# SITE HAZARD ASSESSMENT

## WORKSHEET 1

Summary Score Sheet

**SITE INFORMATION:**

**Pace National**
500 7th Ave S, Kirkland, King County, WA
Ecology Facility Site ID No.: 2159
Section/Township/Range: Sec 5/T25N/R05E
Latitude: 47º 40' 12.5" Longitude: 122º 12' 4"

*Site scored/ranked for the February 19, 2009 update*
December 29, 2008

**BACKGROUND/SITE DESCRIPTION**

The Pace National site (aka Ultra Corporation and hereinafter referred to as site) is located at 500 7th Avenue South, approximately 0.5 miles south of downtown Kirkland, King County, WA. The five-acre property is bounded to the north by 7th Avenue South, to the east by Burlington Northern Santa Fe Railroad tracks, and to the south and west by residential properties.

The property was occupied by several residential dwellings from the early 1900's until the early 1960's when the property was converted to commercial/industrial applications. The Seattle Door Company built an office building in the northeastern portion of the site in 1963. The Tyee Lumber Company stored wood products for builders in the northern portion of the property until PACE National (PACE) purchased the property in 1969 and operated a specialty chemical mixing and packaging facility from 1971 until approximately 1990.

In addition to a large former industrial/warehouse and office building, the Pace facility had 14 underground storage tanks (USTs) containing regulated and unregulated substances such as alcohols, oils, and proprietary mixtures used to formulate products. Between 1990 and 2006, when the Pace building was demolished, the site property was used for retail storage. The southern half of the site has remained largely undeveloped and covered by trees and dense brush.

Raw materials used in the manufacturing processes were stored in the original drums as well as in the USTs. Drummed chemical were stored on wooden pallets and covered with plastic on a paved, outdoor area until they were used. Concrete berms were constructed in numerous areas of the facility to prevent spills from entering stormwater and sewer drains. A culvert, which was covered by a steel grating, had been installed in the loading dock area to catch contaminants if a spill occurred during loading/unloading of chemicals and products. Floor drains located throughout the facility collected wastewater. It was then channeled to an oil/water separator with the aqueous portion diverted to a 1000 gallon holding tank. An operator-controlled valve could release the waste discharge to the METRO sewer system or if the waste could not be released into the sewer, it could be pumped out for proper disposal.

Most residential water supply within a two mile radius of the site is by public water supply, however there is a small number of private domestic wells noted in the Washington State Department of Ecology (Ecology) database. Based on the site's location, it is likely that the vast majority of these wells would be upgradient of the site.

**Environmental Investigations/Sampling**

Numerous environmental investigations and independent remedial actions have occurred at the site over the past 20 years. On January 23, 1987, a spill of alkyl phenol ethoxylate (concentrated detergent) occurred at the paved loading dock and created a large amount of sudsy liquid which ran down a paved area to a storm drain and entered Lake Washington. By January 24, 1987, Ecology determined the cleanup of the spill was complete.

In June 1987, Ecology & Environment (E & E) conducted a site inspection for the U.S. Environmental Protection Agency Region 10 (EPA) and found that no further action (NFA) was warranted under the federal Superfund program. The site was then referred to Ecology for any required follow-up, and was listed on Ecology's Confirmed and Suspected Contaminated Sites List on March 1, 1988, with a site status of Awaiting Site Hazard Assessment (SHA).

The USTs and associated piping were removed in 1990 by SRH Environmental Management and were observed to be in generally good condition. Although no obvious leaks were observed, approximately 300 cubic yards of soil apparently affected by overspills were excavated from around the tanks and verification samples taken. The 1990-91 sampling by Hart Crowser detected a number of volatile organics and chlorinated hydrocarbons in soils from the railroad unloading area and drum storage yard; however, these were below their respective Model Toxics Control Act (MTCA) cleanup levels in effect at that time.

An SHA of the site was conducted by Seattle-King County Department of Public Health (SKCDPH) (now known as Public Health – Seattle & King County) beginning with sampling in March 1997, which showed a detection of tetrachloroethylene (aka perchloroethlyene, or PCE) in one soil sample at 0.16 mg/kg (ppm), which exceeded its (current) MTCA Method A cleanup level of 0.05 ppm. A second round of sampling found all non-detectable concentrations of PCE, with the exception of one sample at 0.073 ppm, just over the cleanup level. However, this cleanup level was not in effect at that time, and lacking any further indications of contamination, the site was given an interim NFA under MTCA for soil only.

Hart Crowser conducted further soil and groundwater sampling in the former UST containment area, the former railroad unloading area, the former ecology tank area, and the south asphalt storage yard. While it was shown that many of the formerly contaminated areas had been effectively remediated, their report concluded: "..the concentrations of previously identified compounds (in groundwater) have been reduced to below the cleanup level or significantly reduced (e.g. vinyl chloride)". For that reason, the April 1, 2004, NFA request by Hart Crowser resulted in more groundwater sampling over the next several years.

Approximately 40 direct push borings and 16 monitoring wells were installed on the site property in 2004/2005. While soil and groundwater testing indicated the primary sources of chlorinated solvents and petroleum likely had been removed, there remained isolated pockets of soil contamination in the northeastern corner of the site. Elevated PCE concentrations in groundwater were primarily encountered in this same area, and PCE degradation products dichlorothene (DCE) and vinyl chloride were observed in a number of wells located downgradient of this source area. Significant concentrations of gasoline-range total petroleum hydrocarbons (TPH-gas) have also been detected in several of the shallower monitoring wells.

The presence of these contaminants remaining at the site have been summarized in the September 2008 draft Agreed Order between Ecology and Ultra, and form the basis for the scoring and ranking of this site under the Washington Ranking Method (WARM). Supplemental file information provided by Maura O'Brien, Ecology site manager, includes additional sampling data which indicate likely offsite migration of the volatile chlorinated organics plume and the eventual need for down-gradient crawl space sampling.

A site drive-by was made on December 8, 2008, to confirm environmental and containment features of the site such as paving and cover by any remaining building structures.

**SPECIAL CONSIDERATIONS (include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site):**

Due to the significant contamination documented on-site being primarily subsurface and in groundwater, the surface water route is not applicable for WARM scoring for this site. Thus, only the air and groundwater routes will be scored, although the former with a reduced containment value due to the depth of known contamination.

**ROUTE SCORES:**

| | | | |
|---|---|---|---|
| Surface Water/Human Health: | **NS** | Surface Water/Environmental.: | **NS** |
| Air/Human Health: | **46.5** | Air/Environmental: | **17.8** |
| Groundwater/Human Health: | **39.6** | | |

**OVERALL RANK: 2**

## WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE – NOT SCORED**

   a. List those substances to be considered for scoring: Source:

   b. Explain basis for choice of substance(s) to be used in scoring.

   c. List those management units to be considered for scoring: Source

   d. Explain basis for choice of unit to be used in scoring:

2. **AIR ROUTE –**

   a. List those substances to be considered for scoring: Source: 1-4

   DCE, PCE, TPH-gas, TCE, and vinyl chloride

   b. Explain basis for choice of substance(s) to be used in scoring:

   These substances were detected on-site in subsurface soil and/or groundwater samples in significant concentrations with respect to their MTCA Method A Cleanup levels, and are available to this route of concern.

   c. List those management units to be considered for scoring: Source: 1-4

   Subsurface soils and groundwater

   d. Explain basis for choice of unit to be used in scoring:

   The contaminating substances were detected on-site in subsurface soil and groundwater in significant concentrations.

3. **GROUNDWATER ROUTE**

   a. List those substances to be considered for scoring: Source: 1-4

   DCE, PCE, TPH-gas, TCE, and vinyl chloride

   b. Explain basis for choice of substance(s) to be used in scoring:

   These substances were detected on-site in subsurface soil and/or groundwater samples in significant concentrations with respect to their MTCA Method A Cleanup levels, and are available to this route of concern.

   c. List those management units to be considered for scoring: Source: 1-4

   Subsurface soils and groundwater.

   d. Explain basis for choice of unit to be used in scoring:

   The contaminating substances were detected on-site in subsurface soil and groundwater in significant concentrations.

# WORKSHEET 5
Air Route

## 1.0 SUBSTANCE CHARACTERISTICS

**1.1.** Introduction (WARM Scoring Manual) – Please review before scoring

**1.2 Human Toxicity**

| | Substance | Air Standard ($\mu g/m^3$) | Value | Acute Toxicity ($mg/m^3$) | Value | Chronic Toxicity (mg/kg/day) | Value | Carcinogenicity | | Value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | WOE | PF* | |
| 1 | DCE | 2631 | 1 | 65000 (mus) | 3 | ND | - | ND | ND | - |
| 2 | PCE | 1.1 | 9 | ND | - | ND | - | ND | ND | - |
| 3 | TPH-Gas | 0.12 | 10 | 31947(rat) | 3 | ND | - | A = 1 | .029 = 5 | 5 |
| 4 | TCE | 0.8 | 10 | 15583 (man) | 3 | ND | - | B2 = 0.8 | .017 = 5 | 4 |
| 5 | Vinyl chloride | 0.023 | 10 | 460123 (rat) | 1 | ND | - | ND | ND | - |

** Potency Factor*

Source: 1-4,7

**Highest Value: 10**
(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**
(Max = 12)

**1.3 Mobility (Use numbers to refer to above listed substances)**

| | 1.3.1 Gaseous Mobility | 1.3.2 Particulate Mobility | | |
|---|---|---|---|---|
| | Vapor Pressure(s) (mmHg) | Soil Type | Erodibility | Climatic Factor |
| 1 | 6.0E+02 = 4 | | | |
| 2 | 1.8E+01 = 4 | | | |
| 3 | 9.5E+01 = 4 | | | |
| 4 | 5.8E+01 = 4 | | | |
| 5 | 2.7E+03 = 4 | | | |

Source: 5

**Value: 4**
(Max = 4)

Source: 1-4,7

**Value: NA**
(Max = 4)

**1.4** Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)

**Final Matrix Value: 24**
(Max = 24)

| 1.5 Environmental Toxicity/Mobility – | | | | | | |
|---|---|---|---|---|---|---|
| | **Substance** | **Non-human Mammalian Inhalation Toxicity ($mg/m^3$)** | **Acute Value** | **Mobility (mmHg)** | **Value** | **Matrix Value** |
| **1** | DCE | 65000 | 3 | 6.0E+02 | 4 | 6 |
| **2** | TPH-gas | 31,947 | 3 | 9.5E+01 | 4 | 6 |
| **3** | Vinyl chloride | 460,123 | 1 | 2.7E+03 | 4 | 2 |

Highest Environmental Toxicity/Mobility Matrix Value (Table A-7) = **Final Matrix Value: 6**
(Max = 24)

| 1.6 Substance Quantity | |
|---|---|
| **Explain Basis:** Unknown, use default value = 1. | Source: 1-4,8<br>**Value: 1**<br>(Max = 10) |

## 2.0 MIGRATION POTENTIAL

| | | Source | Value |
|---|---|---|---|
| **2.1** | **Containment:** Contamination > 5 feet deep. | 1,4,8 | **5**<br>(Max = 10) |

## 3.0 TARGETS

| | | Source | Value |
|---|---|---|---|
| **3.1** | **Nearest Population:** < 1000’ | 6,12 | **10**<br>(Max = 10) |
| **3.2** | **Distance to [and name(s) of] nearest sensitive environment:** Peter Kirk Park 1000’ to the southwest | 6,12 | **5**<br>(Max = 7) |
| **3.3** | **Population within 0.5 miles:** √ 5693 = 75.45 | 13 | **75**<br>(Max = 75) |

## 4.0 RELEASE

| **Explain Basis for scoring a release to air:** | Source: 1-.6<br>**Value: 0**<br>(Max = 5) |
|---|---|
| None documented. | |

# WORKSHEET 6
Groundwater Route

## 1.0 SUBSTANCE CHARACTERISTICS

### 1.1 Human Toxicity

| | Substance | Drinking Water Standard (µg/L) | Value | Acute Toxicity (mg/ kg-bw) | Value | Chronic Toxicity (mg/kg/day) | Value | Carcinogenicity | | Value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | WOE | PF* | |
| 1 | DCE | 70 | 6 | 7902 | 1 | 0.01 | 3 | ND | ND | - |
| 2 | PCE | 5 | 8 | 800 | 5 | 0.01 | 3 | B2= 0.8 | .051 = 5 | 4 |
| 3 | TPH-gas | 5 | 8 | 3306 | 3 | ND | - | A = 1.0 | .028 = 5 | 5 |
| 4 | TCE | 5 | 8 | 2402 | 3 | ND | - | B2= 0.8 | .011 = 5 | 4 |
| 3 | Vinyl chloride | 2 | 8 | 500 | 5 | ND | - | A=1 | 2.3= 7 | 7 |

** Potency Factor*

Source: 1-4,7

**Highest Value: 8**
(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 10**
(Max = 12)

### 1.2 Mobility (use numbers to refer to above listed substances)

| Cations/Anions [Coefficient of Aqueous Migration (K)] OR | Solubility (mg/L) |
|---|---|
| 1= | 1= 1.5E+02 = 2 |
| 2= | 1= 2.7E+03 = 3 |

Source: 1-4,7

**Value: 3**
(Max = 3)

| **1.3 Substance Quantity:** | |
|---|---|
| **Explain basis: :** Unknown, use default value = 1 | Source: 1-4,8<br>**Value: 1**<br>(Max=10) |

## 2.0 MIGRATION POTENTIAL

| | | Source | Value |
|---|---|---|---|
| **2.1** | **Containment (explain basis):** Spill, discharge to soil = 10 | 1-4,6,8 | **10** (Max = 10) |
| **2.2** | **Net precipitation:** 24.6" – 5.9" = 18.7" | 9 | **2** (Max = 5) |
| **2.3** | **Subsurface hydraulic conductivity:** Silty sands/sandy gravels | 1-4 | **3** (Max = 4) |
| **2.4** | **Vertical depth to groundwater:** Obs. release to groundwater = 0' | 1-4 | **8** (Max = 8) |

## 2.0 TARGETS

| | | Source | Value |
|---|---|---|---|
| **3.1** | **Groundwater usage:** Public/private supply, unthreatened alts. avail. | 10.11 | **4** (Max = 10) |
| **3.2** | **Distance to nearest drinking water well:** 5000 feet | 10,11 | **2** (Max = 5) |
| **3.3** | **Population served within 2 miles:** √ 219 = 15 | 10,11 | **15** (Max = 100) |
| **3.4** | **Area irrigated by (groundwater) wells within 2 miles: (0.75)*√0 acres** = 0 | 10,11 | **0** (Max = 50) |

## 3.0 RELEASE

| | Source | Value |
|---|---|---|
| **Explain basis for scoring a release to groundwater:** Confirmed by presence of contaminants in groundwater. | 1-4 | **5** (Max = 5) |

## SOURCES USED IN SCORING


1. Personal communication, Maura O'Brien, Ecology NWRO TCP, December 8, 2008..
2. Draft Agreed Order, Ecology/ULTRA Corporation, September 4, 2008.
3. Prospective Purchaser Agreement/Consent Decree Proposal, Former Pace National Facility, 500 7th Avenue, Kirkland, Washington, Sound Environmental Strategies, December 12, 2007.
4. Additional Supplemental Environmental Investigation for No Further Action (NFA) Determination, Ultra Corporation (formerly PACE National) Property, Kirkland, WA, HartCrowser, April 1, 2004.
5. Site Hazard Assessment Recommendation for No Further Action, Public Health – Seattle & King County, January 7, 1998.
6. SHA Site Drive By Visit, Michael Spencer, WA Ecology, December 8, 2008.
7. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
8. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
9. Washington Climate – Net Rainfall Table
10. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.
11. Washington Department of Health, Sentry Internet Database printout for public water supplies.
12. U.S.G.S. Topo map for site area.
13. Personal memo, Peter Isaksen, Public Health – Seattle & King County, December 8, 2008.