors such as sensitive subpopulations (for example, children or the elderly), extrapolation from animals to humans, and the incompleteness of available data. Thus, the risk reference dose is not expected to cause health effects because it is selected to be much lower than dosages that do not cause adverse health effects in laboratory animals.

The measure used to describe the potential for noncancer health effects to occur in an individual is expressed as a ratio of estimated contaminant intake to the risk reference dose. If exposure to the contaminant exceeds the risk reference dose, there may be concern for potential noncancer health effects because the margin of protection is less than that afforded by the reference dose. As a rule, the greater the ratio of the estimated contaminant intake to the risk reference dose, the greater the level of concern. A ratio equal to or less than one is generally considered an insignificant (minimal) increase in risk.



**APPENDIX C**  
**Public Health Hazard Categories**



**INTERIM PUBLIC HEALTH HAZARD CATEGORIES**

<b>CATEGORY / DEFINITION</b>	<b>DATA SUFFICIENCY</b>	<b>CRITERIA</b>
<p><b>A. Urgent Public Health Hazard</b></p> <p>This category is used for sites where short-term exposures (&lt; 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>Evaluation of available relevant information* indicates that site-specific conditions or likely exposures have had, are having, or are likely to have in the future, an adverse impact on human health that requires immediate action or intervention. Such site-specific conditions or exposures may include the presence of serious physical or safety hazards.</p>
<p><b>B. Public Health Hazard</b></p> <p>This category is used for sites that pose a public health hazard due to the existence of long-term exposures (&gt; 1 yr) to hazardous substance or conditions that could result in adverse health effects.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>Evaluation of available relevant information* suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radionuclides) have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions. Such site-specific exposures may include the presence of serious physical or safety hazards.</p>
<p><b>C. Indeterminate Public Health Hazard</b></p> <p>This category is used for sites in which "critical" data are <i>insufficient</i> with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.</p>	<p>This determination represents a professional judgement that critical data are missing and ATSDR has judged the data are insufficient to support a decision. This does not necessarily imply all data are incomplete; but that some additional data are required to support a decision.</p>	<p>The health assessor must determine, using professional judgement, the "criticality" of such data and the likelihood that the data can be obtained and will be obtained in a timely manner. Where some data are available, even limited data, the health assessor is encouraged to the extent possible to select other hazard categories and to support their decision with clear narrative that explains the limits of the data and the rationale for the decision.</p>
<p><b>D. No Apparent Public Health Hazard</b></p> <p>This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR considers sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>Evaluation of available relevant information* indicates that, under site-specific conditions of exposure, exposures to site-specific contaminants in the past, present, or future are not likely to result in any adverse impact on human health.</p>
<p><b>E: No Public Health Hazard</b></p> <p>This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.</p>	<p>Sufficient evidence indicates that no human exposures to contaminated media have occurred, none are now occurring, and none are likely to occur in the future</p>	

\*Such as environmental and demographic data; health outcome data; exposure data; community health concerns information; toxicologic, medical, and epidemiologic data; monitoring and management plans.