

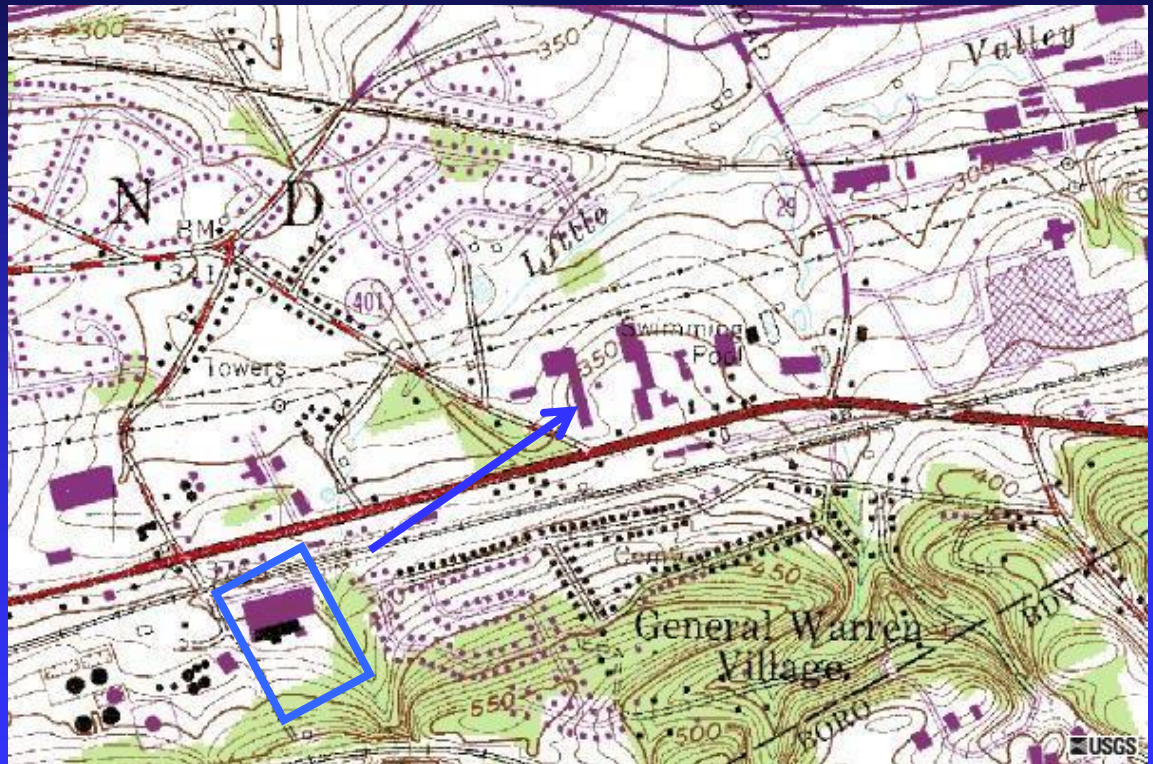
BISHOP TUBE SITE

Source Area Response Action
Public Hearing
January 30, 2007

BISHOP TUBE SITE

- Site Background/History
- DEP Involvement
- DEP Findings
- DEP Response Action
- Long-Term Plans

Site Location



Bishop Tube Site - Aerial View



Operations History

- 1950s - J. Bishop
 - ◆ Precious Metals
 - ◆ Tube Milling and Manufacturing
- 1960s – 1990s Matthey Bishop, Whittaker Corp., Christiana Metals & Alloy Steel
 - ◆ Stainless Steel Tubing
- 1990s – Marcegaglia, USA
 - ◆ Updated Manufacturing Process – stainless tubing

Stainless Steel Tube Manufacturing Process

Cold re-draw mill process involved repeatedly lubricating tubing, drawing tubes through smaller die to achieve smaller diameters. After each draw degreaser is used to remove lubricants prior to physical and chemical treatment to smooth or de-burr the external surfaces.

Chemicals Involved

- Welding gases
- Lubricating oils
- Chlorinated Solvents (Trichloroethene, Tetrachloroethene, & 1,1,1-Trichloroethane)
- Pickling Liquor (Strong Acids: Hydrofluoric acid & Nitric acid)

DEP Involvement

- Early 1970s - discovered releases to Little Valley Creek from waste acid (pickle liquor) lagoon
- 1980s - Groundwater contamination discovered (fluoride initially, later chlorinated degreasers)

DEP Involvement (cont'd)

- 1980s – 1990s - Voluntary actions by Christiana Metals to study contamination
- 1990s - Treatment system installed on off-site domestic well by Christiana Metals
- 1999 - Site abandoned by Christiana Metals and HSCA Further Investigation began.

DEP Involvement (cont'd)

- Hazardous Sites Cleanup Program – Further Investigation
 - ◆ Soil
 - ◆ Groundwater (shallow & deep)
 - ◆ Surface water (Little Valley Creek)

Soil Sampling



Well Drilling



Well Sampling



Stream Sampling



6/24/2004

DEP Findings

- Onsite groundwater contaminated by TCE and other chlorinated solvents
 - ◆ Deep (>200 ft) and shallow (<20 ft)
 - ◆ Evidence of free product (DNAPL)
 - ◆ Migration off-site confirmed – Bedrock geology increases complexity
- Onsite stream discharge of contaminated groundwater.

DEP Findings (cont'd)

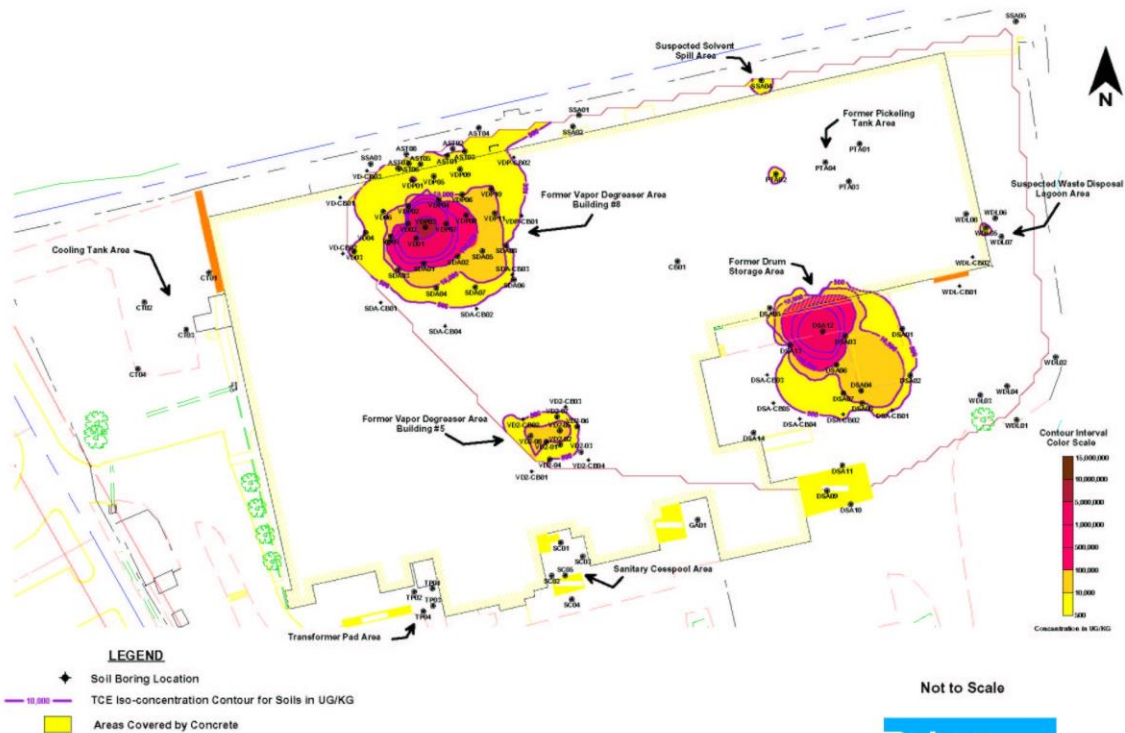
- Off-site groundwater contamination
 - ◆ One domestic well is contaminated (equipped with treatment)
 - ◆ Modeling suggests discharge to Little Valley Creek far downstream
 - ◆ Stream sampling seems to verify the model
 - ◆ Full extent of the contamination is not known

DEP Findings (cont'd)

- Three source areas identified during soil investigations
 - ◆ Sources are consistent with manufacturing, solvent storage and waste handling areas
 - ◆ Sources continue to contribute to groundwater contamination
 - ◆ Potential for indoor air contamination due to soil and shallow groundwater contamination

Source Areas/Hot Spots

FIGURE 12
BISHOP TUBE SITE
TCE SOURCE AREA LOCATION MAP



Not to Scale



TCE Concentrations Based Upon Analytical Results for Soil Samples Collected from Borings Drilled Using Hydraulic-Push Technology.

DEP Response Action

- Cleanup of soil and shallow groundwater in the three source areas coordinated with the new property owner/developer
- Developer agreed to address soil in the areas as part of the purchase from the industrial development authority
- Plant #8 Area is primarily a shallow groundwater problem

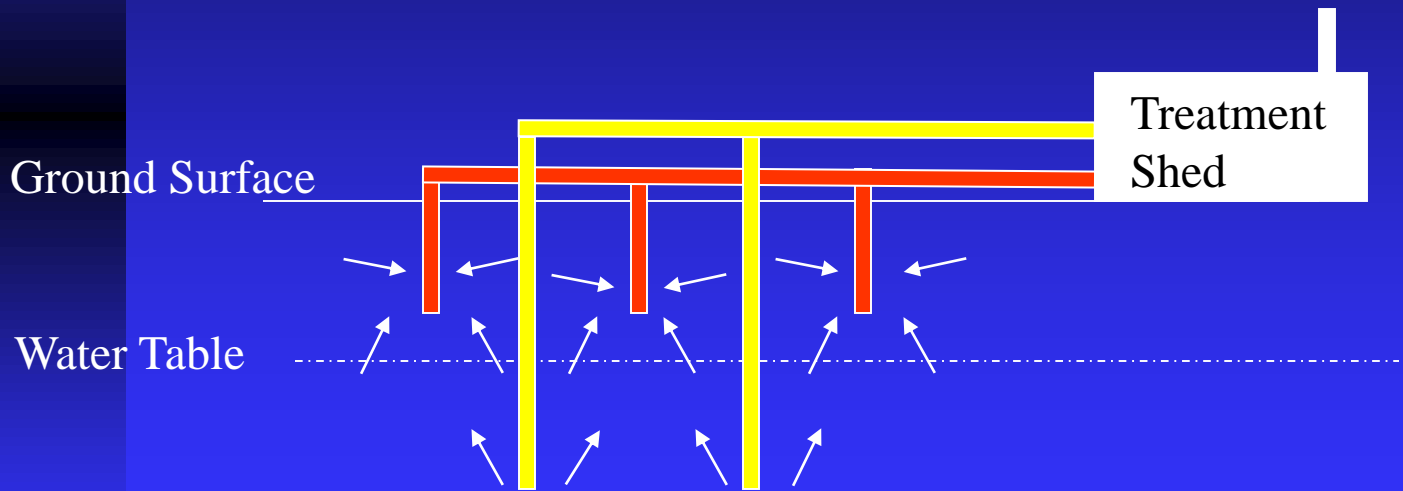
DEP Response Action (cont'd)

- DEP considered taking no action to address groundwater at this time, and concluded:
 - ◆ Continued source of groundwater contamination
 - ◆ Delay in action stops redevelopment plans
 - ◆ Cooperative action is more cost effective and efficient

DEP Response Action

- Response involves coordinating actions on both soil and groundwater in the three source areas
 - ◆ Treatment using Soil Vapor Extraction & Air Sparging technology
 - ◆ Flexibility to supplement or change approach

Soil Vapor Extraction/Air Sparging



Bedrock

Pilot Test Vapor Barrier



DEP Response Action (cont'd)

- Special Conditions for Response Action
 - ◆ Need for a vapor barrier to prevent indoor air contamination
 - ◆ Must allow for the use of the site while the system is working
 - ◆ Flexibility to change approach if system does not operate adequately
 - ◆ Injection of chemical or biological amendments to destroy contaminants
 - ◆ Introduction of heat or steam to destroy contaminants

Long-Term Plans

- Complete evaluation of the stream impact (on site)
 - ◆ Evaluate options for cleanup (including another chance for community input)
- Develop a plan for studying off-site groundwater contamination and assessing associated risks
- Continue to seek the involvement of Potentially Responsible Parties in the Cleanup Actions
- Additional phases of cleanup action

Questions?



Contact Information

Dustin A. Armstrong

PA Department of Environmental Protection

2 East Main Street

Norristown, PA 19401

Phone: (484)250-5723

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