

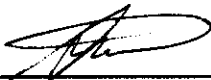
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By Alameda County Environmental Health 1:49 pm, Jun 27, 2017

ACKNOWLEDGMENT STATEMENT

**Subject: 1395 MacArthur Boulevard, San Leandro, California
Site Assessment Work Plan**

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker Website.



Mr. Sayed Hussain, agent for
ESC PARTNERS, L. P. and
Mr. William Matthew Brooks
4725 Thornton Avenue
Fremont, CA, 94536

**Site Assessment Work Plan
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California**

16 June 2017
AGE-Project No. 12-2461

PREPARED FOR:

Mr. William Mathews Brooks
ARDENBROOK

PREPARED BY:

AdvancedGeo
Environmental



An Employee-Owned Company

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“Working in Partnership with People, Business and the Environment”

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Site Assessment Work Plan
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California

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Site Assessment Work Plan
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California

1.0. INTRODUCTION

At the request of Mr. William Mathews Brooks, Advanced GeoEnvironmental, Inc. (AGE) has prepared this, *Site Assessment Work Plan* for 1395 MacArthur Boulevard, San Leandro, California (site). The work plan was prepared as required by the Alameda County Environmental Health Department by letter dated 28 April 2017 (Appendix A). Central Valley Regional Water Quality Control Board (CVRWQB) letter dated 23 March 2017 (Appendix A).

The work plan details the advancement of two (2) additional Cone Penetration Testing boring for collection of grab groundwater samples to evaluate the lateral limits of dissolved chlorinated-solvent impact, resulting from historical dry cleaning operations performed at the site. The work plan details the advancement four (4) borings within the subject unit for the installation of two (2) soil-vapor probes and sampling of two deeper soil-vapor probes. Lastly, the work plan details constituent trigger levels for indoor air, sub-slab and soil-vapor that will be used to determine the termination of operation of the on-site soil-vapor extraction system.

The location of the site is illustrated in Figure 1. A regional site plan showing soil sampling locations, which includes the proposed locations for the proposed site assessment are included as Figures 2 and 3. Historical grab groundwater, soil and soil-vapor sampling results are included in Tables 1 through 3.

2.0. SCOPE OF WORK

Based on analytical data collected at the site and historical analytical data collected to date, the lateral extent of the dissolved chlorinated chemical potential impact (tetrachloroethene or PCE) is undefined at the subject site. Furthermore, to evaluate the effectiveness of the soil-vapor extraction remediation system and the potential for deeper chlorinated solvent sources at the site, additional assessment is warranted at this time. Lastly, included in this work plan, are detailed constituent trigger levels for indoor air, sub-slab and soil-vapor, that will be used to determine the time in which remediation can be terminated.

The proposed scope of work includes the following tasks:

- Permitting and pre-field work activities;
- CPT soil boring advancement and sample collection;
- Soil boring advancement for installation of shallow soil-vapor probes

- Soil boring advancement for installation of deep soil-vapor sampling probes; vapor sampling;
- Determination of trigger levels for remedial system termination; and
- Report preparation.

Each of these tasks is described in greater detail below.

2.1. PRE-FIELD WORK ACTIVITIES

Applicable site assessment permits will be obtained from the Alameda County Public Works Agency. Additionally, encroachment permits for drilling in the City right-of-way will be obtained from the City of San Leandro. In addition, a health and safety plan will be updated in accordance with *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (National Institute for Occupational Safety and Health Administration, U.S. Coast Guard and U.S. Environmental Protection Agency, 1985). Prior to mobilization, each proposed boring location will be clearly marked and a utility clearance obtained through Underground Service Alert.

2.2. CONE PENETRATION TESTING

Previous soil borings and CPT borings for collection of shallow and deeper groundwater samples demonstrated limited dissolved impact to groundwater. Boring B9 detected shallow dissolved PCE at 7.6 micrograms per liter (ug/l) and boring B10 detected dissolved PCE at 2.7 ug/l. The proposed additional CPT sounding borings and soil boring locations are shown in Figure 2.

Utilizing a 25-ton truck-mounted CPT drill rig equipped with 2-inch diameter hollow-stem rods, AGE proposes to advance a total of two (2) CPT sounding borings for lithological evaluation to depths of 100 feet below surface grade (bsg). A total of four (4) borings or two (2) additional boring at each proposed CPT location, will then be advanced separately for collection of grab groundwater samples, to investigate the lateral extent of PCE impact to shallow and intermediate groundwater off-site to the south (Figure 2).

At each of the CPT locations, one location will be a cone penetration testing boring to evaluate lithology and groundwater flow units (permeability) to a total depth of 100 feet bsg; CPT advancement and testing procedures are outlined in Section 3.1.

Subsequent borings adjacent to sounding borings will be advanced to first encountered groundwater as determined by the sounding borings and to depths of approximately 70 to 80 feet bsg where a sand units are anticipated. Groundwater samples will be analyzed by a State of California Department of Public Health (CDPH)-certified laboratory for volatile organic compounds (VOC's) by EPA method 8260B.

Laboratory reports for groundwater analysis, testing methods and laboratory quality assurance/quality control (QA/QC), and sample chain of custody documentation will be presented in a report with findings and recommendations.

2.3. SOIL-VAPOR SAMPLING & ANALYSIS

To evaluate the effectiveness of remedial operations performed at the site and to evaluate the potential for deeper chlorinated hydrocarbon sources, a total of four borings will be advanced within the subject unit. All borings were selected for placement based on elevated chlorinated hydrocarbon impacts detected during previous assessment performed at the site.

Two borings (near B-24 and B-33) for installation of semi-permanent soil-vapor sampling probes. Additionally, two (2) borings will be advanced in the same area for collection of deeper soil-vapor samples at a depth of ten feet bsg. At all locations probes will be installed and then later sampled following a 48-hour stabilization period. Procedures for installation and sampling of the proposed soil-vapor probes are provided below in Section 3.3. Proposed boring locations are illustrated in Figure 2.

2.4. REPORT PREPARATION

Upon completion of field work and receipt of final laboratory analysis, a report will be prepared presenting the findings of the investigation. The report will include a description of the work performed and results of the sampling and analysis. Conclusions, applicable recommendations, maps and cross-sections will be included in the report. The report will be in a format acceptable to the CVRWQCB, and will be reviewed and signed by a California Professional Geologist.

2.5. EVALUATION OF TRIGGER LEVELS FOR REMEDIAL TERMINATION

As required by the April 2017 directive letter, AGE has provided trigger levels for soil-vapor, sub-slab and indoor air that will be used to make the final determination for termination of remedial operations and ultimate closure of the site. Trigger levels were based on acceptable Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board for a commercial setting (February 2016, revision 3). The following is a summary of the trigger levels that will be used to evaluate if termination of remedial operations is appropriate at the site. It should be noted that multiple post-remedial indoor air and sub-slab vapor sampling events will be used in making this future determination:

Soil-Vapor Trigger Levels:

- PCE – 2,100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)
- Trichloroethane (TCE) – 3,000 $\mu\text{g}/\text{m}^3$
- 1,2-dichloroethane (1,2-DCA) – 470 $\mu\text{g}/\text{m}^3$
- 1,1-dichloroethene (1,1-DCE) – 310,000 $\mu\text{g}/\text{m}^3$
- trans-1,2-dichloroethene (trans, 1,2-DCE) – 350,000 $\mu\text{g}/\text{m}^3$
- cis-1,2-dichloroethene (cis-1,2-DCE) – 35,000 $\mu\text{g}/\text{m}^3$
- Vinyl chloride – 160 $\mu\text{g}/\text{m}^3$

Sub-Slab Soil-Vapor:

- PCE – 2,100 $\mu\text{g}/\text{m}^3$
- TCE – 3,000 $\mu\text{g}/\text{m}^3$
- 1,2-DCA – 470 $\mu\text{g}/\text{m}^3$
- 1,1-DCE – 310,000 $\mu\text{g}/\text{m}^3$
- trans, 1,2-DCE – 350,000 $\mu\text{g}/\text{m}^3$
- cis-1,2-DCE – 35,000 $\mu\text{g}/\text{m}^3$
- Vinyl chloride – 160 $\mu\text{g}/\text{m}^3$

Indoor Air:

- PCE – 2.1 $\mu\text{g}/\text{m}^3$
- TCE – 3.0 $\mu\text{g}/\text{m}^3$
- 1,2-DCA – 0.47 $\mu\text{g}/\text{m}^3$
- 1,1-DCE – 310 $\mu\text{g}/\text{m}^3$
- trans, 1,2-DCE – 350 $\mu\text{g}/\text{m}^3$
- cis-1,2-DCE – 35 $\mu\text{g}/\text{m}^3$
- Vinyl chloride – 0.16 $\mu\text{g}/\text{m}^3$

The most current analytical data from sub-slab and indoor air sampling is included in Tables 4 and 5. As noted above, several post-remedial sampling events will be conducted before making the final determination of the fate of soil-vapor extraction being conducted at the subject site.

3.0. FIELD PROCEDURES

All field procedures will be overseen by an AGE representative under the supervision of a registered California Professional Geologist. Procedures for the advancement of the CPT borings and soil-vapor point installation and sampling are outlined below.

3.1. CPT ADVANCEMENT

CPT soil borings will be advanced to a depth of 100 feet bsg or until refusal is encountered utilizing a 25-ton truck-mounted CPT drill rig equipped with 2-inch diameter hollow-stem rods. The CPT drill rig utilizes a hydraulic ram to advance the rods to the desired depth. At all boring locations, the first of the paired soil borings will advance a cone penetrometer to the desired depth. Soil parameters such as cone bearing, sleeve friction and pore water pressure will be measured as the cone penetrometer is advanced.

3.2. CPT GROUNDWATER SAMPLING

At each location, paired soil borings will be advanced for groundwater sample collection. Grab groundwater samples will be collected using a Hydropunch sample tool that will be pushed into specified zones, then withdrawn approximately five to ten feet to expose an inlet screen. The interior of the sampling tool fills with water and a 1-inch outer diameter stainless steel bailer will be lowered and utilized to extract a groundwater sample. Following sample collection, samples will be transferred into four volatile organic analysis (VOAs) vials; all samples will be properly labeled and placed in a chilled container to be transported under chain of custody to a CDPH-certified laboratory for analysis of VOCs by 8260B.

3.3. SOIL-VAPOR POINT INSTALLATION & SOIL-VAPOR SAMPLING & ANALYSIS

At each of the two (2) proposed shallow soil-vapor sampling locations, borings will be advanced to five (5) feet bsg using a four-inch diameter hand auger; the two proposed deeper soil-vapor sampling locations will be advanced with a limited access probe and 1.25" rods to a total depth of 10 feet bsg.

Once the total depth is reached at the shallow soil sampling locations, a semi-permanent probe will be within the boring. The sampling point will consist of eight feet of ¼-inch Teflon tubing and a sampling tip (generally inert ceramic stone). The tubing and sampling tip will be lowered to the base of the boring and one-foot of #2/12 sand will be poured around the tip to create a filter pack. Above the sand, one foot of dry granular bentonite will be placed to a depth of 3 feet bsg. Thereafter, hydrated granular bentonite will be used to seal each location to prevent ambient air intrusion during sampling. At the surface a flush-mounted well cover will be used to secure the wells location.

For deeper sampling locations, temporary probes will be installed within the boring. The temporary sampling point will consist of twelve feet of ¼-inch Teflon tubing and a sampling tip (generally inert ceramic stone). The tubing and sampling tip will be lowered to the base of the boring and one-foot of #2/12 sand will be poured around the tip to create a filter pack. Above the sand, one foot of dry granular bentonite will be placed to a depth of eleven feet bsg. Thereafter, hydrated granular bentonite will be used to seal each location to prevent ambient air intrusion during sampling.

Initially, soil-vapor samples will be collected after allowing a minimum of 48-hours equalization time following installation of the soil-vapor wells.

Shallow vapor wells will each be purged for approximately 10.3 minutes (equal to three purge volumes at 3.4 minutes per volume; Appendix B) utilizing a 6-liter purge canister and manifold, calibrated to 200 milliliters per minute (ml/min); deeper sampling points will be purged for a period of 3.41 min, which is also equal to three purge volumes.

One-liter Summa® sampling and six-liter Summa® purge canisters will be used to collect soil-vapor samples for TO-15 analysis. Sampling and purge canisters will be connected together with a dedicated and serialized sampling inlet manifold. The sampling inlet manifold consists of a vapor-tight valve; a particulate filter; a flow restrictor calibrated to 200 milliliters per minute (ml/min); a stainless-steel tee-fitting; two vacuum gauges at either end of the flow controller and connections for both purge and sampling canisters (manifold assembly). The manifold assembly will be attached to the ¼-inch Teflon® tubing from the soil-vapor well. The purge canister will be attached to the end of the stainless-steel sampling manifold while the sample canisters will be attached to the tee-fitting between the ¼-inch Teflon® tubing and purge container. Teflon® tape will be placed on the threads of each open fitting of the manifold assembly prior to attaching the ¼-inch Teflon® tubing and sampling and purge canisters (Figure 2).

Each canister's initial vacuum will be measured and recorded between -26 and -30 inches of mercury (in hg). Shut-in tests will be performed on each assembly by attaching and securing the sample and purge canisters to the manifold and opening the valves on the purge canister and the manifold. The shut-in test is performed for approximately 10 minutes on each assembly.

Each soil-vapor well location will be isolated from ambient air by enclosing the borehole, tubing and manifold/canister assembly in a 100-liter shroud. Isopropyl alcohol (IPA) is emitted into the shroud surrounding the well borehole, tubing and manifold/canister assembly and acts as a tracer gas to evaluate if leaks in the sampling apparatus have allowed infiltration of ambient air. Measurements of the organic vapor in the shroud will be recorded during sampling.

Upon achieving a successful leak test, the purge canister valve will be opened for a period of time to allow the three calculated volumes of air to be purged (Appendix C). The purge vacuum gauge will be monitored to ensure a proper decrease of vacuum purged.

Upon achieving the targeted purge volume, the purge canister valve will be closed and the sample canister valve opened. The initial pressure and time is recorded. Upon reaching at least -5 in Hg or less, the sample canister valve will be closed and final pressure and time recorded. The sampling port on the sampling canister will be capped with a brass end-cap. In addition to soil-vapor sample collection, a single one-liter summa canister will be placed within the shroud to evaluate leak check compound concentrations during sampling. The one-liter canister will be equipped with a flow restrictor calibrated to 200 ml/min. The shroud sample will be collected until a vacuum (pressure) of -5 Hg or less has been achieved.

The soil-vapor samples will be transported under chain-of-custody procedures to a CDPH-certified laboratory and analyzed for Total VOCs and IPA (tracer gas) in accordance with EPA Method TO-15.

After collection of the sample, soil-vapor from the polyethylene tubing will be monitored for the presence of volatile organics using an organic vapor meter equipped with a photo-ionization detector (PID).

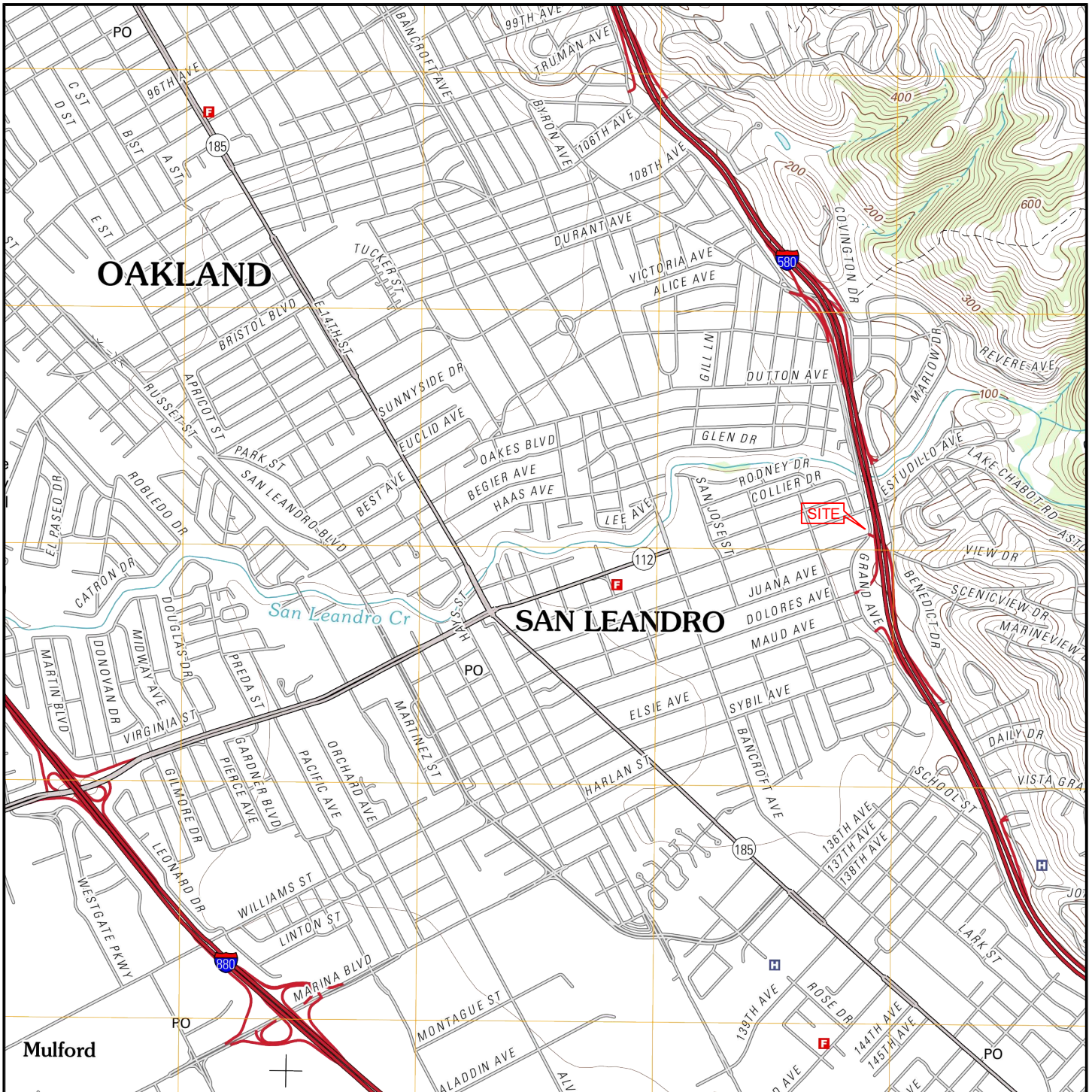
3.4. EQUIPMENT DECONTAMINATION

Rinseate generated during drilling activities will be containerized in properly labeled Department of Transportation (DOT)-approved 55-gallon drums, and stored on-site in an area lacking public access. Disposal alternatives will be evaluated at a later date based on laboratory results of rinseate.

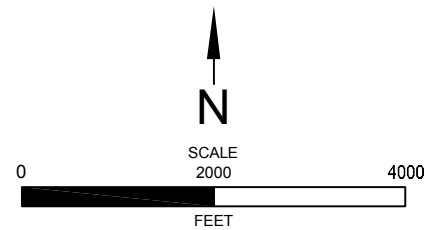
3.5. BORING ABANDONMENTS

Following borehole advancements for CPT drilling and deeper vapor sampling, Portland cement (grout mix) will be utilized to backfill each borehole utilizing a tremie pipe. The Alameda County Public Works Department will be given the opportunity to inspect the grout mix prior to backfilling activities.

FIGURES



SAN LEANDRO QUADRANGLE, CALIFORNIA
 7.5 MINUTE SERIES (U.S. GEOLOGICAL SURVEY)



LOCATION MAP
 SWISS VALLEY CLEANERS
 1395 MacArthur Boulevard
 SAN LEANDRO, CALIFORNIA



Advanced
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 www.advgeoenv.com

PROJECT NO. AGE-NC-12-2461	FILE: LOCATION	FIGURE:
DATE: 21 MAY, 2013	DRAWN BY: MAC	1

LEGEND

- V1 ▲ SOIL VAPOR LOCATIONS (Historical)
- V1 ▲ SOIL-VAPOR SAMPLING LOCATIONS
- VV-4 ⊕ SOIL-VAPOR EXTRACTION WELL LOCATION
- SS-1 ⊙ SUB-SLAB VAPOR WELL LOCATION
- ◇ SURFACE DRAIN/SEWER CLEANOUT LOCATION
- SEWER LINE LOCATION
- WATER LINE LOCATION
- CURRENT DRY CLEANING BUILDING
- HISTORICAL DRY CLEANING BUILDING
- ▲ PROPOSED SHALLOW SOIL-VAPOR SAMPLING WELL
- ▲ PROPOSED DEEP SOIL-VAPOR SAMPLING WELL



TABLES

TABLE 1
ANALYTICAL RESULTS OF GRAB GROUNDWATER SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(ug/l)

Sample ID	Date	EPA 8260B						
		Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (1,1-DCE)	Trans 1,2-Dichloroethene (Trans 1,2-DCE)	Cis 1,2-Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)	Acetone
SVC-1	08-19-1998	<0.5	<0.5	<0.5	-	-	-	-
B9W@46-50	05-07-2013	7.6	<0.5	<1	<1	<1	<0.5	<10
B10W@46-50	05-07-2013	2.7	<0.5	<1	<1	<1	<0.5	<10
CPT1-80-84W	12-19-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT2-47-57W	12-20-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT2-92-96W	12-20-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT3-48-58W	12-21-2016	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT4-47-57W	12-22-2016	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT4-66-70W	12-22-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT5-47-57W	12-27-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT5-78-83W	12-27-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT6-46-56W	12-27-2016	3.0	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT6-70-80W	12-30-2016	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT7-47-57W	12-28-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT7-76-86W	12-28-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT8-47-57W	12-29-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
CPT8-87-91W	12-29-2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
US EPA MCL		5	5	7	100	70	2	-
CDPH MCL		5	5	6	10	6	0.5	-
SFBRWCB ESL		5	5	6	10	6	0.5	6,300

Notes:
 <: below surface grade
 µg/l: micrograms per liter
 US EPA MCL: United State Environmental Protection Agency Maximum Contaminant Level
 CDPH MCL: California Department of Public Health Maximum Contaminant Level
 SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level
 SVC-1: Sample I.D refers to sample collected from floor drain inside unit.

TABLE 2
ANALYTICAL RESULTS OF SOIL SAMPLES
 Swiss Valley Cleaners
 1395 MacArthur Boulevard, San Leandro, California
 (mg/kg)

Sample ID	Depth (feet bsg)	Date	EPA SW 846/8260B					
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (1,1-DCE)	Trans 1,2-Dichloroethene (Trans 1,2-DCE)	Cis 1,2-Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)
B-1@3'	3	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-1@5'	5	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-2@3'	3	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-2@5'	5	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-3@3'	3	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-3@5'	5	08-19-1998	<0.005	<0.005	<0.005	-	-	<0.005
B-4	1.75	04-06-2005	0.0057	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098
B-5	1.83	04-06-2005	0.0074	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094
B-6	1.67	04-06-2005	0.022	<0.0046	<0.0046	<0.0046	<0.0046	<0.0093
B-7	2	07-08-2008	<0.005	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094
B-8	2	07-08-2008	0.060	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094
B9-5	5	05-07-2013	0.028	<0.005	<0.005	<0.005	<0.005	<0.005
B9-10	10	05-07-2013	0.012	<0.005	<0.005	<0.005	<0.005	<0.005
B9-15	15	05-07-2013	0.022	<0.005	<0.005	<0.005	<0.005	<0.005
B10-5	5	05-07-2013	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B10-10	10	05-07-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B10-15	15	05-07-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B11-5	5	10-22-2013	0.009	<0.005	<0.005	<0.005	<0.005	<0.005
B11-10	10	10-22-2013	0.011	<0.005	<0.005	<0.005	<0.005	<0.005
B11-15	15	10-22-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B12-5	5	10-22-2013	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B12-10	10	10-22-2013	0.011	<0.005	<0.005	<0.005	<0.005	<0.005
B12-15	15	10-22-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B13-5	5	10-22-2013	0.008	<0.005	<0.005	<0.005	<0.005	<0.005
B13-10	10	10-22-2013	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
B13-15	15	10-22-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B14-5	5	10-22-2013	0.015	<0.005	<0.005	<0.005	<0.005	<0.005
B14-10	10	10-22-2013	0.008	<0.005	<0.005	<0.005	<0.005	<0.005

TABLE 2
ANALYTICAL RESULTS OF SOIL SAMPLES
 Swiss Valley Cleaners
 1395 MacArthur Boulevard, San Leandro, California
 (mg/kg)

Sample ID	Depth (feet bsg)	Date	EPA SW 846/8260B					
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1- Dichloroethene (1,1-DCE)	Trans 1,2- Dichloroethene (Trans 1,2-DCE)	Cis 1,2- Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)
B14-15	15	10-22-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B15-5	5	10-22-2013	0.030	<0.005	<0.005	<0.005	<0.005	<0.005
B15-10	10	10-22-2013	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B15-15	15	10-22-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B16-5	5	10-23-2013	0.020	<0.005	<0.005	<0.005	<0.005	<0.005
B16-10	10	10-23-2013	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B16-15	15	10-23-2013	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
B17-5	5	10-23-2013	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B17-10	10	10-23-2013	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B17-15	15	10-23-2013	0.011	<0.005	<0.005	<0.005	<0.005	<0.005
B18-5	5	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B18-10	10	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B19-5	5	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B19-10	10	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B20-5	5	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B20-10	10	10-23-2013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B21-5	5	10-24-2013	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B21-10	10	10-24-2013	0.009	<0.005	<0.005	<0.005	<0.005	<0.005
B23-0.5-1.0	0.5-1.0	04-28-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B23-1.5-2.0	1.5-2.0	04-28-2014	0.026	<0.005	<0.005	<0.005	<0.005	<0.005
B23-2.5-3.0	2.5-3.0	04-28-2014	0.12	<0.005	<0.005	<0.005	<0.005	<0.005
B23-3.5-4.0	3.5-4.0	04-28-2014	0.040	<0.005	<0.005	<0.005	<0.005	<0.005
B23-4.5-5.0	4.5-5.0	04-28-2014	0.030	<0.005	<0.005	<0.005	<0.005	<0.005
B24-0.5-1.0	0.5-1.0	04-28-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B24-1.5-2.0	1.5-2.0	04-28-2004	0.032	<0.005	<0.005	<0.005	<0.005	<0.005
B24-4.5-5.0	4.5-50	04-28-2014	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
B25-0.5-1.0	0.5-1.0	04-28-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B25-1.5-2.0	1.5-2.0	04-28-2014	0.048	<0.005	<0.005	<0.005	<0.005	<0.005

TABLE 2
ANALYTICAL RESULTS OF SOIL SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(mg/kg)

Sample ID	Depth (feet bsg)	Date	EPA SW 846/8260B					
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1- Dichloroethene (1,1-DCE)	Trans 1,2- Dichloroethene (Trans 1,2-DCE)	Cis 1,2- Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)
B25-2.5-3.0	2.5-3.0	04-28-2014	0.061	<0.005	<0.005	<0.005	<0.005	<0.005
B25-4.5-5.0	4.5-5.0	04-28-2014	0.023	<0.005	<0.005	<0.005	<0.005	<0.005
B26-0.5-1.0	0.5-1.0	04-28-2014	0.0056	<0.005	<0.005	<0.005	<0.005	<0.005
B26-1.5-2.0	1.5-2.0	04-29-2014	0.0063	<0.005	<0.005	<0.005	<0.005	<0.005
B26-3.0-3.5	3.0-3.5	04-29-2014	0.043	<0.005	<0.005	<0.005	<0.005	<0.005
B26-4.5-5.0	4.5-5.0	04-29-2014	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B27-0.5-1.0	0.5-1.0	04-29-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B27-1.5-2.0	1.5-3.0	04-29-2014	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B27-2.5-3.0	2.5-3.0	04-29-2014	0.045	<0.005	<0.005	<0.005	<0.005	<0.005
B27-4.5-5.0	4.5-5.0	04-29-2014	0.043	<0.005	<0.005	<0.005	<0.005	<0.005
B28-0.5-1.0	1.5-3.0	04-29-2014	0.0053	<0.005	<0.005	<0.005	<0.005	<0.005
B28-2.5-3.0	2.5-3.0	04-29-2014	0.037	<0.005	<0.005	<0.005	<0.005	<0.005
B28-4.5-5.0	4.5-5.0	04-29-2014	0.021	<0.005	<0.005	<0.005	<0.005	<0.005
B29-1.5-2.0	1.5-3.0	04-29-2014	0.015	<0.005	<0.005	<0.005	<0.005	<0.005
B29-2.5-3.0	2.5-3.0	04-29-2014	0.033	<0.005	<0.005	<0.005	<0.005	<0.005
B29-4.5-5.0	4.5-5.0	04-29-2014	0.019	<0.005	<0.005	<0.005	<0.005	<0.005
B30-1.5-2.0	1.5-3.0	04-30-2014	0.019	<0.005	<0.005	<0.005	<0.005	<0.005
B30-2.5-3.0	2.5-3.0	04-30-2014	0.024	<0.005	<0.005	<0.005	<0.005	<0.005
B30-4.5-5.0	4.5-5.0	04-30-2014	0.051	<0.005	<0.005	<0.005	<0.005	<0.005
B31-1.5-2.0	1.5-2.0	04-30-2014	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B31-2.5-3.0	2.5-3.0	04-30-2014	0.025	<0.005	<0.005	<0.005	<0.005	<0.005
B32-1.5-2.0	1.5-3.0	04-30-2014	0.0069	<0.005	<0.005	<0.005	<0.005	<0.005
B32-2.5-3.0	2.5-3.0	04-30-2014	0.011	<0.005	<0.005	<0.005	<0.005	<0.005
B32-4.5-5.0	4.5-5.0	04-30-2014	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B33-1.5-2.0	1.5-3.0	04-30-2014	0.012	<0.005	<0.005	<0.005	<0.005	<0.005
B33-2.5-3.0	2.5-3.0	04-30-2014	0.037	<0.005	<0.005	<0.005	<0.005	<0.005
B33-4.5-5.0	4.5-5.0	04-30-2014	0.029	<0.005	<0.005	<0.005	<0.005	<0.005
B34-1.5-2.0	1.5-3.0	05-01-2014	0.028	<0.005	<0.005	<0.005	<0.005	<0.005

TABLE 2
ANALYTICAL RESULTS OF SOIL SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(mg/kg)

Sample ID	Depth (feet bsg)	Date	EPA SW 846/8260B					
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (1,1-DCE)	Trans 1,2-Dichloroethene (Trans 1,2-DCE)	Cis 1,2-Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)
B34-2.5-3.0	2.5-3.0	05-01-2014	0.020	<0.005	<0.005	<0.005	<0.005	<0.005
B34-4.5-5.0	4.5-5.0	05-01-2014	0.016	<0.005	<0.005	<0.005	<0.005	<0.005
B35-1.5-2.0	1.5-3.0	05-01-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B35-2.5-3.0	2.5-3.0	05-01-2014	0.092	<0.005	<0.005	<0.005	<0.005	<0.005
B35-4.5-5.0	4.5-5.0	05-01-2014	0.058	<0.005	<0.005	<0.005	<0.005	<0.005
B36-1.5-2.0	1.5-3.0	05-01-2014	0.11	<0.005	<0.005	<0.005	<0.005	<0.005
B36-2.5-3.0	2.5-3.0	05-01-2014	0.015	<0.005	<0.005	<0.005	<0.005	<0.005
B36-4.5-5.0	4.5-5.0	05-01-2014	0.012	<0.005	<0.005	<0.005	<0.005	<0.005
B37-1.5-2.0	1.5-3.0	05-01-2014	0.018	<0.005	<0.005	<0.005	<0.005	<0.005
B37-2.5-3.0	2.5-3.0	05-01-2014	0.038	<0.005	<0.005	<0.005	<0.005	<0.005
B37-4.5-5.0	4.5-5.0	05-01-2014	0.016	<0.005	<0.005	<0.005	<0.005	<0.005
B38-1.0-1.5	1.0-1.5	05-02-2014	0.023	<0.005	<0.005	<0.005	<0.005	<0.005
B38-1.5-2.0	1.5-2.0	05-02-2014	0.023	<0.005	<0.005	<0.005	<0.005	<0.005
B38-2.5-3.0	2.5-3.0	05-02-2014	0.014	<0.005	<0.005	<0.005	<0.005	<0.005
B38-4.5-5.0	4.5-5.0	05-02-2014	0.0061	<0.005	<0.005	<0.005	<0.005	<0.005
B39-1.5-2.0	1.5-3.0	05-02-2014	0.016	<0.005	<0.005	<0.005	<0.005	<0.005
B39-2.5-3.0	2.5-3.0	05-02-2014	0.021	<0.005	<0.005	<0.005	<0.005	<0.005
B39-4.5-5.0	4.5-5.0	05-02-2014	0.034	<0.005	<0.005	<0.005	<0.005	<0.005
B40-1.5-2.0	1.5-3.0	05-02-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B40-2.5-3.0	2.5-3.0	05-02-2014	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B40-4.5-5.0	4.5-5.0	05-02-2014	0.029	<0.005	<0.005	<0.005	<0.005	<0.005
B41-1.5-2.0	1.5-2.0	05-05-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B41-4.5-5.0	4.5-5.0	05-05-2014	0.0076	<0.005	<0.005	<0.005	<0.005	<0.005
B42-1.5-2.0	1.5-3.0	05-05-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B42-2.5-3.0	2.5-3.0	05-05-2014	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B42-4.5-5.0	4.5-5.0	05-05-2014	0.022	<0.005	<0.005	<0.005	<0.005	<0.005
B43-1.5-2.0	1.5-2.0	05-06-2014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B43-2.5-3.0	2.5-3.0	05-06-2014	0.022	<0.005	<0.005	<0.005	<0.005	<0.005

TABLE 2
ANALYTICAL RESULTS OF SOIL SAMPLES
 Swiss Valley Cleaners
 1395 MacArthur Boulevard, San Leandro, California
 (mg/kg)

Sample ID	Depth (feet bsg)	Date	EPA SW 846/8260B					
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1- Dichloroethene (1,1-DCE)	Trans 1,2- Dichloroethene (Trans 1,2-DCE)	Cis 1,2- Dichloroethene (Cis 1,2-DCE)	Vinyl Chloride (VC)
B62-9.5-10	9.5-10	03-10-2015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B63-1.5-2.0	1.5-2.0	03-10-2015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B63-4.5-5.0	4.5-5.0	03-10-2015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
B63-9.5-10	9.5-10	03-10-2015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:

mg/kg: milligrams per kilogram

bsg: below surface grade

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

TABLE 3
ANALYTICAL RESULTS OF SOIL-VAPOR SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	Depth (feet bsg)	EPA Method 8260B						
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	Chloroform
VP-57	06-23-2016	5	<100	<100	<100	<100	<100	<100	<100
VP-57 (dup.)	06-23-2016	5	<100	<100	<100	<100	<100	<100	<100
VP-58	06-23-2016	5	<100	<100	<100	<100	<100	<100	<100
CHHSLs (Residential)			180	528	-	31,900	15,900	13.3	-
SFBRWCB ESL Shallow Soil Gas (Commercial)			2,100	3,000	100,000	260,000	-	16	230
SFBRWCB ESL Shallow Soil Gas (Residential)			210	300	880,000	31,000	-	160	2,300

Notes:

SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for shallow soil gas

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

CHHSLs: California Human Health Screening Levels

PCE: Tetrachloroethene

TCE: Trichloroethene

1,1-DCE: 1,1-Dichloroethene

Trans 1,2-DCE: Trans 1,2-Dichloroethene

Cis 1,2-DCE: Cis 1,2-Dichloroethene

VC: Vinyl Chloride

bsg: below surface grade

*: notation for detection above the liner range of calibration

TABLE 4
SUB-SLAB VAPOR ANALYTICAL RESULTS
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Location	Date	TO-15																				
			Dry Cleaning Constituents						Chemicals from other sources														
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	IPA	1,2-DCA	B	T	E	X	1,2-DCP	Ethanol	4-ET	1,2,4-TMB	Ethyl Acetate	Naphthalene	1,3,5-TMB	Acetone	2-Butanone
SS-1	1369 MacArthur Boulevard	03-23-2015	5,700	3.3	<2.0	<2.0	<2.0	<1.3	<50	<2.0	42	58	39	190	<2.4	<96	53	98	<1.8	<5.3	64	<60	<75
		10-30-2015	1,700	<5.9	<4.4	<4.4	<4.4	<2.8	<11	<4.5	<3.5	<4.2	<4.8	<4.8	<5.1	<8.3	<5.4	<33	-	-	<5.4	<26	<13
SS-2	1383 MacArthur Boulevard	03-23-2015	5,400	<2.8	<2.0	<2.0	<2.0	<1.3	<50	<2.0	8.6	2.2	<2.2	<6.6	<2.4	<96	<2.5	9.8	4.7	<5.3	2.7	<60	<75
		10-30-2015	12,000	<41	<30	<30	<30	<20	<76	<31	<24	<29	<33	<33	<36	<58	<38	<38	-	-	<38	<180	<91
		10-13-2016	15,000	<31	<23	<22	<22	<14	79	<23	<18	<21	<25	<25	<26	<43	<28	<170	-	-	<28	<140	<67
		02-20-2017	37	<2.8	<2.0	<2.0	<2.3	<1.3	91	<2.0	<1.6	1.9	<2.2	<6.6	<2.4	<96	<2.5	<2.5	2.7	<5.3	<2.5	160	<67
SS-3	1395 MacArthur Boulevard (Front of Suite)	03-23-2015	8,300	19	<2.0	<2.0	<2.0	<1.3	<50	<2.0	13	5.1	3.9	24	<2.4	<96	6.2	29	<1.8	<5.3	6.8	<60	<75
		10-30-2015	24,000	67	<46	<46	<46	<29	<110	<46	<37	<43	<50	<50	<53	<87	<56	<56	-	-	<56	<270	<140
		10-13-2016	20,000	<73	<55	<54	<54	<35	<130	<55	<43	<51	<59	<59	<63	<100	<67	<67	-	-	<67	<320	<160
		02-20-2017	99	<2.8	<2.0	<2.0	<2.3	<1.3	<50	<2.0	<1.6	<1.9	<2.2	<6.6	<2.4	<96	<2.5	<2.5	<1.8	<5.3	<2.5	<60	<75

TABLE 4
SUB-SLAB VAPOR ANALYTICAL RESULTS
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Location	Date	TO-15																				
			Dry Cleaning Constituents						Chemicals from other sources														
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	IPA	1,2-DCA	B	T	E	X	1,2-DCP	Ethanol	4-ET	1,2,4-TMB	Ethyl Acetate	Naphthalene	1,3,5-TMB	Acetone	2-Butanone
SS-4	1395 MacArthur Boulevard (Rear of Suite)	03-23-2015	7,600	5.6	<2.0	<2.0	<2.0	<1.3	<50	2.2	17	14	9.4	44	<2.4	<96	9.6	29	<1.8	<5.3	5.7	<60	<75
		10-30-2015	21,000	<48	<48	<47	<47	<30	<120	<48	<38	<45	<51	<51	<55	<89	<58	<58	-	-	<58	<280	<140
		10-13-2016	19,000	<40	<30	<29	<29	<19	<72	<48	<23	<28	<32	<32	<34	<55	<36	<36	-	-	<36	<170	<87
		02-20-2017	420	<2.8	<2.0	<2.0	<2.3	<1.3	1,300	<2.0	<1.6	<1.9	<2.2	<6.6	<2.4	<96	<2.5	<2.5	<1.8	<5.3	<2.5	<60	<75
CHHSLs (Commercial)			1,600	1,300	-	240,000	120,000	95.0	-	360	280	890,000	3,600	6,700,000	-	-	-	-	-	310	-	-	-
SFBRWCB ESL (Commercial)			2,100	3,000	880,000	2,600,000	-	160	-	580	420	1,300,000	4,900	440,000	1,200	-	-	-	-	360	-	140,000,000	22,000,000

Notes:

SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for shallow soil gas

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

CHHSLs: California Human Health Screening Levels (Soil Gas Screening for VOC's below buildings constructed with engineer fill below sub-slab gravel)

PCE: Tetrachloroethene

TCE: Trichloroethene

1,1-DCE: 1,1-Dichloroethene

Trans 1,2-DCE: Trans 1,2-Dichloroethene

Cis 1,2-DCE: Cis 1,2-Dichloroethene

VC: Vinyl Chloride

IPA: Isopropyl Alcohol

B: Benzene; T: Toluene; E: Ethyl-benzene; X: Total Xylenes

1,2-DCA: 1,2-Dichloroethane

1,2-DCP: 1,2-Dichloropropane

4-ET: 4-Ethyltoluene

1,2,4-TMB: 1,2,4-Trimethylbenzene

1,3,5-TMB: 1,3,5-Trimethylbenzene

TABLE 5
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
 1395 MacArthur Boulevard,
 San Leandro, California
 (micrograms per cubic meter)

Sample ID	Date	TO-15																	
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform	
IA-1395 MacArthur (Subject Suite)	04-10-2014	12	0.038	0.085	<0.0078	0.34	0.099	46	0.41	0.52	1.4	<0.44	1.2	0.60	2.0	2.7	1.4	0.19	
	05-08-2014	14	0.11	0.19	<0.0078	0.17	0.063	75	0.44	0.27	0.74	<0.44	<1.3	0.67	2.0	8.8	1.1	0.22	
	03-23-2015	16	0.03	0.10	<0.0078	0.17	0.074	110	0.46	0.50	2.3	<0.44	<1.3	0.62	2.4	14.0	1.3	0.33	
	10-30-2015	0.77	<0.17	<0.13	<0.25	-	<0.19	<1.9	<0.20	0.85	3.0	0.44	2.03	1.0	-	-	-	-	0.18
	10-13-2016	40	<0.17	<0.13	<0.25	-	<0.19	<1.9	0.35	0.42	3.1	0.24	1.05	-	-	-	-	-	0.39
	02-20-2017	0.38	0.019	0.20	<0.0023	0.12	0.20	76	0.45	0.57	3.5	0.25	0.90	0.92	2.5	7.0	1.4	0.21	
SFBRWCB ESL (Commercial)		2.1	3.0	0.58	0.17	0.36	1.1	140,000	0.29	0.42	1,300	4.9	440	390	-	-	-	2.3	

TABLE 5
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard,
San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	TO-15																	
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform	
IA-1383 MacArthur (Sothea's Beauty Salon; First Adjacent Unit to North of Subject Suite)	04-10-2014	11	0.057	0.43	0.011	0.26	0.096	3,600	0.38	0.65	11	0.49	2.0	<0.21	<0.50	260	<0.57	0.51	
	05-08-2014	17	0.055	1.1	<0.0078	0.36	0.12	5,200	0.45	0.69	21	<0.44	1.5	<0.21	<0.50	1600	<0.57	0.49	
	03-23-2015	19	0.064	0.37	<0.0078	0.41	0.33	8,600	0.56	0.64	15	0.53	2.0	<0.21	0.89	580	0.84	5.3	
	10-30-2015	3.5	<0.17	<1.3	<2.5	-	<1.9	1,300	<2.0	<2.6	5.2	<1.4	<1.4	1.7	-	-	-	-	<1.6
	10-13-2016	7.2	<1.7	<1.3	<2.4	-	<1.9	6,300	<2.0	<2.5	14	<1.4	<1.4	-	-	-	-	-	<1.5
	02-20-2017	0.83	0.077	0.41	<0.0023	0.17	0.22	2,000	0.46	0.71	11	0.38	1.2	0.96	<0.0035	200	1.4	0.53	
SFBRWCB ESL (Commercial)		2.1	3.0	0.58	0.17	0.36	1.1	140,000	0.29	0.42	1,300	4.9	440	390	-	-	-	2.3	

TABLE 5
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
 1395 MacArthur Boulevard,
 San Leandro, California
 (micrograms per cubic meter)

Sample ID	Date	TO-15																
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform
IA-1377 MacArthur (Estudillo Plaza Optometry; Second Adjacent Unit)	04-10-2014	2.1	0.027	0.76	<0.0078	0.22	0.10	110	0.39	0.54	2.8	0.69	3.0	0.54	1.8	7.4	0.78	0.18
	05-08-2014	5.1	0.033	1.10	<0.0078	0.38	0.37	38	0.45	0.37	6.9	1.1	4.4	0.67	2.1	4.9	1	0.2
	10-30-2015	3.2	<1.8	<1.3	<2.5	-	<2.0	97	<2.1	<2.6	4.8	<1.4	<1.4	<1.7	-	-	-	<1.6
	10-13-2016	5.3	<0.38	<0.28	<0.54	-	<0.42	310	<0.44	<0.56	2.1	0.88	3.8	-	-	-	-	<0.34
SFBRWCB ESL (Commercial)		2.1	3.0	0.58	0.17	0.36	1.1	140,000	0.29	0.42	1,300	4.9	440	390	-	-	-	2.3

TABLE 5
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
 1395 MacArthur Boulevard,
 San Leandro, California
 (micrograms per cubic meter)

Sample ID	Date	TO-15																
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform
IA-1369 MacArthur (Former Jazzercise)	05-08-2014	0.045	0.020	2.2	<0.0078	0.26	0.17	18	0.47	0.60	2.1	<0.44	<1.3	0.68	2.0	2.2	1.3	0.25
Outside 1395 MacArthur (Ambiant Air)	05-08-2014	0.042	0.014	0.067	<0.0078	0.12	0.023	13	0.47	0.20	0.41	<0.44	<1.3	0.64	2.0	2.1	1.1	0.24
SFBRWCB ESL (Commercial)		2.1	3.0	0.58	0.17	0.36	1.1	140,000	0.29	0.42	1,300	4.9	440	390	-	-	-	2.3

Notes:

SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for indoor Air.

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

PCE: Tetrachloroethene

TCE: Trichloroethene

1,2-DCA: 1,2-Dichloroethane

EDB: 1,2-Dibromoethane

1,4-DCB: 1,4-dichlorobenzene

VC: Vinyl Chloride

CT: Carbon Tetrachloride

DCDFM: Dichlorodifluoromethane

TCFM: Trichlorofluoromethane

IPA: Isopropyl Alcohol

B: Benzene; T: Toluene; E: Ethyl-benzene; X: Total Xylenes

*Concentrations denoted with orange fill are above ambient and indoor air screening levels for a commercial setting.

APPENDIX A

ALAMEDA COUNTY
**HEALTH CARE SERVICES
AGENCY**

REBECCA GEBHART, Interim Director



DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY, SUITE 250
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

April 28, 2017

Mr. William Mathews Brooks
4725 Thornton Avenue
Fremont, CA 94536

(Sent via electronic mail to: REWMB@aol.com)

Subject: Corrective Action Plan Addendum Request; Site Cleanup Program (SCP) Case No. RO0003120 and GeoTracker Global ID T10000005063, Swiss Valley Cleaners, 1395 MacArthur Blvd, San Leandro, CA 94577

Dear Mr. Brooks:

Alameda County Department of Environmental Health (ACDEH) has reviewed the *Remedial Well / System Installation & Startup Report*, dated February 1, 2017, the *Cone Penetration Report*, dated February 28, 2017, the *Indoor Air & Sub-Slab Monitoring Report – First Quarter 2017*, dated March 8, 2017, and the *Remedial Status Report – First Quarter 2017*, dated April 6, 20-17. The reports were prepared and submitted on your behalf by Advanced GeoEnvironmental, Inc. (AGE). Thank you for undertaking the work and submitting the reports.

The *Remedial Well / System Installation & Startup Report* documented the installation of vapor extraction wells VW-5 to VW-21, and the startup of the Soil Vapor Extraction (SVE) System. Based on influent concentrations, the system was determined to have removed approximately 2 pounds of tetrachlorethene (PCE) between November 11, and December 15, 2016. The *Cone Penetration Report* documented the installation of Cone Penetration Test (CPT) bores CPT-1 to CPT-8 for the purpose of determining the extent of groundwater contamination from the release at the site. First groundwater was in general encountered at an approximate depth of 46 to 48 feet below grade surface (bgs). The maximum concentration of PCE detected was 3.0 micrograms per liter (ug/l) downgradient of the release; however, the southern extent of potential contamination was not defined. The *Indoor Air & Sub-Slab Monitoring Report – First Quarter 2017* documented the initial indoor air and sub-slab vapor monitoring since startup of the SVE system. Both indoor air and sub-slab vapor concentrations were lower than previous sampling events. The *Remedial Status Report – First Quarter 2017* documented the operations of the SVE system between December 27, 2016 and March 15, 2017, and documented lower vapor influent concentrations. Based on influent concentrations, the system was determined to have removed approximately 4.6 pounds of PCE during the period, and recommended rebound testing of the system with a 30 day system shut down.

Based on the review of the case file ACDEH requests that you address the following technical comments and send us the documents requested below.

TECHNICAL COMMENTS

1. **Rebound Testing** – ACDEH is in agreement that a 30 day system shut down to initiate rebound testing may be appropriate; however, ACDEH notes that although system influent has maintained relatively stable concentrations, the mass-volume calculations indicate an approximately similar amount of PCE was extracted during the period compared to the previous period (allowing for the difference in the reporting time length). This can suggest potentially substantial residual mass might be present beneath the site in the fine-grained sediments. ACDEH views this rebound test as an initial test of the contaminant load at the site and it is intended to in part inform the next Technical Comment.
2. **Corrective Action Plan Addendum** – The existing Corrective Action Plan (CAP) did not include protocols for rebound testing; identify soil vapor, sub-slab, or indoor air trigger levels for further actions; an exit strategy for shutting the system down at the subject site; or define longer term monitoring to

preclude long-term rebound from the fine-grained sediments. Trigger levels can be based on a site specific risk assessment or Environmental Screening Levels (ESLs) as promulgated by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Should a site specific risk assessment be selected, please be aware that ACDEH requires risk assessments to be conducted by individuals with appropriate education and experience, consistent with Department of Toxic Substances (DTSC) guidance, such as certification as a Diplomat of the American Board of Toxicology. Should ESLs be selected, please note that the site currently does not contain appropriately constructed permanent soil vapor wells to a depth of five feet below grade surface (bgs) for the purpose of collecting requisite and seasonal data. A solution to this specific lack of infrastructure can be incorporated into the next Technical Comment. Please submit the requested document by the date identified below.

3. **Data Gaps** – In an effort to collect data as the site progresses, ACDEH has identified a minimum of three data gaps in data collection at the site. Additional data gaps may be present. Please submit a data gap work plan by the date identified below. Data gaps identified by ACDEH include the following:
 - a. **Extent of Groundwater Plume** - As observed above, the extent of the groundwater plume appears to be defined to the west to northwest, but has not been defined to the southwest. ACDEH is in agreement that based on the nearby former Haber Oil site the groundwater gradient in general appears to be to the west northwest. However channelized flow also appeared to be present at that site; thus it appears reasonable to verify that there is not a significant component of flow to the southwest at the subject site.
 - b. **Vertical Extent of Vapor Contamination** – Elevated vapor concentrations have been extensively found at the site; however, the vertical extent has not. It appears appropriate to additionally define the vertical extent in order to eliminate a potential unsuspected source beneath the site.
 - c. **Soil Vapor Collection** – As noted above, at present standard five foot deep vapor wells have not been installed at the site for comparison to RWQCB ESLs or, if needed, for long term monitoring and assessment.

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated Attachment 1 with regard to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker Website.

Please make this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with Attachment 1 and the specified file naming convention below, according to the following schedule:

- **June 23, 2017** – Data Gap Work Plan
File to be named: RO3120_WP_R_yyyy-mm-dd
- **June 30, 2017** – CAP Addendum
File to be named: RO3120_CAP_ADDEND_R_yyyy-mm-dd

Mr. William Mathews Brooks
RO0003120
April 28, 2017, Page 3

Online case files are available for review at the following website: <http://www.acgov.org/aceh/index.htm>.

Should you have any questions, please contact me at (510) 567--6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,



Mark E. Detterman, P.G., C.E.G.
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Daniel Villanueva, Advanced GeoEnvironmental, Inc, 837 Shaw Road, Stockton, CA 95215
(Sent via electronic mail to: DVillanueva@advgeoenv.com)

William Little, Advanced GeoEnvironmental, Inc, 837 Shaw Road, Stockton, CA 95215
(Sent via electronic mail to: WLittle@advgeoenv.com)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Paresh Khatri, ACDEH; (Sent via electronic mail to: paresh.khatri@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File; GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Department of Environmental Health's (ACDEH) Environmental Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program File Transfer Protocol (FTP) site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to SCP sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/) for more information on these requirements.

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6731, 6735, and 7835) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately licensed or certified professional. For your submittal to be considered a valid technical report, you are to present site-specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: <http://www.bpelsq.ca.gov/laws/index.shtml>.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	REVISION DATE: December 1, 2016
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions


The Alameda County Environmental Cleanup Oversight Programs (LOP and SCP) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- Please **do not** submit reports as attachments to electronic mail.
- Entire report including cover letter must be submitted to the ftp site as a **single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

- 1) Obtain User Name and Password
 - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
 - i) Send an e-mail to deh.loptoxic@acgov.org.
 - b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses, and the Case Numbers (RO# available in Geotracker) you will be posting for.**
- 2) Upload Files to the ftp Site
 - a) Open File Explorer using the Windows  key + E keyboard shortcut.
 - i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) On the address bar, type in `ftp://alcoftp1.acgov.org`.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive)
 - d) Click Log On.
 - e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - f) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
 - a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
 - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
 - c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
 - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

APPENDIX B

Tier 1 ESLs

Feb. 2016 (Rev. 3)

Based on a generic conceptual site model designed for use at most sites¹

Chemicals	CAS No.	Groundwater (µg/L)	Soil (mg/kg)	Subslab ² / Soil Gas (µg/m ³)	Indoor Air (µg/m ³)
Acenaphthene	83-32-9	2.0E+01	1.6E+01	2.6E+05	5.1E+02
Acenaphthylene	208-96-8	3.0E+01	1.3E+01	--	--
Acetone	67-64-1	1.5E+03	5.0E-01	1.5E+07	3.1E+04
Aldrin	309-00-2	1.4E-04	3.6E-02	2.9E-01	5.7E-04
Anthracene	120-12-7	7.3E-01	2.8E+00	--	--
Antimony	7440-36-0	6.0E+00	3.1E+01	--	--
Arsenic	7440-38-2	1.0E+01	6.7E-02	--	--
Barium	7440-39-3	1.0E+03	3.0E+03	--	--
Benzene	71-43-2	1.0E+00	4.4E-02	4.8E+01	9.7E-02
Benz(a)anthracene	56-55-3	2.7E-02	1.6E-01	--	--
Benzo(b)fluoranthene	205-99-2	1.2E-02	1.6E-01	4.6E+00	9.2E-03
Benzo(k)fluoranthene	207-08-9	1.7E-02	1.6E+00	4.6E+00	9.2E-03
Benzo(g,h,i)perylene	191-24-2	1.0E-01	2.5E+00	--	--
Benzo(a)pyrene	50-32-8	1.4E-02	1.6E-02	--	--
Beryllium	7440-41-7	2.7E+00	4.2E+01	--	--
1,1-Biphenyl	92-52-4	5.0E-01	6.5E-01	2.1E+02	4.2E-01
Bis(2-chloroethyl) ether	111-44-4	6.3E-03	8.0E-05	2.0E+00	4.0E-03
Bis(2-chloroisopropyl) ether	108-60-1	3.6E-01	3.9E-03	1.4E+02	2.8E-01
Bis(2-ethylhexyl) phthalate	117-81-7	4.0E+00	3.9E+01	--	--
Boron	7440-42-8	1.6E+00	1.6E+04	--	--
Bromodichloromethane	75-27-4	8.0E+01	5.2E-01	3.8E+01	7.6E-02
Bromoform (Tribromomethane)	75-25-2	8.0E+01	1.7E+00	1.3E+03	2.6E+00
Bromomethane	74-83-9	7.5E+00	3.0E-01	2.6E+03	5.2E+00
Cadmium (soil)	7440-43-9	--	3.9E+01	--	--
Cadmium (water)	7440-43-9	2.5E-01	--	--	--
Carbon tetrachloride	56-23-5	2.2E-01	4.8E-02	3.3E+01	6.7E-02
Chlordane	57-74-9	5.9E-04	4.8E-01	4.1E+00	8.3E-03
p-Chloroaniline	106-47-8	3.6E-01	3.9E-03	--	--
Chlorobenzene	108-90-7	2.5E+01	1.5E+00	2.6E+04	5.2E+01
Chloroethane	75-00-3	1.6E+01	1.1E+00	5.2E+06	1.0E+04
Chloroform	67-66-3	2.3E+00	6.8E-02	6.1E+01	1.2E-01
Chloromethane	74-87-3	1.9E+02	2.9E+01	4.7E+04	9.4E+01
2-Chlorophenol	95-57-8	1.8E-01	1.2E-02	9.5E+03	1.9E+01
Chromium (total)	7440-47-3	5.0E+01	--	--	--
Chromium III	16065-83-1	1.8E+02	1.2E+05	--	--
Chromium VI	18540-29-9	1.0E+01	3.0E-01	--	--
Chrysene	218-01-9	4.9E-02	3.8E+00	4.6E+01	9.2E-02
Cobalt	7440-48-4	3.0E+00	2.3E+01	--	--
Copper	7440-50-8	3.1E+00	3.1E+03	--	--
Cyanide	57-12-5	1.0E+00	3.6E-03	4.2E+02	8.3E-01
Dibenz(a,h)anthracene	53-70-3	3.4E-03	1.6E-02	--	--
Dibromochloromethane	124-48-1	4.6E+01	3.8E+00	--	--
1,2-dibromo-3-chloropropane	96-12-8	2.0E-01	4.5E-03	8.4E-02	1.7E-04
1,2-Dibromoethane	106-93-4	5.0E-02	3.3E-04	2.3E+00	4.7E-03
1,2-Dichlorobenzene	95-50-1	1.4E+01	1.6E+00	1.0E+05	2.1E+02
1,3-Dichlorobenzene	541-73-1	6.5E+01	7.4E+00	--	--
1,4-Dichlorobenzene	106-46-7	5.0E+00	5.9E-01	1.3E+02	2.6E-01
3,3-Dichlorobenzidine	91-94-1	4.6E-02	1.2E-02	--	--
Dichlorodiphenyldichloroethane (DDD)	72-54-8	8.4E-04	2.7E+00	--	--
Dichlorodiphenyldichloroethane (DDE)	72-55-9	5.9E-04	1.9E+00	1.4E+01	2.9E-02
Dichlorodiphenyltrichloroethane (DDT)	50-29-3	5.9E-04	1.9E+00	1.4E+01	2.9E-02
1,1-Dichloroethane	75-34-3	5.0E+00	2.0E-01	8.8E+02	1.8E+00
1,2-Dichloroethane	107-06-2	5.0E-01	4.5E-03	5.4E+01	1.1E-01
1,1-Dichloroethene	75-35-4	3.2E+00	5.5E-01	3.7E+04	7.3E+01
cis-1,2-Dichloroethene	156-59-2	6.0E+00	1.9E-01	4.2E+03	8.3E+00
trans-1,2-Dichloroethene	156-60-5	1.0E+01	6.7E-01	4.2E+04	8.3E+01
2,4-Dichlorophenol	120-83-2	3.0E-01	3.0E-01	7.0E+05	1.4E+03
1,2-Dichloropropane	78-87-5	5.0E+00	1.2E-01	1.4E+02	2.8E-01
1,3-Dichloropropene	542-75-6	5.0E-01	5.9E-02	8.8E+01	1.8E-01
Dieldrin	60-57-1	1.4E-04	1.7E-04	3.1E-01	6.1E-04

Based on a generic conceptual site model designed for use at most sites¹

Chemicals	CAS No.	Groundwater (µg/L)	Soil (mg/kg)	Subslab ² / Soil Gas (µg/m ³)	Indoor Air (µg/m ³)
Diethyl phthalate	84-66-2	1.5E+00	3.5E-02	--	--
Dimethyl phthalate	131-11-3	1.5E+00	3.5E-02	--	--
2,4-Dimethylphenol	105-67-9	1.0E+02	6.7E-01	5.0E+02	1.0E+00
2,4-Dinitrophenol	51-28-5	3.9E+01	1.1E-01	--	--
2,4-Dinitrotoluene	121-14-2	2.4E-01	1.8E-03	--	--
1,4-Dioxane	123-91-1	3.8E-01	2.3E-04	1.8E+02	3.6E-01
Dioxin (2,3,7,8-TCDD)	1746-01-6	1.4E-08	4.9E-06	--	--
Endosulfan	115-29-7	8.7E-03	4.6E-03	--	--
Endrin	72-20-8	2.3E-03	6.5E-04	--	--
Ethylbenzene	100-41-4	1.3E+01	1.4E+00	5.6E+02	1.1E+00
Fluoranthene	206-44-0	8.0E+00	6.0E+01	--	--
Fluorene	86-73-7	3.9E+00	8.9E+00	--	--
Heptachlor	76-44-8	2.1E-04	7.7E-04	1.1E+00	2.2E-03
Heptachlor epoxide	1024-57-3	1.1E-04	4.2E-04	5.4E-01	1.1E-03
Hexachlorobenzene	118-74-1	7.7E-04	3.4E-01	2.8E+00	5.5E-03
Hexachlorobutadiene	87-68-3	1.4E-01	6.8E-01	6.4E+01	1.3E-01
γ-Hexachlorocyclohexane (Lindane)	58-89-9	1.6E-02	9.8E-03	--	--
Hexachloroethane	67-72-1	3.3E-01	1.1E+00	1.3E+02	2.6E-01
Indeno(1,2,3-c,d)pyrene	193-39-5	3.4E-02	1.6E-01	--	--
Lead	7439-92-1	2.5E+00	8.0E+01	--	--
Mercury (elemental)	7439-97-6	5.1E-02	1.3E+01	--	--
Methoxychlor	72-43-5	3.0E-03	1.9E+01	--	--
Methylene chloride	75-09-2	5.0E+00	7.7E-02	5.1E+02	1.0E+00
Methyl ethyl ketone	78-93-3	5.6E+03	5.1E+00	2.6E+06	5.2E+03
Methyl isobutyl ketone	108-10-1	1.2E+02	2.8E+00	2.1E+05	4.2E+02
Methyl mercury	22967-92-6	3.0E-03	6.3E+00	--	--
2-Methylnaphthalene	91-57-6	2.1E+00	2.5E-01	3.4E+04	6.8E+01
Methyl tertiary butyl ether (MTBE)	1634-04-4	5.0E+00	2.3E-02	5.4E+03	1.1E+01
Molybdenum	7439-98-7	1.0E+02	3.9E+02	--	--
Naphthalene	91-20-3	1.7E-01	3.3E-02	4.1E+01	8.3E-02
Nickel	7440-02-0	8.2E+00	8.6E+01	--	--
Pentachlorophenol	87-86-5	1.0E+00	1.0E+00	--	--
Perchlorate	7790-98-9	6.0E+00	5.5E+01	--	--
Phenanthrene	85-01-8	4.6E+00	1.1E+01	2.8E+04	5.5E+01
Phenol	108-95-2	5.0E+00	7.6E-02	7.8E+04	1.6E+02
Polychlorinated biphenyls (PCBs)	1336-36-3	1.7E-04	2.5E-01	2.5E+00	4.9E-03
Pyrene	129-00-0	2.0E+00	8.5E+01	--	--
Selenium	7782-49-2	5.0E+00	3.9E+02	--	--
Silver	7440-22-4	1.9E-01	3.9E+02	--	--
Styrene	100-42-5	1.0E+01	1.5E+00	4.7E+05	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	1.0E-02	1.9E+02	3.8E-01
1,1,2,2-Tetrachloroethane	79-34-5	1.0E+00	1.8E-02	2.4E+01	4.8E-02
Tetrachloroethene	127-18-4	3.0E+00	4.2E-01	2.4E+02	4.8E-01
Thallium	7440-28-0	2.0E+00	7.8E-01	--	--
Toluene	108-88-3	4.0E+01	2.9E+00	1.6E+05	3.1E+02
Toxaphene	8001-35-2	2.0E-04	4.2E-04	4.1E+00	8.3E-03
TPH gasoline	--	1.0E+02	1.0E+02	5.0E+04	1.0E+02
TPH Stoddard solvent	--	1.0E+02	1.0E+02	6.8E+04	1.4E+02
TPH diesel	--	1.0E+02	2.3E+02	6.8E+04	1.4E+02
TPH motor oil	--	See Note 3	5.1E+03	--	--
1,2,4-Trichlorobenzene	120-82-1	5.0E+00	1.5E+00	1.0E+03	2.1E+00
1,1,1-Trichloroethane	71-55-6	6.2E+01	7.8E+00	5.2E+05	1.0E+03
1,1,2-Trichloroethane	79-00-5	5.0E+00	7.0E-02	8.8E+01	1.8E-01
Trichloroethene	79-01-6	5.0E+00	4.6E-01	2.4E+02	4.8E-01
2,4,5-Trichlorophenol	95-95-4	1.1E+01	1.8E-01	--	--
2,4,6-Trichlorophenol	88-06-2	6.3E-01	2.1E-01	1.5E+02	3.0E-01
Vanadium	7440-62-2	1.9E+01	3.9E+02	--	--
Vinyl chloride	75-01-4	6.1E-02	8.2E-03	4.7E+00	9.5E-03
Xylenes	1330-20-7	2.0E+01	2.3E+00	5.2E+04	1.0E+02
Zinc	7440-66-6	8.1E+01	2.3E+04	--	--

Notes:

1 - See User's Guide Chapter 2. Input settings are: Land Use = Residential; Groundwater Use = Drinking Water Resource; MCL Priority over Risk-Based Levels = Yes; Intact Building Slab = Yes; Groundwater Depth = Shallow; Soil Type = Sand Scenario; Soil Exposure Depth = Shallow.

2 - Use of the subslab ESLs for the subslab line of evidence assumes an intact slab. See User's Guide Appendix B.

3 - TPH motor oil is not soluble. TPH motor oil detections in water most likely are petroleum degradates or less likely NAPL. If the detections are degradates, add TPH motor oil and TPH diesel results and compare to TPH diesel criterion. See User's Guide Chapter 9 for further information.

Feb. 2016 (Rev. 3)		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	Human Health Risk Based Only	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Shallow Groundwater		Deep Groundwater					Drinking Water	Non-Drinking Water		
							Res.	Com/Ind	Res: Sand Scenario	Res: Fine to Coarse Scenario	Com/Ind: Sand Scenario	Com/Ind: Fine to Coarse Scenario					
Acenaphthene	83-32-9	5.3E+02	5.3E+02	2.3E+01	4.0E+01	2.7E+03	--	--	--	--	--	--	2.1E+03	2.0E+01	2.0E+02	2.0E+01	Nuis/Odor
Acenaphthylene	208-96-8	--	--	--	3.0E+01	--	--	--	--	--	--	--	2.0E+03	--	--	3.0E+01	Dir Exp
Acetone	67-64-1	1.4E+04	1.4E+04	1.5E+03	--	--	3.4E+07	2.9E+08	4.5E+07	1.4E+08	3.7E+08	--	5.0E+04	2.0E+04	2.0E+05	1.5E+03	ETox
Aldrin	309-00-2	9.2E-04	9.2E-04	3.0E-01	1.3E-01	1.4E-04	--	--	--	--	--	--	8.5E+00	1.7E+01	1.7E+02	1.4E-04	ETox
Anthracene	120-12-7	1.8E+03	1.8E+03	7.3E-01	--	1.1E+05	--	--	--	--	--	--	2.2E+01	--	--	7.3E-01	ETox
Antimony	7440-36-0	6.0E+00	7.8E+00	3.0E+01	5.0E+02	4.3E+03	--	--	--	--	--	--	5.0E+04	--	--	6.0E+00	Dir Exp
Arsenic	7440-38-2	1.0E+01	4.0E-03	1.5E+02	3.6E+01	--	--	--	--	--	--	--	5.0E+04	--	--	1.0E+01	Dir Exp
Barium	7440-39-3	1.0E+03	2.0E+03	--	--	--	--	--	--	--	--	--	5.0E+04	--	--	1.0E+03	Dir Exp
Benzene	71-43-2	1.0E+00	1.5E-01	4.6E+01	3.5E+02	7.1E+01	1.1E+00	9.7E+00	1.4E+00	3.0E+01	1.2E+01	2.6E+02	5.0E+04	1.7E+02	2.0E+04	1.0E+00	Dir Exp
Benzo(a)anthracene	56-55-3	3.4E-02	3.4E-02	2.7E-02	--	4.9E-02	--	--	--	--	--	--	5.0E+00	--	--	2.7E-02	ETox
Benzo(b)fluoranthene	205-99-2	1.2E-02	1.2E-02	--	--	4.9E-02	--	--	--	--	--	--	7.0E+00	--	--	1.2E-02	Dir Exp
Benzo(k)fluoranthene	207-08-9	1.7E-02	1.7E-02	3.7E+00	--	4.9E-02	--	--	--	--	--	--	4.0E-01	--	--	1.7E-02	Dir Exp
Benzo(g,h,i)perylene	191-24-2	--	--	1.0E-01	--	--	--	--	--	--	--	--	1.3E-01	--	--	1.0E-01	ETox
Benzo(a)pyrene	50-32-8	2.0E-01	3.4E-03	1.4E-02	--	4.9E-02	--	--	--	--	--	--	1.9E+00	--	--	1.4E-02	ETox
Beryllium	7440-41-7	4.0E+00	1.0E+00	2.7E+00	--	--	--	--	--	--	--	--	5.0E+04	--	--	2.7E+00	ETox
1,1-Biphenyl	92-52-4	8.3E-01	8.3E-01	1.4E+01	--	--	--	--	--	--	--	--	3.8E+03	5.0E-01	5.0E+00	5.0E-01	Nuis/Odor
Bis(2-chloroethyl) ether	111-44-4	6.3E-03	6.3E-03	6.1E+01	--	1.4E+00	--	--	--	--	--	--	5.0E+04	3.6E+02	3.6E+03	6.3E-03	Dir Exp
Bis(2-chloroisopropyl) ether	108-60-1	3.6E-01	3.6E-01	6.1E+01	--	1.7E+05	--	--	--	--	--	--	5.0E+04	3.2E+02	3.2E+03	3.6E-01	Dir Exp
Bis(2-ethylhexyl) phthalate	117-81-7	4.0E+00	5.6E+00	3.2E+01	--	5.9E+00	--	--	--	--	--	--	6.5E+02	--	--	4.0E+00	Dir Exp
Boron	7440-42-8	1.0E+03	1.0E+03	1.6E+00	--	--	--	--	--	--	--	--	5.0E+04	--	--	1.6E+00	ETox
Bromodichloromethane	75-27-4	8.0E+01	1.2E-01	1.1E+03	3.2E+03	--	--	--	--	--	--	--	5.0E+04	--	--	8.0E+01	Dir Exp
Bromoform (Tribromomethane)	75-25-2	8.0E+01	2.9E+00	1.1E+03	3.2E+03	3.6E+02	--	--	--	--	--	--	5.0E+04	5.1E+02	5.1E+03	8.0E+01	Dir Exp
Bromomethane	74-83-9	7.5E+00	7.5E+00	1.6E+02	3.2E+03	4.0E+03	3.6E+01	3.0E+02	4.3E+01	6.5E+03	3.7E+02	5.5E+03	5.0E+04	--	--	7.5E+00	Dir Exp
Cadmium (water)	7440-43-9	5.0E+00	4.0E-02	2.5E-01	9.3E+00	--	--	--	--	--	--	--	5.0E+04	--	--	2.5E-01	ETox
Carbon tetrachloride	56-23-5	5.0E-01	1.0E-01	2.4E+02	3.2E+03	4.4E+00	2.2E-01	1.9E+00	2.7E-01	7.9E+00	2.4E+00	6.9E+01	5.0E+04	5.2E+02	5.2E+03	2.2E-01	Dir Exp
Chlordane	57-74-9	1.0E-01	1.3E-02	4.3E-03	4.0E-03	5.9E-04	--	--	--	--	--	--	2.8E+01	2.5E+00	2.5E+01	5.9E-04	ETox
p-Chloroaniline	106-47-8	3.6E-01	3.6E-01	5.0E+00	--	--	--	--	--	--	--	--	5.0E+04	--	--	3.6E-01	Dir Exp
Chlorobenzene	108-90-7	7.0E+01	7.0E+01	2.5E+01	6.5E+01	2.1E+04	1.4E+03	1.2E+04	1.7E+03	3.1E+04	1.4E+04	2.6E+05	5.0E+04	5.0E+01	5.0E+02	2.5E+01	ETox
Chloroethane	75-00-3	2.1E+04	2.1E+04	--	--	--	4.7E+04	4.0E+05	5.7E+04	1.4E+06	4.8E+05	1.2E+07	5.0E+04	1.6E+01	1.6E+02	1.6E+01	Nuis/Odor
Chloroform	67-66-3	8.0E+01	2.3E-01	6.2E+02	3.2E+03	4.7E+02	2.3E+00	2.0E+01	2.8E+00	5.4E+01	2.5E+01	4.7E+02	5.0E+04	2.4E+03	2.4E+04	2.3E+00	Dir Exp
Chloromethane	74-87-3	1.9E+02	1.9E+02	1.1E+03	3.2E+03	--	4.4E+02	3.7E+03	5.3E+02	1.3E+04	4.4E+03	1.1E+05	5.0E+04	--	--	1.9E+02	Dir Exp
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	Nuis/Odor

Feb. 2016 (Rev. 3)		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)						Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis	
		MCL Priority	Human Health Risk Based Only	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Shallow Groundwater		Deep Groundwater				Gross Contamination Levels (GW-4)	Drinking Water			Non-Drinking Water
							Res.	Com/Ind	Res: Sand Scenario	Res: Fine to Coarse Scenario	Com/Ind: Sand Scenario	Com/Ind: Fine to Coarse Scenario					
Chromium (total)	7440-47-3	5.0E+01	--	1.8E+02	--	--	--	--	--	--	--	--	5.0E+04	--	--	5.0E+01	Dir Exp
Chromium III	16065-83-1	2.2E+04	2.2E+04	1.8E+02	1.0E+03	--	--	--	--	--	--	--	5.0E+04	--	--	1.8E+02	ETox
Chromium VI	18540-29-9	1.0E+01	2.0E-02	1.1E+01	5.0E+01	--	--	--	--	--	--	--	5.0E+04	--	--	1.0E+01	Dir Exp
Chrysene	218-01-9	1.7E-01	1.7E-01	3.5E-01	--	4.9E-02	--	--	--	--	--	--	8.0E-01	--	--	4.9E-02	ETox
Cobalt	7440-48-4	6.0E+00	6.0E+00	3.0E+00	--	--	--	--	--	--	--	--	5.0E+04	--	--	3.0E+00	ETox
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	Dir Exp
Cyanide	57-12-5	1.5E+02	1.5E+00	5.2E+00	1.0E+00	2.2E+05	--	--	--	--	--	--	5.0E+04	1.7E+02	1.7E+03	1.0E+00	Dir Exp
Dibenz(a,h)anthracene	53-70-3	3.4E-03	3.4E-03	7.5E+00	--	4.9E-02	--	--	--	--	--	--	2.5E-01	--	--	3.4E-03	Dir Exp
Dibromochloromethane	124-48-1	8.0E+01	7.0E-01	1.1E+03	3.2E+03	4.6E+01	--	--	--	--	--	--	5.0E+04	--	--	4.6E+01	ETox
1,2-dibromo-3-chloropropane	96-12-8	2.0E-01	3.0E-04	--	--	--	--	--	--	--	--	--	5.0E+04	1.0E+01	1.0E+02	2.0E-01	Dir Exp
1,2-Dibromoethane	106-93-4	5.0E-02	7.5E-03	1.4E+03	--	--	8.5E-01	7.4E+00	1.1E+00	8.4E+00	9.4E+00	7.3E+01	5.0E+04	--	--	5.0E-02	Dir Exp
1,2-Dichlorobenzene	95-50-1	1.0E+02	3.0E+02	1.4E+01	6.5E+01	1.7E+04	1.2E+04	1.0E+05	1.5E+04	--	1.3E+05	--	5.0E+04	1.0E+02	1.0E+02	1.4E+01	ETox
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	Dir Exp
1,4-Dichlorobenzene	106-46-7	5.0E+00	4.8E-01	1.5E+01	6.5E+01	2.6E+03	1.2E+01	1.0E+02	1.5E+01	2.2E+02	1.3E+02	1.9E+03	3.7E+04	5.0E+00	1.1E+02	5.0E+00	Nuis/Odor
3,3-Dichlorobenzidine	91-94-1	4.6E-02	4.6E-02	2.5E+02	--	7.7E-02	--	--	--	--	--	--	1.6E+03	--	--	4.6E-02	Dir Exp
Dichlorodiphenyldichloroethane (DD)	72-54-8	3.1E-02	3.1E-02	1.0E-03	1.0E-03	8.4E-04	--	--	--	--	--	--	8.0E+01	--	--	8.4E-04	ETox
Dichlorodiphenyldichloroethane (DD)	72-55-9	4.6E-02	4.6E-02	1.0E-03	1.0E-03	5.9E-04	--	--	--	--	--	--	2.0E+01	--	--	5.9E-04	ETox
Dichlorodiphenyltrichloroethane (DD)	50-29-3	4.6E-02	4.6E-02	1.0E-03	1.0E-03	5.9E-04	--	--	--	--	--	--	1.5E+00	3.5E+02	3.5E+03	5.9E-04	ETox
1,1-Dichloroethane	75-34-3	5.0E+00	2.7E+00	4.7E+01	--	--	2.0E+01	1.8E+02	2.5E+01	5.5E+02	2.1E+02	4.8E+03	5.0E+04	--	--	5.0E+00	Dir Exp
1,2-Dichloroethane	107-06-2	5.0E-01	1.7E-01	1.0E+04	1.1E+04	9.9E+01	6.1E+00	5.3E+01	7.4E+00	9.0E+01	6.4E+01	7.9E+02	5.0E+04	7.0E+03	2.0E+05	5.0E-01	Dir Exp
1,1-Dichloroethene	75-35-4	6.0E+00	1.0E+01	2.5E+01	2.2E+04	3.2E+00	1.7E+02	1.4E+03	2.0E+02	5.7E+03	1.7E+03	4.8E+04	5.0E+04	1.5E+03	1.5E+04	3.2E+00	ETox
cis-1,2-Dichloroethene	156-59-2	6.0E+00	1.1E+01	5.9E+02	2.2E+04	--	1.1E+02	9.5E+02	1.4E+02	1.5E+04	1.1E+03	1.3E+05	5.0E+04	--	--	6.0E+00	Dir Exp
trans-1,2-Dichloroethene	156-60-5	1.0E+01	6.0E+01	5.9E+02	2.2E+04	1.4E+05	1.0E+03	1.1E+04	1.6E+03	3.1E+04	1.3E+04	2.6E+05	5.0E+04	2.6E+02	2.6E+03	1.0E+01	Dir Exp
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	Nuis/Odor
1,2-Dichloropropane	78-87-5	5.0E+00	4.4E-01	2.9E+03	1.5E+03	3.9E+01	7.6E+00	6.6E+01	9.3E+00	1.6E+02	8.1E+01	1.4E+03	5.0E+04	1.0E+01	1.0E+02	5.0E+00	Dir Exp
1,3-Dichloropropene	542-75-6	5.0E-01	2.0E-01	1.2E+02	7.9E+01	1.7E+03	3.8E+00	3.3E+01	4.6E+00	8.7E+01	4.0E+01	7.6E+02	5.0E+04	--	--	5.0E-01	Dir Exp
Dieldrin	60-57-1	7.1E-04	7.1E-04	5.6E-02	1.9E-03	1.4E-04	--	--	--	--	--	--	9.3E+01	4.1E+01	4.1E+02	1.4E-04	ETox
Diethyl phthalate	84-66-2	1.5E+04	1.5E+04	1.5E+00	1.7E+00	1.2E+54	--	--	--	--	--	--	5.0E+04	--	--	1.5E+00	ETox
Dimethyl phthalate	131-11-3	--	--	1.5E+00	1.7E+00	2.9E+06	--	--	--	--	--	--	5.0E+04	--	--	1.5E+00	ETox
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	Dir Exp
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	Dir Exp
2,4-Dinitrotoluene	121-14-2	2.4E-01	2.4E-01	1.2E+02	1.9E+02	9.1E+00	--	--	--	--	--	--	5.0E+04	--	--	2.4E-01	Dir Exp

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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)						Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis	
		MCL Priority	Human Health Risk Based Only	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Shallow Groundwater		Deep Groundwater				Gross Contamination Levels (GW-4)	Drinking Water			Non-Drinking Water
							Res.	Com/Ind	Res: Sand Scenario	Res: Fine to Coarse Scenario	Com/Ind: Sand Scenario	Com/Ind: Fine to Coarse Scenario					
1,4-Dioxane	123-91-1	3.8E-01	3.8E-01	3.4E+05	5.0E+05	--	--	--	--	--	--	5.0E+04	2.3E+05	--	3.8E-01	Dir Exp	
Dioxin (2,3,7,8-TCDD)	1746-01-6	3.0E-05	5.0E-08	5.0E-06	--	1.4E-08	--	--	--	--	--	7.0E+03	--	--	1.4E-08	ETox	
Endosulfan	115-29-7	1.0E+02	1.0E+02	5.6E-02	8.7E-03	2.4E+02	--	--	--	--	--	7.5E+01	--	--	8.7E-03	Dir Exp	
Endrin	72-20-8	2.0E+00	1.8E+00	3.6E-02	2.3E-03	8.1E-01	--	--	--	--	--	1.3E+02	4.1E+01	4.1E+02	2.3E-03	Dir Exp	
Ethylbenzene	100-41-4	3.0E+01	1.5E+00	2.9E+02	4.3E+01	2.9E+04	1.3E+01	1.1E+02	1.6E+01	3.7E+02	1.4E+02	3.3E+03	5.0E+04	3.0E+01	3.0E+02	1.3E+01	Dir Exp
Fluoranthene	206-44-0	8.0E+02	8.0E+02	8.1E+00	8.0E+00	3.7E+02	--	--	--	--	--	1.3E+02	--	--	8.0E+00	Dir Exp	
Fluorene	86-73-7	2.9E+02	2.9E+02	3.9E+00	3.0E+01	1.4E+04	--	--	--	--	--	9.5E+02	--	--	3.9E+00	ETox	
Heptachlor	76-44-8	1.0E-02	1.4E-03	3.8E-03	3.6E-03	2.1E-04	--	--	--	--	--	2.8E+01	2.0E+01	2.0E+02	2.1E-04	ETox	
Heptachlor epoxide	1024-57-3	1.0E-02	1.4E-03	3.8E-03	3.6E-03	1.1E-04	--	--	--	--	--	1.8E+02	--	--	1.1E-04	ETox	
Hexachlorobenzene	118-74-1	1.0E+00	8.8E-03	3.7E+00	6.5E+01	7.7E-04	--	--	--	--	--	5.5E+01	3.0E+03	3.0E+04	7.7E-04	ETox	
Hexachlorobutadiene	87-68-3	1.4E-01	1.4E-01	4.7E+00	3.2E+00	5.0E+01	--	--	--	--	--	1.0E+03	6.0E+00	6.0E+01	1.4E-01	Dir Exp	
γ-Hexachlorocyclohexane (Lindane)	58-89-9	2.0E-01	3.2E-02	8.0E-02	1.6E-02	6.3E-02	--	--	--	--	--	3.5E+03	1.2E+04	1.2E+05	1.6E-02	Dir Exp	
Hexachloroethane	67-72-1	3.3E-01	3.3E-01	1.2E+01	9.4E+01	8.9E+00	--	--	--	--	--	2.5E+04	1.0E+01	1.0E+02	3.3E-01	Dir Exp	
Indeno(1,2,3-c,d)pyrene	193-39-5	3.4E-02	3.4E-02	--	--	4.9E-02	--	--	--	--	--	2.7E-01	--	--	3.4E-02	Dir Exp	
Lead	7439-92-1	1.5E+01	2.0E-01	2.5E+00	8.1E+00	--	--	--	--	--	--	5.0E+04	--	--	2.5E+00	ETox	
Mercury (elemental)	7439-97-6	2.0E+00	1.2E+00	7.7E-01	9.4E-01	5.1E-02	--	--	--	--	--	5.0E+04	--	--	5.1E-02	ETox	
Methoxychlor	72-43-5	3.0E+01	9.0E-02	1.9E-02	3.0E-03	--	--	--	--	--	--	2.0E+01	4.7E+03	4.7E+04	3.0E-03	Dir Exp	
Methylene chloride	75-09-2	5.0E+00	9.3E-01	2.2E+03	3.2E+03	1.6E+03	4.8E+01	4.2E+02	5.7E+01	1.1E+03	5.0E+02	9.3E+03	5.0E+04	9.1E+03	9.1E+04	5.0E+00	Dir Exp
Methyl ethyl ketone	78-93-3	5.6E+03	5.6E+03	1.4E+04	--	--	4.3E+06	3.6E+07	5.5E+06	2.2E+07	4.6E+07	1.8E+08	5.0E+04	8.4E+03	8.4E+04	5.6E+03	Dir Exp
Methyl isobutyl ketone	108-10-1	1.2E+02	1.2E+02	1.7E+02	--	--	1.6E+06	1.3E+07	2.0E+06	1.1E+07	1.7E+07	--	5.0E+04	1.3E+03	1.3E+04	1.2E+02	Dir Exp
Methyl mercury	22967-92-6	2.0E+00	2.0E+00	3.0E-03	--	--	--	--	--	--	--	5.0E+04	--	--	3.0E-03	ETox	
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	ETox	
Methyl tertiary butyl ether (MTBE)	1634-04-4	5.0E+00	1.3E+01	6.6E+04	8.0E+03	--	1.2E+03	1.1E+04	1.5E+03	1.5E+04	1.3E+04	1.3E+05	5.0E+04	5.0E+00	1.8E+02	5.0E+00	Nuis/Odor
Molybdenum	7439-98-7	1.0E+02	1.0E+02	2.4E+02	--	--	--	--	--	--	--	5.0E+04	--	--	1.0E+02	Dir Exp	
Naphthalene	91-20-3	1.7E-01	1.7E-01	2.4E+01	2.4E+02	--	2.0E+01	1.7E+02	2.5E+01	1.8E+02	2.2E+02	1.6E+03	1.6E+04	2.1E+01	2.1E+02	1.7E-01	Dir Exp
Nickel	7440-02-0	1.0E+02	1.2E+01	5.2E+01	8.2E+00	4.6E+03	--	--	--	--	--	5.0E+04	--	--	8.2E+00	Dir Exp	
Pentachlorophenol	87-86-5	1.0E+00	4.0E-02	1.5E+01	7.9E+00	8.2E+00	--	--	--	--	--	5.0E+04	3.0E+01	5.9E+03	1.0E+00	Dir Exp	
Perchlorate	7790-98-9	6.0E+00	1.0E+00	6.0E+02	--	--	--	--	--	--	--	5.0E+04	--	--	6.0E+00	Dir Exp	
Phenanthrene	85-01-8	--	--	6.3E+00	4.6E+00	--	--	--	--	--	--	4.1E+02	1.0E+03	1.0E+04	4.6E+00	Dir Exp	
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	Nuis/Odor	
Polychlorinated biphenyls (PCBs)	1336-36-3	5.0E-01	1.9E-03	1.4E-02	3.0E-02	1.7E-04	--	--	--	--	--	1.6E+01	--	--	1.7E-04	ETox	
Pyrene	129-00-0	1.2E+02	1.2E+02	2.0E+00	--	1.1E+04	--	--	--	--	--	6.8E+01	--	--	2.0E+00	ETox	

Feb. 2016 (Rev. 3)		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)						Odor Nuisance Levels (Table GW-5)		GW Tier 1 ESL	Basis	
		MCL Priority	Human Health Risk Based Only	Fresh Water Ecotox	Saltwater Ecotox	Seafood Ingestion Human Health	Shallow Groundwater		Deep Groundwater				Gross Contamination Levels (GW-4)	Drinking Water			Non-Drinking Water
							Res.	Com/Ind	Res: Sand Scenario	Res: Fine to Coarse Scenario	Com/Ind: Sand Scenario	Com/Ind: Fine to Coarse Scenario					
Selenium	7782-49-2	5.0E+01	3.0E+01	5.0E+00	7.1E+01	--	--	--	--	--	--	--	5.0E+04	--	--	5.0E+00	ETox
Silver	7440-22-4	1.0E+02	9.4E+01	3.4E-01	1.9E-01	--	--	--	--	--	--	--	5.0E+04	1.0E+02	--	1.9E-01	Dir Exp
Styrene	100-42-5	1.0E+01	5.0E-01	--	--	--	3.0E+04	2.5E+05	3.6E+04	--	3.1E+05	--	5.0E+04	1.0E+01	1.1E+02	1.0E+01	Nuis/Odor
tert-Butyl alcohol	75-65-0	1.2E+01	1.2E+01	1.8E+04	--	--	--	--	--	--	--	--	5.0E+04	--	--	1.2E+01	Dir Exp
1,1,1,2-Tetrachloroethane	630-20-6	5.7E-01	5.7E-01	9.3E+02	--	--	--	--	--	--	--	--	5.0E+04	--	--	5.7E-01	Dir Exp
1,1,2,2-Tetrachloroethane	79-34-5	1.0E+00	7.6E-02	4.2E+02	9.0E+02	1.1E+01	--	--	--	--	--	--	5.0E+04	5.0E+02	5.0E+03	1.0E+00	Dir Exp
Tetrachloroethene	127-18-4	5.0E+00	6.0E-02	1.2E+02	2.3E+02	8.9E+00	3.0E+00	2.6E+01	3.7E+00	1.0E+02	3.2E+01	8.8E+02	5.0E+04	1.7E+02	3.0E+03	3.0E+00	Dir Exp
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	Dir Exp
Toluene	108-88-3	4.0E+01	1.5E+02	1.3E+02	2.5E+03	2.0E+05	3.6E+03	3.0E+04	4.3E+03	1.0E+05	3.7E+04	--	5.0E+04	4.0E+01	4.0E+02	4.0E+01	Nuis/Odor
Toxaphene	8001-35-2	3.0E+00	1.3E-02	2.0E-04	2.0E-04	7.5E-04	--	--	--	--	--	--	1.5E+03	1.4E+02	1.4E+02	2.0E-04	ETox
TPH gasoline	--	2.2E+02	2.2E+02	4.4E+02	3.7E+03	--	--	--	--	--	--	--	5.0E+04	1.0E+02	5.0E+03	1.0E+02	Nuis/Odor
TPH Stoddard solvent	--	1.5E+02	1.5E+02	6.4E+02	6.4E+02	--	--	--	--	--	--	--	2.5E+03	1.0E+02	5.0E+03	1.0E+02	Nuis/Odor
TPH diesel	--	1.5E+02	1.5E+02	6.4E+02	6.4E+02	--	--	--	--	--	--	--	2.5E+03	1.0E+02	5.0E+03	1.0E+02	Nuis/Odor
TPH motor oil	--	Note 1	Note 1	--	--	--	--	--	--	--	--	--	5.0E+04	Note 1	Note 1	5.0E+04	Gross Contam
1,2,4-Trichlorobenzene	120-82-1	5.0E+00	1.1E+00	2.5E+01	6.5E+01	--	2.4E+02	2.0E+03	3.0E+02	3.1E+03	2.5E+03	2.6E+04	5.0E+04	3.0E+03	3.0E+04	5.0E+00	Dir Exp
1,1,1-Trichloroethane	71-55-6	2.0E+02	1.0E+03	6.2E+01	3.1E+03	--	4.9E+03	4.2E+04	6.1E+03	1.7E+05	5.1E+04	--	5.0E+04	9.7E+02	5.0E+05	6.2E+01	ETox
1,1,2-Trichloroethane	79-00-5	5.0E+00	2.8E-01	4.7E+03	--	4.2E+01	--	--	--	--	--	--	5.0E+04	--	--	5.0E+00	Dir Exp
Trichloroethene	79-01-6	5.0E+00	4.9E-01	3.6E+02	2.0E+02	8.1E+01	5.6E+00	4.9E+01	6.9E+00	1.7E+02	6.0E+01	1.5E+03	5.0E+04	3.1E+02	1.0E+05	5.0E+00	Dir Exp
2,4,5-Trichlorophenol	95-95-4	1.2E+03	1.2E+03	6.3E+01	1.1E+01	--	--	--	--	--	--	--	5.0E+04	2.0E+02	2.0E+03	1.1E+01	Dir Exp
2,4,6-Trichlorophenol	88-06-2	6.3E-01	6.3E-01	4.9E+02	--	6.5E+00	--	--	--	--	--	--	5.0E+04	1.0E+02	1.0E+03	6.3E-01	Dir Exp
Vanadium	7440-62-2	5.0E+01	5.0E+01	1.9E+01	--	--	--	--	--	--	--	--	5.0E+04	--	--	1.9E+01	ETox
Vinyl chloride	75-01-4	5.0E-01	9.7E-03	7.8E+02	--	5.3E+02	6.1E-02	5.3E-01	7.3E-02	2.0E+00	6.4E-01	1.7E+01	5.0E+04	3.4E+03	3.4E+04	6.1E-02	Dir Exp
Xylenes	1330-20-7	2.0E+01	1.9E+02	--	1.0E+02	--	1.3E+03	1.1E+04	1.6E+03	3.8E+04	1.3E+04	--	5.0E+04	2.0E+01	5.3E+03	2.0E+01	Nuis/Odor
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	Dir Exp

Notes:
1 - TPH motor oil is not soluble. TPH motor oil detections in water most likely are petroleum degradates or less likely NAPL. If the detections are degradates, add TPH motor oil and TPH diesel results and compare to TPH diesel criterion. See User's Guide Chapter 9 for further information.
MCLs - Maximum Contaminant Levels
Res. - Residential
Com/Ind - Commercial/Industrial
Dir Exp - Direct Exposure
Nuis/Odor - Nuisance-Odor
ETox - Ecological Toxicity

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Summary of Soil ESLs (mg/kg)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)			Leaching to Groundwater Levels (Table S-2)		Gross Contamination Levels (Table S-3)	Odor Nuisance Levels (Table S-4)			Soil Tier 1 ESL	Basis
		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use/ Any Depth Soil Exposure: Construction Worker	Drinking Water	Nondrinking Water		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Deep Soil Exposure (CW)		
Acenaphthene	83-32-9	3.6E+03	4.5E+04	1.0E+04	1.6E+01	1.9E+01	1.3E+02	1.0E+03	2.5E+03	2.5E+03	1.6E+01	Leaching
Acenaphthylene	208-96-8	--	--	--	1.3E+01	1.3E+01	5.9E+01	5.0E+02	1.0E+03	1.0E+03	1.3E+01	Leaching
Acetone	67-64-1	5.9E+04	6.3E+05	2.6E+05	5.0E-01	5.0E-01	1.0E+05	5.0E+02	1.0E+03	1.0E+03	5.0E-01	Leaching
Aldrin	309-00-2	3.6E-02	1.6E-01	1.0E+00	5.0E+00	5.0E+00	5.0E+00	1.0E+03	2.5E+03	2.5E+03	3.6E-02	Dir Exp
Anthracene	120-12-7	1.8E+04	2.3E+05	5.0E+04	2.8E+00	2.8E+00	6.1E+00	5.0E+02	1.0E+03	1.0E+03	2.8E+00	Leaching
Antimony	7440-36-0	3.1E+01	4.7E+02	1.4E+02	--	--	--	--	--	--	3.1E+01	Dir Exp
Arsenic	7440-38-2	6.7E-02	3.1E-01	9.8E-01	--	--	--	--	--	--	6.7E-02	Dir Exp
Barium	7440-39-3	1.5E+04	2.2E+05	3.0E+03	--	--	--	--	--	--	3.0E+03	Dir Exp
Benzene	71-43-2	2.3E-01	1.0E+00	2.4E+01	4.4E-02	4.9E-02	8.7E+02	5.0E+02	1.0E+03	1.0E+03	4.4E-02	Leaching
Benz(a)anthracene	56-55-3	1.6E-01	2.9E+00	1.6E+01	1.2E+01	1.2E+01	1.2E+01	5.0E+02	1.0E+03	1.0E+03	1.6E-01	Dir Exp
Benzo(b)fluoranthene	205-99-2	1.6E-01	2.9E+00	1.6E+01	4.6E+01	6.4E+02	4.6E+01	5.0E+02	1.0E+03	1.0E+03	1.6E-01	Dir Exp
Benzo(k)fluoranthene	207-08-9	1.6E+00	2.9E+01	1.5E+02	2.6E+00	3.7E+01	2.6E+00	5.0E+02	1.0E+03	1.0E+03	1.6E+00	Dir Exp
Benzo(g,h,i)perylene	191-24-2	--	--	--	2.7E+01	2.7E+01	2.5E+00	5.0E+02	1.0E+03	1.0E+03	2.5E+00	Gross Contam
Benzo(a)pyrene	50-32-8	1.6E-02	2.9E-01	1.6E+00	1.3E+02	1.3E+02	1.3E+02	5.0E+02	1.0E+03	1.0E+03	1.6E-02	Dir Exp
Beryllium	7440-41-7	1.5E+02	2.2E+03	4.2E+01	--	--	--	--	--	--	4.2E+01	Dir Exp
1,1-Biphenyl	92-52-4	6.4E+01	2.7E+02	2.4E+02	6.5E-01	6.5E+00	3.5E+02	5.0E+02	1.0E+03	1.0E+03	6.5E-01	Leaching
Bis(2-chloroethyl) ether	111-44-4	1.2E-01	5.3E-01	6.8E+00	8.0E-05	7.8E-01	9.6E+03	5.0E+02	1.0E+03	1.0E+03	8.0E-05	Leaching
Bis(2-chloroisopropyl) ether	108-60-1	3.6E+00	1.6E+01	2.2E+02	3.9E-03	6.6E-01	7.9E+02	5.0E+02	1.0E+03	1.0E+03	3.9E-03	Leaching
Bis(2-ethylhexyl) phthalate	117-81-7	3.9E+01	1.6E+02	9.5E+02	7.8E+02	7.8E+02	7.8E+02	5.0E+02	1.0E+03	1.0E+03	3.9E+01	Dir Exp
Boron	7440-42-8	1.6E+04	2.3E+05	4.5E+04	--	--	--	--	--	--	1.6E+04	Dir Exp
Bromodichloromethane	75-27-4	5.2E-01	2.3E+00	4.7E+01	1.5E+00	2.1E+01	3.0E+03	1.0E+03	2.5E+03	2.5E+03	5.2E-01	Dir Exp
Bromoform (Tribromomethane)	75-25-2	6.3E+01	3.0E+02	2.2E+03	1.7E+00	2.4E+01	2.4E+03	5.0E+02	1.0E+03	1.0E+03	1.7E+00	Leaching
Bromomethane	74-83-9	8.0E+00	3.6E+01	3.4E+01	3.0E-01	1.5E+00	3.1E+03	5.0E+02	1.0E+03	1.0E+03	3.0E-01	Leaching
Cadmium (soil)	7440-43-9	3.9E+01	5.8E+02	4.3E+01	--	--	--	--	--	--	3.9E+01	Dir Exp
Carbon tetrachloride	56-23-5	1.2E-01	5.4E-01	1.3E+01	4.8E-02	4.8E-02	1.1E+03	5.0E+02	1.0E+03	1.0E+03	4.8E-02	Leaching
Chlordane	57-74-9	4.8E-01	2.2E+00	1.4E+01	1.5E+01	1.5E+01	1.5E+01	1.0E+03	2.5E+03	2.5E+03	4.8E-01	Dir Exp
p-Chloroaniline	106-47-8	3.5E+00	1.6E+01	1.2E+02	3.9E-03	5.3E-02	1.3E+03	5.0E+02	1.0E+03	1.0E+03	3.9E-03	Leaching
Chlorobenzene	108-90-7	2.5E+02	1.2E+03	1.1E+03	1.5E+00	1.5E+00	6.8E+02	5.0E+02	1.0E+03	1.0E+03	1.5E+00	Leaching
Chloroethane	75-00-3	1.3E+04	5.3E+04	5.3E+04	1.1E+00	1.1E+01	1.6E+03	5.0E+02	1.0E+03	1.0E+03	1.1E+00	Leaching
Chloroform	67-66-3	3.0E-01	1.3E+00	3.2E+01	6.8E-02	6.8E-02	2.9E+03	5.0E+02	1.0E+03	1.0E+03	6.8E-02	Leaching

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Summary of Soil ESLs (mg/kg)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)			Leaching to Groundwater Levels (Table S-2)			Odor Nuisance Levels (Table S-4)			Soil Tier 1 ESL	Basis
		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use/ Any Depth Soil Exposure: Construction Worker	Drinking Water	Nondrinking Water	Gross Contamination Levels (Table S-3)	Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Deep Soil Exposure (CW)		
Chloromethane	74-87-3	1.0E+02	4.3E+02	4.3E+02	2.9E+01	6.8E+01	4.1E+03	1.0E+02	5.0E+02	5.0E+02	2.9E+01	Leaching
2-Chlorophenol	95-57-8	3.9E+02	5.8E+03	1.8E+03	1.2E-02	1.2E-01	5.5E+04	1.0E+02	5.0E+02	5.0E+02	1.2E-02	Leaching
Chromium (total)	7440-47-3	--	--	--	--	--	--	--	--	--	--	--
Chromium III	16065-83-1	1.2E+05	1.8E+06	5.3E+05	--	--	--	--	--	--	1.2E+05	Dir Exp
Chromium VI	18540-29-9	3.0E-01	6.2E+00	2.8E+00	--	--	--	--	--	--	3.0E-01	Dir Exp
Chrysene	218-01-9	1.5E+01	2.6E+02	1.5E+03	3.8E+00	2.3E+01	3.8E+00	5.0E+02	1.0E+03	1.0E+03	3.8E+00	Gross Contam
Cobalt	7440-48-4	2.3E+01	3.5E+02	2.8E+01	--	--	--	--	--	--	2.3E+01	Dir Exp
Copper	7440-50-8	3.1E+03	4.7E+04	1.4E+04	--	--	--	--	--	--	3.1E+03	Dir Exp
Cyanide	57-12-5	5.3E+00	2.4E+01	2.1E+01	3.6E-03	3.6E-03	2.0E+05	1.0E+02	5.0E+02	5.0E+02	3.6E-03	Leaching
Dibenz(a,h)anthracene	53-70-3	1.6E-02	2.9E-01	1.6E+00	9.9E+00	1.4E+02	9.9E+00	5.0E+02	1.0E+03	1.0E+03	1.6E-02	Dir Exp
Dibromochloromethane	124-48-1	8.3E+00	3.9E+01	2.9E+02	3.8E+00	9.1E+01	1.3E+04	1.0E+02	5.0E+02	5.0E+02	3.8E+00	Leaching
1,2-dibromo-3-chloropropane	96-12-8	5.3E-03	7.2E-02	1.3E+00	4.5E-03	2.2E+00	1.1E+03	5.0E+02	1.0E+03	1.0E+03	4.5E-03	Leaching
1,2-Dibromoethane	106-93-4	3.6E-02	1.6E-01	3.2E+00	3.3E-04	5.7E-03	9.2E+02	5.0E+02	1.0E+03	1.0E+03	3.3E-04	Leaching
1,2-Dichlorobenzene	95-50-1	2.0E+03	1.1E+04	8.5E+03	1.6E+00	1.6E+00	6.0E+02	1.0E+03	2.5E+03	2.5E+03	1.6E+00	Leaching
1,3-Dichlorobenzene	541-73-1	--	--	--	7.4E+00	7.4E+00	6.0E+02	1.0E+02	5.0E+02	5.0E+02	7.4E+00	Leaching
1,4-Dichlorobenzene	106-46-7	3.0E+00	1.3E+01	3.1E+02	5.9E-01	1.4E+00	2.8E+02	5.0E+02	1.0E+03	1.0E+03	5.9E-01	Leaching
3,3-Dichlorobenzidine	91-94-1	5.8E-01	2.7E+00	2.0E+01	1.2E-02	6.6E+01	3.0E+01	5.0E+02	1.0E+03	1.0E+03	1.2E-02	Leaching
Dichlorodiphenyldichloroethane (DDE)	72-54-8	2.7E+00	1.2E+01	8.1E+01	7.5E+02	7.5E+02	7.5E+02	5.0E+02	1.0E+03	1.0E+03	2.7E+00	Dir Exp
Dichlorodiphenylchloroethane (DDE)	72-55-9	1.9E+00	8.5E+00	5.7E+01	1.1E+03	1.1E+03	1.1E+03	5.0E+02	1.0E+03	1.0E+03	1.9E+00	Dir Exp
Dichlorodiphenyltrichloroethane (DDE)	50-29-3	1.9E+00	8.5E+00	5.7E+01	4.3E+00	4.3E+00	4.3E+00	5.0E+02	1.0E+03	1.0E+03	1.9E+00	Dir Exp
1,1-Dichloroethane	75-34-3	3.8E+00	1.7E+01	3.9E+02	2.0E-01	8.1E-01	1.7E+03	5.0E+02	1.0E+03	1.0E+03	2.0E-01	Leaching
1,2-Dichloroethane	107-06-2	3.7E-01	1.6E+00	3.7E+01	4.5E-03	5.4E-02	1.8E+03	1.0E+02	5.0E+02	5.0E+02	4.5E-03	Leaching
1,1-Dichloroethene	75-35-4	9.4E+01	4.0E+02	3.9E+02	5.5E-01	4.3E+00	1.5E+03	5.0E+02	1.0E+03	1.0E+03	5.5E-01	Leaching
cis-1,2-Dichloroethene	156-59-2	1.9E+01	9.0E+01	8.2E+01	1.9E-01	3.5E+00	1.2E+03	1.0E+02	5.0E+02	5.0E+02	1.9E-01	Leaching
trans-1,2-Dichloroethene	156-60-5	1.6E+02	7.3E+02	6.8E+02	6.7E-01	3.9E+01	3.1E+03	5.0E+02	1.0E+03	1.0E+03	6.7E-01	Leaching
2,4-Dichlorophenol	120-83-2	2.3E+02	3.5E+03	1.1E+03	3.0E-01	3.0E+00	1.6E+05	5.0E+02	1.0E+03	1.0E+03	3.0E-01	Leaching
1,2-Dichloropropane	78-87-5	8.8E-01	3.9E+00	5.8E+01	1.2E-01	1.9E-01	1.1E+03	1.0E+02	5.0E+02	5.0E+02	1.2E-01	Leaching
1,3-Dichloropropene	542-75-6	2.8E-01	1.2E+00	2.9E+01	5.9E-02	4.4E-01	1.4E+03	5.0E+02	1.0E+03	1.0E+03	5.9E-02	Leaching
Dieldrin	60-57-1	3.8E-02	1.7E-01	1.1E+00	1.7E-04	2.3E-03	8.3E+00	5.0E+02	1.0E+03	1.0E+03	1.7E-04	Leaching
Diethyl phthalate	84-66-2	5.1E+04	6.6E+05	1.5E+05	3.5E-02	3.5E-02	8.4E+02	5.0E+02	1.0E+03	1.0E+03	3.5E-02	Leaching

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Summary of Soil ESLs (mg/kg)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)			Leaching to Groundwater Levels (Table S-2)			Odor Nuisance Levels (Table S-4)			Soil Tier 1 ESL	Basis
		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use/ Any Depth Soil Exposure: Construction Worker	Drinking Water	Nondrinking Water	Gross Contamination Levels (Table S-3)	Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Deep Soil Exposure (CW)		
Dimethyl phthalate	131-11-3	--	--	--	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	6.7E-01	7.4E-01	2.7E+03	1.0E+02	5.0E+02	5.0E+02	6.7E-01	Leaching
2,4-Dinitrophenol	51-28-5	1.6E+02	2.3E+03	7.1E+02	1.1E-01	2.1E-01	1.1E+03	5.0E+02	1.0E+03	1.0E+03	1.1E-01	Leaching
2,4-Dinitrotoluene	121-14-2	2.2E+00	1.1E+01	7.9E+01	1.8E-03	8.6E-01	1.0E+02	5.0E+02	1.0E+03	1.0E+03	1.8E-03	Leaching
1,4-Dioxane	123-91-1	7.0E+00	3.3E+01	2.5E+02	2.3E-04	3.0E+01	1.2E+05	5.0E+02	1.0E+03	1.0E+03	2.3E-04	Leaching
Dioxin (2,3,7,8-TCDD)	1746-01-6	4.9E-06	2.2E-05	1.5E-04	1.1E+06	1.1E+06	1.1E+06	1.0E+02	5.0E+02	5.0E+02	4.9E-06	Dir Exp
Endosulfan	115-29-7	4.2E+02	5.8E+03	1.5E+03	4.6E-03	4.6E-03	2.9E+00	5.0E+02	1.0E+03	1.0E+03	4.6E-03	Leaching
Endrin	72-20-8	2.1E+01	2.9E+02	7.4E+01	6.5E-04	6.5E-04	2.7E+00	5.0E+02	1.0E+03	1.0E+03	6.5E-04	Leaching
Ethylbenzene	100-41-4	5.1E+00	2.2E+01	4.8E+02	1.4E+00	1.4E+00	4.0E+02	5.0E+02	1.0E+03	1.0E+03	1.4E+00	Leaching
Fluoranthene	206-44-0	2.4E+03	3.0E+04	6.7E+03	6.0E+01	6.0E+01	6.0E+01	5.0E+02	1.0E+03	1.0E+03	6.0E+01	Gross Contam
Fluorene	86-73-7	2.4E+03	3.0E+04	6.7E+03	8.9E+00	8.9E+00	1.6E+02	5.0E+02	1.0E+03	1.0E+03	8.9E+00	Leaching
Heptachlor	76-44-8	1.4E-01	6.0E-01	3.8E+00	7.7E-04	1.3E-02	7.4E+00	1.0E+03	2.5E+03	2.5E+03	7.7E-04	Leaching
Heptachlor epoxide	1024-57-3	6.7E-02	3.0E-01	1.9E+00	4.2E-04	1.4E-02	4.8E+01	1.0E+03	2.5E+03	2.5E+03	4.2E-04	Leaching
Hexachlorobenzene	118-74-1	3.4E-01	1.5E+00	9.5E+00	7.9E+02	7.9E+02	7.9E+02	5.0E+02	1.0E+03	1.0E+03	3.4E-01	Dir Exp
Hexachlorobutadiene	87-68-3	8.9E+00	4.2E+01	3.1E+02	6.8E-01	1.6E+01	3.5E+02	5.0E+02	1.0E+03	1.0E+03	6.8E-01	Leaching
γ-Hexachlorocyclohexane (Lindane)	58-89-9	5.5E-01	2.5E+00	1.6E+01	9.8E-03	9.8E-03	1.6E+02	5.0E+02	1.0E+03	1.0E+03	9.8E-03	Leaching
Hexachloroethane	67-72-1	1.4E+01	5.7E+01	1.3E+02	1.1E+00	4.1E+01	6.0E+03	5.0E+02	1.0E+03	1.0E+03	1.1E+00	Leaching
Indeno(1,2,3-c,d)pyrene	193-39-5	1.6E-01	2.9E+00	1.6E+01	9.1E+00	7.0E+01	5.1E+00	5.0E+02	1.0E+03	1.0E+03	1.6E-01	Dir Exp
Lead	7439-92-1	8.0E+01	3.2E+02	1.6E+02	--	--	--	--	--	--	8.0E+01	Dir Exp
Mercury (elemental)	7439-97-6	1.3E+01	1.9E+02	4.4E+01	--	--	--	5.0E+02	1.0E+03	1.0E+03	1.3E+01	Dir Exp
Methoxychlor	72-43-5	3.5E+02	4.8E+03	1.2E+03	1.9E+01	1.9E+01	1.9E+01	5.0E+02	1.0E+03	1.0E+03	1.9E+01	Gross Contam
Methylene chloride	75-09-2	1.9E+00	2.5E+01	5.0E+02	7.7E-02	7.3E-01	2.4E+03	5.0E+02	1.0E+03	1.0E+03	7.7E-02	Leaching
Methyl ethyl ketone	78-93-3	3.1E+04	2.5E+05	1.4E+05	5.1E+00	1.3E+01	3.4E+04	5.0E+02	1.0E+03	1.0E+03	5.1E+00	Leaching
Methyl isobutyl ketone	108-10-1	5.8E+03	7.1E+04	2.6E+04	2.8E+00	3.9E+00	1.7E+04	1.0E+02	5.0E+02	5.0E+02	2.8E+00	Leaching
Methyl mercury	22967-92-6	6.3E+00	8.2E+01	1.9E+01	--	--	--	1.0E+02	5.0E+02	5.0E+02	6.3E+00	Dir Exp
2-Methylnaphthalene	91-57-6	2.4E+02	3.0E+03	6.7E+02	2.5E-01	2.5E-01	1.1E+02	5.0E+02	1.0E+03	1.0E+03	2.5E-01	Leaching
Methyl tertiary butyl ether (MTBE)	1634-04-4	4.2E+01	1.8E+02	3.7E+03	2.3E-02	8.4E-01	2.1E+04	1.0E+02	5.0E+02	5.0E+02	2.3E-02	Leaching
Molybdenum	7439-98-7	3.9E+02	5.8E+03	1.8E+03	--	--	--	--	--	--	3.9E+02	Dir Exp
Naphthalene	91-20-3	3.3E+00	1.4E+01	3.5E+02	3.3E-02	3.9E+00	2.2E+02	5.0E+02	1.0E+03	1.0E+03	3.3E-02	Leaching
Nickel	7440-02-0	8.2E+02	1.1E+04	8.6E+01	--	--	--	--	--	--	8.6E+01	Dir Exp

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Summary of Soil ESLs (mg/kg)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)			Leaching to Groundwater Levels (Table S-2)		Gross Contamination Levels (Table S-3)	Odor Nuisance Levels (Table S-4)			Soil Tier 1 ESL	Basis
		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use/ Any Depth Soil Exposure: Construction Worker	Drinking Water	Nondrinking Water		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Deep Soil Exposure (CW)		
Pentachlorophenol	87-86-5	1.0E+00	4.0E+00	2.0E+01	2.7E+06	2.7E+06	2.7E+06	5.0E+02	1.0E+03	1.0E+03	1.0E+00	Dir Exp
Perchlorate	7790-98-9	5.5E+01	8.2E+02	2.5E+02	--	--	--	--	--	--	5.5E+01	Dir Exp
Phenanthrene	85-01-8	--	--	--	1.1E+01	1.1E+01	6.9E+01	5.0E+02	1.0E+03	1.0E+03	1.1E+01	Leaching
Phenol	108-95-2	2.3E+04	3.5E+05	9.8E+04	7.6E-02	8.8E+00	5.2E+04	5.0E+02	1.0E+03	1.0E+03	7.6E-02	Leaching
Polychlorinated biphenyls (PCBs)	1336-36-3	2.5E-01	1.0E+00	5.6E+00	6.3E+00	6.3E+00	6.3E+00	5.0E+02	1.0E+03	1.0E+03	2.5E-01	Dir Exp
Pyrene	129-00-0	1.8E+03	2.3E+04	5.0E+03	8.5E+01	8.5E+01	8.5E+01	5.0E+02	1.0E+03	1.0E+03	8.5E+01	Gross Contam
Selenium	7782-49-2	3.9E+02	5.8E+03	1.7E+03	--	--	--	--	--	--	3.9E+02	Dir Exp
Silver	7440-22-4	3.9E+02	5.8E+03	1.8E+03	--	--	--	--	--	--	3.9E+02	Dir Exp
Styrene	100-42-5	6.6E+03	4.0E+04	2.9E+04	1.5E+00	1.6E+01	1.5E+03	5.0E+02	1.0E+03	1.0E+03	1.5E+00	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	4.2E+00	1.8E+01	3.4E+02	1.0E-02	1.6E+01	2.0E+03	1.0E+02	5.0E+02	5.0E+02	1.0E-02	Leaching
1,1,1,2-Tetrachloroethane	79-34-5	5.3E-01	2.3E+00	4.4E+01	1.8E-02	7.4E+00	2.0E+03	5.0E+02	1.0E+03	1.0E+03	1.8E-02	Leaching
Tetrachloroethene	127-18-4	6.0E-01	2.7E+00	3.3E+01	4.2E-01	4.2E-01	2.3E+02	5.0E+02	1.0E+03	1.0E+03	4.2E-01	Leaching
Thallium	7440-28-0	7.8E-01	1.2E+01	3.5E+00	--	--	--	--	--	--	7.8E-01	Dir Exp
Toluene	108-88-3	9.7E+02	4.6E+03	4.1E+03	2.9E+00	9.3E+00	6.5E+02	5.0E+02	1.0E+03	1.0E+03	2.9E+00	Leaching
Toxaphene	8001-35-2	5.1E-01	2.2E+00	1.4E+01	4.2E-04	4.2E-04	9.3E+01	5.0E+02	1.0E+03	1.0E+03	4.2E-04	Leaching
TPH gasoline	--	7.4E+02	3.9E+03	2.8E+03	7.7E+02	3.4E+03	1.0E+03	1.0E+02	5.0E+02	5.0E+02	1.0E+02	Nuis/Odor
TPH Stoddard solvent	--	1.6E+02	8.2E+02	6.3E+02	1.0E+03	6.5E+03	2.3E+03	1.0E+02	5.0E+02	5.0E+02	1.0E+02	Nuis/Odor
TPH diesel	--	2.3E+02	1.1E+03	8.8E+02	5.7E+02	3.6E+03	2.3E+03	5.0E+02	1.0E+03	1.0E+03	2.3E+02	Dir Exp
TPH motor oil	--	1.1E+04	1.4E+05	3.2E+04	--	--	5.1E+03	--	--	--	5.1E+03	Gross Contam
1,2,4-Trichlorobenzene	120-82-1	2.4E+01	1.1E+02	3.1E+02	1.5E+00	7.6E+00	3.2E+03	1.0E+03	2.5E+03	2.5E+03	1.5E+00	Leaching
1,1,1-Trichloroethane	71-55-6	2.1E+03	8.9E+03	8.8E+03	7.8E+00	7.8E+00	1.2E+03	5.0E+02	1.0E+03	1.0E+03	7.8E+00	Leaching
1,1,2-Trichloroethane	79-00-5	9.6E-01	4.2E+00	5.2E+00	7.0E-02	6.6E+01	1.8E+03	1.0E+02	5.0E+02	5.0E+02	7.0E-02	Leaching
Trichloroethene	79-01-6	1.2E+00	8.0E+00	2.3E+01	4.6E-01	5.1E-01	1.3E+03	5.0E+02	1.0E+03	1.0E+03	4.6E-01	Leaching
2,4,5-Trichlorophenol	95-95-4	7.8E+03	1.2E+05	3.5E+04	1.8E-01	1.8E-01	7.6E+02	1.0E+02	5.0E+02	5.0E+02	1.8E-01	Leaching
2,4,6-Trichlorophenol	88-06-2	9.9E+00	4.7E+01	3.5E+02	2.1E-01	1.6E+02	9.7E+03	1.0E+02	5.0E+02	5.0E+02	2.1E-01	Leaching
Vanadium	7440-62-2	3.9E+02	5.8E+03	4.7E+02	--	--	--	--	--	--	3.9E+02	Dir Exp
Vinyl chloride	75-01-4	8.2E-03	1.5E-01	3.4E+00	1.0E-02	1.0E-02	1.2E+03	5.0E+02	1.0E+03	1.0E+03	8.2E-03	Dir Exp
Xylenes	1330-20-7	5.6E+02	2.4E+03	2.4E+03	2.3E+00	1.1E+01	4.2E+02	5.0E+02	1.0E+03	1.0E+03	2.3E+00	Leaching
Zinc	7440-66-6	2.3E+04	3.5E+05	1.1E+05	--	--	--	--	--	--	2.3E+04	Dir Exp

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Summary of Soil ESLs (mg/kg)

Chemicals	CAS No.	Direct Exposure Human Health Risk Levels (Table S-1)			Leaching to Groundwater Levels (Table S-2)		Gross Contamination Levels (Table S-3)	Odor Nuisance Levels (Table S-4)			Soil Tier 1 ESL	Basis
		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use/ Any Depth Soil Exposure: Construction Worker	Drinking Water	Nondrinking Water		Res: Shallow Soil Exposure	Com/Ind: Shallow Soil Exposure	Any Land Use: Deep Soil Exposure (CW)		
Notes: Res. - Residential Com/Ind - Commercial/Industrial CW - Construction Worker Exp - Exposure												

Feb. 2016 (Rev. 3)		Summary of Vapor ESLs										
Chemicals	CAS No.	Subslab ¹ / Soil Gas (µg/m ³)						Indoor Air (µg/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			Residential	Commercial/Industrial			
Acenaphthene	83-32-9	--	--	2.6E+05	5.1E+05	2.6E+05	Nuis/Odor	--	--	5.1E+02	5.1E+02	Nuis/Odor
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	1.6E+07	1.4E+08	1.5E+07	3.1E+07	1.5E+07	Nuis/Odor	3.2E+04	1.4E+05	3.1E+04	3.1E+04	Nuis/Odor
Aldrin	309-00-2	2.9E-01	2.5E+00	1.3E+05	2.6E+05	2.9E-01	Dir Exp	5.7E-04	2.5E-03	2.6E+02	5.7E-04	Dir Exp
Anthracene	120-12-7	--	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	--	--	--	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	--	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	--	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	4.8E+01	4.2E+02	2.4E+06	4.9E+06	4.8E+01	Dir Exp	9.7E-02	4.2E-01	4.9E+03	9.7E-02	Dir Exp
Benz(a)anthracene	56-55-3	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	205-99-2	4.6E+00	1.1E+02	--	--	4.6E+00	Dir Exp	9.2E-03	1.1E-01	--	9.2E-03	Dir Exp
Benzo(k)fluoranthene	207-08-9	4.6E+00	1.1E+02	--	--	4.6E+00	Dir Exp	9.2E-03	1.1E-01	--	9.2E-03	Dir Exp
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	50-32-8	--	--	--	--	--	--	--	--	--	--	--
Beryllium	7440-41-7	--	--	--	--	--	--	--	--	--	--	--
1,1-Biphenyl	92-52-4	2.1E+02	1.8E+03	3.0E+04	6.0E+04	2.1E+02	Dir Exp	4.2E-01	1.8E+00	6.0E+01	4.2E-01	Dir Exp
Bis(2-chloroethyl) ether	111-44-4	2.0E+00	1.7E+01	1.4E+05	2.9E+05	2.0E+00	Dir Exp	4.0E-03	1.7E-02	2.9E+02	4.0E-03	Dir Exp
Bis(2-chloroisopropyl) ether	108-60-1	1.4E+02	1.2E+03	1.1E+06	2.2E+06	1.4E+02	Dir Exp	2.8E-01	1.2E+00	2.2E+03	2.8E-01	Dir Exp
Bis(2-ethylhexyl) phthalate	117-81-7	--	--	--	--	--	--	--	--	--	--	--
Boron	7440-42-8	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	75-27-4	3.8E+01	3.3E+02	5.5E+09	1.1E+10	3.8E+01	Dir Exp	7.6E-02	3.3E-01	1.1E+07	7.6E-02	Dir Exp
Bromoform (Tribromomethane)	75-25-2	1.3E+03	1.1E+04	6.7E+06	1.3E+07	1.3E+03	Dir Exp	2.6E+00	1.1E+01	1.3E+04	2.6E+00	Dir Exp
Bromomethane	74-83-9	2.6E+03	2.2E+04	4.0E+07	8.0E+07	2.6E+03	Dir Exp	5.2E+00	2.2E+01	8.0E+04	5.2E+00	Dir Exp
Cadmium (soil)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--
Cadmium (water)	7440-43-9	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	56-23-5	3.3E+01	2.9E+02	3.2E+07	6.3E+07	3.3E+01	Dir Exp	6.7E-02	2.9E-01	6.3E+04	6.7E-02	Dir Exp
Chlordane	57-74-9	4.1E+00	3.6E+01	4.2E+03	8.4E+03	4.1E+00	Dir Exp	8.3E-03	3.6E-02	8.4E+00	8.3E-03	Dir Exp
p-Chloroaniline	106-47-8	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	108-90-7	2.6E+04	2.2E+05	5.0E+05	1.0E+06	2.6E+04	Dir Exp	5.2E+01	2.2E+02	1.0E+03	5.2E+01	Dir Exp
Chloroethane	75-00-3	5.2E+06	4.4E+07	1.9E+08	3.8E+08	5.2E+06	Dir Exp	1.0E+04	4.4E+04	3.8E+05	1.0E+04	Dir Exp
Chloroform	67-66-3	6.1E+01	5.3E+02	2.1E+08	4.2E+08	6.1E+01	Dir Exp	1.2E-01	5.3E-01	4.2E+05	1.2E-01	Dir Exp
Chloromethane	74-87-3	4.7E+04	3.9E+05	--	--	4.7E+04	Dir Exp	9.4E+01	3.9E+02	--	9.4E+01	Dir Exp
2-Chlorophenol	95-57-8	--	--	9.5E+03	1.9E+04	9.5E+03	Nuis/Odor	--	--	1.9E+01	1.9E+01	Nuis/Odor
Chromium (total)	7440-47-3	--	--	--	--	--	--	--	--	--	--	--
Chromium III	16065-83-1	--	--	--	--	--	--	--	--	--	--	--

Feb. 2016 (Rev. 3)		Summary of Vapor ESLs											
Chemicals	CAS No.	Subslab ¹ / Soil Gas (µg/m ³)					Indoor Air (µg/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			Residential	Commercial/Industrial				
		Residential	Commercial/Industrial	Residential	Commercial/Industrial	Residential	Commercial/Industrial	Residential	Commercial/Industrial	Residential	Commercial/Industrial	Residential	Commercial/Industrial
Chromium VI	18540-29-9	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	218-01-9	4.6E+01	1.1E+03	--	--	4.6E+01	Dir Exp	9.2E-02	1.1E+00	--	--	9.2E-02	Dir Exp
Cobalt	7440-48-4	--	--	--	--	--	--	--	--	--	--	--	--
Copper	7440-50-8	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide	57-12-5	4.2E+02	3.5E+03	3.3E+05	6.5E+05	4.2E+02	Dir Exp	8.3E-01	3.5E+00	6.5E+02	8.3E-01	Dir Exp	Dir Exp
Dibenz(a,h)anthracene	53-70-3	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	124-48-1	--	--	--	--	--	--	--	--	--	--	--	--
1,2-dibromo-3-chloropropane	96-12-8	8.4E-02	2.0E+00	--	--	8.4E-02	Dir Exp	1.7E-04	2.0E-03	--	--	1.7E-04	Dir Exp
1,2-Dibromoethane	106-93-4	2.3E+00	2.0E+01	1.0E+08	2.0E+08	2.3E+00	Dir Exp	4.7E-03	2.0E-02	2.0E+05	4.7E-03	Dir Exp	Dir Exp
1,2-Dichlorobenzene	95-50-1	1.0E+05	8.8E+05	1.5E+08	3.1E+08	1.0E+05	Dir Exp	2.1E+02	8.8E+02	3.1E+05	2.1E+02	Dir Exp	Dir Exp
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	106-46-7	1.3E+02	1.1E+03	5.5E+05	1.1E+06	1.3E+02	Dir Exp	2.6E-01	1.1E+00	1.1E+03	2.6E-01	Dir Exp	Dir Exp
3,3-Dichlorobenzidine	91-94-1	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodiphenyldichloroethane (DD)	72-54-8	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodiphenyldichloroethane (DD)	72-55-9	1.4E+01	1.3E+02	--	--	1.4E+01	Dir Exp	2.9E-02	1.3E-01	--	--	2.9E-02	Dir Exp
Dichlorodiphenyltrichloroethane (DD)	50-29-3	1.4E+01	1.3E+02	--	--	1.4E+01	Dir Exp	2.9E-02	1.3E-01	--	--	2.9E-02	Dir Exp
1,1-Dichloroethane	75-34-3	8.8E+02	7.7E+03	6.3E+07	1.3E+08	8.8E+02	Dir Exp	1.8E+00	7.7E+00	1.3E+05	1.8E+00	Dir Exp	Dir Exp
1,2-Dichloroethane	107-06-2	5.4E+01	4.7E+02	1.2E+06	2.4E+06	5.4E+01	Dir Exp	1.1E-01	4.7E-01	2.4E+03	1.1E-01	Dir Exp	Dir Exp
1,1-Dichloroethene	75-35-4	3.7E+04	3.1E+05	1.0E+09	2.0E+09	3.7E+04	Dir Exp	7.3E+01	3.1E+02	2.0E+06	7.3E+01	Dir Exp	Dir Exp
cis-1,2-Dichloroethene	156-59-2	4.2E+03	3.5E+04	--	--	4.2E+03	Dir Exp	8.3E+00	3.5E+01	--	--	8.3E+00	Dir Exp
trans-1,2-Dichloroethene	156-60-5	4.2E+04	3.5E+05	3.4E+07	6.7E+07	4.2E+04	Dir Exp	8.3E+01	3.5E+02	6.7E+04	8.3E+01	Dir Exp	Dir Exp
2,4-Dichlorophenol	120-83-2	--	--	7.0E+05	1.4E+06	7.0E+05	Nuis/Odor	--	--	1.4E+03	1.4E+03	Nuis/Odor	Nuis/Odor
1,2-Dichloropropane	78-87-5	1.4E+02	1.2E+03	6.0E+05	1.2E+06	1.4E+02	Dir Exp	2.8E-01	1.2E+00	1.2E+03	2.8E-01	Dir Exp	Dir Exp
1,3-Dichloropropene	542-75-6	8.8E+01	7.7E+02	2.1E+06	4.2E+06	8.8E+01	Dir Exp	1.8E-01	7.7E-01	4.2E+03	1.8E-01	Dir Exp	Dir Exp
Dieldrin	60-57-1	3.1E-01	2.7E+00	--	--	3.1E-01	Dir Exp	6.1E-04	2.7E-03	--	--	6.1E-04	Dir Exp
Diethyl phthalate	84-66-2	--	--	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	131-11-3	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	105-67-9	--	--	5.0E+02	1.0E+03	5.0E+02	Nuis/Odor	--	--	1.0E+00	1.0E+00	Nuis/Odor	Nuis/Odor
2,4-Dinitrophenol	51-28-5	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	121-14-2	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dioxane	123-91-1	1.8E+02	1.6E+03	3.1E+08	6.1E+08	1.8E+02	Dir Exp	3.6E-01	1.6E+00	6.1E+05	3.6E-01	Dir Exp	Dir Exp
Dioxin (2,3,7,8-TCDD)	1746-01-6	--	--	--	--	--	--	--	--	--	--	--	--
Endosulfan	115-29-7	--	--	--	--	--	--	--	--	--	--	--	--
Endrin	72-20-8	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	5.6E+02	4.9E+03	1.0E+06	2.0E+06	5.6E+02	Dir Exp	1.1E+00	4.9E+00	2.0E+03	1.1E+00	Dir Exp	Dir Exp

Feb. 2016 (Rev. 3)		Summary of Vapor ESLs										
Chemicals	CAS No.	Subslab ¹ / Soil Gas (µg/m ³)					Indoor Air (µg/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			Residential	Commercial/Industrial			
Fluoranthene	206-44-0	--	--	--	--	--	--	--	--	--	--	--
Fluorene	86-73-7	--	--	--	--	--	--	--	--	--	--	--
Heptachlor	76-44-8	1.1E+00	9.4E+00	1.5E+05	3.0E+05	1.1E+00	Dir Exp	2.2E-03	9.4E-03	3.0E+02	2.2E-03	Dir Exp
Heptachlor epoxide	1024-57-3	5.4E-01	4.7E+00	1.5E+05	3.0E+05	5.4E-01	Dir Exp	1.1E-03	4.7E-03	3.0E+02	1.1E-03	Dir Exp
Hexachlorobenzene	118-74-1	2.8E+00	2.4E+01	--	--	2.8E+00	Dir Exp	5.5E-03	2.4E-02	--	5.5E-03	Dir Exp
Hexachlorobutadiene	87-68-3	6.4E+01	5.6E+02	6.0E+06	1.2E+07	6.4E+01	Dir Exp	1.3E-01	5.6E-01	1.2E+04	1.3E-01	Dir Exp
γ-Hexachlorocyclohexane (Lindane)	58-89-9	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	67-72-1	1.3E+02	1.1E+03	--	--	1.3E+02	Dir Exp	2.6E-01	1.1E+00	--	2.6E-01	Dir Exp
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	--	--	--	--	--	--	--	--
Lead	7439-92-1	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	7439-97-6	--	--	--	--	--	--	--	--	--	--	--
Methoxychlor	72-43-5	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	75-09-2	5.1E+02	1.2E+04	2.8E+08	5.6E+08	5.1E+02	Dir Exp	1.0E+00	1.2E+01	5.6E+05	1.0E+00	Dir Exp
Methyl ethyl ketone	78-93-3	2.6E+06	2.2E+07	1.6E+07	3.2E+07	2.6E+06	Dir Exp	5.2E+03	2.2E+04	3.2E+04	5.2E+03	Dir Exp
Methyl isobutyl ketone	108-10-1	1.6E+06	1.3E+07	2.1E+05	4.2E+05	2.1E+05	Nuis/Odor	3.1E+03	1.3E+04	4.2E+02	4.2E+02	Nuis/Odor
Methyl mercury	22967-92-6	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	91-57-6	--	--	3.4E+04	6.8E+04	3.4E+04	Nuis/Odor	--	--	6.8E+01	6.8E+01	Nuis/Odor
Methyl tertiary butyl ether (MTBE)	1634-04-4	5.4E+03	4.7E+04	2.7E+05	5.3E+05	5.4E+03	Dir Exp	1.1E+01	4.7E+01	5.3E+02	1.1E+01	Dir Exp
Molybdenum	7439-98-7	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	4.1E+01	3.6E+02	2.2E+05	4.4E+05	4.1E+01	Dir Exp	8.3E-02	3.6E-01	4.4E+02	8.3E-02	Dir Exp
Nickel	7440-02-0	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	87-86-5	--	--	--	--	--	--	--	--	--	--	--
Perchlorate	7790-98-9	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	85-01-8	--	--	2.8E+04	5.5E+04	2.8E+04	Nuis/Odor	--	--	5.5E+01	5.5E+01	Nuis/Odor
Phenol	108-95-2	--	--	7.8E+04	1.6E+05	7.8E+04	Nuis/Odor	--	--	1.6E+02	1.6E+02	Nuis/Odor
Polychlorinated biphenyls (PCBs)	1336-36-3	2.5E+00	2.2E+01	--	--	2.5E+00	Dir Exp	4.9E-03	2.2E-02	--	4.9E-03	Dir Exp
Pyrene	129-00-0	--	--	--	--	--	--	--	--	--	--	--
Selenium	7782-49-2	--	--	--	--	--	--	--	--	--	--	--
Silver	7440-22-4	--	--	--	--	--	--	--	--	--	--	--
Styrene	100-42-5	4.7E+05	3.9E+06	6.8E+05	1.4E+06	4.7E+05	Dir Exp	9.4E+02	3.9E+03	1.4E+03	9.4E+02	Dir Exp
tert-Butyl alcohol	75-65-0	--	--	--	--	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	630-20-6	1.9E+02	1.7E+03	--	--	1.9E+02	Dir Exp	3.8E-01	1.7E+00	--	3.8E-01	Dir Exp
1,1,2,2-Tetrachloroethane	79-34-5	2.4E+01	2.1E+02	5.2E+06	1.0E+07	2.4E+01	Dir Exp	4.8E-02	2.1E-01	1.0E+04	4.8E-02	Dir Exp
Tetrachloroethene	127-18-4	2.4E+02	2.1E+03	1.6E+07	3.2E+07	2.4E+02	Dir Exp	4.8E-01	2.1E+00	3.2E+04	4.8E-01	Dir Exp
Thallium	7440-28-0	--	--	--	--	--	--	--	--	--	--	--

Feb. 2016 (Rev. 3)		Summary of Vapor ESLs											
Chemicals	CAS No.	Subslab ¹ / 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	Residential			Commercial/Industrial				
Toluene	108-88-3	1.6E+05	1.3E+06	1.5E+07	3.0E+07	1.6E+05	Dir Exp	3.1E+02	1.3E+03	3.0E+04	3.1E+02	Dir Exp	
Toxaphene	8001-35-2	4.1E+00	3.6E+01	--	--	4.1E+00	Dir Exp	8.3E-03	3.6E-02	--	8.3E-03	Dir Exp	
TPH gasoline	--	3.0E+05	2.5E+06	5.0E+04	1.0E+05	5.0E+04	Nuis/Odor	5.9E+02	2.5E+03	1.0E+02	1.0E+02	Nuis/Odor	
TPH Stoddard solvent	--	6.8E+04	5.7E+05	5.0E+05	1.0E+06	6.8E+04	Dir Exp	1.4E+02	5.7E+02	1.0E+03	1.4E+02	Dir Exp	
TPH diesel	--	6.8E+04	5.7E+05	5.0E+05	1.0E+06	6.8E+04	Dir Exp	1.4E+02	5.7E+02	1.0E+03	1.4E+02	Dir Exp	
TPH motor oil	--	--	--	--	--	--	--	--	--	--	--	--	
1,2,4-Trichlorobenzene	120-82-1	1.0E+03	8.8E+03	1.1E+07	2.2E+07	1.0E+03	Dir Exp	2.1E+00	8.8E+00	2.2E+04	2.1E+00	Dir Exp	
1,1,1-Trichloroethane	71-55-6	5.2E+05	4.4E+06	3.3E+07	6.5E+07	5.2E+05	Dir Exp	1.0E+03	4.4E+03	6.5E+04	1.0E+03	Dir Exp	
1,1,2-Trichloroethane	79-00-5	8.8E+01	7.7E+02	--	--	8.8E+01	Dir Exp	1.8E-01	7.7E-01	--	1.8E-01	Dir Exp	
Trichloroethene	79-01-6	2.4E+02	3.0E+03	6.8E+08	1.4E+09	2.4E+02	Dir Exp	4.8E-01	3.0E+00	1.4E+06	4.8E-01	Dir Exp	
2,4,5-Trichlorophenol	95-95-4	--	--	--	--	--	--	--	--	--	--	--	
2,4,6-Trichlorophenol	88-06-2	--	--	1.5E+02	3.0E+02	1.5E+02	Nuis/Odor	--	--	3.0E-01	3.0E-01	Nuis/Odor	
Vanadium	7440-62-2	--	--	--	--	--	--	--	--	--	--	--	
Vinyl chloride	75-01-4	4.7E+00	1.6E+02	3.9E+08	7.7E+08	4.7E+00	Dir Exp	9.5E-03	1.6E-01	7.7E+05	9.5E-03	Dir Exp	
Xylenes	1330-20-7	5.2E+04	4.4E+05	2.2E+05	4.4E+05	5.2E+04	Dir Exp	1.0E+02	4.4E+02	4.4E+02	1.0E+02	Dir Exp	
Zinc	7440-66-6	--	--	--	--	--	--	--	--	--	--	--	

Notes:
1 - Use of the subslab ESLs for the subslab line of evidence assumes an intact slab. See User's Guide Appendix B.
Dir Exp - Direct Exposure
Nuis/Odor - Nuisance-Odor
VI - Vapor Intrusion

APPENDIX C

APPENDIX C
PURGE VOLUME CALCULATIONS - DEEP
 Swiss Valley Cleaners
 1395 MacArthur, San Leandro, California

Purge Calculations:

1. Tubing (0.25" OD, 0.17" ID)

a. length of tubing = 12 ft (144 in)

b. volume= $\pi r^2 h$

$r = ID/2$	0.085 in
$\pi(0.085^2)144 =$	3.27 in ³
$1 \text{ in}^3 = 16.4 \text{ ml}$	53.58 ml

2. Volume of sand pack and dry bentonite (4" OD, 0.25" ID)

a. height (length) = 1 ft (12 in)

b. Outer vol=total vol-inner vol $1.25"-0.25" = 1.0"$

c. estimated air space in sand = 30%

d. $v_T = \pi r^2 h$

$r = 1.0/2$	0.5 in
$\pi(2^2)12 =$	35.33 in ³
$1 \text{ in}^3 = 16.4 \text{ ml}$	579.33 ml
30% of v_T	173.80 ml

Volume Formula:

A= # of purge volumes	3
B= volume of tubing	53.58 ml
C= volume of well	0.00 ml
D= volume of sand pack	173.80 ml
E= total volume to be purged	

$E = A(B+C+D)$

$E = 1(22.32+741.54)$

Total volume to be purged=	682.13 ml
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APPENDIX C
PURGE VOLUME CALCULATIONS - DEEP
Swiss Valley Cleaners
1395 MacArthur, San Leandro, California

Time Formula:

E= total volume to be purged

F= purge rate (200ml/min peristaltic pump)

G= 60 seconds/min

H= total purge time in seconds at 200 ml (cc) per min

$$H = (E/F)G$$

$$H = \frac{682.13 \times 1 \text{ min} \times 60 \text{ sec}}{200 \text{ ml} \times 1 \text{ min}}$$

Total purge time= 204.64 sec
or
3.41 min

APPENDIX C
PURGE VOLUME CALCULATIONS
 Swiss Valley Cleaners
 1395 MacArthur, San Leandro, California

Purge Calculations:

1. Tubing (0.25" OD, 0.17" ID)

a. length of tubing = 8 ft (96 in)

b. volume= $\pi r^2 h$

$r = ID/2$	0.085 in
$\pi(0.085^2)96 =$	2.18 in ³
$1 \text{ in}^3 = 16.4 \text{ ml}$	35.72 ml

2. Volume of sand pack and dry bentonite (4" OD, 0.25" ID)

a. height (length) = 1 ft (12 in)

b. Outer vol=total vol-inner vol 4"-0.25" = 3.75"

c. estimated air space in sand = 30%

d. $v_T = \pi r^2 h$

$r = 3.75/2$	1.875 in
$\pi(2^2)12 =$	132.47 in ³
$1 \text{ in}^3 = 16.4 \text{ ml}$	2,172.49 ml
30% of v_T	651.75 ml

Volume Formula:

A= # of purge volumes	3
B= volume of tubing	35.72 ml
C= volume of well	0.00 ml
D= volume of sand pack	651.75 ml
E= total volume to be purged	

$E = A(B+C+D)$

$E = 1(22.32+741.54)$

Total volume to be purged=	2,062.39 ml
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APPENDIX C
PURGE VOLUME CALCULATIONS
Swiss Valley Cleaners
1395 MacArthur, San Leandro, California

Time Formula:

E= total volume to be purged

F= purge rate (200ml/min peristaltic pump)

G= 60 seconds/min

H= total purge time in seconds at 200 ml (cc) per min

$$H = (E/F)G$$

$$H = \frac{2,062.39 \times 1 \text{ min} \times 60 \text{ sec}}{200 \text{ ml} \times 1 \text{ min}}$$

Total purge time= 618.72 sec
or
10.31 min