Olympia Brewery

SHARP Report — Part 1 of 2

Go to site contamination history

• SHARP first SHARP	v2024.04.29	Ecology Info	
• SHARP rating	Medium	ERTS	687507
• SHARP date	08/29/2024	CSID	15023
• EJFlagged?	⃠ - No Override	FSID	12255918
• LD confidence level	high	VCP	None
• Cleanup milestone	initial investigation	UST ID	None
• SHARPster	Val Chu	LUST ID	None

This section is blank if this is the first SHARP

SHARP Media	Scores	Confidence	Additional Factors	
Indoor air	D4	high	multiple chemical types	⃠
Groundwater	B1	low	risk to off-site people	✔
Surface water	A1	low	climate change impacts	✔
Sediment	B1	medium	plant/animal tissue data	⃠
Soil	B1	medium		

Location and land use info

100 Custer Way SW, Tumwater, Thurston County, 98501

Primary parcel	4570060000
Land use	mixed use
Responsible unit	SWRO

Sources reviewed

Appendices A-K (litigation hold) From SWRO F: Drive

Early Notice of Release and Preliminarly PLP Determination- Chandualal Patel 2019

Withdrawal of Liability Determination for Release 2023

Primary census tract	Associated census tracts
53067010400	53067010100, 53067010520

Local demographics comments

no comments

Source/source area description

On 2/25/2019 an oil spill was reported entering the Deschutes River from a stormwater outfall along its east bank all the way to Capitol Lake. Approximately 600 gallons of PCB contaminated oil escaped from a transformer site that was occupied from Olympia Brewery. The spill response/cleanup commenced in August 2019 with remediation at multiple spots in the area. PCB levels were above MTCA in the sediment. Under litigation hold

Soil comments

No current soil data available. Soil excavation happened, but don't know how much is left remaining

Groundwater comments

No groundwater data available and TCP maps was not cooperating to locate wells.

Surface water comments

Unknown remaining surface water impact, sediment suspected to still be there.

Sediment comments

Unknown of current impacts, but spill remediation is suspected to have gotten most of the contamination

Indoor air comments

No suspected impact

Additional factors comments

Flooding impact within 100 year storm boundary. Spill impacted lots of people off-site

Site history

Go to top

Spill reported in Feb 2019, cleanup/response ended in August 2019. RDA committee met on March 2021. Settlement agreement between Ecology, Tumwater Development LLC and Chandual Patel became effective on October 10, 2023

Overflow - Site contamination and cleanup history

No overflow

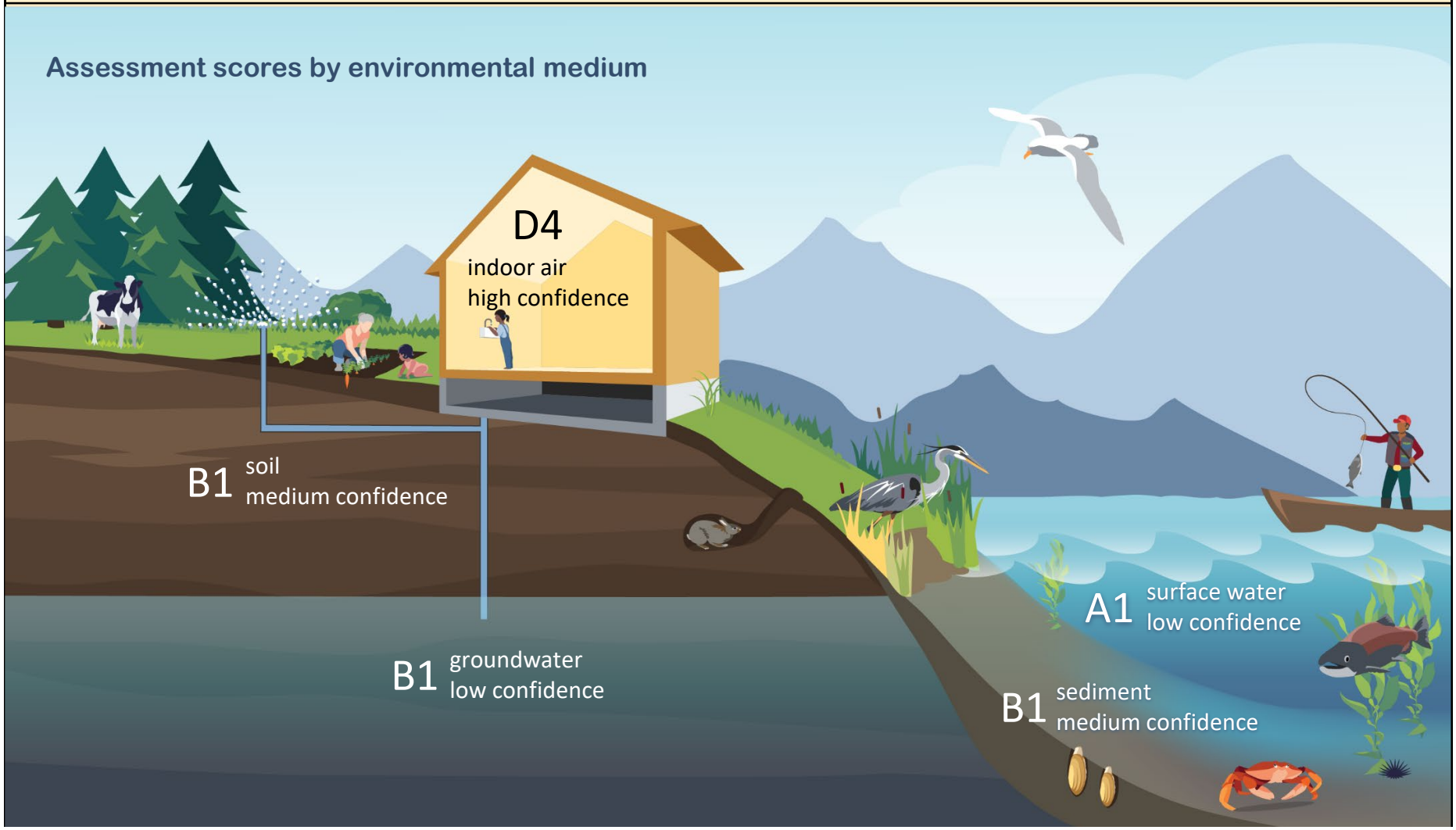
Olympia Brewery

15023 Olympia Brewery 20240829
First SHARP
SHARP rating — Medium

SHARP Report — Part 2 of 2

Conceptual site model
08/29/2024

SHARP



Welcome to the SHARP Tool

Version: v2024.04.29

The SHARP Tool is the Department of Ecology's site assessment procedure required by RCW 70A.305.030(2)(b) and regulated by chapter 173-340 WAC. The SHARP Tool supports meaningful decision making for sites that pose an exposure risk to people and other living things and plays a key role in how Ecology focuses on improving environmental equity under the HEAL Act of 2021.

Ratings rely on scores from assessing risks of potential chemical exposure and severity in soil, groundwater, surface water, sediment, and indoor air. These assessments inform an overall SHARP rating of low, medium, high, or critical. Exposure and severity risks can be re-assessed over time as site cleanups progress and as new information becomes available. The current Microsoft Excel format supports a planned conversion into an online application and is intended for internal Ecology use only.

SHARP Tool Structure

Tabs	Page and purpose
	Together, the following two sheets comprise a SHARP Report.
Part1	SHARP Report Part 1: text summary
Part2	SHARP Report Part 2: site conceptual model
Welcome	This page: describes the layout of the SHARP Tool
	The SHARPster enters information on **only** these two pages.
Info	Site Info: collects readily available, site-specific information
LD	Local Demographics: state-only local demographics data from federal and state sources
	Answer questions on these five sheets to generate five environmental media scores.
SL	Soil
GW	Groundwater
SW	Surface Water
SD	Sediment
IA	Indoor Air
AF	Additional Factors — collects useful, non-scoring site information
	ChemTox is a list of chemicals and relevant information from the CLARC database.
ChemTox	Chemical Toxicity Reference Table

SHARP Tool Support

SHARP Manual	The companion SHARP Manual helps users answer questions in the SHARP Tool, navigate online information sources to collect information.

Site Info

Go to site history

Section I. Generate file name

1 **Enter** site CSID. 15023

2 **Enter** site name. **Olympia Brewery**

3 **Enter** SHARP completion date.

month	08
day	29
year	2024

SHARP date 08/29/2024

4 **Save** this Excel file as this auto-generated file name.

15023 Olympia Brewery 20240829

Section II. Enter basic site information

1 ▼ **Enter** basic site info (use overflow, if needed)

Street address	100 Custer Way SW
City	Tumwater
County	Thurston
Zip	98501
Primary parcel	4570060000 (use overflow for more parcels)
Primary land use	mixed use (see Manual descriptions)
Responsible unit	SWRO

2 ▼ **Enter** Ecology numbers. Enter "none" if no number or unknown.

ERTS	687507
FSID	12255918
VCP	None
UST ID	None
LUST ID	None

4 ▼ **Enter** SHARPster name and cleanup status.

SHARPster name	Val Chu
MTCA cleanup milestone	initial investigation

5 Is this a **first SHARP** or a **reSHARP?** first SHARP

▼ **Enter** the first SHARP information from ISIS here, or **skip** if this is a first SHARP.

SHARP Tool version	
SHARP date	
SHARP rating	menu ▼
EJFlag	menu ▼
LD confidence level	menu ▼
Cleanup milestone	menu ▼
SHARPster name	

Site Info

Go to site history

6 ▼ **Enter** information sources (newest to oldest, use multiple lines or overflow, if needed)**.**

Appendices A-K (litigation hold) From SWRO F: Drive
Early Notice of Release and Preliminarly PLP Determination- Chandualal Patel 2019
Withdrawal of Liability Determination for Release 2023

7 ▼ **Describe** the source/source area

On 2/25/2019 an oil spill was reported entering the Deschutes River from a stormwater outfall along its east bank all the way to Capitol Lake. Approximately 600 gallons of PCB contaminated oil escaped from a transformer site that was occupied from Olympia Brewery. The spill response/cleanup commenced in August 2019 with remediation at multiple spots in the area. PCB levels were above MTCA in the sediment. Under litigation hold

Site Info

Go to site history

8 ▼ **Enter** site history (use overflow, if needed) Go to top

Spill reported in Feb 2019, cleanup/response ended in August 2019. RDA committee met on March 2021. Settlement agreement between Ecology, Tumwater Development LLC and Chandual Patel became effective on October 10, 2023

Site Info

Go to site history

9 ▼ **Enter** overflow information

Local Demographics

No EJFlag - No Override

Go to comments

1 **Follow directions** in the SHARP Manual to collect local demographics data from the:

- EPA's EJScreen, and
- DOH's Environmental Health Disparities (EHD) ranking system.

2 **Go** to EPA's EJScreen.

3 **Enter** the primary census tract. ▶ 53067010400

4 **Generate and download** an EJScreen Community Report for the primary census tract.

Rename the file as: 15023 Tract 53067010400

5 **Enter** below the EJScreen Report's **Percentile in State** data, from the **Selected Variables Table**.

EJFlag factors		Non-EJFlag factors	
16	◄ **Demographic Index**	27	◄ People of color
13	◄ **Supplemental Demographic Index**	25	◄ Low income
		84	◄ Unemployment rate
		0	◄ Limited English speaking households
		24	◄ Less than high school education
		34	◄ Under age 5
		64	◄ Over age 64
		22	◄ Low life expectancy

6 **Identify other** potentially impacted census tracts here (usually adjacent). ▼

53067010100, 53067010520

7 **Go** to DOH's Washington Tracking Network.

8 **Enter** the EHD rank for the primary census tract. ▶ 4

9 **Note** whether a default or no-default EJFlag condition is met (automatically calculated).

No default EJFlag condition is met

10 **Select** a confidence level. Use the definitions in the SHARP Manual or directly from Implementation Memo No. 25. high (select)

11 **Decide** whether site-specific data, if available, should be used to support a **default EJFlag** or a **no-default EJFlag** override. no (select)

If "yes", explain why and enter comments below.

12 Enter comments Go to top

Soil

B1

Go to comments

1 Potential Exposure		Answers/Scores	Tips
SL_Ex1	Is there a current impact to site soil that is greater than applicable MTCA cleanup or screening levels?	maybe	For people exposed to soil contamination, the MTCA soil-direct contact point of compliance is from ground surface to 15 feet deep across the site (WAC 173-340-740[6][d]). In leaching conditions, the point of contact can exceed this and include the saturated zone. ► WAC 173-340-740 Unrestricted land use soil cleanup standards
		continue	
			Y Either of the following is true. • Testing results confirm contamination levels exceed an applicable MTCA cleanup or screening level. • Contamination is noted on soil (e.g., leaking drum liquid or a solid [powder]).
			M All of the following are true. • Soil is discolored, stained, or oily, or has an unnatural odor. • Testing information isn't available or adequate enough to rule out an impact. • A natural biological source cannot be ruled out.
			N Either of the following is true. • Soil testing information indicates no evidence of soil contamination at levels greater than applicable MTCA cleanup or screening levels. • No release has been observed, documented, or reported.
SL_Ex2	Is soil contaminated anywhere from ground surface to approximately 2 feet deep?	maybe	Most soil-direct contact (dermal) exposures are likely to occur at ground surface and down into shallow depths. Common activities that can present soil-direct contact might include participating in sporting events, children playing, gardening, installing fence posts, and landscaping, each of which typically occur from ground surface to about 2 feet deep. Soil at this depth is considered to be "readily accessible". Soil-direct contact includes ingestion for children playing (age 0 to 6 years old), but consider the likelihood for elementary or middle school populations on site. Soil-direct contact exposures is less common or likely with increasing
		B	**Y** Either of the following is true for this approximate depth interval. • Testing results confirm contamination levels exceed an applicable MTCA cleanup or screening level. • A contaminant is visible on soil (e.g., leaking drum liquid or a solid [powder]).

			M All of the following are true for this approximate depth interval. • Soil is discolored, stained, or oily, or has an unnatural odor. • Testing information isn't available or adequate enough to rule out an impact. • A natural biological source cannot be ruled out.
			N Either of the following is true for this approximate depth interval. • Soil testing information indicates no evidence of soil contamination at levels greater than applicable MTCA cleanup or screening levels. • No release has been observed, documented, or reported.
SL_Ex3	Do plants or animals have access to soil contamination anywhere from ground surface to 6 feet deep?	maybe B	The **conditional** soil point of compliance for plants and animals is from ground surface to 6 feet deep, the reasonable depth terrestrial plants can root and animals can burrow (WAC 173-340-7490[4][a]). The area of contaminated soil that triggers evaluation of plant and animal protective values depends on site contaminants. Consider the following criteria, used for a terrestrial ecological evaluation (TEE), to estimate the risk of exposure to plants and animals (WAC 173-340-7490 through 7493). - All contaminated soil is under pavement, a building, or other physical barrier. - Contamination isn't observed or confirmed from ground surface to 6 feet deep. - Contaminant levels aren't greater than soil background levels. - The site meets any of the criteria for a TEE exemption. - The result of a simplified TEE ends the TEE process. ► WAC 173-340-7490. Terrestrial ecological evaluation procedures ► WAC 173-340-7491. Exclusions from a terrestrial ecological evaluation ► WAC 173-340-7492. Simplified terrestrial ecological evaluation procedures ► WAC 173-340-7493. Site-specific terrestrial ecological evaluation procedures See Ecology's draft guidance. ► Technical Document: Terrestrial Ecological Evaluations under the Model Toxics Control Act
			Y Either of the following is true. • A TEE was conducted that didn't result in a TEE exemption or a simplified TEE that ended. • A TEE hasn't been conducted, but the site doesn't meet any exclusion criteria.

			M Either of the following is true. • Knowledge of site conditions is too limited or inadequate to rule out access to plants and animals. • A non-permanent barrier is in place that currently prevents plants and animals from accessing the soil.
			N Either of the following is true. • A TEE was conducted that resulted in a TEE exemption or a simplified TEE that ended. • At least one TEE exclusion criterion is met.
SL_Ex4	Do any physical barriers block people from direct contact with soil contamination?	maybe	Physical contact with soil contamination can be blocked by physical barriers such as buildings, pavement, soil caps, geotextile fabrics, and mitigation barriers. Security fencing and warning signage don't necessarily block access but rather deter access to contaminated soil.
		B	**Y** A physical barrier is in place to block soil-direct contact.
			M A physical barrier prevents some but not all soil-direct contact, such as a partially paved or fenced area.
			N No physical barrier is in place to block soil-direct contact.
	Exposure score ▶	**B**	

2	**Severity**	**Answers/Scores**	**Tips**
SL_Sv1	Is any **extremely** toxic chemical in soil?	yes	Compare confirmed or suspected chemicals in soil with those listed as **extremely** toxic under the ChemTox table heading "Soil, Groundwater, Air". ▶ ChemTox
		10	
			Y Any chemical in soil is listed as extremely toxic in the ChemTox table.
			M Any chemical in soil may be listed as extremely toxic in the ChemTox table, but analytical data are not available to confirm.
			N No chemical in soil is listed as extremely toxic in the ChemTox table.
SL_Sv2	Is any **very** toxic chemical in soil?	menu ▼	Compare confirmed or suspected chemicals in soil with those listed as **very** toxic under the ChemTox table heading "Soil, Groundwater, Air". ▶ ChemTox
		SKIP	
			Y Any chemical in soil is listed as very toxic in the ChemTox table.
			M Any chemical in soil may be listed as very toxic in the ChemTox table, but analytical data are not available to confirm.
			N No chemical in soil is listed as very toxic in the ChemTox table.

Soil

B1

Go to comments

SL_Sv3	Do children have unrestricted access to the site?	maybe	Small children are at the greatest risk of accidental soil ingestion through playing and digging in shallow soil. Consider if children may live or play near the site or have unrestricted access to contaminated soil. For soil ingestion, children are considered to be 0 to 6 years of age, but consider the likelihood of occupancy by elementary and middle school populations.
		6	**Y** No physical barrier blocks children from accessing the contaminated area.
			M A physical barrier prevents some but not all soil-direct contact, such as a partially paved or fenced contaminated area.
			N A physical barrier blocks access to the contaminated area.
SL_Sv4	Are people likely to be exposed to contaminated soil as airborne dust?	maybe	Bare, dry soil contamination can become airborne and present an inhalation exposure. This is more important in arid or windy regions like Eastern Washington or in seasonally dry areas.
		3	**Y** People use or occupy areas susceptible to contact with dusty airborne contamination.
			M People occasionally could use or occupy areas susceptible to contact with dusty airborne contamination.
			N The soil contamination is capped or wouldn't likely present dusty conditions.
SL_Sv5	Has any volatile chemical been identified in site soil or groundwater?	maybe	A volatile chemical's liquid and gaseous phases can occupy and contaminate soil pore spaces. Further, a volatile chemical gaseous phase in groundwater can mobilize upward above the saturated zone and contaminate soil from below. Identify volatile chemicals in soil and groundwater by comparing confirmed or suspected chemicals with listed chemicals marked as "yes" under the ChemTox table heading "Possible Vapor Intrusion".
		3	► ChemTox
			Y A volatile chemical has been released to, or identified in, site soil or groundwater, as confirmed by analysis.
			M A volatile chemical has likely been released to, or identified in, site soil or groundwater, but testing information isn't available to confirm.
			N Testing information confirms no volatile chemical has been released to site soil or groundwater, and there is no credible reason to suspect a release.

SL_Sv6	Does soil contamination pose an immediate risk to groundwater?	maybe	Soil permeability is a soil quality that enables vapor and liquid contaminants to transmit through soil pore space and reach groundwater. Soil cleanup levels are based on the potential for a contaminant to leach from soil into groundwater (WAC 173-340-747). Review the following resources to assess whether groundwater is at risk from soil contamination, based on confirmed or potential soil concentrations. ► WAC 173-340-747. Deriving soil concentrations for groundwater protection ► TCP Maps ► CLARC home page ► CLARC "Master CLARC Spreadsheet" Tab (surface water headings) ► WAC 173-340-357 Soil to groundwater pathway
		3	**Y** Any of the following is true. • Soil contaminant levels are confirmed in site groundwater in excess of applicable MTCA cleanup or screening levels derived for groundwater protection. • The soil contaminant is a non-aqueous phase liquid. • The close proximity and depth of the soil contamination poses a risk to groundwater.
			M Both of the following are true. • Soil contaminant levels may be greater than applicable MTCA cleanup or screening levels for the soil to groundwater pathway. • Groundwater isn't excessively deep or isn't separated from soil contamination by sufficiently low-permeability strata, such as fine-grained or clay-rich soils.
			N Either of the following is true. • Soil contamination is relatively "old" with no evidence of having mobilized to groundwater. • Groundwater is fairly excessively "deep" or is separated from contamination by sufficiently low-permeability strata.
SL_Sv7	Do soil contaminants pose an immediate risk to surface water or sediment?	yes	Contaminated runoff poses a common risk to surface water and sediment. The runoff pathway can be direct or indirect such as through water flowing in trenches or storm sewer systems that discharge to surface water.
		5	**Y** Any of the following is true. • Soil contaminants are confirmed in site surface water or sediment at levels greater than applicable MTCA cleanup or screening levels. • A perennial or intermittent surface water body is within 100 ft downslope of site contamination.

		• The close proximity of the soil contamination poses a risk to surface water or sediment.
		M At least one of the following is true, and sampling hasn't ruled out surface water and/or sediment impacts. • Site soil contamination is near or on a waterfront. • A permitted stormwater treatment system is in place and operating as intended, at this time. • Current or historic on-site wastewater or storm water systems drain to surface water or a waterfront. • The site supports or has supported over-water activities like log rafting, boat maintenance, utility conveyance, or fuel or bilge transfer.
		N Either of the following is true. • Runoff from the site is not feasible. • Site runoff cannot reach or is unlikely to reach surface water or sediment.
Severity score	**1**	

Soil

B1

Go to comments

3	Select confidence level	medium

Go to top

4	Enter comments

No current soil data available. Soil excavation happened, but don't know how much is left remaining

1 Potential Exposure		Answers/Scores	Tips
GW_Ex1	Is there an on-site release or impact to groundwater that is greater than applicable MTCA cleanup or screening levels?	maybe	The standard point of compliance for protection of groundwater quality is across the site from the top of the saturated zone to the lowest saturated depth which could be impacted (WAC 173-340-720[8][b]). If a release to soil has not been cleaned up, and site cleanup or screening levels aren't set, default to comparing data to Methods A or B cleanup levels protective of potable groundwater (WAC 173-340-720[3] and [4]). Compare concentrations with Method A cleanup levels, if the investigation is in its early stages or contaminants are few, and a fairly straightforward cleanup strategy is known or likely. Method B may be used at any site where contaminants aren't listed under Method A. See CLARC's "GW Method A, B & ARARs".
		continue	► WAC 173-340-720 Groundwater cleanup standards ► CLARC "GW Method A, B & ARARs" Tab
			Y Either of the following is true. • Testing results indicate at least one chemical concentration that exceeds an applicable MTCA cleanup or screening level for soil or groundwater. • An unnatural oil-like sheen is observed on groundwater samples.
			M Any of the following is true. • Testing has not been conducted and used to rule out an impact. • The range of chemicals used in soil testing is insufficient to be able to rule out an impact to groundwater. • Pit water or well water samples appear unnaturally discolored or have an unnatural odor.
			N Either of the following is true. • The range of chemicals used in soil testing is sufficient enough to rule out an impact to soil. • Contaminant concentrations in soil don't exceed applicable MTCA cleanup or screening levels.
GW_Ex2	Is a site or vicinity drinking water well impacted by contaminants released at the site?	maybe	Review TCP Maps and the DOH Source Water Assessment Program (SWAP) Maps to identify **drinking water wells** on site or in the vicinity. Also review water well reports, boring logs, groundwater data, and related information to determine the potential for site contamination to have impacted any site or vicinity drinking water wells. Compare available site drinking water well data to applicable MTCA cleanup or screening levels in CLARC's "GW Method A, B & ARARs" sheet.

Groundwater

B1

Go to comments

B

- ▶ TCP Maps
- ▶ DOH SWAP Maps
- ▶ CLARC "GW Method A, B & ARARs" Tab

Y	Any of the following is true. • A groundwater impact is confirmed for an on-site or vicinity drinking water well. • Groundwater testing results show chemical concentrations greater than any applicable MTCA cleanup standard in a site or vicinity drinking water well. • A TCP Maps query shows the estimated site plume to be within the 10-year travel-time zone of a Group A or B water supply well, unless a hydrogeologic factor indicates an absence of connection between the impacted groundwater and the drinking water aquifer (for example, a site adjacent to a groundwater discharge area where an upward gradient exists).
M	A domestic drinking water well or irrigation well is located on site or within 500 feet of the site.
N	A municipal or community drinking water system serves the site with water from a surface water source, and groundwater isn't a likely or viable water supply source.

Exposure score ▶ **B**

2 Severity		**Answers/Scores**	**Tips**
GW_Sv1	Is any **extremely** toxic chemical in groundwater?	maybe 6	Compare confirmed or suspected chemicals in groundwater with those listed as **extremely** toxic under the ChemTox table heading "Soil, Groundwater, Air". ▶ ChemTox
			Y Any chemical in groundwater is listed as extremely toxic in the ChemTox table.
			M Any chemical in groundwater may be listed as extremely toxic in the ChemTox table, but analytical data are not available to confirm.
			N No chemical in groundwater is listed as extremely toxic in the ChemTox table.
GW_Sv2	Is any **very** toxic chemical in groundwater?	menu ▼ SKIP	Compare confirmed or suspected chemicals in groundwater with those listed as **very** toxic under the ChemTox table heading "Soil, Groundwater, Air". ▶ ChemTox
			Y Any chemical in groundwater is listed as very toxic in the ChemTox table.
			M Any chemical in groundwater may be listed as very toxic in the ChemTox table, but analytical data are not available to confirm.
			N No chemical in groundwater is listed as very toxic in the ChemTox table.

Groundwater

B1

Go to comments

GW_Sv3	Is contaminated groundwater either: 1) within the 10-year travel-time zone of a Group A or B water supply well; or 2) within 500 feet of a domestic water well or irrigation well?	maybe 6	Use TCP Maps and DOH SWAP Maps to access groundwater data and other information for the site and vicinity. See if a site or vicinity water supply well derives water from the affected aquifer. The following resources may be helpful. ► TCP Maps ► DOH SWAP Maps
			Y Any water supply well meets these criteria, based on sufficient quality information.
			M Any water supply well meets these criteria, based on minimal or low quality information.
			N No known well meets these criteria.
GW_Sv4	Has any water supply well been adversely affected by site contamination, including any taken out of service?	maybe 6	Use TCP Maps and DOH SWAP Maps to determine if any water supply wells are impacted, or likely to be impacted, by contaminants originating from the site. ► TCP Maps ► DOH SWAP Maps
			Y Impact to a water supply well has been confirmed by groundwater data.
			M Impact to a water supply well is alleged or suspected, based on minimal information.
			N No water supply well has been reported to be affected.
GW_Sv5	Is any light non-aqueous phase liquid (LNAPL) chemical observed or present at a measurable thickness in site groundwater?	maybe 3	LNAPLs such as oils don't mix well with water and are less dense than water. Therefore, they tend to spread or float across a water surface as a visible sheen or as a thicker layer that is measurable. Compare site observations identifying the presence of LNAPL with the chemicals listed in the following publication. ► EPA Ground Water Issue, Light Nonaqueous Phase Liquids
			Y LNAPL is visible on groundwater or pit water as a sheen or is present in a measurable thickness.
			M A sheen is observed on groundwater, but its thickness isn't measurable.
			N No LNAPL is observed or measurable on site groundwater.
GW_Sv6	Is any dense non-aqueous phase liquid (DNAPL) chemical observed or present at a measurable thickness in site groundwater?	maybe	DNAPLs are organic chemicals (e.g., solvents) that don't mix well with water. They are denser than water and tend to sink to the bottom of aquifers. As such, they are difficult to observe in the field. Compare site observations identifying the presence of DNAPL with the chemicals listed in the following publication.

Groundwater	B1	Go to comments
	3	► EPA Ground Water Issue, Dense Nonaqueous Phase Liquids

			Y Field observation or field DNAPL testing has confirmed DNAPL in groundwater.
			M Field observation or field DNAPL concentrations is inconclusive, but DNAPL is suspected in site groundwater.
			N DNAPL hasn't been observed or detected at a measurable thickness in site groundwater.
GW_Sv7	Does a site plume extend beyond the source property boundary?	maybe	Consider whether the estimated or known plume footprint has migrated off of the original release parcel(s)/property and onto another parcel/property.
		3	**Y** The estimated leading edge of a plume extends beyond the source property line, based on groundwater data.
			M The estimated leading edge of a plume likely extends beyond the source property line, but isn't wholly supported by groundwater data.
			N Groundwater data indicate the plume doesn't extend past the property line.
GW_Sv8	Does a site plume pose a potential risk to downgradient surface water or sediment?	yes	Identify downgradient surface water or sediment sources in the direction of groundwater flow from the site. Evaluate the risk to those sources from the site plume. Consider whether plume concentrations could sufficiently attenuate to non-risk levels before reaching the downgradient surface water or sediment sources. Review the following sources, as needed. ► TCP Maps ► WAC 173-340-730 Surface water cleanup standards
		5	**Y** Groundwater data indicate an impact to surface water or sediment from a plume originating from the site.
			M Either of the following is true. • Nearby surface water or sediment sources are estimated to be downgradient of the site, based on indirect information such as topography features, surficial drainage patterns, or reliance on lower-quality information. • Surface water or sediment sources are nearby, but a potential impact from groundwater and the estimated groundwater flow direction aren't well understood.
			N Downgradient surface water and sediment sources aren't at risk.
	Severity score	**1**	

3	**Select confidence level**	low

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4 Enter comments

No groundwater data available and TCP maps was not cooperating to locate wells.

Surface Water

A1

Go to comments

1 Potential Exposure		Answers/Scores	Tips
SW_Ex1	Is surface water present on the site?	yes continue	MTCA defines surface water as lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses in the state (WAC 173-340-200). Well to moderately well drained soils aren't likely to support surface water conditions. Use map sources, including the Department of Fish & Wildlife (DFW) sources, to identify or estimate the presence of surface water or its indicators, such as aquatic habitat. ► TCP Maps ► DFW Priority Habitat and Species Map Tool
			Y Surface water is observed or reported on site.
			M Surface water is likely present, but information unavailable or inadequate to rule out its presence.
			N Any of the following is true. • The site is paved or covered by buildings or structures. • The site is too steep to likely support surface water or has well-draining soil. • No on-site standing or surface water is present.
SW_Ex2	Is surface water contaminated at levels greater than applicable MTCA cleanup or screening levels?	maybe continue	Based on the protection of surface water, the standard point of compliance is all locations where contamination is released to surface water (WAC 173-340-730[6]). If site-specific cleanup levels aren't available, use CLARC surface water screening levels for marine or fresh water. Search the surface water headings in the "Master CLARC Spreadsheet" tab. ► WAC 173-340-730 Surface water cleanup standards ► CLARC "Master CLARC Spreadsheet" Tab (surface water headings)
			Y Available information confirms a surface water contaminant level greater than applicable MTCA cleanup or screening levels.
			M Any of the following is true. • Testing information isn't available or adequate enough to rule out an impact to surface water. • Testing has not been conducted, and other information is too insufficient to rule out an impact to surface water. • A water sheen water may not be biological in nature, but information isn't available to confirm.
			N Any one of the following is true. • An impact isn't likely. • A surface water is upgradient/upslope from a contaminated area.

			• Test results for a sufficient range of suspected chemicals indicate no contaminants at levels greater than applicable MTCA cleanup or screening levels.
SW_Ex3	Is site surface water used as a drinking water source?	yes	Use Ecology's Water Rights Search mapping tool to find water right permits, certificates, or claims, which can help identify surface water sources used for drinking water. ► Water Rights Search See if site surface water is in a drinking water source protection area using DOH SWAP Maps. ► DOH SWAP Maps
		A	**Y** Either of the following is true. • The site has at least one water right permit, certificate, or claim. • The site is located in a state drinking water source protection area.
			M The site's surface water is of sufficient quality and quantity that it could be used as a drinking water source but isn't currently.
			PF Site surface water isn't accessible as a drinking water source but could be in the future.
			N Either of the following is true. • The site's surface water is not of sufficient quality and quantity to be used as a drinking water source. • People have no access to site surface water.
SW_Ex4	Is the site accessible for fishing?	yes	Fishing may be conducted in contaminated areas putting fishers at risk of exposure during fishing activities and potentially during consumption of their catch. Identify potential fishing resources and whether they are physically accessible to fishers. Assume all streams and lakes on Puget Sound shorelines are fish-bearing water bodies.
		A	**Y** Fishing resource areas are accessible to people who harvest or eat fish.
			M Fishing resource areas may be accessible to people who harvest or eat fish, but additional information is needed to confirm.
			PF Fishing resource areas are not accessible at this time to people who harvest or eat fish, but access could become available in the future.
			N Fishing resource areas don't exist on site, or such areas are not accessible for fishing.
	Exposure score ►	**A**	

2 Severity		Answers/Scores	Tips
SW_Sv1	Is a PBT (persistent bioaccumulative toxic) chemical impacting or likely to impact surface water or sediment?	yes 10	Compare site contaminants with the PBT list in WAC 173-333-310(2). WAC 173-333-310 What chemicals or chemical groups are included on the PBT list?
			Y At least one PBT chemical is detected in surface water or sediment.
			M At least one unconfirmed PBT chemical is suspected in surface water or sediment.
			N No PBT chemical is detected in site surface water or sediment.
SW_Sv2	Is there a current impact from any extremely toxic chemical to a marine or freshwater ecological community?	maybe SKIP	Compare site confirmed or suspected chemicals with those listed as extremely toxic in the ChemTox table under the heading "Surface Water". ► ChemTox
			Y At least one extremely toxic chemical is detected in a marine or freshwater ecological community in surface water or sediment.
			M At least one unconfirmed extremely toxic chemical is suspected in surface water or sediment.
			N No extremely toxic chemical is detected in a freshwater or marine ecological community or in surface water or sediment.
SW_Sv3	Are any at-risk aquatic species on site at any time of year, or are any impacted by site contamination?	yes 10	The Washington DFW PHS on the Web maps offer basic information about known locations of biodiversity areas and corridors across Washington. Use the map to create an online "PHS Identify" report that includes on-site and nearby priority habitats and species. ► DFW PHS on the Web
			Y At least one at-risk aquatic species is present at the site and is impacted by site contamination.
			M Either of the following is likely to be true. • An at-risk aquatic species may be impacted, but more information is needed to confirm. • An at-risk aquatic species may access the site at any time of year, but more information is needed to confirm.
			N It isn't likely or possible for an at-risk aquatic species to be impacted or access the site at any time of the year.

Surface Water

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SW_Sv4	Is site contamination less than 2 miles upstream of a current or suitable surface drinking water source?	yes 10	Use the DOH Source Water Assessment Program (SWAP) Maps to find information on the locations and quality of vicinity and regional public surface drinking water supplies. ► DOH SWAP Maps
			Y Both of the following are true. • A surface drinking water supply intake is mapped within approximately 2 miles downstream of contamination. • The mapped surface water is of sufficient quality to support a suitable drinking water source.
			M Either of the following is true. • Potential surface drinking water use is suspected, based solely on the general site setting. • Downstream surface water is of sufficient quality to support a suitable drinking water source, but information sources don't confirm this.
			N The site isn't an upland source to a current or suitable drinking water source.
SW_Sv5	Is the site less than 2 miles upland of an aquatic recreational source?	yes 5	Recreational activities can occur in or on the water or be enhanced by being close to water, such as hiking, nature viewing, and hunting waterfowl. Use the following link to identify in-water and near-water recreational resources, such as fishing and shellfishing locations; public fishing piers; clam, mussel, and oyster beaches; marine fishing areas; lowland and high lakes; and water access areas. ► DFW Places to Go
			Y The site is within 2 miles upland of a known aquatic recreational source.
			M The site is within 2 miles upland of a water source that may be used for aquatic recreation, based on the general site setting.
			N The site isn't within 2 miles upland of a known aquatic recreational source.
	Severity score	**1**	

3 Select confidence level	low	Go to top

4 Enter comments

Unknown remaining surface water impact, sediment suspected to still be there.

Sediment

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1 Potential Exposure		Answers/Scores	Tips
SD_Ex1	Is sediment on site?	yes	Sediment can exist only if surface water conditions exist. Sediment accumulates when particulate matter settles at or below the ordinary high water mark, where surface water is present for a minimum of six consecutive weeks annually.
		continue	**Y** Sediment is in an on-site or adjacent area.
			M Sediment may be in an on-site or adjacent area, but more information is needed to confirm.
			N Sediment isn't observed on site or adjacent to the site.
SD_Ex2	Does a sediment contaminant concentration exceed either a sediment cleanup objective or cleanup screening level for chemistry?	maybe	Identify whether a site contaminant concentration exceeds a criterion for either a sediment cleanup objective (SCO) or a cleanup screening level (CSL) for chemistry in the Sediment Cleanup User's Manual (SCUM). ► see SCUM Table 8-1, p. 8-8
		B	
			Y Testing results indicate a contaminant concentration exceeds at least one criterion.
			M Testing results aren't available or adequate enough to rule out exceeding at least one criterion.
			N Testing results are adequate for screening and indicate no exceedance of a listed SCO or CSL.
SD_Ex3	Does a biological test result exceed an SCO, CSL, or performance standard for marine or freshwater criteria?	maybe	Adverse effects are defined when any biological test result for an SCO, CSL, or performance standard is exceeded for marine or freshwater chemistry. See the following tables in the Sediment Cleanup User's Manual (SCUM). ► see SCUM Table 8-2, p. 8-11, & Table 8-4, p. 8-14
		B	
			Y At least one biological test result exceeds a listed SCO, CSL, or performance standard in either SCUM Table 8-2 or 8-4.
			M Either of the following is true. • Bioassay testing has been performed, but the quality or quantity of the data is insufficient to rule out an impact. • Bioassay testing has not been performed, but an impact is suspected.
			N Testing results indicate no biological criterion is exceeded in either table.
SD_Ex4	Is there an impact to sediment from an on-site upland source that needs cleanup action?	maybe	Upland sediment sources could include various land uses and cover types, such as forest, cropland, pasture, construction sites, or roads. Natural and unnatural activities and processes occurring at these upland locations can impact a downslope or downgradient site.

Sediment

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	B	**Y**	Field observation or testing results confirm site sediment is impacted from an on-site upland source.

			M Any of the following is true. • Testing has been conducted, but results are unavailable, inadequate, or too limited to rule out an impact. • Too few samples have been tested to rule out a sediment impact. • An oil-like sheen is visible on site sediment, or LNAPL or DNAPL has been identified in surface water or in nearby soil or groundwater. • Contaminated surface water may pose a risk to site sediment, and relevant information isn't available to exclude a sediment concern.
			PF A timely cleanup of an upland portion of the site sediment isn't scheduled for imminent action or currently underway, leaving site sediment vulnerable to a potential future impact.
			N Site information confirms that site sediment isn't impacted by an on-site upland source.
SD_Ex5	Is there an impact to sediment from an off-site upland source - either historically or currently?	yes	Contamination sources might include groundwater, surface water, permitted and unpermitted discharges, spills, bank erosion, or other sources. Identify information about historical and remaining sources and transport pathways to sediment from off-site upland sources and releases. Use upland remedial investigation information to see if the transport pathways are complete or controlled.
		B	**Y** Current or historical impacts to sediment are confirmed from an off-site upland source.
			M Any of the following is true. • Upgradient groundwater contamination is known or suspected. • Bioassay testing information is unavailable or inadequate enough to rule out a sediment impact from an off-site upland source. • An unnatural oil-like sheen is observed on site surface water or nearby soil, or in groundwater from a suspected off-site upland source. • An off-site upland site storm water or wastewater outfall discharges, or has historically discharged to, site surface water. • An upland site has or had overwater activities (e.g., loading dock) that could impact site sediment. • Wood waste is, or has historically been observed, in site sediment (beach, intertidal, or subtidal areas). • Site surface water is contaminated from an off-site upland source.

Sediment

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PF	Site sediment currently is not impacted from a known off-site upland source but could become impacted in the future.
N	No off-site upland source has impacted, or has the potential to impact, site sediment.

Exposure score ► **B**

2 Severity		**Answers/Scores**	**Tips**
SD_Sv1	Does any portion of the site area overlay a 303(d)-listed waterbody in Category 2, 3, 4a, 4b, or 5?	yes 5	Ecology conducts water quality assessments in streams, lakes, and marine waters. Use Ecology's Water Quality Atlas Map to find information to answer this question. ► Water Quality Atlas Map
			Y At least a portion of the site is mapped within a 303(d)-listed water body.
			M The site is adjacent to a 303(d)-listed water body, or its estimated boundary intercepts a 303(d)-listed water body.
			N No portion of the site is mapped in or adjacent to a 303(d)-listed water body.
SD_Sv2	Are any PBTs in site sediment?	maybe continue	Compare contaminants identified in site sediment with chemicals listed in WAC 173-333-310[2] PBT list. Chemical source areas could include upland soil and upgradient groundwater. WAC 173-333-310. What chemicals or chemical groups are included on the PBT list?
			Y At least one Washington-listed PBT is confirmed in sediment.
			M Testing results aren't available, and a PBT source is known but not confirmed in upland soil or groundwater.
			N Sufficient information has been collected to show no PBT is present in sediment or an upland soil or groundwater source area.
SD_Sv3	Is any PBT concentration in sediment greater than any listed in SCUM Tables 10-1 or 11-1?	maybe 6	Compare site sediment contaminants with those listed in the following sources. ► see SCUM Table 10-1, p 10-21 and Table 11-1, p 11-6
			Y At least one PBT concentration in sediment exceeds any criterion listed in either table, based on sufficient testing results.
			M At least one PBT concentration in sediment likely exceeds any criterion listed in either table, but more information is needed to confirm.

			N No PBT concentration in sediment exceeds the criteria in either table, based on sufficient information to rule out the presence of any PBT chemical.
SD_Sv4	Does or has the site historically supported shellfish?	yes	Any marine bay or inlet likely has supported shellfish. Further, any river or any area on the Puget Sound is considered a shellfishing source. For more information on mapped shellfish habitat locations, see the following information sources. ► DFW Commercial wild stock geoduck clam fishery ► DOH Commercial Shellfish Map Viewer ► DOH Shellfish Safety Information ► DFW PHS on the Web
		5	**Y** Any of the following is true. • Shellfish are observed at the site. • The site is located on a shoreline of the Puget Sound or any shoreline of a stream. • The site historically has supported shellfish habitat.
			M Shellfish may have inhabited the site based on historical knowledge (e.g., tribal oral history) or could be supported after restoration.
			N Either of the following is true. • The site isn't located on a Puget Sound shoreline or on a shoreline of any stream. • No shellfish are present at the site, and shellfish habitat cannot be supported.
SD_Sv5	Is the site accessible for fishing?	yes	Fishing may be conducted in contaminated areas putting fishers at risk of exposure during fishing activities and potentially during consumption of their catch. Identify potential fishing resources and whether they are physically accessible to fishers. Assume shoreline areas of the Puget Sound are considered to to support fish-bearing habitat.
		5	**Y** Fishing resource areas are accessible to people who harvest or eat fish.
			M Fishing resource areas may be accessible to people who harvest or eat fish.
			N Fishing resource areas don't exist on site, or such areas are not accessible for fishing.

Sediment

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SD_Sv6	Is the site in an area that supports a sensitive or critical habitat?	yes	On-site habitat indicators might include eelgrass, shellfish, herring, forage fish, salmonids, spawning habitat, shorebirds, marine mammals, or endangered or threatened species. Access information about these habitat indicators from the following online resources. General priority habitat and species: ► DFW PHS on the Web Critical habitat (National Oceanic and Atmospheric Administration; NOAA): ► NOAA National NMFS ESA Critical Habitat Mapper Seagrass (Department of Natural Resources, DNR): ►DNR Puget Sound Eelgrass Monitoring Data Viewer ►DNR Nearshore Habitat Biotic Community Monitoring ►DNR Nearshore Habitat Inventory Shellfish: ► DFW Public clam, mussel, and oyster beaches ► DFW Commercial wild stock geoduck clam fishery ► DFW State Listed Species ► DOH Commercial Shellfish Map Viewer ► DOH Shellfish Safety Information Forage fish: ►DFW Coastal Intertidal Forage Fish Spawning Surveys
		5	
			Y Relevant information confirms at least one sensitive or critical habitat indicator is on site.
			M Relevant information isn't available, but at least one sensitive or critical habitat indicator may be on site.
			N Relevant information confirms no sensitive or critical habitat indicator is on site.
	Severity score	**1**	

3 **Select confidence level**	medium

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4 Enter comments

Unknown of current impacts, but spill remediation is suspected to have gotten most of the contamination

1 Potential Exposure		Answers/Scores	Tips
IA_Ex1	Is there an impact to indoor air that is greater than applicable MTCA cleanup or screening levels?	no	The indoor air point of compliance is throughout the site (WAC 173-340-750[6]). If screening levels are established, they may be cleanup levels or conservative values applied during an investigation such as Method B values protective of unrestricted land use. The ChemTox table lists volatiles that have CLARC screening levels for individual volatiles under both Methods B and C and for workers. To identify volatiles, look at chemicals marked as "yes" in the ChemTox table under the heading "Possible Vapor Intrusion". ► WAC 173-340-750 Cleanup standards to protect air quality ► ChemTox See the following guidance for additional information. ► CLARC "Vapor Intrusion Method B" Tab ► CLARC "Vapor Intrusion Method C" Tab ► CLARC "Vapor Intrusion Worker" Tab ► Guidance for Evaluating Soil Vapor Intrusion in Washington State, Investigation and Remedial Action
		D	**Y** Testing results confirm at least one volatile vapor level exceeds a screening level for indoor air, and an indoor or outdoor ambient source has been ruled out.
			M Any of the following is true. • Testing information is available, and at least one volatile vapor level exceeds screening levels, but ambient air or products in the building cannot be excluded as the source. • Subsurface media concentrations exceed vapor intrusion screening levels, but indoor air has not yet been sampled. • Testing information isn't available, but an unnatural odor is noted by occupants.
			N Any of the following is true. • No buildings exist on site at this time, so there is no "indoor air" on site. • Testing information isn't available, but vapor intrusion is neither suspected nor likely. • Testing information is available and confirms no volatile vapor level exceeds a screening level for indoor air.
IA_Ex2	Are volatile **petroleum** chemical vapor levels greater than applicable screening levels for soil gas or groundwater?	no	Volatile petroleum indicator chemicals include: benzene, toluene, ethylbenzene, and xylenes; ethylene dibromide; 1,2-dichloroethene; hexane; MTBE; and naphthalene. Default soil vapor screening distances for any of these chemicals are: 1) within 30 lateral feet of a building; or 2) within 15 vertical feet below a building's lowest point (e.g., crawl space or basement). Otherwise, site-specific vapor screening distances can be used, if established. Also, CLARC lists subsurface media screening levels protective of indoor air (Method B chemicals). See CLARC screening levels for subsurface media protective of indoor air. Also, see Ecology guidance for more information.

Indoor Air

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SKIP	► CLARC "Vapor Intrusion Method B" Tab ► Guidance for Evaluating Soil Vapor Intrusion in Washington State, Investigation and Remedial Action

			Y Both of the following are true. • At least one volatile petroleum chemical is in soil or groundwater within either default screening distance or a site-specific screening distance. • At least one volatile petroleum chemical level exceeds applicable soil vapor screening levels within either screening distance.
			M Both of the following are true. • At least one volatile petroleum chemical may be within a screening distance, but more information is needed to confirm. • Volatile petroleum chemical levels within a screening distance may exceed applicable soil vapor screening levels, but more information is needed to confirm.
			N Either of the following is true. • Volatile petroleum chemicals aren't present within any screening distance. • If present within any screening distance, volatile petroleum chemical levels do not exceed soil vapor screening levels.
IA_Ex3	Are volatile **non-petroleum** chemical vapor levels greater than applicable screening levels for soil gas or groundwater?	menu ▼ SKIP	Default vapor screening distances for volatile non-petroleum chemicals are within 100 lateral feet of a building or any vertical depth below a building's lowest point. Otherwise, site-specific vapor screening distances can be used, if established. Also, CLARC lists subsurface media screening levels protective of indoor air. See Ecology guidance for more information. ► CLARC "Vapor Intrusion Method B" Tab ► Guidance for Evaluating Soil Vapor Intrusion in Washington State, Investigation and Remedial Action
			Y Both of the following are true. • At least one volatile non-petroleum chemical is in soil or groundwater within either default screening distance or a site-specific screening distance. • At least one volatile non-petroleum chemical level exceeds applicable soil vapor screening levels within either screening distance.
			M Both of the following are true. • At least one volatile non-petroleum chemical may be within a screening distance, but more information is needed to confirm. • Volatile non-petroleum chemical levels within a screening distances may exceed applicable soil vapor screening levels, but more information is needed to confirm.
			N Either of the following is true. • Volatile non-petroleum chemicals aren't present within any screening distance. • If present within any screening distance, volatile non-petroleum chemical levels do not exceed soil vapor screening levels.

Indoor Air

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IA_Ex4	Is vapor intrusion being limited by mitigation measures?	menu ▼	Example mitigation measures might include HVAC system adjustments, sub-slab depressurization systems, and vapor barriers.
		SKIP	**Y** A mitigation measure or system operates such that, if compromised or turned off, an exposure could be reactivated.
			M More information is needed to confirm a mitigation measure or system is in place and effectively operating as intended.
			N No mitigation measure or system is in place or operation.
	Exposure score ►	**D**	

2	**Severity**	**Answers/Scores**	**Tips**
IA_Sv1	Is any **extremely** toxic volatile chemical in soil vapor or indoor air?	no	Compare confirmed or suspected volatile chemicals in indoor air that are: 1) marked as "yes" in the ChemTox table under the heading "Possible Vapor Intrusion"; and 2) identified as "**extremely**" under the heading "Soil, Groundwater, Air".
		SKIP	► ChemTox
			Y Any site volatile chemical is listed as extremely toxic in the ChemTox table.
			M Any chemical in indoor air may be listed as extremely toxic in the ChemTox table, but analytical data are not available to confirm.
			N No site volatile chemical is listed as extremely toxic in the ChemTox table.
IA_Sv2	Is any **very** toxic volatile chemical in soil vapor or indoor air?	menu ▼	Compare confirmed or suspected volatile chemicals in indoor air that are: 1) marked as "yes" in the ChemTox table under the heading "Possible Vapor Intrusion"; and 2) identified as "**very**" under the heading "Soil, Groundwater, Air".
		SKIP	► ChemTox
			Y Any site volatile chemical is listed as very toxic in the ChemTox table.
			M Any chemical in indoor air may be listed as very toxic in the ChemTox table, but analytical data are not available to confirm.
			N No site volatile chemical is listed as very toxic in the ChemTox table.
IA_Sv3	Are children or women of child-bearing age present in a potentially impacted building for extended periods of time?	menu ▼	When considering possible affects of contaminated indoor air: 1) children are people from 0 up to 6 years old; and 2) women of childbearing age are approximately 13 to 50 years old. Children and women of childbearing age who may reside, work, or be a long-term guest or regular visitor (e.g., nanny) are more sensitive to indoor air contamination than other people. An exposure could recur, if an on-site, operating mitigation system is later turned off. Consider the likelihood of an elementary or middle school population when answering. This is especially important for trichloroethene vapor in indoor air.

Indoor Air

D4		Go to comments
	SKIP	**Y** Children and women of child-bearing age likely occupy a potentially impacted building for extended periods of time.
		M Either of the following is true. • Building occupancy populations or uses are unknown. • A vapor plume is expanding or suspected to be expanding in the direction of a building occupied or used by children and women of child-bearing age.
		N Site buildings can't be occupied because of reasons such as inhabitability, condemnation, or blocked entry.
Severity score	**4**	

3 **Select confidence level**	high	Go to top

4 **Enter comments**
No suspected impact

Additional Factors identified

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1 Additional factor questions		Answers	Tips
AF_1	**Multi-chemical types:** Does the site have a screening or cleanup standard exceedance of multiple chemical types where cumulative or synergistic effects are a concern?	no	Potential cumulative or synergistic effects of **multiple types** of chemicals can be important factors during cleanup planning. These factors may not be directly related to specific exposure media or contact pathways and can include various chemical data groups. Filter chemical groups under the "Chemical Data Group" heading in CLARC's "Master CLARC Spreadsheet" tab. Common examples: carcinogenic polyaromatic hydrocarbons, herbicides, metals, polycarbonate biphenyls, pesticides, petroleum, volatile organic compounds, semi-volatile organic compounds, and others. ► CLARC "Master CLARC Spreadsheet" Tab
			Y Applicable multiple-chemical-type MTCA cleanup or screening levels are exceeded.
			M Applicable multiple-chemical-type MTCA cleanup or screening levels may be exceeded, but relevant information is needed to confirm.
			N No applicable multiple-chemical-type MTCA cleanup or screening levels are exceeded.
AF_2	**Risks to off-site people:** Are people and other living things off-site at risk of exposure?	yes	People and other living things can be at risk off site from contamination that has moved, or been moved, from the site to other areas, such as through "downwinder" exposures. Examples might include effluent or discharges from storm sewer systems, mining operations, manufacturing, or the Hanford Site. Consider whether off-site exposures might have occurred or are occurring from sources.
			Y People off site are at risk of exposure from site contamination.
			M An off-site exposure isn't confirmed but is likely.
			N Off-site exposures are unlikely.

Additional Factors identified

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AF_3	**Climate change impacts:** Is the site vulnerable to any high-threat climate change factor?	yes	Sites may be vulnerable to high-threat climate change impacts such as wildfire, flooding, landslide, and sea level rise. The level of threat can depend on the type of site (e.g., landfill, mine, etc.), media impacted (i.e., groundwater, sediment, soil), type of cleanup remedy (e.g., cap, treatment, etc.), and location. The vulnerability to climate change impacts increases for sites in specific locations, such as the following. • Flooding for sites located in either of the following. - in a floodplain - along or near a water body (i.e., marine shoreline, lake, creek, or river - notably one fed by snow melt) • Sea level rise for sites located along or near: 1) a marine shoreline; or 2) a tidally influenced stream or river. • Wildfire for sites located in or near a grassland or forested area. • Landslide for sites located in any of the following. - in or near an area of past landslides - in or near a steep area that recently experienced wildfire - atop an erosion-prone bluff For more information on potential vulnerabilities, see these Ecology references. ► Sustainable Remediation: Climate Change Resiliency and Green Remediation Read about potential vulnerabilities in chapter 3. ► TCP Maps See the climate change layers to visualize potential vulnerabilities.
			Y The site may be vulnerable to climate change impacts.
			M The site may be vulnerable to climate change impacts, but not enough relevant information is available to confirm.
			N The site isn't likely to be vulnerable to climate change impacts.
AF_4	**Plant and animal tissue:** Is relevant testing information available that reports contaminant concentrations in plant or animal tissue from or near the site?	no	While testing information for plant and animal tissue is rare or often unavailable, such information is useful for assessing potential risks to people and other living things that consume plants and animals as food sources in the area.
			Y Testing information is available.
			N Testing information isn't available.

Additional Factors identified

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Flooding impact within 100 year storm boundary. Spill impacted lots of people off-site	

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
acenaphthene			extremely (only freshwater)	83-32-9
acephate		extremely	extremely (only freshwater)	30560-19-1
acetaldehyde	yes		extremely (only freshwater)	75-07-0
acetochlor				34256-82-1
acetone				67-64-1
acetone cyanohydrin		very		75-86-5
acetonitrile	yes			75-05-8
acetophenone				98-86-2
acifluorfen, sodium				62476-59-9
acrolein	yes	extremely		107-02-8
acrylamide		very		79-06-1
acrylic acid		very		79-10-7
acrylonitrile	yes	very		107-13-1
alachlor			extremely	15972-60-8
alar				1596-84-5
aldicarb		very	extremely	116-06-3
aldicarb sulfone		very		1646-88-4
aldrin		extremely	extremely	309-00-2
ally				74223-64-6
allyl alcohol		extremely		107-18-6
allyl chloride	yes	very		107-05-1
aluminum		very		7429-90-5
aluminum phosphide		extremely		20859-73-8
amdro			extremely	67485-29-4
ametryn				834-12-8
aminobiphenyl;4-		extremely		92-67-1
aminophenol;m-				591-27-5
amitraz		very		33089-61-1
ammonia				7664-41-7
ammonium perchlorate		very		7790-98-9
ammonium sulfamate				7773-06-0
aniline		very	extremely (only freshwater)	62-53-3
anthracene			extremely	120-12-7
antimony		extremely		7440-36-0
antimony pentoxide		very		1314-60-9
antimony potassium tartrate		very		28300-74-5
antimony tetroxide		extremely		1332-81-6
antimony trioxide		extremely		1309-64-4

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
apollo			extremely	74115-24-5
aramite			extremely	140-57-8
arsenic		extremely		7440-38-2
arsine		extremely		7784-42-1
asbestos		extremely		1332-21-4
assure				76578-14-8
asulam				3337-71-1
atrazine			extremely	1912-24-9
avermectin B1		extremely	extremely	65195-55-3
azobenzene		very		103-33-3
barium and compounds		very		7440-39-3
baygon		very		114-26-1
bayleton				43121-43-3
baythroid				68359-37-5
benefin				1861-40-1
benomyl				17804-35-2
bentazon				25057-89-0
benzaldehyde				100-52-7
benzene	yes	very		71-43-2
benzenethiol		very		108-98-5
benzidine		extremely		92-87-5
benzo[a]anthracene		use cPAH TEQ - see benzo(a)pyrene		56-55-3
benzo[a]pyrene (also use for cPAH TEQ)		Extremely		50-32-8
benzo[b]fluoranthene		use cPAH TEQ - see benzo(a)pyrene		205-99-2
benzo[e]pyrene		extremely		192-97-2
benzo[k]fluoranthene		use cPAH TEQ - see benzo(a)pyrene		207-08-9
benzoic acid				65-85-0
benzotrichloride		extremely		98-07-7
benzyl alcohol				100-51-6
benzyl chloride	yes	very		100-44-7
beryllium		extremely		7440-41-7
beta-chloronaphthalene				91-58-7
bidrin		extremely		141-66-2
biphenthrin				82657-04-3
biphenyl;1,1-		very		92-52-4
bis(2-chloro-1-methyl-ethyl)ether				108-60-1
bis(2-chloroethoxy)methane		very		111-91-1
bis(2-chloroethyl)ether		very		111-44-4
bis(2-ethylhexyl) phthalate (DEHP)				117-81-7

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
bis(chloromethyl)ether		extremely		542-88-1
bisphenol a				80-05-7
boron				7440-42-8
bromate		very		15541-45-4
bromoacetic acid				79-08-3
bromobenzene	yes			108-86-1
bromochloromethane				74-97-5
bromodichloromethane	yes			75-27-4
bromoethene	yes	very		593-60-2
bromoform	yes			75-25-2
bromomethane	yes	very		74-83-9
bromophos				2104-96-3
bromoxynil				1689-84-5
bromoxynil octanoate				1689-99-2
butadiene;1,3-	yes	extremely		106-99-0
butanol;n-				71-36-3
butyl alcohol;tert-				75-65-0
butyl benzyl phthalate				85-68-7
butylate				2008-41-5
butylphthalyl butylglycolate				85-70-1
butyric acid;4-(2-methyl-4-chlorophenoxy)-				94-81-5
cacodylic acid				75-60-5
cadmium		extremely	extremely (only freshwater)	7440-43-9
calcium cyanide		very		592-01-8
caprolactam		very		105-60-2
captafol		very		6/1/2425
captan				133-06-2
carbaryl				63-25-2
carbofuran				1563-66-2
carbon disulfide	yes			75-15-0
carbon tetrachloride	yes	very		56-23-5
carbosulfan				55285-14-8
carboxin				5234-68-4
cerium oxide and cerium compounds		very		1306-38-3
chloral hydrate				302-17-0
chloramben				133-90-4
chloranil				118-75-2
chlordane		very	extremely	12789-03-6
chlordane (alpha)		very		5103-71-9
chlordane (gamma)		very		5103-74-2
chlordecone (kepone)		extremely		143-50-0

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
chloride				16887-00-6
chlorimuron-ethyl				90982-32-4
chlorine		extremely		7782-50-5
chlorine cyanide				506-77-4
chlorine dioxide		extremely		10049-04-4
chlorite				7758-19-2
chloro-1,1-difluoroethane;1-				75-68-3
chloro-1,3-butadiene;2-	yes			126-99-8
chloro-2-methylaniline hydrochloride;4-				3165-93-3
chloro-2-methylaniline;4-		very		95-69-2
chloroacetic acid		very		79-11-8
chloroacetophenone;2-		extremely		532-27-4
chloroaniline;p-		very		106-47-8
chlorobenzene	yes			108-90-7
chlorobenzilate				510-15-6
chlorobenzoic acid;p-				74-11-3
chlorobenzotrifluoride;4-		very		98-56-6
chlorobutane;1-				109-69-3
chlorocresol				59-50-7
chlorodifluoromethane	yes			75-45-6
chloroform	yes			67-66-3
chloromethane	yes			74-87-3
chloromethyl methyl ether		extremely		107-30-2
chloronitrobenzene;o-		extremely		88-73-3
chloronitrobenzene;p-		very		100-00-5
chlorophenol; 2-				95-57-8
chlorothalonil				1897-45-6
chlorotoluene;o-				95-49-8
chlorotoluene;p-				106-43-4
chlorpropham				101-21-3
chlorpyrifos		very	extremely	2921-88-2
chlorpyrifos-methyl				5598-13-0
chlorsulfuron				64902-72-3
chlorthiophos		very		60238-56-4
chromium (III)				16065-83-1
chromium (total)				7440-47-3
chromium (VI)		extremely		18540-29-9
chrysene		use cPAH TEQ - see benzo(a)pyrene		218-01-9
cobalt		extremely		7440-48-4
coke oven emissions				E649830
copper				7440-50-8

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
copper cyanide				544-92-3
cresol;m-				108-39-4
cresol;o-				95-48-7
cresol;p-				106-44-5
cresols				1319-77-3
crotonaldehyde		very		123-73-9
cumene	yes			98-82-8
cyanazine		very		21725-46-2
cyanide		very		57-12-5
cyanogen		very		460-19-5
cyanogen bromide				506-68-3
cyclohexane	yes			110-82-7
cyclohexanone	yes			108-94-1
cyclohexylamine				108-91-8
cyromazine				66215-27-8
dacthal				1861-32-1
dalapon, sodium salt				75-99-0
danitol				39515-41-8
DDD		extremely		72-54-8
DDE		extremely		72-55-9
DDT		very	extremely	50-29-3
decabromodiphenyl ether (PBDE-209)				1163-19-5
demeton		extremely	extremely	8065-48-3
di(2-ethylhexyl)adipate				103-23-1
diallate				2303-16-4
diazinon		very	extremely	333-41-5
dibenz[a,h]anthracene		use cPAH TEQ - see benzo(a)pyrene		53-70-3
dibenzofuran		very		132-64-9
dibromo-3-chloropropane;1,2-	yes	extremely		96-12-8
dibromoacetic acid				631-64-1
dibromobenzene;1,4-				106-37-6
dibromochloromethane				124-48-1
di-butyl phthalate				84-74-2
dicamba				1918-00-9
dichloramine				9/7/3400
dichloro-2-butene;1,4-				764-41-0
dichloro-2-butene;trans-1,4-				110-57-6
dichloroacetic acid		very		79-43-6
dichlorobenzene;1,2-	yes			95-50-1
dichlorobenzene;1,3-				541-73-1
dichlorobenzene;1,4-	yes			106-46-7

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
dichlorobenzidine;3,3'-		very		91-94-1
dichlorodifluoromethane	yes			75-71-8
dichloroethane;1,1-	yes			75-34-3
dichloroethane;1,2- (EDC)	yes			107-06-2
dichloroethylene;1,1-	yes			75-35-4
dichloroethylene;1,2-,cis	yes	very		156-59-2
dichloroethylene;1,2-,trans	yes			156-60-5
dichlorophenol;2,4-		very		120-83-2
dichlorophenoxyacetic acid;2,4-				94-75-7
dichloropropane;1,2-	yes	very		78-87-5
dichloropropane;1,3-				142-28-9
dichloropropanol;2,3-		very		616-23-9
dichloropropene;1,3-	yes			542-75-6
dichlorvos		very		62-73-7
dicyclopentadiene		extremely		77-73-6
dieldrin		extremely	extremely	60-57-1
diesel, and/or oil range				
diethyl phthalate				84-66-2
diethylene glycol monobutyl ether		extremely		112-34-5
diethylene glycol monoethyl ether		extremely		111-90-0
diethylformamide		very		617-84-5
diethylstilbesterol		extremely		56-53-1
difenzoquat				43222-48-6
diflubenzuron				35367-38-5
difluoroethane;1,1-	yes			75-37-6
diisopropyl ether				108-20-3
diisopropyl methylphosphonate				1445-75-6
dimethipin				55290-64-7
dimethoate		very		60-51-5
dimethoxybenzidine;3,3'-		very		119-90-4
dimethyl phthalate				131-11-3
dimethyl terephthalate				120-61-6
dimethylaniline hydrochloride;2,4-				21436-96-4
dimethylaniline;2,4-		very		95-68-1
dimethylaniline;N,N-		very		121-69-7
dimethylbenzidine;3,3'-		extremely		119-93-7
dimethylformamide;N,N-				68-12-2
dimethylhydrazine;1,1-		extremely		57-14-7
dimethylhydrazine;1,2-		extremely		540-73-8
dimethylphenol;2,4-				105-67-9
dimethylphenol;2,6-		very		576-26-1
dimethylphenol;3,4-		very		95-65-8

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
dinitrobenzene;m-		extremely		99-65-0
dinitrobenzene;o-		extremely		528-29-0
dinitrobenzene;p-		extremely		100-25-4
dinitro-o-cyclohexyl phenol;4,6-		very		131-89-5
dinitrophenol;2,4-		very		51-28-5
dinitrophenols				25550-58-7
dinitrotoluene mixture; 2,4-/2,6-		very		E1615210
dinitrotoluene, 2-amino-4,6-		extremely		35572-78-2
dinitrotoluene, 4-amino-2,6-		extremely		19406-51-0
dinitrotoluene;2,4-		very		121-14-2
dinitrotoluene;2,6-		extremely		606-20-2
di-n-octyl phthalate				117-84-0
dinoseb		very		88-85-7
dioxane;1,4-	yes			123-91-1
diphenamid				957-51-7
diphenylamine				122-39-4
diphenylhydrazine;1,2-		very		122-66-7
diquat		very		2764-72-9
direct black 38		extremely		1937-37-7
direct blue 6		extremely		2602-46-2
direct brown 95		extremely		16071-86-6
disulfoton		extremely		298-04-4
dithiane;1,4-				505-29-3
diuron		very		330-54-1
DNOC		extremely		534-52-1
dodine				10/3/2439
endosulfan			extremely	115-29-7
endosulfan sulfate				1031-07-8
endosulfan;alpha			extremely	959-98-8
endosulfan;beta			extremely	33213-65-9
endothall				145-73-3
endrin		extremely	extremely	72-20-8
endrin aldehyde				7421-93-4
epichlorohydrin		very		106-89-8
epoxybutane				106-88-7
ethephon				16672-87-0
ethion		very		563-12-2
ethoxyethanol acetate;2-				111-15-9
ethoxyethanol;2-				110-80-5
ethyl acetate	yes			141-78-6
ethyl acrylate	yes			140-88-5
ethyl chloride	yes			75-00-3

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
ethyl dipropylthiocarbamate;S-				759-94-4
ethyl ether				60-29-7
ethyl methacrylate	yes			97-63-2
ethyl p-nitrophenyl phenylphosphorothioate		extremely		2104-64-5
ethyl tertiary butyl ether (ETBE)	yes			637-92-3
ethylbenzene	yes			100-41-4
ethylene cyanohydrin				109-78-4
ethylene diamine				107-15-3
ethylene dibromide (EDB)	yes	very		106-93-4
ethylene glycol				107-21-1
ethylene glycol monobutyl ether (EGBE)				111-76-2
ethylene oxide	yes	extremely		75-21-8
ethylene thiourea		extremely		96-45-7
ethylphthalyl ethyl glycolate				84-72-0
express				101200-48-0
fenamiphos		extremely		22224-92-6
fluometuron				2164-17-2
fluoranthene				206-44-0
fluorene				86-73-7
fluoride				16984-48-8
fluridone				59756-60-4
flurprimidol				56425-91-3
flutolanil				66332-96-5
fluvalinate				69409-94-5
folpet				133-07-3
fomesafen				72178-02-0
fonofos		very		944-22-9
formaldehyde				50-00-0
formic acid		extremely		64-18-6
fosetyl-al				39148-24-8
furan		very		110-00-9
furazolidone		very		67-45-8
furfural		very		98-01-1
furium		very		531-82-8
furmecyclox				60568-05-0
glufosinate-ammonium				77182-82-2
glycidaldehyde		extremely		765-34-4
glyphosate				1071-83-6
guthion		very	extremely	86-50-0
haloxyfop-methyl		extremely		69806-40-2
harmony				79277-27-3
heptachlor	yes	extremely	extremely	76-44-8

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
heptachlor epoxide		extremely	extremely	1024-57-3
heptane;n-	yes	extremely		142-82-5
hexabromobenzene		very		87-82-1
hexabromodiphenyl ether; 2,2',4,4',5,5'- (PBDE-153)		extremely		68631-49-2
hexachlorobenzene	yes	extremely		118-74-1
hexachlorobutadiene	yes	very		87-68-3
hexachlorocyclohexane;alpha		extremely		319-84-6
hexachlorocyclohexane;beta-		very		319-85-7
hexachlorocyclohexane;technical		very		608-73-1
hexachlorocyclopentadiene	yes	extremely		77-47-4
hexachlorodibenzo-p-dioxin, mixture		extremely		34465-46-8
hexachloroethane	yes	very		67-72-1
hexachlorophene		extremely		70-30-4
hexafluoropropylene oxide dimer acid (HFPO-DA; GenX)		extremely		13252-13-6
hexamethylene diisocyanate;1,6-		extremely		822-06-0
hexane;n-	yes			110-54-3
hexanone;2-	yes			591-78-6
hexazinone				51235-04-2
hydrazine		extremely		302-01-2
hydrazine sulfate		very		10034-93-2
hydrogen chloride				7647-01-0
hydrogen cyanide		very		74-90-8
hydrogen sulfide	yes	very		6/4/7783
hydroquinone				123-31-9
imazalil				35554-44-0
imazaquin				81335-37-7
indeno[1,2,3-cd]pyrene		use cPAH TEQ - see benzo(a)pyrene		193-39-5
iprodione				36734-19-7
iron				7439-89-6
isobutyl alcohol				78-83-1
isophorone				78-59-1
isopropalin				33820-53-0
isopropanol				67-63-0
isopropyl methyl phosphonic acid				1832-54-8
isoxaben				82558-50-7
lactofen				77501-63-4
lead		extremely		7439-92-1
lindane		extremely	extremely	58-89-9
linuron				330-55-2
lithium		very		7439-93-2

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
lithium perchlorate		very		3/9/7791
londax				83055-99-6
malathion			extremely	121-75-5
maleic anhydride		very		108-31-6
maleic hydrazide				123-33-1
malononitrile		extremely		109-77-3
mancozeb				1/7/8018
maneb				12427-38-2
manganese (diet or non-diet source)		extremely		7439-96-5
mephosfolan		extremely		950-10-7
mepiquat chloride				24307-26-4
mercuric chloride		extremely		7487-94-7
mercury	yes	extremely	extremely	7439-97-6
merphos		extremely		150-50-5
metalaxyl				57837-19-1
methacrylonitrile	yes	extremely		126-98-7
methamidosphos		extremely		10265-92-6
methanol	yes			67-56-1
methidathion		very		950-37-8
methomyl				16752-77-5
methoxy-5-nitroaniline;2-				99-59-2
methoxychlor			extremely	72-43-5
methoxyethanol acetate;2-		very		110-49-6
methoxyethanol;2-				109-86-4
methyl acetate				79-20-9
methyl acrylate				96-33-3
methyl ethyl ketone	yes			78-93-3
methyl isobutyl ketone	yes			108-10-1
methyl mercury		extremely	extremely	22967-92-6
methyl methacrylate	yes			80-62-6
methyl naphthalene;1-				90-12-0
methyl naphthalene;2-		very		91-57-6
methyl parathion		extremely		298-00-0
methyl styrene				25013-15-4
methyl styrene, alpha				98-83-9
methyl tert-butyl ether (MTBE)	yes			1634-04-4
methyl-4-chlorophenoxy-acetic acid;2-		very		94-74-6
methyl-5-nitroaniline;2-				99-55-8
methylaniline hydrochloride;2-				636-21-5
methylaniline;2-				95-53-4
methylene bis(2-chloroaniline);4,4'-		very		101-14-4
methylene bis(n,n'-dimethyl)aniline;4,4'-				101-61-1

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
methylene bromide	yes	very		74-95-3
methylene chloride	yes			75-09-2
methylene diphenyl diisocyanate (MDI)		very		101-68-8
methylene diphenyl diisocyanate (polymeric) (PMDI)		very		9016-87-9
methylenebisbenzenamine;4,4-		very		101-77-9
methylhydrazine		extremely		60-34-4
metolachlor				51218-45-2
metribuzin				21087-64-9
mirex	yes	extremely	extremely	2385-85-5
molinate		very		2212-67-1
molybdenum		very		7439-98-7
monochloramine				10599-90-3
naled		very		300-76-5
naphthalene	yes	very		91-20-3
napropamide				15299-99-7
n-butylbenzene				104-51-8
nickel refinery dust		extremely		E715532
nickel soluble salts		extremely		7440-02-0
nickel subsulfide		extremely		12035-72-2
nitrate (measured as nitrogen)				14797-55-8
nitrite (measured as nitrogen)				14797-65-0
nitroaniline, 2-		extremely		88-74-4
nitroaniline, 4-		very		100-01-6
nitrobenzene		very		98-95-3
nitrofurantoin				67-20-9
nitrofurazone				59-87-0
nitroglycerin		extremely		55-63-0
nitroguanidine				556-88-7
nitropropane;2-	yes	very		79-46-9
nitrosodiethanolamine;N-		very		1116-54-7
nitrosodiethylamine;N-		extremely		55-18-5
nitrosodimethylamine;N-		extremely		62-75-9
nitroso-di-n-butylamine;N-		extremely		924-16-3
nitroso-di-n-propylamine;N-		extremely		621-64-7
nitrosodiphenylamine;N-				86-30-6
nitroso-n-ethylurea;n-		extremely		759-73-9
nitroso-N-methylethylamine;N-		extremely		10595-95-6
nitroso-n-methylurea,n-		extremely		684-93-5
nitrosopyrrolidine;N-		extremely		930-55-2
nitrotoluene, m-		extremely		99-08-1
nitrotoluene, o-		very		88-72-2
nitrotoluene, p-		very		99-99-0

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
nonylphenol				84852-15-3
norflurazon		very		27314-13-2
nustar		very		85509-19-9
octabromodiphenyl ether (OctaBDE)				32536-52-0
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine				2691-41-0
octamethylpyrophosphoramide		very		152-16-9
oryzalin				19044-88-3
oxadiazon				19666-30-9
oxamyl				23135-22-0
oxyfluorfen				42874-03-3
paclobutrazol				76738-62-0
paraquat dichloride		very		1910-42-5
parathion			extremely	56-38-2
pebulate				1114-71-2
pendimethalin				40487-42-1
pentabromo-6-chloro-cyclohexane;1,2,3,4,5-				87-84-3
pentabromodiphenyl ether; 2,2',4,4',5- (PBDE-99)		extremely		60348-60-9
pentabromodiphenyl ethers (PentaBDE)		very		32534-81-9
pentachlorobenzene		very		608-93-5
pentachloroethane				76-01-7
pentachloronitrobenzene		very		82-68-8
pentachlorophenol				87-86-5
pentaerythritol tetranitrate (PETN)				78-11-5
pentane;n-				109-66-0
perchlorate and perchlorate salts		very		14797-73-0
perfluorobutanesulfonic acid (PFBS)		extremely		375-73-5
perfluorobutanoic acid (PFBA)		very		375-22-4
perfluorohexanesulfonic acid (PFHxS)		extremely		355-46-4
perfluorononanoic acid (PFNA)		extremely		375-95-1
perfluorooctanesulfonic acid (PFOS)		extremely		1763-23-1
perfluorooctanoic acid (PFOA)		extremely		335-67-1
permethrin				52645-53-1
phenmedipham				13684-63-4
phenol				108-95-2
phenylenediamine, p-		very		106-50-3
phenylenediamine;m-				108-45-2
phenylenediamine;o-		very		95-54-5
phenylmercuric acetate		extremely		62-38-4
phenylphenol;2-				90-43-7
phorate		extremely		298-02-2
phosgene	yes	extremely		75-44-5
phosmet				732-11-6

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
phosphine		extremely		7803-51-2
phosphoric acid				7664-38-2
phosphorus		extremely		7723-14-0
phthalic acid;p-				100-21-0
phthalic anhydride				85-44-9
picloram				2/1/1918
pirimiphos-methyl		very		29232-93-7
polybrominated biphenyls		extremely		36355-01-8
polychlorinated biphenyls (PCBs)		extremely	extremely	1336-36-3
potassium cyanide		very		151-50-8
potassium perchlorate		very		7778-74-7
potassium silver cyanide				506-61-6
prochloraz				67747-09-5
profluralin				26399-36-0
prometon				1610-18-0
prometryn				7287-19-6
pronamide				23950-58-5
propachlor				1918-16-7
propanil				709-98-8
propargite				2312-35-8
propargyl alcohol		very		107-19-7
propazine				139-40-2
propham				122-42-9
propiconazole				60207-90-1
propionaldehyde	yes			123-38-6
propionic acid;(2-methyl-4-chlorophenoxy)2-		very		93-65-2
propylbenzene;n-	yes			103-65-1
propylene glycol				57-55-6
propylene glycol dinitrate;1,2-		extremely		6423-43-4
propylene glycol monoethyl ether				52125-53-8
propylene glycol monomethyl ether (PGME)				107-98-2
propylene oxide				75-56-9
pursuit				81335-77-5
pydrin				51630-58-1
pyrene				129-00-0
pyridine		very		110-86-1
quinalphos		very		13593-03-8
quinoline		very		91-22-5
radium 226		extremely	extremely	13982-63-3
radium 228		extremely	extremely	15262-20-1
RDX		very		121-82-4
refractory ceramic fibers		extremely		E715557

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
resmethrin				10453-86-8
ronnel				299-84-3
rotenone		very		83-79-4
s,s,s-tributylphosphorotrithioate		extremely		78-48-8
savey				78587-05-0
sec-butylbenzene				135-98-8
selenious acid				7783-00-8
selenium and compounds				7782-49-2
sethoxydim				74051-80-2
silver			extremely	7440-22-4
silver cyanide				506-64-9
simazine				122-34-9
sodium azide		very		26628-22-8
sodium cyanide		very		143-33-9
sodium diethyldithiocarbamate				148-18-5
sodium fluoroacetate		extremely		62-74-8
sodium metavanadate		very		13718-26-8
sodium perchlorate		very		7601-89-0
strontium				7440-24-6
strychnine		extremely		57-24-9
styrene	yes			100-42-5
systhane				88671-89-0
TCDD;2,3,7,8- (use for dioxin/furan TEQ)		extremely		1746-01-6
tebuthiuron				34014-18-1
temephos				3383-96-8
terbacil				5902-51-2
terbufos		extremely		13071-79-9
terbutryn		very		886-50-0
tert-butylbenzene				98-06-6
tetrabromodiphenyl ether 2,2',4,4' (PBDE-47)		extremely		5436-43-1
tetrachlorobenzene;1,2,4,5-		extremely		95-94-3
tetrachloroethane;1,1,1,2-	yes			630-20-6
tetrachloroethane;1,1,2,2-	yes			79-34-5
tetrachloroethylene (PCE)	yes			127-18-4
tetrachlorophenol;2,3,4,6-				58-90-2
tetrachlorotoluene;p,a,a,a,-		extremely		5216-25-1
tetrachlorvinphos				961-11-5
tetraethyl dithiopyrophosphate		very		3689-24-5
tetraethyl lead		extremely		78-00-2
tetrafluoroethane;1,1,1,2-				811-97-2
tetrahydrofuran	yes			109-99-9
thallic oxide		extremely		1314-32-5

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
thallium acetate		extremely		563-68-8
thallium carbonate		extremely		6533-73-9
thallium chloride		extremely		7791-12-0
thallium nitrate		extremely		10102-45-1
thallium selenite		extremely		12039-52-0
thallium(I) sulfate		extremely		7446-18-6
thallium, soluble salts		extremely		7440-28-0
thiobencarb				28249-77-6
thiocyanomethylthiobenzothiazole;2-				21564-17-0
thiofanox		extremely		39196-18-4
thiophanate-methyl				23564-05-8
thiram				137-26-8
tin				7440-31-5
TNT				118-96-7
toluene	yes			108-88-3
toluene diisocyanate mixture;2,4-/2,6-		extremely		26471-62-5
toluene-2,4-diisocyanate		extremely		584-84-9
toluene-2,6-diisocyanate		extremely		91-08-7
toluenediamine;2,5-				95-70-5
toluidine;p-				106-49-0
Total Petroleum Hydrocarbons (TPH), gas,	some			none
toxaphene		extremely	extremely	8001-35-2
TP;2,4,5-				93-72-1
tralomethrin				66841-25-6
triallate				2303-17-5
triasulfuron				82097-50-5
tribromobenzene;1,2,4-				615-54-3
tributyltin		very	extremely	688-73-3
tributyltin oxide		extremely		56-35-9
trichloramine				10025-85-1
trichloro-1,2,2-trifluoroethane;1,1,2-	yes			76-13-1
trichloroacetic acid				76-03-9
trichloroaniline hydrochloride;2,4,6-				33663-50-2
trichloroaniline;2,4,6-		extremely		634-93-5
trichlorobenzene;1,2,3-		very		87-61-6
trichlorobenzene;1,2,4-	yes	very		120-82-1
trichloroethane;1,1,1-	yes			71-55-6
trichloroethane;1,1,2-	yes	very		79-00-5
trichloroethylene (TCE)	yes	very		79-01-6
trichlorofluoromethane	yes			75-69-4
trichlorophenol;2,4,5-				95-95-4
trichlorophenol;2,4,6-		very		88-06-2

Chemical Toxicity Reference Table				
Chemical Name	Possible Vapor Intrusion	Toxicity Category		CAS #
		Soil, Groundwater, Indoor Air	Surface Water	
trichlorophenoxyacetic acid;2,4,5-				93-76-5
trichloropropane;1,1,2-				598-77-6
trichloropropane;1,2,3-	yes	extremely		96-18-4
trichloropropene;1,2,3-		extremely		96-19-5
tridiphane		very		58138-08-2
triethylamine	yes			121-44-8
trifluralin				1582-09-8
trihalomethanes, (total) (TTHMs)				none
trimethyl phosphate				512-56-1
trimethylbenzene;1,2,3-	yes			526-73-8
trimethylbenzene;1,2,4-	yes			95-63-6
trimethylbenzene;1,3,5-	yes			108-67-8
trinitrobenzene;1,3,5-				99-35-4
trinitrophenylmethylnitramine		very		479-45-8
uranium, soluble salts		extremely		7440-61-1
vanadium		extremely		7440-62-2
vanadium pentoxide		extremely		1314-62-1
vernam		very		1929-77-7
vinclozolin		very		50471-44-8
vinyl acetate	yes			108-05-4
vinyl chloride	yes	extremely		75-01-4
warfarin		extremely		81-81-2
white mineral oil				8012-95-1
xylene;m-				108-38-3
xylene;o-				95-47-6
xylene;p-				106-42-3
xylenes	yes			1330-20-7
zinc				7440-66-6
zinc cyanide				557-21-1
zinc phosphide		extremely		1314-84-7
zineb				12122-67-7