

COMMONWEALTH OF PENNSYLVANIA

**Department of Environmental Protection
Hazardous Sites Cleanup Program
Southcentral Region**

CONESTOGA PINES PARK
CITY OF LANCASTER
LANCASTER COUNTY, PENNSYLVANIA

**ANALYSIS OF ALTERNATIVES AND PROPOSED RESPONSE
February 2013**

The purpose of this Analysis of Alternatives and Proposed Response document is to outline the decision making process involved in the selection of the proposed response and to provide a description of the proposed response. This document will be included in the Administrative Record that will be compiled for this response pursuant to Section 506 of the Pennsylvania Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756 No. 108 ("HSCA"), 35 P.S. Section 6020.506.

The proposed response for the Conestoga Pines Park is an interim response to mitigate the volatile organic compound contamination detected in the spring/stream that flows through the Site. This action will be protective of the public health and safety and the environment.

I. SITE INFORMATION

A. Site Location and Description

The Site is a Lancaster City park. It is bordered on the north-northeast by a residential housing (Eden Manor Development), and Pitney Road to the east. Beyond Pitney Road, and up gradient of the Site, is the Commerce Industrial Park East. The Norfolk Southern railroad tracks and the CBS/Playskool, Inc. facility are located to the south. The Conestoga River forms the Site's western property boundary. The General Electric facility property lies to the west of the Conestoga River down gradient of the Site.

The Site slopes westward from Pitney Road toward the Conestoga River. The upper portion of the Site contains an existing renovated barn used as a recreation center, and the grass covered remnants of a former house foundation that is approximately 250 feet north of the barn. Approximately 100 feet below the former house foundation, is a

spring discharge that forms a stream (un-named tributary) that flows through the northern portion of the Site into the Conestoga River. Mid-way through the northern third portion of the Site (down-slope) is the ruins of a former day camp. Below this area is a public swimming pool and parking lot. In the southwestern portion of the Site is the Lancaster Municipal Water Authority Public Water Filtration Plant. Water taken from the Conestoga River is treated for potable use by the City of Lancaster.

B. Site History

The water filtration plant was established in the 1930's to provide potable water for the Lancaster City residents. The plant currently treats influent water for pH adjustment, coagulation, settling, filtration and disinfection. An average of eight (8) million gallons of water per day is supplied by this filtration plant.

In the 1930s, a Civilian Conservation Corps camp was developed on the Site. Physical structures related to this camp are visible on aerial photographs from the 1940's until the 1970's. The current recreation barn building and house foundation remnants are related to past farming operations.

The General Electric Company drilled two monitoring wells in 1991 (MWs 9109 & 9110), and two monitoring wells in 1992 (MWs 9211 & 9212) at the Site as part of an Environmental Protection Agency (EPA) mandated Resource Conservation and Recovery Act (RCRA) Facility Investigation. Sampling of these wells showed elevated levels of volatile organic compounds (VOCs). The VOCs found were trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethylene (1,1-DCE) and 1,1-dichloroethane (1,1-DCA).

Wells 9109 and 9110 were drilled on the west Site boundary near the Conestoga River to trace the plume of migrating TCE contamination from the GE facility on the west side of the Conestoga River. When TCE levels were found to be higher on the Site, wells 9211 and 9212 were drilled along an observed air photo lineament. These wells are near the stream headwaters. Well 9211 is 200 feet deep, and well 9212 is 30 feet deep. Water level measurements of wells 9211 and 9212 being similar, indicates hydraulic communication and negligible hydraulic gradient. The level of contamination decreases with depth in this well cluster. This indicates that the source of contamination is fairly close to the surface and in an eastern direction (up-gradient).

The Department performed a Site soil gas survey in October 1992. Several areas were strongly affected by VOCs in the soil gas. The most highly contaminated areas appeared northeast and northwest of the park barn and in a linear pattern extending to the west along the paved road to a former sand storage area (sand-pit). The area northeast of the barn is between the area of the former structure and the wooded land from which the contaminated spring arises. The area northwest of the barn (sand pit) is approximately fifty (50) feet south of the paved road on the edge of the wooded hill that slopes to the south.

A limited number of soil samples at some of the gas monitoring points were taken in May 1993. None of the soil samples indicated a source of continuously released organic contamination.

On October 13, 1999 and January 14, 2000, the Department sampled several surface water locations along the spring/UNT that runs approximately one quarter mile in length through the park. The analytical results show the springhead identified as the "headwater location" continues to have the highest levels of TCE. The range of headwater spring VOCs above groundwater regulatory standards are TCE (450 - 580 µg/L), cis-1,2-DCE (510 - 548 µg/L), and 1,1-DCE (18 µg/L). The regulatory standards are 5 ug/L, 70 ug/l and 7 ug/l respectively. The highest levels of contamination have been at the spring forming the headwaters of the stream. Spring/UNT surface water sampling conducted from 1992 to 2010 showed TCE levels ranging from 820 micrograms per liter (µg/L) to 164 µg/L.

Warning signs were placed along the stream to warn any users of the dangers of utilizing the water.

The Department sampled Site monitoring wells in 2007 and 2008, and determined TCE levels as follows: MW1 shallow was as high as 92 ug/L; MW1 deep was as high as 71.7 ug/L; MW2 was as high as 280 ug/L; and MW3 was as high as 242 ug/L.

R.R. Donnelly conducted hydrologic investigations, to include the installation of new groundwater monitoring wells, in 2006 and 2008, but neither investigation determined the source of the VOC groundwater contamination.

The Department conducted a soil vapor investigation along the northern edge of the Park property adjacent to the residential development and also conducted indoor air sampling at the recreation barn and the swimming pool building to determine if a vapor intrusion threat exists at the Site. The investigation concluded that no vapor intrusion threat is present at either the on-site structures or the adjacent residential development.

C. Threat of Release of Hazardous Substances

Contaminated groundwater, possibly from a Site source, is currently impacting surface water above regulatory standards and provides a threat to the public and the environment. TCE is listed as a carcinogen by the United States Environmental Protection Agency (USEPA). TCE is readily absorbed following ingestion, and absorbed readily into the lungs during inhalation. TCE is also absorbed through the skin although not as readily as through ingestion and inhalation. The acute effects of TCE are pronounced in central nervous system disturbances and heart, liver and kidney damage. The chronic effects of TCE create central nervous system and heart damage.

Although not listed as a carcinogen by the USEPA, 1,1-DCE is readily absorbed by ingestion and inhalation. To a lesser degree, it is absorbed through the skin. Acute

affects are demonstrated as disturbances to the central nervous system and respiratory system. Chronic effects of exposure can cause kidney and liver damage.

Although not listed as a carcinogen by the USEPA, cis-1,2-DCE has been determined to be harmful to the heart, liver, lungs and blood.

The water quality criteria of 25 PA Code Chapter 16 (Water Quality Toxics) are the numeric limits for parameters or stream conditions that need to be maintained or attained to prevent or eliminate pollution. Surface water sampling conducted in January 2001, showed TCE exceeding continuous concentrations for fish and aquatic life at the springhead, and exceeding human health criteria from the head spring to 50 feet from the confluence with the Conestoga River. Previous sampling showed TCE human health criteria to be exceeded at the confluence with the Conestoga River. Human health criteria for 1,1-DCE are exceeded from the headspring to within 50 feet of the confluence with the Conestoga River. (See Table 4)

The major exposure threat is to humans coming into contact with the unrestricted unnamed tributary, and its effect on aquatic life particularly near the headspring.

II. RESPONSE CATEGORY

The Department proposes an interim response at this site to protect public health and safety or the environment. This determination is based upon the following conditions that exist at the Site: (a) The actual or potential exposure via inhalation, ingestion and dermal contact to hazardous substances.

An interim action is justified in order to remove the current exposure risks posed through releases of hazardous substances and contaminants. The Department's response will not exceed 12 months in duration or \$2 million in cost.

III. CLEANUP STANDARDS

This response is not a final remedial response pursuant to Section 504 of HSCA and therefore is not required to meet the cleanup standards that apply to final responses. Additional response action may be needed to achieve a complete and final cleanup for the Conestoga Pines Park Site.

IV. APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS

The following standards, requirements, criteria, or limitations are legally applicable or relevant and appropriate under the circumstances presented by the site:

The Pennsylvania Constitution, Article 1, Section 27.

Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995, P.L. 4, No. 1995.2, 35 P.S. Section 6026.101 et. seq. ("Act 2").

Administration of the Land Recycling Program, 25 Pa. Code Chapter 250, Subchapter C (Statewide Health Standards).

Subchapter C - Statewide Health Standards

Section 250.305 - Medium-Specific Concentrations (MSCs) for soil

The Pennsylvania Solid Waste Management Act, Act of July 7, 1980, P.L. 380, No. 97, as amended, 35 P.S. Sections 6018.101 et. seq.

Hazardous Waste Management Regulations, Article VII, Chapters 260 - 270 (25 Pa. Code 260.1 - 270.1 et. seq.) - 25 PA Code Chapters 260a-266a, 266b and 268a-270a remain as PA ARARs. The former PA Hazardous Waste Regulations Chapters 260-270 are incorporated into the federal regulations by reference. Refer to the Resource Conservation and Recovery Act (RCRA) (42 U.S.C.A., §§ 6901-6992) and the federal regulations in 40 CFR Parts 124, 260-270, 273, and 279.

Residual Waste Management Regulations (Article IX, Chapters 287 - 299).

The Air Pollution Control Act, Act of January 8, 1960, P.L. 2119, 35 P.S. Sections 4001, et. seq.

Chapter 123 - Standards For Contaminants

Section 123.1 - Prohibition of certain fugitive emissions

Section 123.2 - Fugitive particulate matter

Chapter 127 - Construction, Modification, Reactivation and Operation of Sources.

Sections 127.1 - Purpose (New source emission control)

Section 127.12(a)(5) - Best Available Technology (BAT)

Section 127.71 - New or modified volatile organic compound sources

Chapter 131 - Ambient Air Quality Standards.

Section 131.1 - Purpose

Section 131.2 - National ambient air quality standards

Section 131.3 - Ambient air quality standards

Section 131.4 - Application of ambient air quality standards

The Clean Streams Law, Act of June 22, 1937, P.L. 1987, No. 394, as amended, 35 P.S. Sections 691.1 et. seq.

Chapter 102 - Erosion Control.

Section 102.2. - Scope (Earthmoving activities)

Section 102.3 - Purpose (Control of accelerated erosion)

Section 102.4 - General (Implement control measures)

Section 102.5 - Erosion and sedimentation control plan
Section 102.11 - General requirements
Section 102.12 - Control measures (Diversion, velocity, stabilization & runoff)
Section 102.13 - Control facilities (Sedimentation basins)
Section 102.21 - Applicability (Restoration)
Section 102.22 - Stabilization
Section 102.23 - Interim control measures
Section 102.24 - Final measures
TBC - "Erosion & Sediment Pollution Control Program Manual PADEP, May 2000.

The Storm Water Management Act, Act of October 4, 1978, P.L. 864, No. 167, as amended, 32 P.S. Sections 680.1 - 680.17.

Pennsylvania Department of Transportation, Act of June 1, 1945 (P.L. 1242, No. 421) (36 P.S. Sections 670-411, 670-420, 670-421 and 670-702).

Pennsylvania Hazardous Transportation Regulations, Pa. Code Titles 13 & 15.

V. ANALYSIS OF ALTERNATIVES

Alternative 1. No Action for surface water contamination.

This alternative would involve no action by the Department at the Site and is retained as a baseline for comparison with other alternatives. This alternative would not remove the actual or potential exposure threat posed by the contaminated media, and would not be protective of the public health and safety. This alternative would not comply with ARARs and not be protective of human health and the environment. The present worth cost of this alternative is \$0.

Alternative 2. Treat the contaminated groundwater before it reaches the ground surface at the headwall of the spring. This alternative provides for the Department to construct, operate and maintain a conventional pump and treat groundwater treatment system to mitigate the elevated levels of VOCs presently in the groundwater.

This alternative will comply with ARARs and is protective of human health and safety, and the environment. The estimated cost of implementing this alternative is \$5,000,000.

Alternative 3. Treat the contaminated groundwater before it reaches the ground surface at the headwall of the spring. This alternative provides for the Department to mitigate the elevated levels of VOCs presently in the groundwater via in-situ injection of proprietary chemicals.

This alternative will comply with ARARs and is protective of human health and safety, and the environment. The estimated cost of implementing this alternative is \$1,000,000.

Alternative 4. Treat the VOC contamination in the spring/stream by installing passive treatment devices such as a bubbler at the spring headwaters and also several check/rock/riffle weir dams to aerate the stream and drive off the volatile organic compounds from the stream water. Lastly, plant a buffer of thick vegetation or trees to keep Park users from entering the contaminated portion of the stream.

This alternative will comply with ARARs and is protective of human health and safety, and the environment. The estimated cost of implementing this alternative is \$95,000.

Alternative 5. The piping of the non-compliant portion of the UNT down-stream toward the Conestoga River. This alternative would be protective of human health, but would likely destroy the natural wetlands present around the stream and would compromise the environmental quality and aesthetics of the Park.

This alternative will comply with ARARs and is protective of human health and safety, and the environment, but would not be environmentally sound. The cost of implementing this alternative is \$20,000.

Alternative 6. Collect and pipe the spring water to a nearby waste water treatment plant (WWTP).

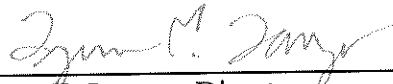
This alternative will comply with ARARs and is protective of human health and safety, and the environment, but would likely not be feasible due to the treatment volume limitations of the nearby WWTP. The estimated cost of implementing this alternative is \$35,000.

VI. PROPOSED RESPONSE

The Department has selected Alternative 4 because it is protective, cost effective, and meets substantive regulatory requirements. Stabilization of this site provided by the proposed response is necessary based on current site conditions.

VII. DEP APPROVALS

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Lynn E. Langer, Director
Southcentral Region

2/26/13
Date

COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection

February 7, 2013
717 705-4844

SUBJECT: Conestoga Pines Park Site
Analysis of Alternatives (AOA)

TO: Lynn Langer
Director
Southcentral Region

FROM: Douglas Cordelli
Chief
HSCA

THROUGH: John Krueger
Manager
ECP

The enclosed AOA documents an interim response action by the Department to mitigate the contaminated spring at the CPP Site. The UNT is contaminated with volatile organic compounds that originate from the contaminated groundwater.

This document has been reviewed by technical and legal staff.