DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)

Current Human Exposures Under Control

Facility Name:	Lenox China, a Division of Lenox Incorporated
Facility Address:	Tilton Road, Pomona, New Jersey 08648
Facility EPA ID #:	NJD002325074

1. *Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?*

__X__ *If yes - check here and continue with #2 below.*

____ *If no - re-evaluate existing data, or*

____ *if data are not available skip to #6 and enter"IN" (more information needed) status code.*

BACKGROUND

- **Facility Description**

References:

- RCRA Facility Assessment (RFA) Report for Lenox China, Tilton Road, Pomona, New Jersey, March 1989.
- Supplemental Information, Solid Waste Management Units, Lenox China, Pomona, New Jersey, September 1990.
- Letter dated October 8, 1987 from A.J. Gustray, Director of Lenox to Kenneth Goldstein, NJDEP, "Re: Underground Storage Tanks, Lenox China Pomona Plant."
- Polishing Basin Closure/Post-Closure Plan, Lenox China, Pomona, New Jersey, Project #530-1, June 1992, Revised July 1992.
- Letter dated November 12, 1993 from James M. Barish, Eder Associates Consulting Engineers, P.C. to Frank Faranca, NJDEP, "Re: Polishing Basin Closure, Lenox China Facility."
- Facility Background Report, RCRA Facility Investigation Task I Report, February 1993.
- Letter dated August 18, 1993 from Stephen K. Lichtenstein, Senior Vice President of Lenox to Frank Faranca, NJDEP, "Re: Report of Potential Solid Waste Management Unit or Area of Concern."
- Lenox Incorporated Remedial Action Work Plan (South Site) dated October 16, 1996
- South Site Remediation, Finding/Remedial Action Report, Lenox China, Pomona, Atlantic

County, New Jersey, January 1999.
- Final major modification of the New Jersey Pollutant Discharge Elimination System/Discharge to Groundwater (NJPDES/DGW) Permit issued by NJDEP on February 10, 1999

General: Lenox China, a division of Lenox Incorporated, is located on 56 acres of land in a rural area on the outskirts of the Town of Pomona in southeastern New Jersey. The facility manufactures fine china giftware and dinnerware. The manufacturing process includes the progressive dewatering of clay solution to form ceramic pieces. The pieces are then kiln fired, coated with a non-leaded glaze mixture (leaded glaze no longer used) and then refired. Decorations are applied using decals, precious metal paints and mechanical etching prior to the final firing. The process waste includes clay solution waste and glaze waste (fritted lead compound is no longer used). Prior etching operations used trichloroethylene (TCE) and produced waste solvent (TCE) sludge.

Soild Waste Management Unit (SWMU)/Area of Concern (AOC): The following SWMUs and AOC have been identified at the facility and are considered for this evaluation:
- SWMU 1 (Degreaser Sludge Pit): The pit was used to receive degreaser sludge generated during the acid etching process. Sludge flowed through a pipe that discharged into drums for off-site disposal.
- SWMU 2 (Sludge Disposal Area): Located northeast of the slip basin (SWMU 11), waste sludge containing lead was dredged from the basin and placed in the area. The volume of sludge is estimated at 350 cubic yards.
- SWMU 3 (Waste Pile): White and clayey material was discovered in the west wall of the glaze basin (SWMU 10). This material contained lead and zinc and had the appearance of glaze waste.
- SWMU 4 (Polishing Basin): The basin is part of the wastewater treatment system. It was used to receive all industrial wastewater discharges from the facility and it was also used as a secondary clarifier before wastewater was discharged to the Tilton Road Pond (SWMU 5). Sludge and contaminated soil were excavated and disposed of off-site.
- SWMU 5 (Tilton Road Pond): The pond was used to receive non-contact cooling water, treated industrial and sanitary wastewater, and stormwater until 1992.
- SWMU 6 (Underground Effluent Transfer Pipe): The 200-foot underground steel pipe was used to transfer liquid from the glaze basin to the slip basin.
- SWMU 7 (Equalization Sump): The sump was used to receive process wastewater until 1988 and then used to recycle plaster and water until 1990.
- SWMU 8 (Wastewater Treatment Piping): The 2-inch piping was used to transfer wastewater from the Equalization Sump to the treatment facility.
- SWMU 9 (Underground Storage Tank): The two Underground Storage Tanks were used to store heating oil and gasoline.
- SWMU 10 (Glaze Basin): The basin, a RCRA-regulated hazardous waste unit, was used to

store waste glaze material consisting of clay, lead carbonate, and fritted lead.

- SWMU 11 (Slip Basin): The basin, a RCRA-regulated hazardous waste unit, was used to store clay waste material from 1954 to 1970 and process wastewater consisting clay, lead carbonate, fritted lead, and silica from 1970 to 1981. It also received process wastewater and was used to provide surge capacity for the wastewater treatment plant from 1981 to 1987. SWMU 12 (Drum Storage Area): It was used to store drums containing hazardous wastes before they were sent off-site for disposal. It also stored containers containing a TCE product solvent.
- Area of Concern (AOC) 13 (Area between Monitoring Well #10 and Aloe Street): Soil sampling revealed the presence of discolored surficial soils and subsequent investigations found slip waste in the area.
- SWMU 14 (Two Neutralization Tanks): The two 3,750 gallons fiberglass tanks were used to store non-hazardous treated glaze wastewater prior to discharge to the sanitary sewer system. They were removed from service in March 1994 but have been in operation since the reactivation in April 1995.
- SWMU 15 (Filter Press): The five foot by two foot cast iron press has been used to dewater glaze sludge since 1987.
- SWMU 16 (Precious Metal Incinerator): It was used to reclaim precious metals, principally gold, from rags used during the decorating process.
- SWMU 17 (South Site): It was utilized to store waste plaster molds and broken ware from approximately 1954 to the late 1970s. Contaminated soil was excavated and disposed of off-site.

- **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

- **Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

- **Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

- **Duration/Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. *Are groundwater, soil, surface water, sediments, or air* ***media*** *known or reasonably suspected to be* ***"contaminated"***[1] *above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?*

	Yes	*No*	*?*	*Rationale / Key Contaminants*
Groundwater	X			Trichloroethylene (TCE)
Air (indoor)		X		
Surface Soil (e.g., <2 ft)	X			Lead, Zinc
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			Lead, Zinc
Air (outdoor)		X		

____ *If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.*

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

_X_ *If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.*

____ *If unknown (for any media) - skip to #6 and enter "IN" status code.*

References:

- Summary Report of the Investigation of Trichloroethene in Groundwater and Proposed Groundwater Remediation System, Lenox China Facility and Adjacent Area, Pomona, New Jersey, Volumes I, II, & III, August 1990.
- Groundwater Corrective Action System Semi-Annual Report, January - June 1992, November 1992.
- Pomona TCE Quarterly & Semi-Annual Groundwater Monitoring Reports
  - November 1994 Monitoring Round dated January 1995.
  - May 1995 Monitoring Round dated July 1995.
  - November 1995 Monitoring Round dated February 1996.
- TCE Quarterly Groundwater Monitoring Reports dated April 1995, November 1995, May 1996, September 1996, March 27, 1998, June 1998, September 30, 1998, December 23, 1998, March 26, 1999, June 15, 1999, September 27, 1999, and December 22, 1999.
- RCRA Facility Investigation Report (June 1994) and its Addendum (December 1994).
- The Johnson-Ettinger Model (1991) for Subsurface Vapor Intrusion into Building by Paul Johnson & Robbie Ettinger (available at the web site, www.epa.gov/superfund/programs/risk/airmodel/johnson_ettinger.htm).

Rationale:

Groundwater: There were releases of inorganics from the Sludge Disposal Area, the Waste Pile, the Glaze and Slip Basins and the Area between Well #10 and Aloe Street. The inorganic constituents are contained within the facility boundary. TCE was released into the groundwater from the Degreaser Sludge Pit and the Drum Storage Area and have migrated off-site. A pump and treat system was installed in 1991 to collect the contaminated groundwater and to mitigate further off-site migration of TCE. The TCE Quarterly Groundwater Monitoring Reports demonstrate that the pump and treat system has been effectively preventing migration of the TCE groundwater plume beyond Whitehorse Pike (the outer limit of the Classification Exception Area (CEA)). See groundwater and TCE concentration (isopleth) maps in the referenced reports.

Air (Indoors)[2]: Indoor air quality can be adversely impacted by groundwater with volatile contaminants. The Johnson-Ettinger Model (1991) for Subsurface Vapor Intrusion into Building has been utilized to screen potential indoor air risks from on-site TCE-contaminated groundwater. See footnote 2

About 10 properties, located in a light commercial/residential area, are in proximity to the 1 ppb TCE groundwater isopleth. A safety factor of 10 has been added to the calculation of the incremental risk under the residential scenario. Therefore, for purposes of the calculation, it has been assumed that the TCE groundwater concentration under the houses is 10 ppb, instead of the actual 1 ppb. The Johnson-Ettinger Model results show an incremental risk of 3.2×10^{-8}, which is well below the point-of-departure (i.e. 1×10^{-6}) of EPA's acceptable risk range. However, most of the properties do not have basements, so that indoor air is not a concern since only enclosed spaces, such as basements, are impacted by the contaminated groundwater.

A safety factor of 10 has also been added to the calculation of incremental risk under an industrial setting. Under an industrial scenario, Lenox is the only source impacted by the TCE-contaminated groundwater. The results show an incremental risk of 1.9×10^{-8}.

Soils: Waste or contaminated soils remaining at the facility are associated with the SWMUs and AOC listed below.

- SWMU 2:Soil was contaminated with lead and zinc above the NJDEP soil cleanup standards.
- SWMU 3 (Waste Pile): The lead and zinc in the Waste Pile could not be excavated at the time the glaze basin (SWMU 10) was decommissioned, because it was under some active equipment.
- SWMU 10 (Glaze Basin):Soil was contaminated with lead and zinc above the NJDEP soil cleanup standards.
- SWMU 11 (Slip Basin): Soil was contaminated with lead and zinc above the NJDEP soil cleanup standards.
- ACO 13: Soil was contaminated with lead and zinc above the NJDEP soil cleanup standards.

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[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. *Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?*

Summary Exposure Pathway Evaluation Table

"Contaminated" Media	*Potential **Human Receptors** (Under Current Conditions)* Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	Yes	No	No	No	No	No	Yes
Air (indoor)	X	X	X	X	X	X	X
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
Surface Water	X	X	X	X	X	X	X
Sediment	X	X	X	X	X	X	X
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoor)	X	X	X	X	X	X	X

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ *If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).*

_X_ *If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.*

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[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

____ *If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.*

Reference(s):

- Remedial Action Report, Lenox China Facility, Pomona, New Jersey, Project #530-7, March 1996.

Rationale:

Groundwater: The pump and treat system has been controlling the TCE groundwater plume within a Classification Exception Area (CEA) established by the State of New Jersey Department of Environmental Protection and the TCE concentration has been decreasing over time. The intention of a CEA is to restrict groundwater use in a specific contaminated area of an aquifer until drinking water standards are achieved. A CEA was adopted by NJDEP through a final major modification of the New Jersey Pollutant Discharge Elimination System (NJPDES)/Discharge to Groundwater (DGW) Permit dated February 23, 1999. Lenox China will continue groundwater monitoring to ensure that the plume is contained within the CEA.

Due to the TCE contamination, some residences have been connected to the municipal water supply system. However, because some domestic wells are currently being utilized for irrigation, some residents may be potentially exposed to contaminated groundwater when spraying pumped groundwater or consuming harvested crops (fruits/vegetables/plants) irrigated with pumped groundwater.

Soils (Surface and Subsurface): The remedial measures implemented for contaminated soils (surface and subsurface) at the facility consist of the engineering and institutional controls: capping, fencing, and placement of the Declaration of Environmental Restrictions. These measures prevent human exposure to the contaminated soils. A disposition of the areas is as follows:

- Sitewide: A site-wide Declaration of Environmental Restriction has been implemented at the facility, which limits the facility to only non-residential exposure scenarios and precludes unauthorized excavation or disturbance of contaminated areas.
- SWMU 2 (Sludge Disposal Area): This area was paved and is now used as a parking lot.
- SWMU 3 (Waste Pile): The waste could not be excavated at the time the Glaze Basin (SWMU 10) was decommissioned because it was under some active equipment. This area has now been capped.
- SWMU 10 (Glaze Basin): Waste was removed from the unit and sent off-site for recycling. Residual waste remained along the north sidewall, which is now capped under the adjacent building foundation. The unit is currently subject to the RCRA post-closure care monitoring requirements, pursuant to the New Jersey Discharge to Groundwater (DGW) permit issued by the NJDEP.
- SWMU 11 (Slip Basin): The Slip Basin was capped in 1990. It is currently subject to the RCRA post-closure care monitoring requirements, pursuant to the New Jersey/DGW permit.

- AOC 13 (Area between Monitoring Well #10 and Aloe Street): The area has been fenced to prohibit unauthorized access.

4. *Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?*

_X_ *If no (exposures cannot be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."*

If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ *If unknown (for any complete pathway) - skip to #6 and enter "IN" status code*

Rationale:
Groundwater: The domestic wells which are potentially impacted by onsite TCE-contaminated groundwater are located close to the 1 ppb TCE groundwater isopleth, indicating that groundwater at these wells have TCE concentrations close to 1 ppb. The EPA Maximum Contaminant Level (MCL) of 5 ppb for TCE is protective of the public health for long-term water consumption. By comparison, the risk associated with exposure secondary to irrigation usage (vapor inhalation, dermal contact and produce consumption) of TCE contaminated water at approximately 1 ppb is expected to be negligible.

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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. *Can the "significant"* ***exposures*** *(identified in #4) be shown to be within* ***acceptable*** *limits?*

_____ *If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).*

If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. *Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):*

_X_ *YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the* ***Lenox China, a Division of Lenox, Incorporated*** *facility, EPA ID #* **NJD002325074**, *located at* ***Pomona, New Jersey*** *under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.*

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by: ____________________ Date 7/14/00
Andrew Park, Project Manager
RCRA Programs Branch
EPA Region 2

____________________ Date 7/14/00
Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: ____________________ Date 8/24/00
Raymond Basso, Chief
RCRA Programs Branch
EPA Region 2

Locations where References may be found:

U.S. Environmental Protection Agency Region 2
RCRA Records Center
290 Broadway, 15th Floor
New York, New York 10007-1866

New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
Trenton, New Jersey 08625

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Attachments:

1. Johnson-Ettinger Model (1991) - Derivation of Health Risks Potentially Imposed by TCE-Contaminated Groundwater.

2. SWMU Map. Available upon request.

Attachment 1

Johnson-Ettinger Model (1991) -
Derivation of Health Risks Potentially Imposed by TCE-Contaminated Groundwater

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

VERSION 1.2
September, 1998

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C~W (microg/L)	Chemical
79016	10	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L~F (15 or 200 cm)	ENTER Depth below grade to water table, L~WT (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T~S (^oC)
200	300	SC	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k~v (cm^2)	ENTER Vadose zone soil dry bulk density, rho~b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, theta~w^V (cm^3/cm^3)
SCL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT~C (yrs)	ENTER Averaging time for noncarcinogens, AT~NC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-006	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (microg/L)	Indoor exposure groundwater conc., noncarcinogen (microg/L)	Risk-based indoor exposure groundwater conc., (microg/L)	Pure component water solubility, S (microg/L)	Final indoor exposure groundwater conc., (microg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.2E-008	NA

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

VERSION 1.2
September, 1998

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C~W (microg/L)	Chemical
79016	10	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L~F (15 or 200 cm)	ENTER Depth below grade to water table, L~WT (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T~S (^oC)
200	300	SC	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor ermeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k~v (cm^2	ENTER Vadose zone soil dry bulk density, rho~b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, theta~w^V (cm^3/cm^3)
SCL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT~C (yrs)	ENTER Averaging time for noncarcinogens, AT~NC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-006	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (microg/L)	Indoor exposure groundwater conc., noncarcinogen (microg/L)	Risk-based indoor exposure groundwater conc., (microg/L)	Pure component water solubility, S (microg/L)	Final indoor exposure groundwater conc., (microg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.9E-008	NA

Attachment 2

SWMU Map