
Central Coast Regional Water Quality Control Board

October 20, 2020

Rhine LP
Mr. Chris Mathys
2304 W. Shaw Avenue, Suite 102
Fresno, CA 93711
Email: mathys@orofinancial.net

Sent via Electronic Mail only

Morro94, LLC
Mr. Rob Solley
2141 Tuolumne Street, Suite J
Fresno, CA 93721
Email: solley@sbcglobal.net

Dear Mr. Mathys and Mr. Solley:

SITE CLEANUP PROGRAM: FORMER ESTERO BAY DEFENSE FUEL SUPPLY POINT, 3300 PANORAMA DRIVE, MORRO BAY, SAN LUIS OBISPO COUNTY – CONDITIONAL CONCURRENCE TO WORKPLAN IMPLEMENTATION

On December 20, 2019, Rhine LP and Morro94, LLC, current property owners (owners), requested California Environmental Protection Agency regulatory oversight of a redevelopment project at the former Estero Bay Defense Fuel Supply Point (DFSP) located at 3300 Panorama Drive, Morro Bay (Site)¹. On June 15, 2020, the owners entered into a Site Cleanup Program Cost Recovery Agreement with the Central Coast Regional Water Quality Control Board (Central Coast Water Board) to reimburse regulatory staff oversight costs involved with oversight of cleanup and abatement efforts at the Site. The Central Coast Water Board has reviewed the Department of Defense file, Site Assessment Workplan (Workplan)² dated July 24, 2020, and the Health and Safety Plan³ dated July 28, 2020 prepared by Analytical Consulting Group, Inc. (ACG) submitted on behalf of the property owners. The Central Coast Water Board conditionally approves the Workplan, provided the property owners comply with the requirements listed below. The property owners may implement the Workplan and are required to submit their findings in a summary report **no later than January 4, 2021.**

¹ All Central Coast Water Board files for this case are on the State Water Resources Control Board's (State Water Board) GeoTracker website: <http://geotracker.waterboards.ca.gov/?qid=T10000014042> and <http://geotracker.waterboards.ca.gov/?qid=T10000009417>.

² The July 24, 2020, Site Assessment Workplan: <https://geotracker.waterboards.ca.gov/?surl=to4mf>

³ The July 28, 2020, Health and Safety Plan: <https://geotracker.waterboards.ca.gov/?surl=usxw4>

DR. JEAN-PIERRE WOLFF, CHAIR | MATTHEW T. KEELING, EXECUTIVE OFFICER

The Central Coast Water Board does not have the authority to approve or disapprove of the Health and Safety Plan; consequently, the Central Coast Water Board will not provide any comments on the plan.

Background

The DFSP facility was formerly owned by the federal government and delivered JP-5 jet fuel from the Pacific coast to the LeMoore Naval Air Station (NAS). The facility consisted of an offshore tanking mooring point in Estero Bay, 0.5-mile submerged pipeline, a 0.35-mile length of pipeline through the town of Morro Bay, a 10-acre former bulk fuel tank farm, and a 98-mile pipeline from Morro Bay to the LeMoore NAS. The Site consists of the 10-acre former bulk fuel tank farm which included two above ground storage tanks (AGTs) containing jet fuel⁴, one water storage tank, and one pump station.

In 1991, the Defense Logistics Agency (DLA) began to decommission the facility. From 1991 to 1996, the DLA's consultant conducted environmental activities at the Site. In February 1996, the DLA proposed a risk assessment-based case closure. Because the Site consisted primarily of petroleum hydrocarbon waste discharges, the Department of Toxic Substances Control (DTSC) asked the Central Coast Water Board to evaluate the case for closure. The Central Coast Water Board concurred with the DLA's risk-based approach and agreed remaining petroleum hydrocarbons beneath the Site would ultimately biodegrade and no longer pose a risk to the environment. On December 20, 1996, DTSC granted case closure and recommended reassessing the Site for potential human health exposure to benzene if the land use changes from its current use (i.e. open space) to a residential scenario.

In 2018, the property owners removed the two ASTs, water tank, fuel pumping station, and associated piping⁵ under County of San Luis Obispo and City of Morro Bay regulatory oversight. As part of their application and as part of the Workplan, the property owners requested the Central Coast Water Board open a new Site Cleanup Program case and asked for case closure for unrestricted use (i.e. residential use) at the Site.⁶

Central Coast Water Board Workplan Review Comments and Requirements

The objectives of the Workplan are to assess the current condition of previously identified pollutants on the Site, to assess areas of the Site that have not been previously investigated due to the presence of AGTs and other improvements, and to provide information to support the preparation of a Site-specific Human Health Risk Assessment.

⁴ Each AST contained 125,000-barrels or 5,250,000 gallons of JP5 jet fuel.

⁵ April 21, 2019, *Post-Removal Soil Assessment Report Removal of Aboveground Tank System*: <https://geotracker.waterboards.ca.gov/?surl=b35nl>

⁶ In the application, the City of Morro Bay is requiring unrestricted closure for residential use prior to redevelopment: <https://geotracker.waterboards.ca.gov/?surl=4wsyr>

As detailed in the Workplan, ACG proposes collecting soil samples using hollow stem auger and direct push drilling methods and collecting groundwater grab samples. Soil and groundwater samples will be analyzed for total petroleum hydrocarbons and volatile organic compounds. ACG will also sample and analyze surface soil for lead to determine if there are residual impacts from lead-based paint used on historic Site structures (i.e., ASTs, pipelines, and buildings). The Central Coast Water Board conditionally approves the Workplan, provided the property owners comply with the requirements listed below:

1. Obtain permits from all applicable City and/or County agencies prior to implementing the proposed field work specified in the Workplan. Specifically, San Luis Obispo County Environmental Health Services (County) requires permits for borings drilled over 25 feet and a permit for borings drilled under 25 feet in areas with shallow groundwater. Please contact the county directly for more information.
2. Notify via email both Central Coast Water Board and County staff, as well as all other appropriate local agencies, of impending field work (dates, estimated start and end times, field contact person, and contact person's phone number) **at least 48 hours in advance of field activities**. Email addresses for Sarah Treadwell and Linnea Chandler are provided below.
3. Analyze soil samples at each of the proposed boring (PB1 – PB13) at depths of 2 feet, 5 feet, and 10 feet for Title 22, California Code of Regulations (CAM 17)⁷ metals. Historic results of soil sample metal analyses show some metals (e.g., mercury)⁸ elevated above San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) Tier 1 Environmental Screening Levels (ESLs). To support unrestricted/residential use of the property, the property owners must provide updated sampling results for CAM 17 metals in soil to confirm there are no potential human health (or ecological) risks associated with the Site.
4. Submit a Workplan implementation summary report **no later than January 4, 2021**. The report must include, at a minimum, the following:
 - a. Summary of field observations, plot plans of boring and sample locations, boring logs, laboratory results, findings and recommendations, and a human health risk assessment as proposed in the Workplan.

⁷ Reference Title 22, Section 66261.24(2)(A) Table II.

⁸ The May 28, 1996 *Surface Soil and Selected Groundwater Sampling Report* prepared by GTI: <https://geotracker.waterboards.ca.gov/?surl=l5ajr>

- b. Discussion on all soil and groundwater sampling results including a comparison to historic data results, Tier 1 ESLs⁹, and background concentrations of metals (if applicable)¹⁰.
- c. Discussion on potential for vapor intrusion issues from any of the wastes found during this assessment.
- d. Summarize, in tabular format, all current and historical groundwater and soil data found at the Site.
- e. Include proposed redevelopment plans for the Site, if available.
- f. Include a recommendation for case closure or next steps planned to close and data gaps that were found.
- g. Include copies of applicable permits and waste disposal manifests.

The property owners must submit the required summary report on or before January 4, 2021 incorporating the requirements cited herein. Failure to comply with these requirements may subject the property owners to enforcement action by the Central Coast Water Board, including issuance of an order under Water Code Sections 13267 and or 13304, and potential administrative civil liabilities.

If you have any questions, comments, or concerns, please contact Sarah Treadwell at (805) 549-3695 or email sarah.treadwell@waterboards.ca.gov, or contact Sheila Soderberg at (805)549-3592 or email sheila.soderberg@waterboards.ca.gov.

Sincerely,

Sheila Soderberg

for Matthew T. Keeling
Executive Officer

Attachment 1: San Francisco Bay Regional Water Quality Control Board ESLs (2019, Rev. 2)

cc via email:

Michael R. Tiffany, ACG, mtiffany@analyticalconsultinggroup.com
Edward Gallegos, CVI Group LLC, edwardgallegos1313@yahoo.com
Steven Gallegos, CVI Group LLC, cvigroup@sbcglobal.net
Linnea Chandler, San Luis Obispo County, lchandler@co.slo.ca.us
Greg Bishop, Central Coast Water Board, greg.bishop@waterboards.ca.gov

⁹ The San Francisco Bay Water Board ESLs provide conservative screening levels for over 100 chemicals and are intended to help expedite the identification and evaluation of potential environmental concerns at cleanup sites. You can review information on ESLs on their website:

https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.html

A copy of the current 2019, revision 2, ESLs is attached to this letter for your convenience (Attachment 1).

¹⁰ A comparison to background concentrations for metals may be necessary to discuss any metal concentrations elevated above Tier 1 ESLs. Background sample locations or reference surveys for metals must reasonably represent the Site.

Letter Information: r:\rb3\shared\scp\sites\slo co\morro bay\3300 panorama drive - former defense fuel point\site assessment 2020\2020_wp_response_st.docx

CR# 2030163; Former Estero Bay Defense Fuel Supply Point Workplan Response



Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board



GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Tier 1 ESLs ¹

2019 (Rev. 2)

Based on a generic conceptual site model designed for use at most sites²

Chemicals	CAS No.	Groundwater (µg/L)	Soil (mg/kg)	Subslab / Soil Gas (µg/m ³)	Indoor Air (µg/m ³)
Acenaphthene [PAH]	83-32-9	1.5E+01	1.2E+01	1.7E+04	5.1E+02
Acenaphthylene [PAH]	208-96-8	1.5E+01	6.4E+00	--	--
Acetone	67-64-1	1.5E+03	9.2E-01	1.0E+06	3.1E+04
Aldrin	309-00-2	1.4E-04	2.4E-03	1.9E-02	5.7E-04
Anthracene [PAH]	120-12-7	7.3E-01	1.9E+00	--	--
Antimony	7440-36-0	6.0E+00	1.1E+01	--	--
Arsenic	7440-38-2	1.0E+01	6.7E-02	--	--
Barium	7440-39-3	1.0E+03	3.9E+02	--	--
Benzene	71-43-2	4.2E-01	2.5E-02	3.2E+00	9.7E-02
Benzo[a]anthracene [PAH]	56-55-3	1.7E-02	6.3E-01	3.1E-01	9.2E-03
Benzo[b]fluoranthene [PAH]	205-99-2	4.9E-02	1.1E+00	--	--
Benzo[k]fluoranthene [PAH]	207-08-9	4.9E-02	2.8E+00	--	--
Benzo[g,h,i]perylene [PAH]	191-24-2	1.0E-01	2.5E+00	--	--
Benzo[a]pyrene [PAH]	50-32-8	1.4E-02	1.1E-01	--	--
Beryllium	7440-41-7	2.7E+00	5.0E+00	--	--
1,1-Biphenyl	92-52-4	5.0E-01	4.2E-01	1.4E+01	4.2E-01
Bis(2-chloroethyl) ether	111-44-4	6.3E-03	3.4E-05	1.3E-01	4.0E-03
Bis(2-chloro-1-methylethyl) ether	108-60-1	3.6E-01	5.1E-03	9.4E+00	2.8E-01
Bis(2-ethylhexyl) phthalate	117-81-7	4.0E+00	8.0E-01	--	--
Boron	7440-42-8	1.6E+00	1.2E+02	--	--
Bromodichloromethane	75-27-4	8.7E-01	1.6E-02	2.5E+00	7.6E-02
Bromoform (Tribromomethane)	75-25-2	8.0E+01	6.9E-01	8.5E+01	2.6E+00
Bromomethane	74-83-9	7.5E+00	3.6E-01	1.7E+02	5.2E+00
Cadmium (soil)	7440-43-9	--	1.9E+00	--	--
Cadmium (water)	7440-43-9	2.5E-01	--	--	--
Carbon tetrachloride	56-23-5	4.3E-01	7.6E-02	1.6E+01	4.7E-01
Chlordane	12789-03-6	5.9E-04	8.5E-03	2.8E-01	8.3E-03
p-Chloroaniline	106-47-8	3.6E-01	6.7E-03	--	--
Chlorobenzene	108-90-7	2.5E+01	1.4E+00	1.7E+03	5.2E+01
Chloroethane	75-00-3	1.6E+01	1.2E+00	3.5E+05	1.0E+04
Chloroform	67-66-3	8.1E-01	2.3E-02	4.1E+00	1.2E-01
Chloromethane	74-87-3	1.9E+02	1.1E+01	3.1E+03	9.4E+01
2-Chlorophenol	95-57-8	1.8E-01	1.2E-02	6.3E+02	1.9E+01
Chromium (total)	7440-47-3	5.0E+01	1.6E+02	--	--
Chromium III	16065-83-1	1.8E+02	1.2E+05	--	--
Chromium VI	18540-29-9	2.0E-02	3.0E-01	--	--
Chrysene [PAH]	218-01-9	4.9E-02	2.2E+00	--	--
Cobalt	7440-48-4	3.0E+00	2.3E+01	--	--
Copper	7440-50-8	3.1E+00	1.8E+02	--	--
Cyanide	57-12-5	1.0E+00	3.4E-03	2.8E+01	8.3E-01
Dibenz[a,h]anthracene [PAH]	53-70-3	2.5E-02	1.1E-01	--	--
Dibromochloromethane	124-48-1	3.4E+01	3.5E-01	--	--
1,2-dibromo-3-chloropropane	96-12-8	2.8E-02	5.9E-04	5.6E-03	1.7E-04
1,2-Dibromoethane	106-93-4	5.0E-02	5.3E-04	1.6E-01	4.7E-03
1,2-Dichlorobenzene	95-50-1	1.4E+01	1.0E+00	7.0E+03	2.1E+02
1,3-Dichlorobenzene	541-73-1	6.5E+01	6.0E+00	--	--
1,4-Dichlorobenzene	106-46-7	2.6E+00	2.0E-01	8.5E+00	2.6E-01
3,3-Dichlorobenzidine	91-94-1	4.6E-02	2.5E-02	--	--
DDD	72-54-8	8.4E-04	2.7E+00	--	--
DDE	72-55-9	5.9E-04	3.3E-01	9.6E-01	2.9E-02
DDT	50-29-3	5.9E-04	1.1E-03	--	--
1,1-Dichloroethane	75-34-3	5.0E+00	2.0E-01	5.8E+01	1.8E+00
1,2-Dichloroethane	107-06-2	5.0E-01	7.0E-03	3.6E+00	1.1E-01
1,1-Dichloroethene	75-35-4	3.2E+00	5.4E-01	2.4E+03	7.3E+01
cis-1,2-Dichloroethene	156-59-2	6.0E+00	1.9E-01	2.8E+02	8.3E+00
trans-1,2-Dichloroethene	156-60-5	1.0E+01	6.5E-01	2.8E+03	8.3E+01
2,4-Dichlorophenol	120-83-2	3.0E-01	7.5E-03	4.7E+04	1.4E+03



Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board



Tier 1 ESLs ¹

2019 (Rev. 2)

Based on a generic conceptual site model designed for use at most sites²

Chemicals	CAS No.	Groundwater (µg/L)	Soil (mg/kg)	Subslab / Soil Gas (µg/m ³)	Indoor Air (µg/m ³)
1,2-Dichloropropane	78-87-5	2.3E+00	6.5E-02	9.4E+00	2.8E-01
1,3-Dichloropropene	542-75-6	5.0E-01	1.7E-02	5.8E+00	1.8E-01
Dieldrin	60-57-1	1.4E-04	4.6E-04	2.0E-02	6.1E-04
Diethyl phthalate	84-66-2	1.5E+00	2.5E-02	--	--
Dimethyl phthalate	131-11-3	1.5E+00	3.5E-02	--	--
2,4-Dimethylphenol	105-67-9	1.0E+02	8.1E+00	3.3E+01	1.0E+00
2,4-Dinitrophenol	51-28-5	3.9E+01	3.0E+00	--	--
2,4-Dinitrotoluene	121-14-2	2.4E-01	2.3E-02	--	--
1,4-Dioxane	123-91-1	3.8E-01	1.7E-04	1.2E+01	3.6E-01
Dioxin (2,3,7,8-TCDD)	1746-01-6	1.4E-08	4.8E-06	2.5E-06	7.4E-08
Endosulfan	115-29-7	8.7E-03	9.8E-03	--	--
Endrin	72-20-8	2.3E-03	1.1E-03	--	--
Ethylbenzene	100-41-4	3.5E+00	4.3E-01	3.7E+01	1.1E+00
Fluoranthene [PAH]	206-44-0	8.0E+00	6.9E-01	--	--
Fluorene [PAH]	86-73-7	3.9E+00	6.0E+00	--	--
Heptachlor	76-44-8	2.1E-04	1.2E-01	7.2E-02	2.2E-03
Heptachlor epoxide	1024-57-3	1.1E-04	1.8E-04	3.6E-02	1.1E-03
Hexachlorobenzene	118-74-1	7.7E-04	8.0E-04	1.8E-01	5.5E-03
Hexachlorobutadiene	87-68-3	1.4E-01	2.8E-02	4.3E+00	1.3E-01
g-Hexachlorocyclohexane (Lindane)	58-89-9	1.6E-02	7.4E-03	--	--
Hexachloroethane	67-72-1	3.3E-01	1.9E-02	8.5E+00	2.6E-01
Indeno[1,2,3-c,d]pyrene [PAH]	193-39-5	4.9E-02	4.8E-01	--	--
Lead	7439-92-1	2.5E+00	3.2E+01	--	--
Mercury (elemental)	7439-97-6	2.5E-02	1.3E+01	1.0E+00	3.1E-02
Methoxychlor	72-43-5	3.0E-03	1.3E-02	--	--
Methylene chloride	75-09-2	5.0E+00	1.2E-01	3.4E+01	1.0E+00
Methyl ethyl ketone	78-93-3	5.6E+03	6.1E+00	1.7E+05	5.2E+03
Methyl isobutyl ketone	108-10-1	1.2E+02	3.6E-01	1.4E+04	4.2E+02
Methyl mercury	22967-92-6	3.0E-03	3.4E-02	--	--
2-Methylnaphthalene	91-57-6	2.1E+00	8.8E-01	2.3E+03	6.8E+01
Methyl tertiary butyl ether (MTBE)	1634-04-4	5.0E+00	2.8E-02	3.6E+02	1.1E+01
Molybdenum	7439-98-7	1.0E+02	6.9E+00	--	--
Naphthalene [PAH]	91-20-3	1.7E-01	4.2E-02	2.8E+00	8.3E-02
Nickel	7440-02-0	8.2E+00	8.6E+01	--	--
Pentachlorophenol	87-86-5	1.0E+00	1.3E-02	--	--
Perchlorate	7790-98-9	6.0E+00	5.5E+01	--	--
Petroleum - Gasoline	--	1.0E+02	1.0E+02	3.3E+03	1.0E+02
Petroleum - Stoddard Solvent	--	1.0E+02	1.0E+02	1.1E+04	3.3E+02
Petroleum - Jet Fuel	--	1.0E+02	1.0E+02	1.1E+04	3.3E+02
Petroleum - Diesel	--	1.0E+02	2.6E+02	8.9E+03	2.7E+02
Petroleum - HOPs	--	1.0E+02	--	--	--
Petroleum - Motor Oil	--	--	1.6E+03	--	--
Phenanthrene [PAH]	85-01-8	4.6E+00	7.8E+00	1.8E+03	5.5E+01
Phenol	108-95-2	5.0E+00	1.6E-01	5.2E+03	1.6E+02
Polychlorinated biphenyls (PCBs)	1336-36-3	1.7E-04	2.3E-01	1.6E-01	4.9E-03
Pyrene [PAH]	129-00-0	2.0E+00	4.5E+01	--	--
Selenium	7782-49-2	5.0E-01	2.4E+00	--	--
Silver	7440-22-4	1.9E-01	2.5E+01	--	--
Styrene	100-42-5	1.0E+01	9.2E-01	3.1E+04	9.4E+02
tert-Butyl alcohol	75-65-0	1.2E+01	7.5E-02	--	--
1,1,1,2-Tetrachloroethane	630-20-6	5.7E-01	1.7E-02	1.3E+01	3.8E-01
1,1,2,2-Tetrachloroethane	79-34-5	1.0E+00	1.8E-02	1.6E+00	4.8E-02
Tetrachloroethene	127-18-4	6.4E-01	8.0E-02	1.5E+01	4.6E-01
Thallium	7440-28-0	2.0E+00	7.8E-01	--	--
Toluene	108-88-3	4.0E+01	3.2E+00	1.0E+04	3.1E+02
Toxaphene	8001-35-2	2.0E-04	5.1E-01	--	--
1,2,4-Trichlorobenzene	120-82-1	5.0E+00	1.2E+00	7.0E+01	2.1E+00



Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board



Tier 1 ESLs ¹

2019 (Rev. 2)

Based on a generic conceptual site model designed for use at most sites²

Chemicals	CAS No.	Groundwater (µg/L)	Soil (mg/kg)	Subslab / Soil Gas (µg/m ³)	Indoor Air (µg/m ³)
1,1,1-Trichloroethane	71-55-6	6.2E+01	7.0E+00	3.5E+04	1.0E+03
1,1,2-Trichloroethane	79-00-5	5.0E+00	7.6E-02	5.8E+00	1.8E-01
Trichloroethene	79-01-6	1.2E+00	8.5E-02	1.6E+01	4.8E-01
2,4,5-Trichlorophenol	95-95-4	1.1E+01	2.9E+00	--	--
2,4,6-Trichlorophenol	88-06-2	6.3E-01	4.0E-02	1.0E+01	3.0E-01
1,2,3-Trichloropropane	96-18-4	5.0E-03	1.1E-04	1.0E+01	3.1E-01
Vanadium	7440-62-2	1.9E+01	1.8E+01	--	--
Vinyl chloride	75-01-4	8.6E-03	1.5E-03	3.2E-01	9.5E-03
Xylenes	1330-20-7	2.0E+01	2.1E+00	3.5E+03	1.0E+02
Zinc	7440-66-6	8.1E+01	3.4E+02	--	--

Notes:

1 - ESLs are developed based on methodologies discussed in the User's Guide. Evaluation of laboratory detection limits and naturally occurring background or ambient concentrations should be independently conducted. See User's Guide Chapter 12 (Additional Considerations) for further information.

2 - Generic Conceptual Site Model - See User's Guide Chapter 2. Input settings are:

- Land Use = Residential
- Groundwater Use = Drinking Water Resource
- MCL Priority over Risk-Based Levels = Yes
- Discharge to Surface Water = Saltwater & Freshwater
- Vegetation Level = Substantial
- Soil Exposure Depth = Shallow

Abbreviations:

- DDD - Dichlorodiphenyldichloroethane
- DDE - Dichlorodiphenyldichloroethene
- DDT - Dichlorodiphenyltrichloroethane
- HOPs - Hydrocarbon Oxidation Products (biodegradation metabolites and photo-oxidation products of petroleum hydrocarbons). See User's Guide Chapter 4 for further information.
- PAH - Polycyclic aromatic hydrocarbon
- TCDD - Tetrachlorodibenzodioxin

2019 (Rev. 2)		Summary of Groundwater ESLs (µg/L)														
Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table GW-1)			Aquatic Habitat Goal Levels (Table GW-2)			Groundwater Vapor Intrusion Human Health Risk Levels (Table GW-3)				Gross Contamination Levels (GW-4)	Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis
		MCL Priority ¹	Tapwater Cancer Risk	Tapwater Non-cancer Hazard	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Residential		Commercial/Industrial			Drinking Water	Non-Drinking Water		
								Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard					
Acenaphthene [PAH]	83-32-9	5.3E+02	--	5.3E+02	2.3E+01	1.5E+01	2.7E+03	--	--	--	--	2.0E+03	2.0E+01	2.0E+02	1.5E+01	Aquatic Habitat
Acenaphthylene [PAH]	208-96-8	--	--	--	--	1.5E+01	--	--	--	--	--	2.0E+03	--	--	1.5E+01	Aquatic Habitat
Acetone	67-64-1	1.4E+04	--	1.4E+04	1.5E+03	--	--	--	2.3E+07	--	9.7E+07	5.0E+04	2.0E+04	2.0E+05	1.5E+03	Aquatic Habitat
Aldrin	309-00-2	9.2E-04	9.2E-04	2.0E-03	3.0E-01	1.3E-01	1.4E-04	3.2E-01	--	1.4E+00	--	8.5E+00	1.7E+01	1.7E+02	1.4E-04	Aquatic Habitat
Anthracene [PAH]	120-12-7	1.8E+03	--	1.8E+03	7.3E-01	1.5E+01	1.1E+05	--	--	--	--	2.2E+01	--	--	7.3E-01	Aquatic Habitat
Antimony	7440-36-0	6.0E+00	--	1.0E+00	3.0E+01	5.0E+02	4.3E+03	--	--	--	--	5.0E+04	--	--	6.0E+00	MCL
Arsenic	7440-38-2	1.0E+01	4.0E-03	7.0E-02	1.5E+02	3.6E+01	--	--	--	--	--	5.0E+04	--	--	1.0E+01	MCL
Barium	7440-39-3	1.0E+03	--	2.0E+03	--	--	--	--	--	--	--	5.0E+04	--	--	1.0E+03	MCL
Benzene	71-43-2	1.0E+00	1.5E-01	5.7E+00	4.6E+01	3.5E+02	7.1E+01	4.2E-01	1.4E+01	1.8E+00	5.7E+01	5.0E+04	1.7E+02	2.0E+04	1.2E-01	Vapor Intrusion
Benzo[a]anthracene [PAH]	56-55-3	1.7E-02	1.7E-02	--	2.7E-02	1.5E+01	4.9E-02	1.9E+01	--	2.3E+02	--	4.7E+00	--	--	1.7E-02	Tap Canc-Risk
Benzo[b]fluoranthene [PAH]	205-99-2	2.5E-01	2.5E-01	--	--	1.5E+01	4.9E-02	--	--	--	--	7.5E-01	--	--	4.9E-02	Aquatic Habitat
Benzo[k]fluoranthene [PAH]	207-08-9	2.5E+00	2.5E+00	--	3.7E+00	1.5E+01	4.9E-02	--	--	--	--	4.0E-01	--	--	4.9E-02	Aquatic Habitat
Benzo[g,h,i]perylene [PAH]	191-24-2	--	--	--	1.0E-01	1.5E+01	--	--	--	--	--	1.3E-01	--	--	1.0E-01	Aquatic Habitat
Benzo[a]pyrene [PAH]	50-32-8	2.0E-01	7.0E-03	6.0E+00	1.4E-02	1.5E+01	4.9E-02	--	--	--	--	8.0E-01	--	--	1.4E-02	Aquatic Habitat
Beryllium	7440-41-7	4.0E+00	--	1.0E+00	2.7E+00	--	--	--	--	--	--	5.0E+04	--	--	2.7E+00	Aquatic Habitat
1,1-Biphenyl	92-52-4	8.3E-01	3.8E+00	8.3E-01	1.4E+01	--	--	--	3.2E+01	--	1.3E+02	3.8E+03	5.0E-01	5.0E+00	5.0E-01	Odor/Nuis
Bis(2-chloroethyl) ether	111-44-4	6.3E-03	6.3E-03	--	6.1E+01	--	1.4E+00	5.6E+00	--	2.5E+01	--	5.0E+04	3.6E+02	3.6E+03	6.3E-03	Tap Canc-Risk
Bis(2-chloro-1-methylethyl) ether	108-60-1	3.6E-01	3.6E-01	7.1E+02	6.1E+01	--	1.7E+05	9.4E+01	--	4.1E+02	--	5.0E+04	3.2E+02	3.2E+03	3.6E-01	Tap Canc-Risk
Bis(2-ethylhexyl) phthalate	117-81-7	4.0E+00	5.6E+00	4.0E+02	3.2E+01	--	5.9E+00	--	--	--	--	1.4E+02	--	--	4.0E+00	MCL
Boron	7440-42-8	1.0E+03	--	1.0E+03	1.6E+00	--	--	--	--	--	--	5.0E+04	--	--	1.6E+00	Aquatic Habitat
Bromodichloromethane	75-27-4	8.0E+01	1.2E-01	3.8E+02	1.1E+03	3.2E+03	--	8.7E-01	--	3.8E+00	--	5.0E+04	--	--	8.7E-01	Vapor Intrusion
Bromoform (Tribromomethane)	75-25-2	8.0E+01	2.9E+00	3.8E+02	1.1E+03	3.2E+03	3.6E+02	1.2E+02	--	5.1E+02	--	5.0E+04	5.1E+02	5.1E+03	8.0E+01	MCL
Bromomethane	74-83-9	7.5E+00	--	7.5E+00	1.6E+02	3.2E+03	4.0E+03	--	1.7E+01	--	7.3E+01	5.0E+04	--	--	7.5E+00	Tap NC-Hazard
Cadmium (soil)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium (water)	7440-43-9	5.0E+00	--	4.0E-02	2.5E-01	9.3E+00	--	--	--	--	--	5.0E+04	--	--	2.5E-01	Aquatic Habitat
Carbon tetrachloride	56-23-5	5.0E-01	1.0E-01	3.6E+01	2.4E+02	3.2E+03	4.4E+00	4.3E-01	3.8E+01	1.9E+00	1.6E+02	5.0E+04	5.2E+02	5.2E+03	4.3E-01	Vapor Intrusion
Chlordane	12789-03-6	1.0E-01	1.3E-02	1.3E+00	4.3E-03	4.0E-03	5.9E-04	4.1E+00	3.7E+02	1.8E+01	1.5E+03	2.8E+01	2.5E+00	2.5E+01	5.9E-04	Aquatic Habitat
p-Chloroaniline	106-47-8	3.6E-01	3.6E-01	7.6E+01	5.0E+00	--	--	--	--	--	--	5.0E+04	--	--	3.6E-01	Tap Canc-Risk
Chlorobenzene	108-90-7	7.0E+01	--	7.0E+01	2.5E+01	6.5E+01	2.1E+04	--	4.0E+02	--	1.7E+03	5.0E+04	5.0E+01	5.0E+02	2.5E+01	Aquatic Habitat
Chloroethane	75-00-3	2.1E+04	--	2.1E+04	--	--	--	--	2.3E+04	--	9.7E+04	5.0E+04	1.6E+01	1.6E+02	1.6E+01	Odor/Nuis
Chloroform	67-66-3	8.0E+01	2.2E-01	9.7E+01	6.2E+02	3.2E+03	--	8.1E-01	6.8E+02	3.6E+00	2.9E+03	5.0E+04	2.4E+03	2.4E+04	8.1E-01	Vapor Intrusion
Chloromethane	74-87-3	1.9E+02	--	1.9E+02	1.1E+03	3.2E+03	--	--	2.6E+02	--	1.1E+03	5.0E+04	--	--	1.9E+02	Tap NC-Hazard
2-Chlorophenol	95-57-8	9.1E+01	--	9.1E+01	4.4E+02	--	4.0E+02	--	--	--	--	5.0E+04	1.8E-01	1.8E+00	1.8E-01	Odor/Nuis
Chromium (total)	7440-47-3	5.0E+01	--	--	1.8E+02	--	--	--	--	--	--	5.0E+04	--	--	5.0E+01	MCL
Chromium III	16065-83-1	2.2E+04	--	2.2E+04	1.8E+02	1.0E+03	--	--	--	--	--	5.0E+04	--	--	1.8E+02	Aquatic Habitat
Chromium VI	18540-29-9	2.0E-02	2.0E-02	4.4E+01	1.1E+01	5.0E+01	--	--	--	--	--	5.0E+04	--	--	2.0E-02	Tap Canc-Risk

2019 (Rev. 2)		Summary of Groundwater ESLs (µg/L)														
Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table GW-1)			Aquatic Habitat Goal Levels (Table GW-2)			Groundwater Vapor Intrusion Human Health Risk Levels (Table GW-3)				Gross Contamination Levels (GW-4)	Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis
		MCL Priority ¹	Tapwater Cancer Risk	Tapwater Non-cancer Hazard	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Residential		Commercial/Industrial			Drinking Water	Non-Drinking Water		
								Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard					
Chrysene [PAH]	218-01-9	2.5E+01	2.5E+01	--	3.5E-01	1.5E+01	4.9E-02	--	--	--	--	1.0E+00	--	--	4.9E-02	Aquatic Habitat
Cobalt	7440-48-4	6.0E+00	--	6.0E+00	3.0E+00	--	--	--	--	--	--	5.0E+04	--	--	3.0E+00	Aquatic Habitat
Copper	7440-50-8	1.0E+03	--	3.0E+02	9.0E+00	3.1E+00	--	--	--	--	--	5.0E+04	1.0E+03	--	3.1E+00	Aquatic Habitat
Cyanide	57-12-5	1.5E+02	--	1.5E+00	5.2E+00	1.0E+00	2.2E+05	--	2.0E+02	--	8.3E+02	5.0E+04	1.7E+02	1.7E+03	1.0E+00	Aquatic Habitat
Dibenz[a,h]anthracene [PAH]	53-70-3	2.5E-02	2.5E-02	--	7.5E+00	1.5E+01	4.9E-02	--	--	--	--	1.3E+00	--	--	2.5E-02	Tap Canc-Risk
Dibromochloromethane	124-48-1	8.0E+01	8.7E-01	3.8E+02	1.1E+03	3.2E+03	3.4E+01	--	--	--	--	5.0E+04	--	--	3.4E+01	Aquatic Habitat
1,2-dibromo-3-chloropropane	96-12-8	2.0E-01	3.0E-04	3.7E-01	--	--	--	2.8E-02	3.5E+01	3.4E-01	1.5E+02	5.0E+04	1.0E+01	1.0E+02	2.8E-02	Vapor Intrusion
1,2-Dibromoethane	106-93-4	5.0E-02	7.5E-03	1.7E+00	1.4E+03	--	--	1.7E-01	3.1E+01	7.6E-01	1.3E+02	5.0E+04	--	--	5.0E-02	MCL
1,2-Dichlorobenzene	95-50-1	1.0E+02	--	3.0E+02	1.4E+01	6.5E+01	1.7E+04	--	2.7E+03	--	1.1E+04	5.0E+04	1.0E+02	1.0E+02	1.4E+01	Aquatic Habitat
1,3-Dichlorobenzene	541-73-1	6.0E+02	--	6.0E+02	7.1E+01	6.5E+01	2.6E+03	--	--	--	--	5.0E+04	--	--	6.5E+01	Aquatic Habitat
1,4-Dichlorobenzene	106-46-7	5.0E+00	4.8E-01	5.7E+02	1.5E+01	6.5E+01	2.6E+03	2.6E+00	8.4E+03	1.1E+01	3.5E+04	4.1E+04	5.0E+00	1.1E+02	2.6E+00	Vapor Intrusion
3,3-Dichlorobenzidine	91-94-1	4.6E-02	4.6E-02	--	2.5E+02	--	7.7E-02	--	--	--	--	1.6E+03	--	--	4.6E-02	Tap Canc-Risk
DDD	72-54-8	3.1E-02	3.1E-02	--	1.0E-03	1.0E-03	8.4E-04	--	--	--	--	4.5E+01	--	--	8.4E-04	Aquatic Habitat
DDE	72-55-9	4.6E-02	4.6E-02	--	1.0E-03	1.0E-03	5.9E-04	1.7E+01	--	7.4E+01	--	2.0E+01	--	--	5.9E-04	Aquatic Habitat
DDT	50-29-3	2.3E-01	2.3E-01	1.0E+01	1.0E-03	1.0E-03	5.9E-04	--	--	--	--	2.8E+00	3.5E+02	3.5E+03	5.9E-04	Aquatic Habitat
1,1-Dichloroethane	75-34-3	5.0E+00	2.7E+00	3.8E+03	4.7E+01	--	--	7.6E+00	--	3.3E+01	--	5.0E+04	--	--	5.0E+00	MCL
1,2-Dichloroethane	107-06-2	5.0E-01	1.7E-01	1.3E+01	1.0E+04	1.1E+04	9.9E+01	2.2E+00	1.5E+02	9.8E+00	6.4E+02	5.0E+04	7.0E+03	2.0E+05	5.0E-01	MCL
1,1-Dichloroethene	75-35-4	6.0E+00	--	1.0E+01	2.5E+01	2.2E+04	3.2E+00	--	6.6E+01	--	2.8E+02	5.0E+04	1.5E+03	1.5E+04	3.2E+00	Aquatic Habitat
cis-1,2-Dichloroethene	156-59-2	6.0E+00	--	1.1E+01	5.9E+02	2.2E+04	--	--	4.9E+01	--	2.1E+02	5.0E+04	--	--	6.0E+00	MCL
trans-1,2-Dichloroethene	156-60-5	1.0E+01	--	5.0E+01	5.9E+02	2.2E+04	1.4E+05	--	2.2E+02	--	9.2E+02	5.0E+04	2.6E+02	2.6E+03	1.0E+01	MCL
2,4-Dichlorophenol	120-83-2	4.6E+01	--	4.6E+01	1.8E+02	--	7.9E+02	--	--	--	--	5.0E+04	3.0E-01	3.0E+00	3.0E-01	Odor/Nuis
1,2-Dichloropropane	78-87-5	5.0E+00	4.4E-01	8.3E+00	2.9E+03	1.5E+03	3.9E+01	2.3E+00	3.5E+01	1.0E+01	1.5E+02	5.0E+04	1.0E+01	1.0E+02	2.3E+00	Vapor Intrusion
1,3-Dichloropropene	542-75-6	5.0E-01	2.0E-01	3.9E+01	1.2E+02	7.9E+01	1.7E+03	1.2E+00	1.4E+02	5.1E+00	5.8E+02	5.0E+04	--	--	5.0E-01	MCL
Dieldrin	60-57-1	7.1E-04	7.1E-04	2.0E-03	5.6E-02	1.9E-03	1.4E-04	1.5E+00	--	6.5E+00	--	1.0E+02	4.1E+01	4.1E+02	1.4E-04	Aquatic Habitat
Diethyl phthalate	84-66-2	1.5E+04	--	1.5E+04	1.5E+00	1.7E+00	1.2E+05	--	--	--	--	5.0E+04	--	--	1.5E+00	Aquatic Habitat
Dimethyl phthalate	131-11-3	--	--	--	1.5E+00	1.7E+00	2.9E+06	--	--	--	--	5.0E+04	--	--	1.5E+00	Aquatic Habitat
2,4-Dimethylphenol	105-67-9	1.0E+02	--	1.0E+02	5.3E+02	1.1E+02	2.3E+03	--	--	--	--	5.0E+04	4.0E+02	4.0E+03	1.0E+02	Tap NC-Hazard
2,4-Dinitrophenol	51-28-5	3.9E+01	--	3.9E+01	7.5E+01	4.9E+02	1.4E+04	--	--	--	--	5.0E+04	--	--	3.9E+01	Tap NC-Hazard
2,4-Dinitrotoluene	121-14-2	2.4E-01	2.4E-01	3.8E+01	1.2E+02	1.9E+02	9.1E+00	--	--	--	--	5.0E+04	--	--	2.4E-01	Tap Canc-Risk
1,4-Dioxane	123-91-1	3.8E-01	3.8E-01	5.7E+01	3.4E+05	5.0E+05	--	1.8E+03	1.6E+05	8.0E+03	6.6E+05	5.0E+04	2.3E+05	--	3.8E-01	Tap Canc-Risk
Dioxin (2,3,7,8-TCDD)	1746-01-6	3.0E-05	1.2E-07	1.2E-05	5.0E-06	--	1.4E-08	3.7E-05	2.1E-02	1.6E-04	8.8E-02	1.0E-01	--	--	1.4E-08	Aquatic Habitat
Endosulfan	115-29-7	1.0E+02	--	1.0E+02	5.6E-02	8.7E-03	2.4E+02	--	--	--	--	1.7E+02	--	--	8.7E-03	Aquatic Habitat
Endrin	72-20-8	2.0E+00	--	3.0E-01	3.6E-02	2.3E-03	8.1E-01	--	--	--	--	1.3E+02	4.1E+01	4.1E+02	2.3E-03	Aquatic Habitat
Ethylbenzene	100-41-4	3.0E+01	1.5E+00	3.0E+02	2.9E+02	4.3E+01	2.9E+04	3.5E+00	3.3E+03	1.5E+01	1.4E+04	5.0E+04	3.0E+01	3.0E+02	3.5E+00	Vapor Intrusion
Fluoranthene [PAH]	206-44-0	8.0E+02	--	8.0E+02	8.1E+00	8.0E+00	3.7E+02	--	--	--	--	1.3E+02	--	--	8.0E+00	Aquatic Habitat
Fluorene [PAH]	86-73-7	2.9E+02	--	2.9E+02	3.9E+00	1.5E+01	1.4E+04	--	--	--	--	8.5E+02	--	--	3.9E+00	Aquatic Habitat

2019 (Rev. 2)		Summary of Groundwater ESLs (µg/L)														
Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table GW-1)			Aquatic Habitat Goal Levels (Table GW-2)			Groundwater Vapor Intrusion Human Health Risk Levels (Table GW-3)				Gross Contamination Levels (GW-4)	Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis
		MCL Priority ¹	Tapwater Cancer Risk	Tapwater Non-cancer Hazard	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Residential		Commercial/Industrial			Drinking Water	Non-Drinking Water		
								Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard					
Heptachlor	76-44-8	1.0E-02	1.4E-03	1.3E+00	3.8E-03	3.6E-03	2.1E-04	1.8E-01	--	7.9E-01	--	9.0E+01	2.0E+01	2.0E+02	2.1E-04	Aquatic Habitat
Heptachlor epoxide	1024-57-3	1.0E-02	1.4E-03	1.2E-01	3.8E-03	3.6E-03	1.1E-04	1.3E+00	--	5.5E+00	--	1.0E+02	--	--	1.1E-04	Aquatic Habitat
Hexachlorobenzene	118-74-1	1.0E+00	8.8E-03	1.6E+01	3.7E+00	6.5E+01	7.7E-04	7.9E-02	--	3.4E-01	--	3.1E+00	3.0E+03	3.0E+04	7.7E-04	Aquatic Habitat
Hexachlorobutadiene	87-68-3	1.4E-01	1.4E-01	6.5E+00	4.7E+00	3.2E+00	5.0E+01	3.0E-01	--	1.3E+00	--	1.6E+03	6.0E+00	6.0E+01	1.4E-01	Tap Canc-Risk
g-Hexachlorocyclohexane (Lindane)	58-89-9	2.0E-01	3.2E-02	3.6E+00	8.0E-02	1.6E-02	6.3E-02	--	--	--	--	3.7E+03	1.2E+04	1.2E+05	1.6E-02	Aquatic Habitat
Hexachloroethane	67-72-1	3.3E-01	3.3E-01	6.2E+00	1.2E+01	9.4E+01	8.9E+00	1.6E+00	2.0E+02	7.0E+00	8.2E+02	2.5E+04	1.0E+01	1.0E+02	3.3E-01	Tap Canc-Risk
Indeno[1,2,3-c,d]pyrene [PAH]	193-39-5	2.5E-01	2.5E-01	--	--	1.5E+01	4.9E-02	--	--	--	--	9.5E-02	--	--	4.9E-02	Aquatic Habitat
Lead	7439-92-1	1.5E+01	9.2E+00	2.0E-01	2.5E+00	8.1E+00	--	--	--	--	--	5.0E+04	--	--	2.5E+00	Aquatic Habitat
Mercury (elemental)	7439-97-6	2.0E+00	--	6.1E-02	2.5E-02	2.5E-02	5.1E-02	--	8.9E-02	--	3.8E-01	3.0E+01	--	--	2.5E-02	Aquatic Habitat
Methoxychlor	72-43-5	3.0E+01	--	9.0E-02	1.9E-02	3.0E-03	--	--	--	--	--	5.0E+01	4.7E+03	4.7E+04	3.0E-03	Aquatic Habitat
Methylene chloride	75-09-2	5.0E+00	9.3E-01	1.0E+02	2.2E+03	3.2E+03	1.6E+03	7.8E+00	3.2E+03	9.4E+01	1.3E+04	5.0E+04	9.1E+03	9.1E+04	5.0E+00	MCL
Methyl ethyl ketone	78-93-3	5.6E+03	--	5.6E+03	1.4E+04	--	--	--	2.3E+06	--	9.5E+06	5.0E+04	8.4E+03	8.4E+04	5.6E+03	Tap NC-Hazard
Methyl isobutyl ketone	108-10-1	1.2E+02	--	1.2E+02	1.7E+02	--	--	--	5.6E+05	--	2.3E+06	5.0E+04	1.3E+03	1.3E+04	1.2E+02	Tap NC-Hazard
Methyl mercury	22967-92-6	2.0E+00	--	2.0E+00	3.0E-03	--	--	--	--	--	--	5.0E+04	--	--	3.0E-03	Aquatic Habitat
2-Methylnaphthalene	91-57-6	3.6E+01	--	3.6E+01	2.1E+00	3.0E+01	--	--	--	--	--	1.3E+04	1.0E+01	1.0E+02	2.1E+00	Aquatic Habitat
Methyl tertiary butyl ether (MTBE)	1634-04-4	5.0E+00	1.3E+01	6.3E+03	6.6E+04	8.0E+03	--	4.5E+02	1.3E+05	2.0E+03	5.5E+05	5.0E+04	5.0E+00	1.8E+03	5.0E+00	Odor/Nuis
Molybdenum	7439-98-7	1.0E+02	--	1.0E+02	2.4E+02	--	--	--	--	--	--	5.0E+04	--	--	1.0E+02	Tap NC-Hazard
Naphthalene [PAH]	91-20-3	1.7E-01	1.7E-01	6.1E+00	2.4E+01	1.5E+01	--	4.6E+00	1.7E+02	2.0E+01	7.3E+02	1.6E+04	2.1E+01	2.1E+02	1.7E-01	Tap Canc-Risk
Nickel	7440-02-0	1.0E+02	1.2E+01	2.2E+02	5.2E+01	8.2E+00	4.6E+03	--	--	--	--	5.0E+04	--	--	8.2E+00	Aquatic Habitat
Pentachlorophenol	87-86-5	1.0E+00	4.0E-02	2.3E+01	1.5E+01	7.9E+00	8.2E+00	--	--	--	--	7.0E+03	3.0E+01	5.9E+03	1.0E+00	MCL
Perchlorate	7790-98-9	6.0E+00	--	1.0E+00	6.0E+02	--	--	--	--	--	--	5.0E+04	--	--	6.0E+00	MCL
Petroleum - Gasoline	--	7.6E+02	--	7.6E+02	4.4E+02	3.7E+03	--	--	--	--	--	5.0E+04	1.0E+02	5.0E+03	1.0E+02	Odor/Nuis
Petroleum - Stoddard Solvent	--	2.1E+02	--	2.1E+02	6.4E+02	6.4E+02	--	--	--	--	--	2.5E+03	1.0E+02	5.0E+03	1.0E+02	Odor/Nuis
Petroleum - Jet Fuel	--	2.1E+02	--	2.1E+02	6.4E+02	6.4E+02	--	--	--	--	--	2.5E+03	1.0E+02	5.0E+03	1.0E+02	Odor/Nuis
Petroleum - Diesel	--	2.0E+02	--	2.0E+02	6.4E+02	6.4E+02	--	--	--	--	--	2.5E+03	1.0E+02	5.0E+03	1.0E+02	Odor/Nuis
Petroleum - HOPs	--	4.1E+02	--	4.1E+02	5.1E+02	5.1E+02	--	--	--	--	--	5.0E+04	1.0E+02	5.0E+03	1.0E+02	Odor/Nuis
Petroleum - Motor Oil	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene [PAH]	85-01-8	--	--	--	6.3E+00	4.6E+00	--	--	--	--	--	4.1E+02	1.0E+03	1.0E+04	4.6E+00	Aquatic Habitat
Phenol	108-95-2	4.2E+03	--	4.2E+03	1.3E+03	5.8E+02	4.6E+06	--	--	--	--	5.0E+04	5.0E+00	7.9E+04	5.0E+00	Odor/Nuis
Polychlorinated biphenyls (PCBs)	1336-36-3	5.0E-01	1.9E-03	--	1.4E-02	3.0E-02	1.7E-04	2.9E-01	--	1.3E+00	--	3.5E+02	--	--	1.7E-04	Aquatic Habitat
Pyrene [PAH]	129-00-0	1.2E+02	--	1.2E+02	2.0E+00	1.5E+01	1.1E+04	--	--	--	--	7.0E+01	--	--	2.0E+00	Aquatic Habitat
Selenium	7782-49-2	5.0E+01	--	3.0E+01	5.0E+00	5.0E-01	--	--	--	--	--	5.0E+04	--	--	5.0E-01	Aquatic Habitat
Silver	7440-22-4	1.0E+02	--	9.4E+01	3.4E+00	1.9E-01	--	--	--	--	--	5.0E+04	1.0E+02	--	1.9E-01	Aquatic Habitat
Styrene	100-42-5	1.0E+01	5.0E-01	1.1E+03	--	--	--	--	8.5E+03	--	3.6E+04	5.0E+04	1.0E+01	1.1E+02	1.0E+01	Odor/Nuis
tert-Butyl alcohol	75-65-0	1.2E+01	1.2E+01	--	1.8E+04	--	--	--	--	--	--	5.0E+04	--	--	1.2E+01	Tap Canc-Risk
1,1,1,2-Tetrachloroethane	630-20-6	5.7E-01	5.7E-01	4.8E+02	9.3E+02	--	--	3.8E+00	--	1.7E+01	--	5.0E+04	--	--	5.7E-01	Tap Canc-Risk

2019 (Rev. 2) Summary of Groundwater ESLs (µg/L)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table GW-1)			Aquatic Habitat Goal Levels (Table GW-2)			Groundwater Vapor Intrusion Human Health Risk Levels (Table GW-3)				Gross Contamination Levels (GW-4)	Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis
		MCL Priority ¹	Tapwater Cancer Risk	Tapwater Non-cancer Hazard	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Residential		Commercial/Industrial			Drinking Water	Non-Drinking Water		
								Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard					
1,1,2,2-Tetrachloroethane	79-34-5	1.0E+00	7.6E-02	3.6E+02	4.2E+02	9.0E+02	1.1E+01	3.2E+00	--	1.4E+01	--	5.0E+04	5.0E+02	5.0E+03	1.0E+00	MCL
Tetrachloroethene	127-18-4	5.0E+00	6.0E-02	4.1E+01	1.2E+02	2.3E+02	8.9E+00	6.4E-01	5.8E+01	2.8E+00	2.4E+02	5.0E+04	1.7E+02	3.0E+03	6.4E-01	Vapor Intrusion
Thallium	7440-28-0	2.0E+00	--	1.0E-01	2.0E+01	2.1E+02	6.3E+00	--	--	--	--	5.0E+04	--	--	2.0E+00	MCL
Toluene	108-88-3	4.0E+01	--	1.5E+02	1.3E+02	2.5E+03	2.0E+05	--	1.2E+03	--	4.9E+03	5.0E+04	4.0E+01	4.0E+02	4.0E+01	Odor/Nuis
Toxaphene	8001-35-2	3.0E+00	3.0E-02	--	2.0E-04	2.0E-04	7.5E-04	--	--	--	--	2.8E+02	1.4E+02	1.4E+02	2.0E-04	Aquatic Habitat
1,2,4-Trichlorobenzene	120-82-1	5.0E+00	1.1E+00	4.0E+00	2.5E+01	6.5E+01	--	--	3.6E+01	--	1.5E+02	2.5E+04	3.0E+03	3.0E+04	5.0E+00	MCL
1,1,1-Trichloroethane	71-55-6	2.0E+02	--	1.0E+03	6.2E+01	3.1E+03	--	--	1.5E+03	--	6.3E+03	5.0E+04	9.7E+02	5.0E+05	6.2E+01	Aquatic Habitat
1,1,2-Trichloroethane	79-00-5	5.0E+00	2.8E-01	4.1E-01	4.7E+03	--	4.2E+01	5.2E+00	6.1E+00	2.3E+01	2.6E+01	5.0E+04	--	--	5.0E+00	MCL
Trichloroethene	79-01-6	5.0E+00	4.9E-01	2.8E+00	3.6E+02	2.0E+02	8.1E+01	1.2E+00	5.2E+00	7.5E+00	2.2E+01	5.0E+04	3.1E+02	1.0E+05	1.2E+00	Vapor Intrusion
2,4,5-Trichlorophenol	95-95-4	--	--	1.2E+03	6.3E+01	1.1E+01	--	--	--	--	--	5.0E+04	2.0E+02	2.0E+03	1.1E+01	Aquatic Habitat
2,4,6-Trichlorophenol	88-06-2	6.3E-01	6.3E-01	1.2E+01	4.9E+02	--	6.5E+00	--	--	--	--	5.0E+04	1.0E+02	1.0E+03	6.3E-01	Tap Canc-Risk
1,2,3-Trichloropropane	96-18-4	5.0E-03	7.0E-04	6.2E-01	2.7E+03	6.0E-03	--	--	2.2E+01	--	9.4E+01	5.0E+04	--	--	5.0E-03	MCL
Vanadium	7440-62-2	--	--	5.0E+01	1.9E+01	--	--	--	--	--	--	5.0E+04	--	--	1.9E+01	Aquatic Habitat
Vinyl chloride	75-01-4	5.0E-01	9.7E-03	4.4E+01	7.8E+02	--	5.3E+02	8.6E-03	9.5E+01	1.4E-01	4.0E+02	5.0E+04	3.4E+03	3.4E+04	8.6E-03	Vapor Intrusion
Xylenes	1330-20-7	2.0E+01	--	1.9E+02	--	1.0E+02	--	--	3.9E+02	--	1.6E+03	5.0E+04	2.0E+01	5.3E+03	2.0E+01	Odor/Nuis
Zinc	7440-66-6	5.0E+03	--	6.0E+03	1.2E+02	8.1E+01	--	--	--	--	--	5.0E+04	5.0E+03	--	8.1E+01	Aquatic Habitat

Notes:
 1 - "MCL Priority" lists all available MCL values. If no MCL values are available, the lower of the cancer and noncancer tapwater direct exposure levels is listed.
 - Cadmium (Soil) - No groundwater values are listed since groundwater ESLs only apply to dissolved chemicals.
 - Petroleum Motor Oil is composed of large carbon chain compounds (C24-C36+) having negligible solubility. Detections in water samples typically are Petroleum HOPs, nonaqueous phase liquid (NAPL or free product), contaminated sediment entrained in the water sample, or naturally occurring compounds. Review the chromatograms to help determine the nature of the compounds being detected. See User's Guide Chapter 4.

Abbreviations:
 Canc - Cancer
 Contam - Contamination
 DDD - Dichlorodiphenyldichloroethane
 DDE - Dichlorodiphenyldichloroethene
 DDT - Dichlorodiphenyltrichloroethane
 HOPs - Hydrocarbon Oxidation Products (biodegradation metabolites and photo-oxidation products of petroleum hydrocarbons). See User's Guide Chapter 4 for further information.
 MCL - Maximum Contaminant Level
 NC - Noncancer
 Odor/Nuis - Odor Nuisance
 PAH - Polycyclic aromatic hydrocarbon
 Tap - Tapwater
 TCDD - Tetrachlorodibenzodioxin

2019 (Rev. 2)		Summary of Soil ESLs (mg/kg)																
Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)						Terrestrial Habitat Levels (Table S-2)			Leaching to Groundwater Levels (Table S-3)		Gross Contamination Levels (Table S-4)	Odor Nuisance Levels (Table S-5)			Soil Tier 1 ESL	Basis
		Residential: Shallow Soil Exposure		Commercial/Industrial: Shallow Soil Exposure		Construction Worker: Any Land Use/Any Depth Soil Exposure		Significantly Vegetated Area	Minimally Vegetated Area	Drinking Water	Non-drinking Water	Res: Shallow Soil Exposure		Com/Ind: Shallow Soil Exposure	Any Land Use: Any Soil Exposure (CW)			
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Examples: Parkland or single family homes with yards	Examples: High density residential or commercial/industrial areas									
Acenaphthene [PAH]	83-32-9	--	3.6E+03	--	4.5E+04	--	1.0E+04	6.6E+03	4.6E+04	1.2E+01	1.2E+01	1.2E+02	1.0E+03	2.5E+03	2.5E+03	1.2E+01	Leaching	
Acenaphthylene [PAH]	208-96-8	--	--	--	--	--	--	--	--	6.4E+00	6.4E+00	5.9E+01	5.0E+02	1.0E+03	1.0E+03	6.4E+00	Leaching	
Acetone	67-64-1	--	6.1E+04	--	6.7E+05	--	2.7E+05	5.6E+01	5.6E+01	9.2E-01	9.2E-01	1.1E+05	5.0E+02	1.0E+03	1.0E+03	9.2E-01	Leaching	
Aldrin	309-00-2	3.5E-02	2.1E+00	1.5E-01	2.9E+01	1.0E+00	7.4E+00	2.4E-03	1.0E-01	8.4E+00	8.4E+00	8.4E+00	1.0E+03	2.5E+03	2.5E+03	2.4E-03	Terr Habitat	
Anthracene [PAH]	120-12-7	--	1.8E+04	--	2.3E+05	--	5.0E+04	3.1E+00	4.0E+01	1.9E+00	1.9E+00	4.1E+00	5.0E+02	1.0E+03	1.0E+03	1.9E+00	Leaching	
Antimony	7440-36-0	--	1.1E+01	--	1.6E+02	--	5.0E+01	2.5E+01	5.0E+01	--	--	--	--	--	--	1.1E+01	NC-Hazard	
Arsenic	7440-38-2	6.7E-02	2.6E-01	3.1E-01	3.6E+00	2.0E+00	9.8E-01	2.5E+01	5.0E+01	--	--	--	--	--	--	6.7E-02	Canc-Risk	
Barium	7440-39-3	--	1.5E+04	--	2.2E+05	--	3.0E+03	3.9E+02	6.7E+02	--	--	--	--	--	--	3.9E+02	Terr Habitat	
Benzene	71-43-2	3.3E-01	1.1E+01	1.4E+00	4.7E+01	3.3E+01	4.5E+01	6.0E+01	3.1E+02	2.5E-02	2.5E-02	1.9E+03	5.0E+02	1.0E+03	1.0E+03	2.5E-02	Leaching	
Benzo[a]anthracene [PAH]	56-55-3	1.1E+00	--	2.0E+01	--	1.1E+02	--	6.3E-01	1.3E+00	1.0E+01	1.0E+01	1.0E+01	5.0E+02	1.0E+03	1.0E+03	6.3E-01	Terr Habitat	
Benzo[a]pyrene [PAH]	50-32-8	1.1E-01	1.8E+01	2.1E+00	2.2E+02	1.1E+01	1.0E+01	2.5E+01	9.0E+01	5.7E+00	5.7E+00	5.7E+00	5.0E+02	1.0E+03	1.0E+03	1.1E-01	Canc-Risk	
Benzo[b]fluoranthene [PAH]	205-99-2	1.1E+00	--	2.1E+01	--	1.1E+02	--	--	--	5.4E+00	7.5E+01	5.4E+00	5.0E+02	1.0E+03	1.0E+03	1.1E+00	Canc-Risk	
Benzo[g,h,i]perylene [PAH]	191-24-2	--	--	--	--	--	--	8.3E+00	1.7E+01	2.7E+01	2.7E+01	2.5E+00	5.0E+02	1.0E+03	1.0E+03	2.5E+00	Gross Contam	
Benzo[k]fluoranthene [PAH]	207-08-9	1.1E+01	--	2.1E+02	--	9.1E+02	--	9.5E+00	1.9E+01	4.8E+00	3.9E+01	2.8E+00	5.0E+02	1.0E+03	1.0E+03	2.8E+00	Gross Contam	
Beryllium	7440-41-7	1.6E+03	1.6E+01	6.9E+03	2.3E+02	1.8E+02	2.7E+01	5.0E+00	1.0E+01	--	--	--	--	--	--	5.0E+00	Terr Habitat	
1,1-Biphenyl	92-52-4	6.8E+01	4.7E+01	2.9E+02	2.0E+02	1.7E+03	1.8E+02	--	--	4.2E-01	4.2E+00	2.3E+02	5.0E+02	1.0E+03	1.0E+03	4.2E-01	Leaching	
Bis(2-chloroethyl) ether	111-44-4	1.0E-01	--	4.7E-01	--	6.4E+00	--	--	--	3.4E-05	3.1E-02	5.0E+03	5.0E+02	1.0E+03	1.0E+03	3.4E-05	Leaching	
Bis(2-chloro-1-methylethyl) ether	108-60-1	5.0E+00	3.1E+03	2.3E+01	4.7E+04	2.7E+02	1.4E+04	--	--	5.1E-03	8.7E-01	1.0E+03	5.0E+02	1.0E+03	1.0E+03	5.1E-03	Leaching	
Bis(2-ethylhexyl) phthalate	117-81-7	3.9E+01	1.3E+03	1.6E+02	1.6E+04	9.5E+02	3.8E+03	8.0E-01	3.5E+01	1.9E+02	6.4E+02	1.9E+02	5.0E+02	1.0E+03	1.0E+03	8.0E-01	Terr Habitat	
Boron	7440-42-8	--	1.6E+04	--	2.3E+05	--	4.5E+04	1.2E+02	1.2E+02	--	--	--	--	--	--	1.2E+02	Terr Habitat	
Bromodichloromethane	75-27-4	2.9E-01	1.6E+03	1.3E+00	2.3E+04	2.8E+01	7.1E+03	--	--	1.6E-02	1.6E-02	9.3E+02	1.0E+03	2.5E+03	2.5E+03	1.6E-02	Leaching	
Bromoform (Tribromomethane)	75-25-2	1.8E+01	1.6E+03	8.0E+01	2.3E+04	1.2E+03	7.1E+03	--	--	6.9E-01	1.0E+00	9.2E+02	5.0E+02	1.0E+03	1.0E+03	6.9E-01	Leaching	
Bromomethane	74-83-9	--	6.9E+00	--	3.0E+01	--	2.9E+01	--	--	3.6E-01	8.3E-01	3.5E+03	5.0E+02	1.0E+03	1.0E+03	3.6E-01	Leaching	
Cadmium (soil)	7440-43-9	9.1E+02	7.8E+01	4.0E+03	1.1E+03	1.1E+02	5.1E+01	1.9E+00	1.9E+00	--	--	--	--	--	--	1.9E+00	Terr Habitat	
Cadmium (water)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbon tetrachloride	56-23-5	6.2E-01	5.3E+01	2.7E+00	2.5E+02	5.3E+01	2.2E+02	7.3E+00	1.5E+01	7.6E-02	7.6E-02	4.5E+02	5.0E+02	1.0E+03	1.0E+03	7.6E-02	Leaching	
Chlordane	12789-03-6	4.8E-01	3.6E+01	2.2E+00	5.0E+02	1.4E+01	1.3E+02	8.5E-03	8.5E-03	2.3E+01	2.3E+01	2.3E+01	1.0E+03	2.5E+03	2.5E+03	8.5E-03	Terr Habitat	
p-Chloroaniline	106-47-8	3.5E+00	3.1E+02	1.6E+01	4.7E+03	1.2E+02	1.4E+03	2.5E+01	5.0E+01	6.7E-03	9.1E-02	3.0E+03	5.0E+02	1.0E+03	1.0E+03	6.7E-03	Leaching	
Chlorobenzene	108-90-7	--	2.7E+02	--	1.3E+03	--	1.2E+03	7.5E+00	1.5E+01	1.4E+00	1.4E+00	7.5E+02	5.0E+02	1.0E+03	1.0E+03	1.4E+00	Leaching	
Chloroethane	75-00-3	--	1.4E+04	--	5.9E+04	--	5.9E+04	--	--	1.2E+00	1.2E+01	2.1E+03	5.0E+02	1.0E+03	1.0E+03	1.2E+00	Leaching	
Chloroform	67-66-3	3.2E-01	2.0E+02	1.4E+00	1.0E+03	3.4E+01	8.6E+02	4.3E+01	8.5E+01	2.3E-02	2.3E-02	2.6E+03	5.0E+02	1.0E+03	1.0E+03	2.3E-02	Leaching	
Chloromethane	74-87-3	--	1.1E+02	--	4.7E+02	--	4.7E+02	--	--	1.1E+01	1.5E+01	1.3E+03	1.0E+02	5.0E+02	5.0E+02	1.1E+01	Leaching	
2-Chlorophenol	95-57-8	--	3.9E+02	--	5.8E+03	--	1.8E+03	2.0E+00	3.9E+00	1.2E-02	1.2E-01	2.7E+04	1.0E+02	5.0E+02	5.0E+02	1.2E-02	Leaching	
Chromium (total)	7440-47-3	--	--	--	--	--	--	1.6E+02	1.6E+02	--	--	--	--	--	--	1.6E+02	Terr Habitat	
Chromium III	16065-83-1	--	1.2E+05	--	1.8E+06	--	5.3E+05	--	--	--	--	--	--	--	--	1.2E+05	NC-Hazard	
Chromium VI	18540-29-9	3.0E-01	2.3E+02	6.2E+00	3.5E+03	2.8E+00	4.0E+02	1.0E+01	1.0E+01	--	--	--	--	--	--	3.0E-01	Canc-Risk	
Chrysene [PAH]	218-01-9	1.1E+02	--	2.1E+03	--	9.1E+03	--	8.8E+00	1.8E+01	2.2E+00	1.0E+01	2.2E+00	5.0E+02	1.0E+03	1.0E+03	2.2E+00	Leaching	
Cobalt	7440-48-4	4.2E+02	2.3E+01	1.9E+03	3.5E+02	4.9E+01	2.8E+01	5.0E+01	1.0E+02	--	--	--	--	--	--	2.3E+01	NC-Hazard	
Copper	7440-50-8	--	3.1E+03	--	4.7E+04	--	1.4E+04	1.8E+02	3.0E+02	--	--	--	--	--	--	1.8E+02	Terr Habitat	
Cyanide	57-12-5	--	5.5E+00	--	2.5E+01	--	2.2E+01	1.1E-01	1.1E-01	3.4E-03	3.4E-03	1.9E+04	1.0E+02	5.0E+02	5.0E+02	3.4E-03	Leaching	
Dibenz[a,h]anthracene [PAH]	53-70-3	1.1E-01	--	2.1E+00	--	1.1E+01	--	--	--	2.9E+01	3.9E+02	2.9E+01	5.0E+02	1.0E+03	1.0E+03	1.1E-01	Canc-Risk	
Dibromochloromethane	124-48-1	8.3E+00	1.6E+03	3.9E+01	2.3E+04	2.9E+02	7.1E+03	--	--	3.5E-01	1.1E+01	8.0E+02	1.0E+02	5.0E+02	5.0E+02	3.5E-01	Leaching	
1,2-dibromo-3-chloropropane	96-12-8	4.4E-03	4.8E+00	5.9E-02	2.6E+01	1.1E+00	2.0E+01	--	--	5.9E-04	5.9E-04	9.9E+02	5.0E+02	1.0E+03	1.0E+03	5.9E-04	Leaching	
1,2-Dibromoethane	106-93-4	3.6E-02	7.2E+00	1.6E-01	3.0E+01	3.3E+00	3.0E+01	--	--	5.3E-04	1.9E-03	1.3E+03	5.0E+02	1.0E+03	1.0E+03	5.3E-04	Leaching	

2019 (Rev. 2)		Summary of Soil ESLs (mg/kg)																
Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)						Terrestrial Habitat Levels (Table S-2)			Leaching to Groundwater Levels (Table S-3)		Gross Contamination Levels (Table S-4)	Odor Nuisance Levels (Table S-5)			Soil Tier 1 ESL	Basis
		Residential: Shallow Soil Exposure		Commercial/Industrial: Shallow Soil Exposure		Construction Worker: Any Land Use/Any Depth Soil Exposure		Significantly Vegetated Area	Minimally Vegetated Area	Drinking Water	Non-drinking Water	Res: Shallow Soil Exposure		Com/Ind: Shallow Soil Exposure	Any Land Use: Any Soil Exposure (CW)			
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Examples: Parkland or single family homes with yards	Examples: High density residential or commercial/industrial areas									
1,2-Dichlorobenzene	95-50-1	--	1.8E+03	--	9.4E+03	--	7.8E+03	4.3E+00	8.5E+00	1.0E+00	1.0E+00	3.8E+02	1.0E+03	2.5E+03	2.5E+03	1.0E+00	Leaching	
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	--	6.0E+00	1.2E+01	7.4E+00	7.4E+00	6.1E+02	1.0E+02	5.0E+02	5.0E+02	6.0E+00	Terr Habitat	
1,4-Dichlorobenzene	106-46-7	2.6E+00	3.4E+03	1.2E+01	2.6E+04	2.8E+02	1.5E+04	4.5E+00	9.0E+00	2.0E-01	2.0E-01	1.9E+02	5.0E+02	1.0E+03	1.0E+03	2.0E-01	Leaching	
3,3-Dichlorobenzidine	91-94-1	5.8E-01	--	2.7E+00	--	2.0E+01	--	--	--	2.5E-02	1.3E+02	6.0E+01	5.0E+02	1.0E+03	1.0E+03	2.5E-02	Leaching	
DDD	72-54-8	2.7E+00	--	1.2E+01	--	8.1E+01	--	8.5E+00	1.7E+01	6.5E+01	6.5E+01	6.5E+01	5.0E+02	1.0E+03	1.0E+03	2.7E+00	Canc-Risk	
DDE	72-55-9	1.8E+00	--	8.3E+00	--	5.7E+01	--	3.3E-01	6.5E-01	2.9E+01	2.9E+01	2.9E+01	5.0E+02	1.0E+03	1.0E+03	3.3E-01	Terr Habitat	
DDT	50-29-3	1.9E+00	3.7E+01	8.5E+00	5.2E+02	5.7E+01	1.4E+02	1.1E-03	7.8E+00	5.6E+00	5.6E+00	5.6E+00	5.0E+02	1.0E+03	1.0E+03	1.1E-03	Terr Habitat	
1,1-Dichloroethane	75-34-3	3.6E+00	1.6E+04	1.6E+01	2.3E+05	3.7E+02	7.1E+04	1.1E+01	2.1E+01	2.0E-01	3.1E-01	1.7E+03	5.0E+02	1.0E+03	1.0E+03	2.0E-01	Leaching	
1,2-Dichloroethane	107-06-2	4.7E-01	3.2E+01	2.1E+00	1.4E+02	4.5E+01	1.3E+02	2.9E+01	2.9E+01	7.0E-03	3.1E-02	3.0E+03	1.0E+02	5.0E+02	5.0E+02	7.0E-03	Leaching	
1,1-Dichloroethene	75-35-4	--	8.3E+01	--	3.5E+02	--	3.5E+02	4.3E+01	1.3E+02	5.4E-01	4.2E+00	1.2E+03	5.0E+02	1.0E+03	1.0E+03	5.4E-01	Leaching	
cis-1,2-Dichloroethene	156-59-2	--	1.9E+01	--	8.5E+01	--	7.8E+01	8.4E+01	9.4E+02	1.9E-01	1.6E+00	2.4E+03	1.0E+02	5.0E+02	5.0E+02	1.9E-01	Leaching	
trans-1,2-Dichloroethene	156-60-5	--	1.3E+02	--	6.0E+02	--	5.7E+02	8.4E+01	9.4E+02	6.5E-01	1.4E+01	1.9E+03	5.0E+02	1.0E+03	1.0E+03	6.5E-01	Leaching	
2,4-Dichlorophenol	120-83-2	--	2.3E+02	--	3.5E+03	--	1.1E+03	2.1E+00	--	7.5E-03	7.5E-02	5.6E+03	5.0E+02	1.0E+03	1.0E+03	7.5E-03	Leaching	
1,2-Dichloropropane	78-87-5	1.0E+00	1.6E+01	4.4E+00	6.6E+01	9.9E+01	6.6E+01	3.1E+01	6.3E+01	6.5E-02	6.5E-02	1.4E+03	1.0E+02	5.0E+02	5.0E+02	6.5E-02	Leaching	
1,3-Dichloropropene	542-75-6	5.7E-01	7.2E+01	2.5E+00	3.1E+02	5.3E+01	3.0E+02	3.1E+01	6.3E+01	1.7E-02	4.0E-02	1.6E+03	5.0E+02	1.0E+03	1.0E+03	1.7E-02	Leaching	
Dieldrin	60-57-1	3.7E-02	3.5E+00	1.6E-01	4.8E+01	1.1E+00	1.2E+01	9.6E-04	1.1E-01	4.6E-04	6.3E-03	2.4E+01	5.0E+02	1.0E+03	1.0E+03	4.6E-04	Leaching	
Diethyl phthalate	84-66-2	--	5.1E+04	--	6.6E+05	--	1.5E+05	1.3E+01	2.7E+01	2.5E-02	2.5E-02	7.7E+02	5.0E+02	1.0E+03	1.0E+03	2.5E-02	Leaching	
Dimethyl phthalate	131-11-3	--	--	--	--	--	--	2.1E+01	4.2E+01	3.5E-02	3.5E-02	4.7E+03	5.0E+02	1.0E+03	1.0E+03	3.5E-02	Leaching	
2,4-Dimethylphenol	105-67-9	--	1.6E+03	--	2.3E+04	--	7.1E+03	--	--	8.1E+00	8.9E+00	2.4E+04	1.0E+02	5.0E+02	5.0E+02	8.1E+00	Leaching	
2,4-Dinitrophenol	51-28-5	--	1.6E+02	--	2.3E+03	--	7.1E+02	--	--	3.0E+00	5.7E+00	8.0E+03	5.0E+02	1.0E+03	1.0E+03	3.0E+00	Leaching	
2,4-Dinitrotoluene	121-14-2	2.2E+00	1.6E+02	1.1E+01	2.3E+03	7.9E+01	7.1E+02	--	--	2.3E-02	1.1E+01	7.2E+02	5.0E+02	1.0E+03	1.0E+03	2.3E-02	Leaching	
1,4-Dioxane	123-91-1	4.7E+00	8.1E+02	2.2E+01	4.5E+03	2.1E+02	3.4E+03	1.8E+00	1.8E+00	1.7E-04	8.4E-01	1.2E+05	5.0E+02	1.0E+03	1.0E+03	1.7E-04	Leaching	
Dioxin (2,3,7,8-TCDD)	1746-01-6	4.8E-06	5.1E-05	2.2E-05	7.2E-04	1.5E-04	2.0E-04	1.3E-05	9.9E-05	3.0E-01	3.0E-01	3.0E-01	5.0E+02	1.0E+03	1.0E+03	4.8E-06	Canc-Risk	
Endosulfan	115-29-7	--	4.2E+02	--	5.8E+03	--	1.5E+03	2.3E-02	3.8E-01	9.8E-03	9.8E-03	1.3E+01	5.0E+02	1.0E+03	1.0E+03	9.8E-03	Leaching	
Endrin	72-20-8	--	2.1E+01	--	2.9E+02	--	7.4E+01	1.1E-03	1.1E-03	7.6E-03	7.6E-03	3.0E+01	5.0E+02	1.0E+03	1.0E+03	1.1E-03	Terr Habitat	
Ethylbenzene	100-41-4	5.9E+00	3.4E+03	2.6E+01	2.1E+04	5.4E+02	1.5E+04	9.0E+01	4.3E+02	4.3E-01	4.3E-01	4.9E+02	5.0E+02	1.0E+03	1.0E+03	4.3E-01	Leaching	
Fluoranthene [PAH]	206-44-0	--	2.4E+03	--	3.0E+04	--	6.7E+03	6.9E-01	1.2E+05	8.6E+01	8.6E+01	8.6E+01	5.0E+02	1.0E+03	1.0E+03	6.9E-01	Terr Habitat	
Fluorene [PAH]	86-73-7	--	2.4E+03	--	3.0E+04	--	6.7E+03	--	--	6.0E+00	6.0E+00	9.4E+01	5.0E+02	1.0E+03	1.0E+03	6.0E+00	Leaching	
Heptachlor	76-44-8	1.2E-01	3.5E+01	5.3E-01	4.8E+02	3.7E+00	1.2E+02	2.5E-01	5.0E-01	4.4E+01	4.4E+01	4.4E+01	1.0E+03	2.5E+03	2.5E+03	1.2E-01	Canc-Risk	
Heptachlor epoxide	1024-57-3	6.2E-02	9.1E-01	2.8E-01	1.3E+01	1.9E+00	3.2E+00	--	--	1.8E-04	6.0E-03	1.2E+01	1.0E+03	2.5E+03	2.5E+03	1.8E-04	Leaching	
Hexachlorobenzene	118-74-1	1.8E-01	5.6E+01	7.8E-01	7.7E+02	7.7E+00	2.0E+02	1.3E+02	2.5E+02	8.0E-04	8.2E-02	2.3E-01	5.0E+02	1.0E+03	1.0E+03	8.0E-04	Leaching	
Hexachlorobutadiene	87-68-3	1.2E+00	7.8E+01	5.3E+00	1.2E+03	1.0E+02	3.5E+02	--	--	2.8E-02	6.2E-02	1.7E+01	5.0E+02	1.0E+03	1.0E+03	2.8E-02	Leaching	
g-Hexachlorocyclohexane (Lindane)	58-89-9	5.5E-01	2.1E+01	2.5E+00	2.9E+02	1.6E+01	7.4E+01	7.4E+00	1.5E+01	7.4E-03	7.4E-03	1.2E+02	5.0E+02	1.0E+03	1.0E+03	7.4E-03	Leaching	
Hexachloroethane	67-72-1	1.8E+00	3.8E+01	7.8E+00	3.7E+02	1.3E+02	1.2E+02	--	--	1.9E-02	9.2E-02	6.7E+01	5.0E+02	1.0E+03	1.0E+03	1.9E-02	Leaching	
Indeno[1,2,3-c]pyrene [PAH]	193-39-5	1.1E+00	--	2.1E+01	--	1.1E+02	--	4.8E-01	9.5E-01	1.6E+01	3.2E+01	2.3E+00	5.0E+02	1.0E+03	1.0E+03	4.8E-01	Terr Habitat	
Lead	7439-92-1	8.2E+01	8.0E+01	3.8E+02	3.2E+02	2.7E+03	1.6E+02	3.2E+01	3.2E+01	--	--	--	--	--	--	3.2E+01	Terr Habitat	
Mercury (elemental)	7439-97-6	--	1.3E+01	--	1.9E+02	--	4.4E+01	1.5E+01	2.0E+01	--	--	--	5.0E+02	1.0E+03	1.0E+03	1.3E+01	NC-Hazard	
Methoxychlor	72-43-5	--	3.5E+02	--	4.8E+03	--	1.2E+03	1.3E-01	4.1E+03	1.3E-02	1.3E-02	1.6E+01	5.0E+02	1.0E+03	1.0E+03	1.3E-02	Leaching	
Methylene chloride	75-09-2	1.9E+00	3.1E+02	2.5E+01	2.5E+03	4.9E+02	1.4E+03	9.8E-01	2.0E+00	1.2E-01	1.9E-01	3.3E+03	5.0E+02	1.0E+03	1.0E+03	1.2E-01	Leaching	
Methyl ethyl ketone	78-93-3	--	2.7E+04	--	2.0E+05	--	1.2E+05	4.4E+01	8.8E+01	6.1E+00	1.5E+01	2.8E+04	5.0E+02	1.0E+03	1.0E+03	6.1E+00	Leaching	
Methyl isobutyl ketone	108-10-1	--	3.4E+04	--	1.4E+05	--	1.4E+05	--	--	3.6E-01	5.1E-01	3.4E+03	1.0E+02	5.0E+02	5.0E+02	3.6E-01	Leaching	
Methyl mercury	22967-92-6	--	6.3E+00	--	8.2E+01	--	1.9E+01	3.4E-02	3.4E-02	--	--	--	1.0E+02	5.0E+02	5.0E+02	3.4E-02	Terr Habitat	
2-Methylnaphthalene	91-57-6	--	2.4E+02	--	3.0E+03	--	6.7E+02	--	--	8.8E-01	8.8E-01	3.8E+02	5.0E+02	1.0E+03	1.0E+03	8.8E-01	Leaching	
Methyl tertiary butyl ether (MTBE)	1634-04-4	4.7E+01	1.6E+04	2.1E+02	6.6E+04	4.1E+03	6.5E+04	3.1E+01	6.3E+01	2.8E-02	2.5E+00	9.0E+03	1.0E+02	5.0E+02	5.0E+02	2.8E-02	Leaching	

2019 (Rev. 2) **Summary of Soil ESLs (mg/kg)**

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)						Terrestrial Habitat Levels (Table S-2)		Leaching to Groundwater Levels (Table S-3)		Gross Contamination Levels (Table S-4)	Odor Nuisance Levels (Table S-5)			Soil Tier 1 ESL	Basis
		Residential: Shallow Soil Exposure		Commercial/Industrial: Shallow Soil Exposure		Construction Worker: Any Land Use/Any Depth Soil Exposure		Significantly Vegetated Area	Minimally Vegetated Area	Drinking Water	Non-drinking Water		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Any Soil Exposure (CW)		
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Examples: Parkland or single family homes with yards	Examples: High density residential or commercial/ industrial areas								
Molybdenum	7439-98-7	--	3.9E+02	--	5.8E+03	--	1.8E+03	6.9E+00	4.0E+01	--	--	--	--	--	6.9E+00	Terr Habitat	
Naphthalene [PAH]	91-20-3	3.8E+00	1.3E+02	1.7E+01	5.8E+02	4.0E+02	5.0E+02	7.5E-01	2.8E+01	4.2E-02	1.2E+00	2.8E+02	5.0E+02	1.0E+03	1.0E+03	4.2E-02	Leaching
Nickel	7440-02-0	1.5E+04	8.2E+02	6.4E+04	1.1E+04	1.7E+03	8.6E+01	1.3E+02	3.4E+02	--	--	--	--	--	8.6E+01	NC-Hazard	
Pentachlorophenol	87-86-5	1.0E+00	2.5E+02	4.0E+00	2.8E+03	2.0E+01	5.6E+02	1.3E-02	3.9E+01	9.8E-02	7.7E-01	5.1E+01	5.0E+02	1.0E+03	1.0E+03	1.3E-02	Terr Habitat
Perchlorate	7790-98-9	--	5.5E+01	--	8.2E+02	--	2.5E+02	--	--	--	--	--	--	--	5.5E+01	NC-Hazard	
Petroleum - Gasoline	--	--	4.3E+02	--	2.0E+03	--	1.8E+03	1.2E+02	1.2E+02	1.1E+03	4.9E+03	1.0E+03	1.0E+02	5.0E+02	5.0E+02	1.0E+02	Odor/Nuis
Petroleum - Stoddard Solvent	--	--	2.6E+02	--	1.4E+03	--	1.1E+03	2.6E+02	2.6E+02	1.3E+03	8.0E+03	2.3E+03	1.0E+02	5.0E+02	5.0E+02	1.0E+02	Odor/Nuis
Petroleum - Jet Fuel	--	--	2.7E+02	--	1.4E+03	--	1.1E+03	2.6E+02	2.6E+02	1.3E+03	8.0E+03	2.3E+03	1.0E+02	5.0E+02	5.0E+02	1.0E+02	Odor/Nuis
Petroleum - Diesel	--	--	2.6E+02	--	1.2E+03	--	1.1E+03	2.6E+02	2.6E+02	1.1E+03	7.3E+03	2.3E+03	5.0E+02	1.0E+03	1.0E+03	2.6E+02	NC-Hazard
Petroleum - HOPs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum - Motor Oil	--	--	1.2E+04	--	1.8E+05	--	5.4E+04	1.6E+03	1.6E+03	--	--	5.1E+03	--	--	--	1.6E+03	Terr Habitat
Phenanthrene [PAH]	85-01-8	--	--	--	--	--	--	7.8E+00	1.6E+01	1.1E+01	1.1E+01	6.9E+01	5.0E+02	1.0E+03	1.0E+03	7.8E+00	Terr Habitat
Phenol	108-95-2	--	2.3E+04	--	3.5E+05	--	9.8E+04	9.4E+00	9.4E+00	1.6E-01	1.8E+01	1.0E+05	5.0E+02	1.0E+03	1.0E+03	1.6E-01	Leaching
Polychlorinated biphenyls (PCBs)	1336-36-3	2.3E-01	--	9.4E-01	--	5.5E+00	--	1.1E+00	1.1E+00	3.3E+02	3.3E+02	3.3E+02	5.0E+02	1.0E+03	1.0E+03	2.3E-01	Canc-Risk
Pyrene [PAH]	129-00-0	--	1.8E+03	--	2.3E+04	--	5.0E+03	4.7E+03	9.9E+04	4.5E+01	4.5E+01	4.5E+01	5.0E+02	1.0E+03	1.0E+03	4.5E+01	Leaching
Selenium	7782-49-2	--	3.9E+02	--	5.8E+03	--	1.7E+03	2.4E+00	5.5E+00	--	--	--	--	--	2.4E+00	Terr Habitat	
Silver	7440-22-4	--	3.9E+02	--	5.8E+03	--	1.8E+03	2.5E+01	5.0E+01	--	--	--	--	--	2.5E+01	Terr Habitat	
Styrene	100-42-5	--	5.7E+03	--	3.3E+04	--	2.5E+04	2.2E+01	4.3E+01	9.2E-01	1.0E+01	8.7E+02	5.0E+02	1.0E+03	1.0E+03	9.2E-01	Leaching
tert-Butyl alcohol	75-65-0	--	--	--	--	--	--	--	--	7.5E-02	1.1E+02	3.2E+05	1.0E+02	5.0E+02	5.0E+02	7.5E-02	Leaching
1,1,1,2-Tetrachloroethane	630-20-6	2.0E+00	2.3E+03	8.9E+00	3.5E+04	1.9E+02	1.1E+04	--	--	1.7E-02	1.1E-01	7.0E+02	1.0E+02	5.0E+02	5.0E+02	1.7E-02	Leaching
1,1,2,2-Tetrachloroethane	79-34-5	6.1E-01	1.6E+03	2.7E+00	2.3E+04	4.9E+01	7.1E+03	--	--	1.8E-02	5.8E-02	1.9E+03	5.0E+02	1.0E+03	1.0E+03	1.8E-02	Leaching
Tetrachloroethene	127-18-4	5.9E-01	8.2E+01	2.7E+00	3.9E+02	3.3E+01	3.5E+02	4.5E+00	4.3E+01	8.0E-02	8.0E-02	1.7E+02	5.0E+02	1.0E+03	1.0E+03	8.0E-02	Leaching
Thallium	7440-28-0	--	7.8E-01	--	1.2E+01	--	3.5E+00	1.8E+00	4.5E+00	--	--	--	--	--	--	7.8E-01	NC-Hazard
Toluene	108-88-3	--	1.1E+03	--	5.3E+03	--	4.7E+03	1.4E+02	6.6E+02	3.2E+00	1.0E+01	8.1E+02	5.0E+02	1.0E+03	1.0E+03	3.2E+00	Leaching
Toxaphene	8001-35-2	5.1E-01	--	2.2E+00	--	1.4E+01	--	--	--	2.5E+02	2.5E+02	2.5E+02	5.0E+02	1.0E+03	1.0E+03	5.1E-01	Canc-Risk
1,2,4-Trichlorobenzene	120-82-1	2.4E+01	5.9E+01	1.1E+02	2.6E+02	8.5E+02	2.4E+02	1.6E+01	3.0E+01	1.2E+00	6.0E+00	4.2E+02	5.0E+02	1.0E+03	1.0E+03	1.2E+00	Leaching
1,1,1-Trichloroethane	71-55-6	--	1.7E+03	--	7.3E+03	--	7.2E+03	2.2E+01	4.4E+01	7.0E+00	7.0E+00	6.5E+02	5.0E+02	1.0E+03	1.0E+03	7.0E+00	Leaching
1,1,2-Trichloroethane	79-00-5	1.2E+00	1.5E+00	5.1E+00	6.4E+00	1.1E+02	6.3E+00	1.0E+02	2.0E+02	7.6E-02	7.9E-02	2.2E+03	1.0E+02	5.0E+02	5.0E+02	7.6E-02	Leaching
Trichloroethene	79-01-6	9.5E-01	4.2E+00	6.1E+00	1.9E+01	1.3E+02	1.8E+01	8.1E+00	2.5E+02	8.5E-02	8.5E-02	7.0E+02	5.0E+02	1.0E+03	1.0E+03	8.5E-02	Leaching
2,4,5-Trichlorophenol	95-95-4	--	7.8E+03	--	1.2E+05	--	3.5E+04	5.5E+00	1.0E+01	2.9E+00	2.9E+00	1.2E+04	5.0E+02	1.0E+03	1.0E+03	2.9E+00	Leaching
2,4,6-Trichlorophenol	88-06-2	9.9E+00	7.8E+01	4.7E+01	1.2E+03	3.5E+02	3.5E+02	5.5E+00	1.0E+01	4.0E-02	3.1E+01	1.9E+03	1.0E+02	5.0E+02	5.0E+02	4.0E-02	Leaching
1,2,3-Trichloropropane	96-18-4	2.3E-02	4.9E+00	1.1E-01	2.1E+01	8.3E-01	2.0E+01	--	--	1.1E-04	1.3E-04	1.4E+03	1.0E+02	5.0E+02	5.0E+02	1.1E-04	Leaching
Vanadium	7440-62-2	--	3.9E+02	--	5.8E+03	--	4.7E+02	1.8E+01	1.8E+01	--	--	--	--	--	--	1.8E+01	Terr Habitat
Vinyl chloride	75-01-4	8.3E-03	7.0E+01	1.5E-01	3.8E+02	3.4E+00	3.0E+02	4.3E+00	8.5E+00	1.5E-03	1.5E-03	3.9E+03	5.0E+02	1.0E+03	1.0E+03	1.5E-03	Leaching
Xylenes	1330-20-7	--	5.8E+02	--	2.5E+03	--	2.4E+03	5.5E+01	2.1E+02	2.1E+00	1.0E+01	2.7E+02	5.0E+02	1.0E+03	1.0E+03	2.1E+00	Leaching
Zinc	7440-66-6	--	2.3E+04	--	3.5E+05	--	1.1E+05	3.4E+02	3.4E+02	--	--	--	--	--	--	3.4E+02	Terr Habitat

Notes:
- Cadmium (Water): Groundwater levels do not apply to cadmium in soil so no soil level are listed.
- Petroleum - HOPs: Soil ESLs have not been developed at this time.

Abbreviations:
Canc - Cancer
Com/Ind - Commercial/Industrial
Contam - Contamination
CW - Construction Worker
DDD - Dichlorodiphenyldichloroethane

2019 (Rev. 2)	Summary of Soil ESLs (mg/kg)												
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Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)						Terrestrial Habitat Levels (Table S-2)		Leaching to Groundwater Levels (Table S-3)		Gross Contamination Levels (Table S-4)	Odor Nuisance Levels (Table S-5)			Soil Tier 1 ESL	Basis
		Residential: Shallow Soil Exposure		Commerical/ Industrial: Shallow Soil Exposure		Construction Worker: Any Land Use/ Any Depth Soil Exposure		Significantly Vegetated Area	Minimally Vegetated Area	Drinking Water	Non-drinking Water		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Any Soil Exposure (CW)		
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard				Examples: Parkland or single family homes with yards	Examples: High density residential or commercial/ industrial areas			

DDE - Dichlorodiphenyldichloroethene
 DDT - Dichlorodiphenyltrichloroethane
 Exp - Exposure
 HOPs - Hydrocarbon Oxidation Products (biodegradation metabolites and photo-oxidation products of petroleum hydrocarbons). See User's Guide Chapter 4 for further information.
 NC - Noncancer
 Odor/Nuis - Odor Nuisance
 PAH - Polycyclic aromatic hydrocarbon
 Res - Residential
 TCDD - Tetrachlorodibenzodioxin
 Terr - Terrestrial

2019 (Rev. 2)		Summary of Vapor ESLs													
Chemicals	CAS No.	Subslab/ Soil Gas ($\mu\text{g}/\text{m}^3$)							Indoor Air ($\mu\text{g}/\text{m}^3$)						
		Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels (Table SG-1)				Subslab/ Soil Gas Vapor Intrusion: Odor Nuisance Levels (Table SG-2)	Tier 1 ESL	Basis	Direct Exposure Human Health Risk Levels (Table IA-1)				Odor Nuisance Levels (Table IA-2)	Tier 1 ESL	Basis
		Residential		Commercial/ Industrial					Residential		Commercial/ Industrial				
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard				Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard			
Acenaphthene [PAH]	83-32-9	--	--	--	--	1.7E+04	1.7E+04	Odor/Nuis	--	--	--	--	5.1E+02	5.1E+02	Nuis/Odor
Acenaphthylene [PAH]	208-96-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	--	1.1E+06	--	4.5E+06	1.0E+06	1.0E+06	Odor/Nuis	--	3.2E+04	--	1.4E+05	3.1E+04	3.1E+04	Nuis/Odor
Aldrin	309-00-2	1.9E-02	--	8.3E-02	--	8.8E+03	1.9E-02	Canc-Risk	5.7E-04	--	2.5E-03	--	2.6E+02	5.7E-04	Canc-Risk
Anthracene [PAH]	120-12-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	3.2E+00	1.0E+02	1.4E+01	4.4E+02	1.6E+05	3.2E+00	Canc-Risk	9.7E-02	3.1E+00	4.2E-01	1.3E+01	4.9E+03	9.7E-02	Canc-Risk
Benzo[a]anthracene [PAH]	56-55-3	3.1E-01	--	3.7E+00	--	--	3.1E-01	Canc-Risk	9.2E-03	--	1.1E-01	--	--	9.2E-03	Canc-Risk
Benzo[a]pyrene [PAH]	50-32-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene [PAH]	205-99-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene [PAH]	191-24-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene [PAH]	207-08-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	7440-41-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Biphenyl	92-52-4	--	1.4E+01	--	5.8E+01	2.0E+03	1.4E+01	NC-Hazard	--	4.2E-01	--	1.8E+00	6.0E+01	4.2E-01	NC-Hazard
Bis(2-chloroethyl) ether	111-44-4	1.3E-01	--	5.8E-01	--	9.6E+03	1.3E-01	Canc-Risk	4.0E-03	--	1.7E-02	--	2.9E+02	4.0E-03	Canc-Risk
Bis(2-chloro-1-methylethyl) ether	108-60-1	9.4E+00	--	4.1E+01	--	7.5E+04	9.4E+00	Canc-Risk	2.8E-01	--	1.2E+00	--	2.2E+03	2.8E-01	Canc-Risk
Bis(2-ethylhexyl) phthalate	117-81-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	7440-42-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	75-27-4	2.5E+00	--	1.1E+01	--	3.7E+08	2.5E+00	Canc-Risk	7.6E-02	--	3.3E-01	--	1.1E+07	7.6E-02	Canc-Risk
Bromoform (Tribromomethane)	75-25-2	8.5E+01	--	3.7E+02	--	4.5E+05	8.5E+01	Canc-Risk	2.6E+00	--	1.1E+01	--	1.3E+04	2.6E+00	Canc-Risk
Bromomethane	74-83-9	--	1.7E+02	--	7.3E+02	2.7E+06	1.7E+02	NC-Hazard	--	5.2E+00	--	2.2E+01	8.0E+04	5.2E+00	NC-Hazard
Cadmium (soil)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium (water)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	56-23-5	1.6E+01	1.4E+03	6.8E+01	5.8E+03	2.1E+06	1.6E+01	Canc-Risk	4.7E-01	4.2E+01	2.0E+00	1.8E+02	6.3E+04	4.7E-01	Canc-Risk
Chlordane	12789-03-6	2.8E-01	2.4E+01	1.2E+00	1.0E+02	2.8E+02	2.8E-01	Canc-Risk	8.3E-03	7.3E-01	3.6E-02	3.1E+00	8.4E+00	8.3E-03	Canc-Risk
p-Chloroaniline	106-47-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	108-90-7	--	1.7E+03	--	7.3E+03	3.3E+04	1.7E+03	NC-Hazard	--	5.2E+01	--	2.2E+02	1.0E+03	5.2E+01	NC-Hazard
Chloroethane	75-00-3	--	3.5E+05	--	1.5E+06	1.3E+07	3.5E+05	NC-Hazard	--	1.0E+04	--	4.4E+04	3.8E+05	1.0E+04	NC-Hazard
Chloroform	67-66-3	4.1E+00	3.4E+03	1.8E+01	1.4E+04	1.4E+07	4.1E+00	Canc-Risk	1.2E-01	1.0E+02	5.3E-01	4.3E+02	4.2E+05	1.2E-01	Canc-Risk
Chloromethane	74-87-3	--	3.1E+03	--	1.3E+04	--	3.1E+03	NC-Hazard	--	9.4E+01	--	3.9E+02	--	9.4E+01	NC-Hazard
2-Chlorophenol	95-57-8	--	--	--	--	6.3E+02	6.3E+02	Odor/Nuis	--	--	--	--	1.9E+01	1.9E+01	Nuis/Odor

2019 (Rev. 2)		Summary of Vapor ESLs													
Chemicals	CAS No.	Subslab/ Soil Gas ($\mu\text{g}/\text{m}^3$)							Indoor Air ($\mu\text{g}/\text{m}^3$)						
		Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels (Table SG-1)				Subslab/ Soil Gas Vapor Intrusion: Odor Nuisance Levels (Table SG-2)	Tier 1 ESL	Basis	Direct Exposure Human Health Risk Levels (Table IA-1)				Odor Nuisance Levels (Table IA-2)	Tier 1 ESL	Basis
		Residential		Commercial/ Industrial					Residential		Commercial/ Industrial				
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard				Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard			
Chromium (total)	7440-47-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium III	16065-83-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI	18540-29-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene [PAH]	218-01-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	7440-48-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	7440-50-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide	57-12-5	--	2.8E+01	--	1.2E+02	2.2E+04	2.8E+01	NC-Hazard	--	8.3E-01	--	3.5E+00	6.5E+02	8.3E-01	NC-Hazard
Dibenz[a,h]anthracene [PAH]	53-70-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	124-48-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-dibromo-3-chloropropane	96-12-8	5.6E-03	7.0E+00	6.8E-02	2.9E+01	--	5.6E-03	Canc-Risk	1.7E-04	2.1E-01	2.0E-03	8.8E-01	--	1.7E-04	Canc-Risk
1,2-Dibromoethane	106-93-4	1.6E-01	2.8E+01	6.8E-01	1.2E+02	6.7E+06	1.6E-01	Canc-Risk	4.7E-03	8.3E-01	2.0E-02	3.5E+00	2.0E+05	4.7E-03	Canc-Risk
1,2-Dichlorobenzene	95-50-1	--	7.0E+03	--	2.9E+04	1.0E+07	7.0E+03	NC-Hazard	--	2.1E+02	--	8.8E+02	3.1E+05	2.1E+02	NC-Hazard
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	106-46-7	8.5E+00	2.8E+04	3.7E+01	1.2E+05	3.7E+04	8.5E+00	Canc-Risk	2.6E-01	8.3E+02	1.1E+00	3.5E+03	1.1E+03	2.6E-01	Canc-Risk
3,3-Dichlorobenzidine	91-94-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDD	72-54-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDE	72-55-9	9.6E-01	--	4.2E+00	--	--	9.6E-01	Canc-Risk	2.9E-02	--	1.3E-01	--	--	2.9E-02	Canc-Risk
DDT	50-29-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	75-34-3	5.8E+01	--	2.6E+02	--	4.2E+06	5.8E+01	Canc-Risk	1.8E+00	--	7.7E+00	--	1.3E+05	1.8E+00	Canc-Risk
1,2-Dichloroethane	107-06-2	3.6E+00	2.4E+02	1.6E+01	1.0E+03	8.1E+04	3.6E+00	Canc-Risk	1.1E-01	7.3E+00	4.7E-01	3.1E+01	2.4E+03	1.1E-01	Canc-Risk
1,1-Dichloroethene	75-35-4	--	2.4E+03	--	1.0E+04	6.7E+07	2.4E+03	NC-Hazard	--	7.3E+01	--	3.1E+02	2.0E+06	7.3E+01	NC-Hazard
cis-1,2-Dichloroethene	156-59-2	--	2.8E+02	--	1.2E+03	--	2.8E+02	NC-Hazard	--	8.3E+00	--	3.5E+01	--	8.3E+00	NC-Hazard
trans-1,2-Dichloroethene	156-60-5	--	2.8E+03	--	1.2E+04	2.2E+06	2.8E+03	NC-Hazard	--	8.3E+01	--	3.5E+02	6.7E+04	8.3E+01	NC-Hazard
2,4-Dichlorophenol	120-83-2	--	--	--	--	4.7E+04	4.7E+04	Odor/Nuis	--	--	--	--	1.4E+03	1.4E+03	Nuis/Odor
1,2-Dichloropropane	78-87-5	9.4E+00	1.4E+02	4.1E+01	5.8E+02	4.0E+04	9.4E+00	Canc-Risk	2.8E-01	4.2E+00	1.2E+00	1.8E+01	1.2E+03	2.8E-01	Canc-Risk
1,3-Dichloropropene	542-75-6	5.8E+00	7.0E+02	2.6E+01	2.9E+03	1.4E+05	5.8E+00	Canc-Risk	1.8E-01	2.1E+01	7.7E-01	8.8E+01	4.2E+03	1.8E-01	Canc-Risk
Dieldrin	60-57-1	2.0E-02	--	8.9E-02	--	--	2.0E-02	Canc-Risk	6.1E-04	--	2.7E-03	--	--	6.1E-04	Canc-Risk
Diethyl phthalate	84-66-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	131-11-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	105-67-9	--	--	--	--	3.3E+01	3.3E+01	Odor/Nuis	--	--	--	--	1.0E+00	1.0E+00	Nuis/Odor
2,4-Dinitrophenol	51-28-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	121-14-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dioxane	123-91-1	1.2E+01	1.0E+03	5.3E+01	4.4E+03	2.0E+07	1.2E+01	Canc-Risk	3.6E-01	3.1E+01	1.6E+00	1.3E+02	6.1E+05	3.6E-01	Canc-Risk

2019 (Rev. 2)		Summary of Vapor ESLs													
Chemicals	CAS No.	Subslab/ Soil Gas ($\mu\text{g}/\text{m}^3$)							Indoor Air ($\mu\text{g}/\text{m}^3$)						
		Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels (Table SG-1)				Subslab/ Soil Gas Vapor Intrusion: Odor Nuisance Levels (Table SG-2)	Tier 1 ESL	Basis	Direct Exposure Human Health Risk Levels (Table IA-1)				Odor Nuisance Levels (Table IA-2)	Tier 1 ESL	Basis
		Residential		Commercial/ Industrial					Residential		Commercial/ Industrial				
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard				Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard			
Dioxin (2,3,7,8-TCDD)	1746-01-6	2.5E-06	1.4E-03	1.1E-05	5.8E-03	--	2.5E-06	Canc-Risk	7.4E-08	4.2E-05	3.2E-07	1.8E-04	--	7.4E-08	Canc-Risk
Endosulfan	115-29-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endrin	72-20-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	3.7E+01	3.5E+04	1.6E+02	1.5E+05	6.7E+04	3.7E+01	Canc-Risk	1.1E+00	1.0E+03	4.9E+00	4.4E+03	2.0E+03	1.1E+00	Canc-Risk
Fluoranthene [PAH]	206-44-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene [PAH]	86-73-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heptachlor	76-44-8	7.2E-02	--	3.1E-01	--	1.0E+04	7.2E-02	Canc-Risk	2.2E-03	--	9.4E-03	--	3.0E+02	2.2E-03	Canc-Risk
Heptachlor epoxide	1024-57-3	3.6E-02	--	1.6E-01	--	1.0E+04	3.6E-02	Canc-Risk	1.1E-03	--	4.7E-03	--	3.0E+02	1.1E-03	Canc-Risk
Hexachlorobenzene	118-74-1	1.8E-01	--	8.0E-01	--	--	1.8E-01	Canc-Risk	5.5E-03	--	2.4E-02	--	--	5.5E-03	Canc-Risk
Hexachlorobutadiene	87-68-3	4.3E+00	--	1.9E+01	--	4.0E+05	4.3E+00	Canc-Risk	1.3E-01	--	5.6E-01	--	1.2E+04	1.3E-01	Canc-Risk
g-Hexachlorocyclohexane (Lindane)	58-89-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	67-72-1	8.5E+00	1.0E+03	3.7E+01	4.4E+03	--	8.5E+00	Canc-Risk	2.6E-01	3.1E+01	1.1E+00	1.3E+02	--	2.6E-01	Canc-Risk
Indeno[1,2,3-c,d]pyrene [PAH]	193-39-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	7439-92-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	7439-97-6	--	1.0E+00	--	4.4E+00	--	1.0E+00	NC-Hazard	--	3.1E-02	--	1.3E-01	--	3.1E-02	NC-Hazard
Methoxychlor	72-43-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	75-09-2	3.4E+01	1.4E+04	4.1E+02	5.8E+04	1.9E+07	3.4E+01	Canc-Risk	1.0E+00	4.2E+02	1.2E+01	1.8E+03	5.6E+05	1.0E+00	Canc-Risk
Methyl ethyl ketone	78-93-3	--	1.7E+05	--	7.3E+05	1.1E+06	1.7E+05	NC-Hazard	--	5.2E+03	--	2.2E+04	3.2E+04	5.2E+03	NC-Hazard
Methyl isobutyl ketone	108-10-1	--	1.0E+05	--	4.4E+05	1.4E+04	1.4E+04	Odor/Nuis	--	3.1E+03	--	1.3E+04	4.2E+02	4.2E+02	Nuis/Odor
Methyl mercury	22967-92-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	91-57-6	--	--	--	--	2.3E+03	2.3E+03	Odor/Nuis	--	--	--	--	6.8E+01	6.8E+01	Nuis/Odor
Methyl tertiary butyl ether (MTBE)	1634-04-4	3.6E+02	1.0E+05	1.6E+03	4.4E+05	1.8E+04	3.6E+02	Canc-Risk	1.1E+01	3.1E+03	4.7E+01	1.3E+04	5.3E+02	1.1E+01	Canc-Risk
Molybdenum	7439-98-7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene [PAH]	91-20-3	2.8E+00	1.0E+02	1.2E+01	4.4E+02	1.5E+04	2.8E+00	Canc-Risk	8.3E-02	3.1E+00	3.6E-01	1.3E+01	4.4E+02	8.3E-02	Canc-Risk
Nickel	7440-02-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	87-86-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perchlorate	7790-98-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum - Gasoline	--	--	2.0E+04	--	8.3E+04	3.3E+03	3.3E+03	Odor/Nuis	--	6.0E+02	--	2.5E+03	1.0E+02	1.0E+02	Nuis/Odor
Petroleum - Stoddard Solvent	--	--	1.1E+04	--	4.6E+04	3.3E+04	1.1E+04	NC-Hazard	--	3.3E+02	--	1.4E+03	1.0E+03	3.3E+02	NC-Hazard
Petroleum - Jet Fuel	--	--	1.1E+04	--	4.6E+04	3.3E+04	1.1E+04	NC-Hazard	--	3.3E+02	--	1.4E+03	1.0E+03	3.3E+02	NC-Hazard
Petroleum - Diesel	--	--	8.9E+03	--	3.7E+04	3.3E+04	8.9E+03	NC-Hazard	--	2.7E+02	--	1.1E+03	1.0E+03	2.7E+02	NC-Hazard
Petroleum - HOPs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum - Motor Oil	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2019 (Rev. 2)		Summary of Vapor ESLs													
Chemicals	CAS No.	Subslab/ Soil Gas ($\mu\text{g}/\text{m}^3$)							Indoor Air ($\mu\text{g}/\text{m}^3$)						
		Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels (Table SG-1)				Subslab/ Soil Gas Vapor Intrusion: Odor Nuisance Levels (Table SG-2)	Tier 1 ESL	Basis	Direct Exposure Human Health Risk Levels (Table IA-1)				Odor Nuisance Levels (Table IA-2)	Tier 1 ESL	Basis
		Residential		Commercial/ Industrial					Residential		Commercial/ Industrial				
		Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard				Cancer Risk	Non-cancer Hazard	Cancer Risk	Non-cancer Hazard			
Phenanthrene [PAH]	85-01-8	--	--	--	--	1.8E+03	1.8E+03	Odor/Nuis	--	--	--	--	5.5E+01	5.5E+01	Nuis/Odor
Phenol	108-95-2	--	--	--	--	5.2E+03	5.2E+03	Odor/Nuis	--	--	--	--	1.6E+02	1.6E+02	Nuis/Odor
Polychlorinated biphenyls (PCBs)	1336-36-3	1.6E-01	--	7.2E-01	--	--	1.6E-01	Canc-Risk	4.9E-03	--	2.2E-02	--	--	4.9E-03	Canc-Risk
Pyrene [PAH]	129-00-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	7782-49-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	7440-22-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	100-42-5	--	3.1E+04	--	1.3E+05	4.5E+04	3.1E+04	NC-Hazard	--	9.4E+02	--	3.9E+03	1.4E+03	9.4E+02	NC-Hazard
tert-Butyl alcohol	75-65-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	630-20-6	1.3E+01	--	5.5E+01	--	--	1.3E+01	Canc-Risk	3.8E-01	--	1.7E+00	--	--	3.8E-01	Canc-Risk
1,1,2,2-Tetrachloroethane	79-34-5	1.6E+00	--	7.0E+00	--	3.5E+05	1.6E+00	Canc-Risk	4.8E-02	--	2.1E-01	--	1.0E+04	4.8E-02	Canc-Risk
Tetrachloroethene	127-18-4	1.5E+01	1.4E+03	6.7E+01	5.8E+03	1.1E+06	1.5E+01	Canc-Risk	4.6E-01	4.2E+01	2.0E+00	1.8E+02	3.2E+04	4.6E-01	Canc-Risk
Thallium	7440-28-0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	--	1.0E+04	--	4.4E+04	1.0E+06	1.0E+04	NC-Hazard	--	3.1E+02	--	1.3E+03	3.0E+04	3.1E+02	NC-Hazard
Toxaphene	8001-35-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	120-82-1	--	7.0E+01	--	2.9E+02	7.3E+05	7.0E+01	NC-Hazard	--	2.1E+00	--	8.8E+00	2.2E+04	2.1E+00	NC-Hazard
1,1,1-Trichloroethane	71-55-6	--	3.5E+04	--	1.5E+05	2.2E+06	3.5E+04	NC-Hazard	--	1.0E+03	--	4.4E+03	6.5E+04	1.0E+03	NC-Hazard
1,1,2-Trichloroethane	79-00-5	5.8E+00	7.0E+00	2.6E+01	2.9E+01	--	5.8E+00	Canc-Risk	1.8E-01	2.1E-01	7.7E-01	8.8E-01	--	1.8E-01	Canc-Risk
Trichloroethene	79-01-6	1.6E+01	7.0E+01	1.0E+02	2.9E+02	4.5E+07	1.6E+01	Canc-Risk	4.8E-01	2.1E+00	3.0E+00	8.8E+00	1.4E+06	4.8E-01	Canc-Risk
2,4,5-Trichlorophenol	95-95-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	88-06-2	--	--	--	--	1.0E+01	1.0E+01	Odor/Nuis	--	--	--	--	3.0E-01	3.0E-01	Nuis/Odor
1,2,3-Trichloropropane	96-18-4	--	1.0E+01	--	4.4E+01	--	1.0E+01	NC-Hazard	--	3.1E-01	--	1.3E+00	--	3.1E-01	NC-Hazard
Vanadium	7440-62-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	75-01-4	3.2E-01	3.5E+03	5.2E+00	1.5E+04	2.6E+07	3.2E-01	Canc-Risk	9.5E-03	1.0E+02	1.6E-01	4.4E+02	7.7E+05	9.5E-03	Canc-Risk
Xylenes	1330-20-7	--	3.5E+03	--	1.5E+04	1.5E+04	3.5E+03	NC-Hazard	--	1.0E+02	--	4.4E+02	4.4E+02	1.0E+02	NC-Hazard
Zinc	7440-66-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Abbreviations:
Canc-Risk - Cancer
DDD - Dichlorodiphenyldichloroethane
DDE - Dichlorodiphenyldichloroethene
DDT - Dichlorodiphenyltrichloroethane
HOPs - Hydrocarbon Oxidation Products (biodegradation metabolites and photo-oxidation products of petroleum hydrocarbons). See User's Guide Chapter 4 for further information.
NC - Noncancer
Odor/Nuis - Odor Nuisance
PAH - Polycyclic aromatic hydrocarbon
TCDD - Tetrachlorodibenzodioxin

2019 (Rev. 2)	Short-Term Action Levels for Trichloroethene (TCE)						
Land Use	Groundwater Trigger Level (µg/L)	Subslab/ Soil Gas Trigger Level (µg/m ³)	Trigger Level Response Action	Indoor Air Accelerated Response Level (µg/m ³)	Accelerated Response Action	Indoor Air Urgent Response Level (µg/m ³)	Urgent Response Action
Residential	5.0E+00	6.7E+01	Expedite Indoor Air Sampling	2.0E+00	Mitigation* within Weeks	6.0E+00	Mitigation* within Days
Commercial	2.0E+01	2.7E+02		8.0E+00		2.4E+01	
<p>Notes: User's Guide Chapter 6 presents the basis for the short-term action levels for TCE in groundwater, soil gas, and indoor air. Also see the USEPA Region 9 Memorandum Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion (USEPA 2014d). *Mitigation - Responses include but are not limited to the following: - Residential: prompt mitigation such as increasing ventilation, sealing potential conduits, or treating indoor air - Commercial: prompt mitigation such as increasing use of HVAC (e.g., increasing outdoor air intake, increasing building pressurization), sealing potential conduits, or treating indoor air</p>							