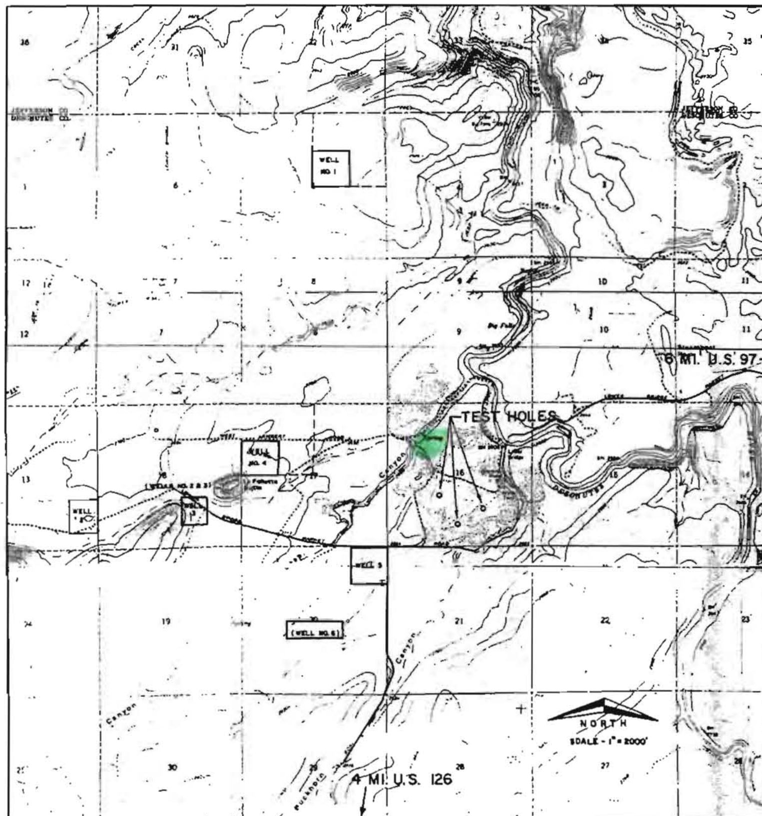
January 6, 2016

Deschutes County Board of Commissioners as Appeal Hearings Body:
Testimony to be submitted into the record on Appeal of Hearings Officer's denial of 247-15-000194-CU/195-TP Lower Bridge Road LLC

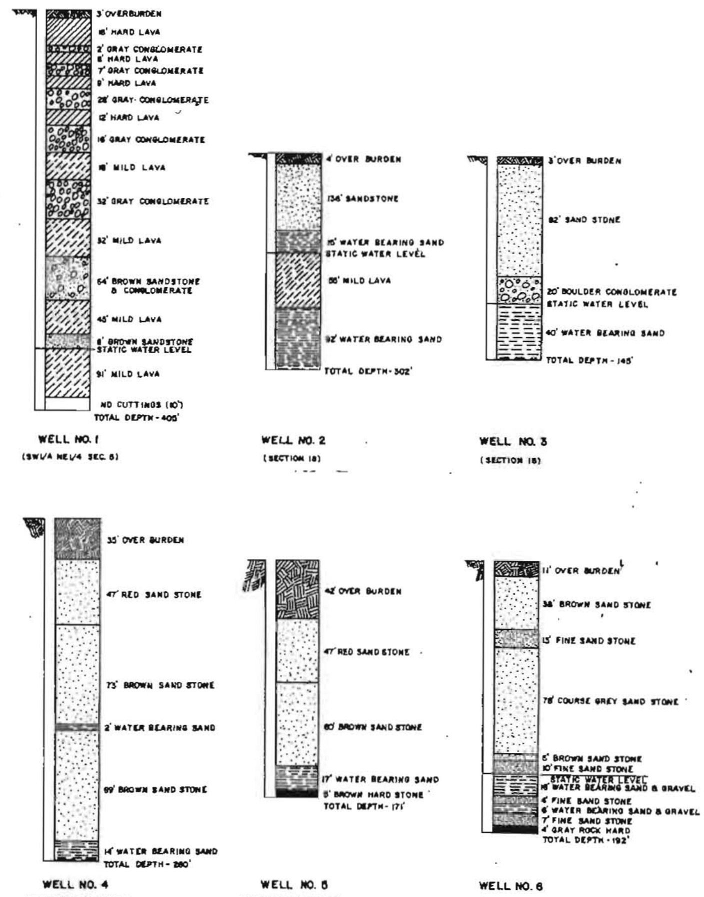
1. I concur with the most recent Hearings Officer's findings which are adequate.
2. The recently submitted December 18, 2015 Wallace report does not identify the spring that exists on taxlot 1501. This spring is shown on the Century West drawings from the 1970's for the waste site. The Wallace report does not identify the proximity of the site to the Deschutes River. The Wallace Report identifies that revegetation includes cheat grass. Cheat grass is an invasive weed that is part of the weed eradication program in Deschutes County. Cheat grass should not count toward revegetation or reclamation. Cheat grass is a fire hazard.
3. Deschutes County is celebrating 100 years so it is appropriate to identify that The Deschutes County Goal 5 historic resource Lynch & Roberts sign is located on taxlot 1505 of the proposed PUD. Please identify this heritage site correctly and enforce preservation standards for this historic resource.
4. I am wondering what the pedestrian route is from the proposed PUD lots on the east side of lower bridge way to the open space on the west side of lower bridge way. Will pedestrians be walking on lower bridge way with it's 55 mph vehicle speed limit, walking eastbound from the PUD's driveway, then crossing lower bridge road onto the west side onto the unreclaimed mine in the Open Space Tract F to access Open Space Tract E where there are views of the Deschutes River overlooking the park? If so, then it seems that Lower Bridge Way needs both pedestrian and bicycle improvements such as bike ways or bike lanes and also a safe pedestrian pathway which is not identified in these plans. The County identifies it will work with applicant to **reduce** the Dolan test on lower bridge way, but I don't understand how there is safety for the PUD residents traveling by foot or by bike to their own open space on the west of lower bridge way. The applicant should fund and install the needed bicycle and pedestrian improvements so the future residents of this PUD can access their own open space.
5. Lastly, Reclamation of the mine has not been done to even to the agreed to standards for industrial use. Before you provide any approval of this PUD, shouldn't the BOCC have in hand a DEQ certificate stating that dust now longer occurs, and a certificate from DOGAMI that all 550 acres of the mine have been reclaimed to residential standards?
7. Here is a DEQ matrix to give you a feel for residential risk based factors : notice that residential standards require much more stringent cleanup.
8. **First, please help this property owner clean up the entire mining site to residential standards by adding this entire mining site to your list of brownfields so it could be eligible for federal funds.**
9. **Next, get in writing to BOCC DEQ's and DOGAMI's certificate of clean up satisfaction to residential standards.**
9. **Then** if the property owner modifies their application to remove EFU zoned lands which will involve reconfiguring their application you can then process their application.

Thanks for considering my views. As has been written in the file, Deschtues County regulates Air Quality and Deschutes County needs to create a clean matrix for how this will occur for our community's public health.

Nunzie Gould *Nunzie Gould*
19845 JW Brown Rd
Bend, OR 97701
541-420-3325 attachments: 4 include: Century West page 4, Wallace Report, taxlot overview map, Open Space Exhibit A page 1



WELL LOCATION MAP



NO. 4

Design By	
Drawn By	R. W. K.
Checked By	
Approved By	
Date	MARCH 1975
Scale	1" = 2000'
S.W.R. No. - 630	
W.O. No. - 1048	

REVISIONS			
No.	By		Date

WELL LOGS AND LOCATION MAP FOR PROPOSED SOLID/LIQUID WASTE DISPOSAL FACILITIES

FOR:

DESCHUTES VALLEY SANITATION, INC.

Century West Engineering Corporation Bend, Oregon

wallaceGROUP
applied earth & environmental science

December 18, 2015

Ms. Tia Lewis
Schwabe, Williamson & Wyatt
360 SW Bond Street, Suite 500
Bend, OR 97702

Subject: Compliance Summary
Aggregate Mine Reclamation
18-Acre Site SP-85-23
Lower Bridge Road
Deschutes County, Oregon
Project No. 10446 (7)

Dear Ms. Lewis:

Wallace Group geologic staff visited the above-referenced, former aggregate surface mine site on December 7, 2015, to observe current conditions and assess the site's reclamation status. A Site Map illustrating the approximate 18-acre reclamation site (SP-85-23) is included for reference on **Figure 1**. The Amended Reclamation Plan for SP-85-23 provided the basis for this assessment, in accordance with OAR 632-030-0025. This compliance summary is also intended to meet Condition 12 set forth in the Decision of Deschutes County Hearings Officer (Ms. Karen Green), dated December 12, 2011.

Background

Site SP-85-23 is contiguous to, and located within, the boundary of an approximate 410-acre, former diatomaceous earth (DE) surface mine (SM Site 461). Reclamation work on SM Site 461 was previously completed to the satisfaction of the Oregon Department of Geology and Mineral Industries (DOGAMI), and the file is closed.

Reclamation work was reportedly completed on Site SP-85-23 in 2012, by the property owners (Norman Wiegand, et. al.) as referenced in the December 12, 2011 Hearings Officer Decision. The Amended Reclamation Plan for Site SP-85-23 documented existing site conditions and zoning as of October 2011 and provided the framework for reclamation work performed by the owners. The reclamation requirements, by Plan number, are included below along with Wallace Group input, based on our December 7, 2015 observations.

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1. **Pre-Mine Conditions**
   a) Current Land-Use and Zoning: Surface Mining (SM)
   b) Average topsoil depth: < 6-inches
   c) Type and density of vegetation: Sagebrush, cheat grass and bitterbrush; sparse to moderately dense high desert ground cover.
   d) No springs, seeps, intermittent or perennial streams are on or near the site.
   e) A wetland delineation has not been completed and is not required for the site.
   f) A landslide investigation has not been completed and is not required for the site.

2. **Post-Mining Land Use**
   a) Current Land-Use and Zoning: Surface Mining (SM) subject to an Intent to Rezone to RR-10.

3. **Reclamation Timing**
   a) Reclamation will begin over 20 years following completion of mining.

4. **Operating Plan**
   a) Not applicable.

5. **Water Resource Protection**
   a) Not applicable.

6. **Groundwater Information**
   a) Mining reportedly did not exceed 15 feet below original ground surface.
   b) Groundwater depth: 54 feet below ground surface.
   c) Depth to groundwater is based upon 2008 Oregon Water Resource Department Well Log Records for an on-site well.
   d) Flow direction is inferred to be to the north/northeast based upon a joint Deschutes Basin Groundwater Study conducted by the Oregon Water Resources Department and the U.S. Geologic Survey (2001).

7. **Visual and Noise Screening**
   a) Not applicable.

8. **Equipment and Structures Removed**
   a) Upon final reclamation, all residual mining equipment, storage tanks, metallic and wood debris will be removed from the site. Based upon our site observations on December 7, 2015, all equipment, tanks and debris appear to have been removed from the site during reclamation activities. Surface conditions are illustrated on **Figures 2a-2d**.

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9. Reclamation Techniques

a) Any over-sized rock materials will remain on-site and will be placed in locations that replicate original pre-mining surface conditions. We did not observe any oversize boulders in on the 18-acre reclamation site during our December 7, 2015 site visit.

b) The average depth of soil replaced in the reclamation area will be 6-inches. Site observations on December 7, 2015 indicate the thickness of surface fill and aggregate materials ranges from approximately 6 to 8-inches in reclaimed areas (**Figure 2b**).

c) No additional materials will be utilized as a soil substitute to complete the re-vegetation.

d) There do not appear to have been any waste products such as tailings, crusher rejects, etc. generated during mining. There were several small stockpiles of residual aggregate located in the central portion of the site. The stockpiles and adjacent area to west exhibit sparse to moderate vegetative cover consisting of sagebrush, range grasses and weeds (**Figures 2c & 2d**).

e) Processing and stockpile areas were reclaimed by removing non-native metallic and wood debris from this site prior to regarding and contouring work (**Figure 2a**). Areas where vegetation had been naturally re-established were not disturbed to preserve existing vegetation and minimize the remobilization of fine-grained soil particles and resulting dust hazard. Additional re-vegetation work is not proposed. The reclamation work appears to have been completed in accordance with the Plan based upon our December 7, 2015 site observations.

10. Re-vegetation Techniques

a) Species to be seeded/planted by type and amount. Native, high desert, range-type vegetation (sagebrush, cheat grass and bitterbrush) has been naturally re-established in sparse to moderate density over portions of the site. Reclamation grading work will not disturb those areas that have been re-vegetated. Natural re-vegetative processes will continue and additional re-vegetation activities are not proposed. Areas of the site where re-vegetation has occurred were not disturbed during on-site reclamation work.

b) Reclamation earthwork was reportedly conducted during wet, winter months to minimize dust generation.

c) Fertilizers, lime and mulch were not used during reclamation.

11. Reclamation Procedures - Post-Mine Drainage Control & Reconstruction

a) Stream channel and/or bank stabilization and rehabilitation were not required at the site.

b) Surface water run-off and drainage-induced erosion control where not required on the site. This is due to the permeable nature of native surface soils. Any overland flow that occurs would be transported to the north and east on to adjacent SM-zoned property (owned by the same landowner). We did not observe evidence of surface runoff from the site during our December 7, 2015 site visit.

12. Reclamation Procedures – Impoundments & Pond Decommissioning

a) Not applicable.
b) Surface water run-off and drainage-induced erosion control where no required on the site. This is due to the permeable nature of native surface soils. Any overland flow that occurs would be transported to the north and east on to adjacent SM-zoned property (owned by the same landowner). We did not observe evidence of surface runoff from the site during our December 7, 2015 site visit.

13. Reclamation Procedures – Land Shaping

a) What will be the steepest above-water excavated slopes after mining: 1.5 : 1
b) What will be done to ensure stability of excavated slopes? Reclamation grading does not appear to have resulted in slopes exceeding 1.5 : 1 (H : V). Anticipated post-reclamation land-use is anticipated to include Open Space Conservation (OSP) designation, which will preclude development in areas with potential for destabilization of excavated slopes.
c) Final slopes will not exceed 2 : 1. Post-reclamation site access is limited and vegetated areas did not appear to be disturbed.
d) Grading and backfill activities appear consistent with the surrounding topography.

14. Post-Mining Water Impoundments

a) Not applicable.

Summary of Findings

The reclamation activities at the subject site appear to meet the conditions and requirements set forth in the Amended Reclamation Plan, dated October 21, 2011. All residual mining equipment, storage tanks, and metallic/wood debris have been removed from the site. In addition, reclamation grading activities have spread the majority of the residual aggregate stockpiles and blended them with native soils to establish final reclamation grades and contours. The grading activities do not appear to have disturbed pre-existing vegetation. We noted that some areas of the site within former access road and stockpile areas were planted with range grass, and there appears to be limited growth in these areas. The limited plant growth is attributed to an absence of irrigation and the nature of the reclaimed soil cover materials, which consist primarily of crushed aggregate with very little fine-grained soil constituents. As such, the cover material appears to provide erosion and dust control, but does not readily support re-

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vegetative growth, which is characterized as limited in the former aggregate stockpile and access road areas.

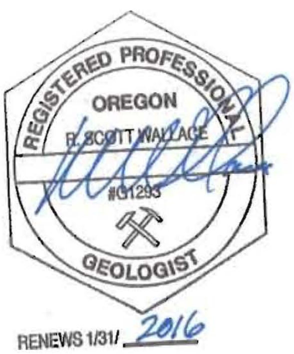
Limitations

The observations and findings presented in this report were based on our December 7, 2015 site visit and review of previous studies and the Amended Reclamation Plan for the site. The professional judgments expressed in this report meet the standard of care of our profession.

We appreciate the opportunity to provide our professional services. If you have questions concerning this report, please call our office at (541) 382-4707.

Sincerely,

Wallace Group, Inc.



R. Scott Wallace, R.G.
Principal Geologist

Attachments: Figure 1 – Vicinity Map
Figures 2a-2d – Site Photographs

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Figure 1
Site Map
Aggregate Surface Mine-SP-85-23
Lower Bridge Road
Deschutes County, Oregon

Figure 1
Site Map
Aggregate Surface Mine-SP-85-23
Lower Bridge Road
Deschutes County, Oregon

View looking north along access road from south-central property boundary.

View looking northwest from central-portion of the site. Fence and Juniper trees on left form the western site boundary.

FIGURE 2a

View looking south along aggregate-covered access road. Note sparse range grass growth in furrows from reclamation seeding.

View looking north from northern portion of the site. Juniper trees and gully are located near the approximate north site boundary.

FIGURE 2b

View looking east at typical vegetation on adjacent, reclaimed DE mine, from the east-central portion of the site.

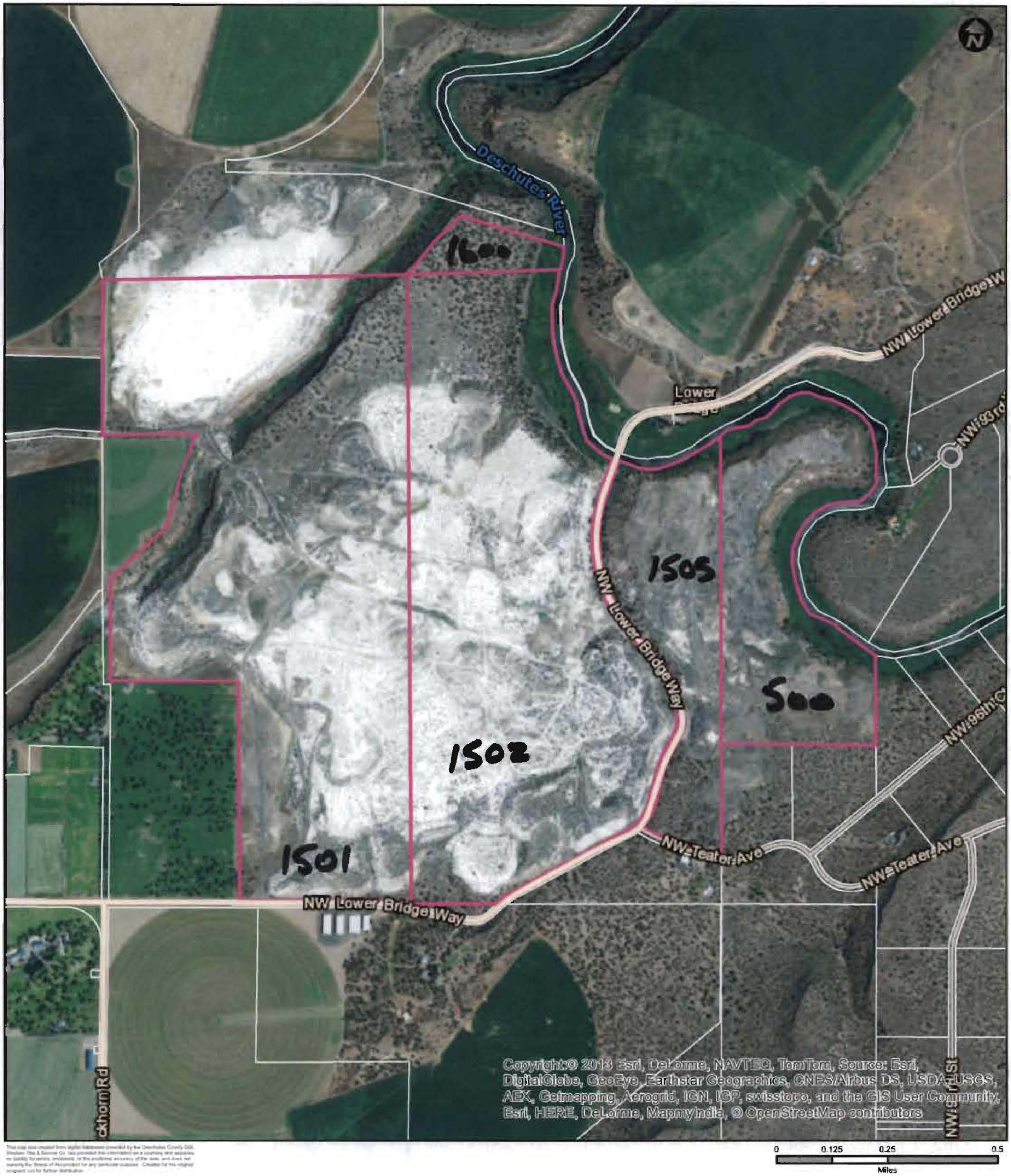
View looking north at residual aggregate stockpiles in central portion of the site.

FIGURE 2c

View looking southwest from residual aggregate stockpile area. Note well-established sagebrush cover and fence along western site boundary.

View from southeast portion of the site looking south. Note well-developed range grasses and sagebrush on east-facing slope on left of photo.

FIGURE 2d



Western Title & Escrow

11/20/2015

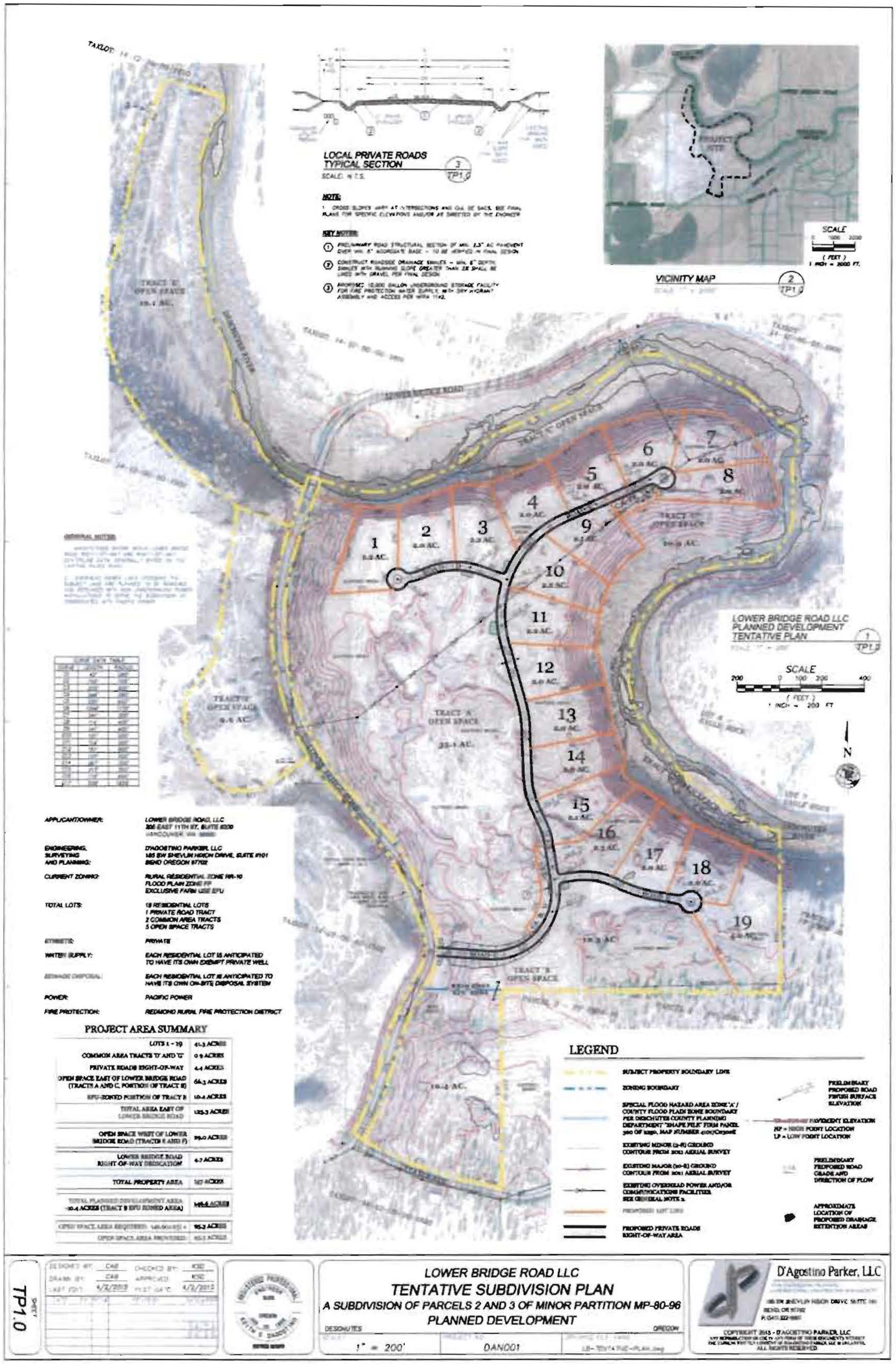


Exhibit A
Page 1 of 1

Gould #5
Attachement addition to written testimony
Jan 6 2016
Re: Lower Bridge Road LLC
On Appeal before BOCC

State of Oregon Department of Environmental Quality

RISK-BASED CONCENTRATIONS

This table shows the lower of non-carcinogenic and carcinogenic RBCs and should be used for most screening purposes instead of the EXCEL version.

Contaminated Medium →		SOIL mg/Kg (ppm)										SOIL mg/Kg (ppm)						SOIL mg/Kg (ppm)						SOIL mg/Kg (ppm)						GROUNDWATER (µg/L (ppb))					
Exposure Pathway →		Soil Ingestion, Dermal Contact, and Inhalation (RBC_{ss})										Volatilization to Outdoor Air (RBC_{so})						Vapor Intrusion into Buildings (RBC_{si})						Leaching to Groundwater (RBC_{sw})						Ingestion & Inhalation from Tapwater (RBC_{tw})					
Receptor Scenario →		Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)		DC		DC		DC		DC		DC		IVS		IVS		IVS		IVS		IVS		IVS		IS		IS		IS		DS		DS		DS	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note
Acenaphthene	nc, v	4,700	>Csat	9,400	>Csat	70,000	>Csat	21,000	>Csat	590,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	510		2,400		2,500	
Acrylonitrile	c, v	0.86		2.5		4.0		40		1,100		1.3		3.1		5.8		0.08		0.19		1.0		0.0004		0.0016		0.0017		0.052		0.23		0.25	
Aldrin	c, v	0.03		0.08		0.13		1.1		30	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	0.023		0.1		0.1		0.00092		0.0042		0.0042	
Anthracene	nc, v	23,000	>Csat	47,000	>Csat	350,000	>Csat	110,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Arsenic	c, nv	0.43		1.0		1.9		15		420		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		0.052		0.21		0.31	
Barium	nc, nv	15,000		31,000		220,000		69,000		-	>Max	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		4,000		15,000		33,000	
Benz[a]anthracene	c, nv	0.15		0.34		2.9		24.	>Csat	660	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	0.64		2.3		8.8		0.012		0.043		0.17	
Benzene	c, v	8.2		24		37		380		11,000	>Csat	11		27		50		0.16		0.38		2.1		0.023		0.10		0.10		0.46		2.0		2.1	
Benzidine	c, nv	0.00052		0.0012		0.01		0.082		2.3		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.000038		0.00012		0.0007		0.00011		0.00034		0.00190	
Benzo[a]pyrene (BaP equivalents) **	c, nv	0.015		0.034		0.29		2.4		67	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.60		1.9		-	>Csat	0.0034		0.011		0.064	
Benzo[b]fluoranthene	c, v	0.15		0.34		2.9		24	>Csat	670	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	6.2		-	>Csat	-	>Csat	0.034		0.11		0.64	
Benzo[k]fluoranthene	c, nv	1.5		3.4		29	>Csat	240	>Csat	6,700	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	0.34		-	>S	-	>S
Beryllium	c*, nv	160		310		2,300		700		19,000		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		40		150		330	
Bis(2-ethylhexyl)phthalate	c, nv	39		97		160	>Csat	1,300	>Csat	37,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Max	-	>Max	-	>Max	5.6		22		33	
Bromodichloromethane	c, v	3.4		12		15		230		6,300	>Csat	2.4		5.7		11		0.041		0.10		0.53		0.002		0.01		0.01		0.13		0.62		0.6	
Bromoform	c, v	57		170		260		2,700	>Csat	74,000	>Csat	81		190		360		8.2		19		110		0.046		0.20		0.22		3.3		15		16	
Bromomethane	nc, v	46		92		750		370		10,000	>Csat	170		170		700		1.3		1.3		17		0.093		0.19		0.40		7.5		28		36	
Cadmium	c*, nv	78		160		1,100		350		9,700		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		20		73		160	
Carbon tetrachloride	c, v	7.5		21		34		320		8,900	>Csat	15		35		65		0.12		0.28		1.6		0.01		0.06		0.06		0.46		2.0		2.1	
Chlorobenzene	nc, v	530		1,100	>Csat	8,700	>Csat	4,700	>Csat	130,000	>Csat	-	>Csat	-	>Csat	-	>Csat	77		77		-	>Max	6.7		14		27		77		290		350	
Chlorodibromomethane (dibromochloromethane)	c, v	3.7		12		17		210		5,800	>Csat	3.3		7.8		14		0.22		0.53		2.9		0.0024		0.011		0.011		0.17		0.77		0.77	
Chloroethane (ethyl chloride)	nc, v	160,000	>Csat	320,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	310		620		1,300		21,000		76,000		88,000	
Chloroform	c, v	5.8		22		26		410		11,000	>Csat	3.9		9.2		17		0.031		0.074		0.41		0.0034		0.016		0.015		0.22		1.0		0.98	
Chloromethane	nc, v	1,400	>Csat	2,900	>Csat	25,000	>Csat	25,000	>Csat	700,000	>Csat	-	>Csat	-	>Csat	-	>Csat	24		24		300		2.2		4.3		9.1		190		690		790	
Chlordane	c, v	1.7		4.2		7.4		61	>Csat	1,700	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	0.45		2.1		2.1		0.045		0.20		0.21	
Chromium (III)	nc, nv	120,000		230,000		-	>Max	530,000		-	>Max	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		30,000		110,000		250,000	
Chromium (VI)	c, nv	0.30		0.67		6.3		49		1,400		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		0.05		0.16		0.90	
Chrysene	c, nv	15	>Csat	34	>Csat	290	>Csat	2,400	>Csat	67,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Copper	nc, nv	3,100		6,200		47,000		14,000		390,000		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		800		2,900		6,500	
Cyanide (hydrogen cyanide)	nc, nv	47		94		700		210		5,900		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	*		*		*		12		44		98	
DDD (4,4'-Dichlorodiphenyldichloroethane)	c, nv	2.7		6.6		12		94		2,600		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	1.1		3.7		2.6		0.031		0.10		0.074	
DDE (4,4'-Dichlorodiphenyldichloroethene)	c, v	1.8		4.5		8.2		66		1,800		-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	1.6		7.4		7.5		0.046		0.21		0.21	
DDT (4,4'-Dichlorodiphenyltrichloroethane)	c, nv	1.9		4.6		8.5		66		1,800		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	12		46		70		0.23		0.92		1.4	
Dibenz[a,h]anthracene	c, nv	0.015		0.034		0.29		2.4		67	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	2.0		-	>Csat	-	>Csat	0.0034		0.011		0.064	
1,2-Dichlorobenzene	nc, v	2,200	>Csat	4,400	>Csat	36,000	>Csat	20,000	>Csat	560,000	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	43		86		160		300		1,200		1,400	
1,4-Dichlorobenzene	c, v	14		62		64		1,300	>Csat	36,000	>Csat	8.1		19		36		0.99		2.3		13		0.057		0.27		0.25		0.48		2.3		2.1	
3,3-Dichlorobenzidine	c, nv	1.2		3.0		5.1		42	>Csat	1,200.00	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.17		0.67		1.0		0.17		0.69		1.0	
1,1-Dichloroethane	c, v	58		190		260		3,200	>Csat	89,000	>Max	56		130		240		0.45		1.1		5.9		0.044		0.20		0.20		2.8		13		13	
1,1-Dichloroethene	nc, v	1,800	>Csat	3,500	>Csat	29,000	>Csat	13,000	>Csat	370,000	>Csat	-	>Csat	-	>Csat	-	>Csat	54		54		680		7.8		16		32		280		1,100		1,400	
cis-1,2-Dichloroethene	nc, v	160		310		2,300	>Csat	710		20,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	1.1		2.3		4.5		36		140		260	
trans-1,2-Dichloroethene	nc, v	1,600	>Csat	3,100	>Csat	23,000	>Csat	7,100	>Csat	200,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	13		26		51		360		1400		2,600	
Dichloroethylether	c, v	0.29		0.96		1.3		16		450		0.53		1.2		6.9		0.53		1.2		6.9		0.0002		0.0002		0.0009		0.014		0.062		0.063	
Dichloromethane	c, v	76		170		1,600		2,100	>Csat	58,000	>Csat	-	>Csat	-	>Csat	-	>Csat	26		48		950		0.14		0.44		2.4		11		37		200	
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	nc, nv	630	>Csat	1,300	>Csat	8,200	>Csat	2,700	>Csat	74,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	4.2		8.5		16		170		670		1,200	
Dieldrin	c, nv	0.034		0.085		0.14		1.2		33	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.010		0.037		0.030		0.0017		0.0061		0.005	
Dinitrotoluene, 2,6-	nc, nv	0.36		0.90		1.5		13		350	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.009		0.035		0.049		0.049		0.19		0.27	
Di-N-propylnitrosamine (N-nitroso-di-N-propylamine)	c, nv	0.078		0.19		0.33		2.7		74		-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	0.0009		0.0038		0.0054		0.011		0.043		0.062	
Dioxane, 1,4-	c, v	5.4		14		24		210		5,900		28		67		370		28		67		370		0.0023		0.099		0.012		0.46		2.0		2.4	
Diphenylnitrosamine	c, nv	110		280	>Csat	470	>Csat	3,800	>Csat	110,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	10		39		45		13		49		57	
EDB (1,2-dibromoethane)	c, v	0.16		0.53		0.73		9		250		0.15		0.35		0.65		0.012		0.028		0.16		0.00012		0.00056		0.00056		0.0075		0.034		0.034	
EDC (1,2-dichloroethane)	c, v	3.6		12		16		200		5,600	>Csat	3.4		8.1		15		0.077		0.18		1.0		0.0028		0.013		0.013		0.17		0.78		0.78	
Endosulfan, (alpha-beta)	nc, v	380	>Csat	760	>Csat	4,900	>Csat	1,600	>Csat	45,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	98		-	>S	-	>S
Endrin	nc, nv	19	>Csat	38	>Csat	250	>Csat	80	>Csat	2,200	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	1.9		9.5		8.6	
Ethylbenzene	c, v	34		110		150		1,700	>Csat	49,000	>Csat	36		85		160		1.3		3.0		17		0.22		0.94		0.90		1.5		6.7		6.4	
Fluoranthene	nc, nv	2,400	>Csat	4,800	>Csat	30,000	>Csat	10,000	>Csat	280,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Fluorene	nc, v	3,100	>Csat	6,300	>Csat	47,000	>Csat	14,000	>Csat	390,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	280		1,400		1,300	
Formaldehyde	c*, v	15		69		64		1,600		44,000	>Csat	48		110		630		48		110		630		0.002		0.0093		0.0086		0.43		2.0		1.0	

Risk-Based Concentrations For Individual Chemicals

Contaminated Medium →		SOIL mg/Kg (ppm)									
Exposure Pathway →		Soil Ingestion, Dermal Contact, and Inhalation (RBC_{ss})									
Receptor Scenario →		Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker	
Direct or Indirect Pathway (see notes)		DC		DC		DC		DC		DC	
Contaminant	Note		Note		Note		Note		Note		Note
Heptachlor	c, v	0.11		0.28		0.45		4.0		110	
Heptachlor Epoxide	c, v	0.055		0.14		0.24		2.0		56	
Hexachlorobenzene	c, v	0.21		0.67		0.93		11		320	
Hexachlorocyclohexane, alpha- (alpha-HCH)	c, nv	0.086		0.21		0.36		3.0		83	>Csat
Hexachlorocyclohexane, gamma- (Lindane)	c, nv	0.49		1.2		2.1		17		470	>Csat
Hexachloroethane	c*, v	7.4		24		32		180		5,100	>Csat
Indeno[1,2,3-cd]pyrene	c, nv	0.15		0.34		2.9	>Csat	24	>Csat	670	>Csat
Lead	nc, nv	400	L	400	L	800	L	800	L	800	L
Manganese	nc, nv	1,800		3,600		25,000		8,200		230,000	
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	nc, nv	32		63		410	>Csat	130		3,700	>Csat
Mercury	nc, nv	23		47		350		110		2,900	
MTBE (methyl t-butyl ether)	c, v	250		730		1,100		12,000	>Csat	320,000	>Csat
Naphthalene	c, v	5.3		25		23		580		16,000	>Csat
Nickel	c*, nv	1,500		3,100		22,000		7,000		190,000	
Pentachlorophenol	c, nv	1.0		2.6		4.0		34		960	
Polychlorinated biphenyls (Total PCBs)**	c*, v	0.23		0.33		0.59		4.9	>Csat	140	>Csat
iso-Propylbenzene (cumene)	nc, v	3,500	>Csat	7,000	>Csat	57,000	>Csat	27,000	>Csat	750,000	>Csat
Pyrene	nc, v	1,800	>Csat	3,600	>Csat	23,000	>Csat	7,500	>Csat	210,000	>Csat
Silver	nc, nv	390		780		5,800		1,800		49,000	
Styrene	nc, v	7,900	>Csat	16,000	>Csat	130,000	>Csat	56,000	>Csat	-	>Max
2,3,7,8-TCDD (dioxin) equivalents **	c, v	0.0000047		0.000012		0.000016		0.00017		0.0048	
Tetrachloroethene (PCE)	c*, v	220	>Csat	540	>Csat	1,000	>Csat	1,800	>Csat	50,000	>Csat
Toluene	nc, v	5,800	>Csat	12,000	>Csat	88,000	>Csat	28,000	>Csat	770,000	>Csat
Toxaphene	c, nv	0.49		1.2		2.1		17		470	
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	nc, v	400,000	>Csat	800,000	>Csat	-	>Max	-	>Max	-	>Max
Trichloroethane, 1,1,1-	c, v	53,000	>Csat	110,000	>Csat	870,000	>Csat	470,000	>Csat	-	>Max
Trichloroethane, 1,1,2-	c *, v	3.2		6.3		26		54		1,500	>Csat
Trichloroethene	c *, v	6.7		17		51		470	>Csat	13,000	>Csat
Trichlorofluoromethane (Freon 11)	nc, v	7,600	>Csat	15,000	>Csat	130,000	>Csat	69,000	>Csat	-	>Max
Trichlorophenol, 2,4,6-	c*, nv	49		120		210		270		7,400	>Csat
Trimethylbenzene, 1,2,4-	nc, v	110		220		2,000	>Csat	2,000	>Csat	54,000	>Csat
Trimethylbenzene, 1,3,5-	nc, v	780	>Csat	1,600	>Csat	12,000	>Csat	3,500	>Csat	98,000	>Csat
Vinyl chloride	c, v	0.36		0.80		4.4		34		950	>Csat
Xylenes	nc, v	1,400	>Csat	2,900	>Csat	25,000	>Csat	20,000	>Csat	560,000	>Csat
Generic Gasoline	nc, v	1,200		2,500		20,000		9,700		>Max	
Generic Diesel/Heating Oil	nc, v	1,100		2,200		14,000		4,600		>Max	
Generic Mineral/Insulating Oil	nc, nv	2,800		5,700		36,000		11,000		>Max	

Contaminated Medium →	SOIL mg/Kg (ppm)						SOIL mg/Kg (ppm)					
Exposure Pathway →	Volatilization to Outdoor Air (RBC_{so})						Vapor Intrusion into Buildings (RBC_{si})					
Receptor Scenario →	Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)	IVS		IVS		IVS		IVS		IVS		IVS	
Contaminant		Note		Note		Note		Note		Note		Note
Heptachlor	18		42		230		18		42		230	
Heptachlor Epoxide	28		66		-	>Csat	28		66		-	>Csat
Hexachlorobenzene	1.0		2.4		13		1.0		2.4		13	
Hexachlorocyclohexane, alpha- (alpha-HCH)	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Hexachlorocyclohexane, gamma- (Lindane)	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Hexachloroethane	8.1		19		36		0.58		1.4		7.6	
Indeno[1,2,3-cd]pyrene	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Lead	L	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Manganese	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Mercury	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
MTBE (methyl t-butyl ether)	340		810		1,500		8.5		20		110	
Naphthalene	6.4		15		83		6.4		15		83	
Nickel	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Pentachlorophenol	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Polychlorinated biphenyls (Total PCBs)**	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
iso-Propylbenzene (cumene)	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
Pyrene	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
Silver	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Styrene	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
2,3,7,8-TCDD (dioxin) equivalents **	0.010		0.024		0.13		0.010		0.024		0.13	
Tetrachloroethene (PCE)	-	>Csat	-	>Csat	-	>Csat	2.8		6.6		36	
Toluene	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
Toxaphene	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
Trichloroethane, 1,1,1-	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat
Trichloroethane, 1,1,2-	5.60		6.7		24		0.32		0.38		4.2	
Trichloroethene	15		33		96		0.12		0.26		2.3	
Trichlorofluoromethane (Freon 11)	-	>Csat	-	>Csat	-	>Csat	190		190		-	>Csat
Trichlorophenol, 2,4,6-	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV
Trimethylbenzene, 1,2,4-	230		230		980		16		16		210	
Trimethylbenzene, 1,3,5-	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max
Vinyl chloride	5.3		6.5		89		0.043		0.053		2.2	
Xylenes	-	>Csat	-	>Csat	-	>Csat	160		160		-	>Csat
Generic Gasoline	5,900		5,900		69,000		94		94		>Max	
Generic Diesel/Heating Oil	>Max		>Max		>Max		>Max		>Max		>Max	
Generic Mineral/Insulating Oil	>Max		>Max		>Max		>Max		>Max		>Max	

Contaminated Medium →	SOIL mg/Kg (ppm)						GROUNDWATER (µg/L (ppb))					
Exposure Pathway →	Leaching to Groundwater (RBC_{sw})						Ingestion & Inhalation from Tapwater (RBC_{tw})					
Receptor Scenario →	Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)	IS		IS		IS		DS		DS		DS	
Contaminant		Note		Note		Note		Note		Note		Note
Heptachlor	0.017		0.063		0.048		0.0014		0.0051		0.0039	
Heptachlor Epoxide	0.0042		0.018		0.016		0.0014		0.0059		0.0053	
Hexachlorobenzene	0.018		0.083		0.084		0.0098		0.045		0.045	
Hexachlorocyclohexane, alpha- (alpha-HCH)	0.0063		0.024		0.023		0.0075		0.028		0.027	
Hexachlorocyclohexane, gamma- (Lindane)	0.036		0.13		0.13		0.043		0.16		0.16	
Hexachloroethane	0.022		0.095		0.087		0.34		1.5		1.3	
Indeno[1,2,3-cd]pyrene	-	>Csat	-	>Csat	-	>Csat	0.034		0.11		-	>S
Lead	30	L	30	L	30	L	15	L	15	L	15	L
Manganese	*		*		*		480		1,800		3,900	
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	0.20		0.41		0.61		7.4		30		47	
Mercury	*		*		*		6.0		22		49	
MTBE (methyl t-butyl ether)	0.11		0.50		0.54		14		64		68	
Naphthalene	0.077		0.37		0.34		0.17		0.78		0.72	
Nickel	*		*		*		400		1,500		3,300	
Pentachlorophenol	0.066		0.23		0.17		0.044		0.15		0.12	
Polychlorinated biphenyls (Total PCBs)**	0.24		1.1		1.1		0.006		0.028		0.028	
iso-Propylbenzene (cumene)	140		280		-	>Csat	440		1,800		2,000	
Pyrene	-	>Csat	-	>Csat	-	>Csat	110	>S	-	>S	-	>S
Silver	*		*		*		100		370		820	
Styrene	210		430		800		1,200		4,600		5,700	
2,3,7,8-TCDD (dioxin) equivalents **	0.0000068		0.000031		0.000031		0.000000091		0.00000042		0.00000042	
Tetrachloroethene (PCE)	0.46		1.9		1.9		12		49		48	
Toluene	150		310		490		1,100		4,400		6,300	
Toxaphene	0.36		1.2		0.93		0.015		0.053		0.04	
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	-	>Csat	-	>Csat	-	>Csat	55,000		-	>S	-	>S
Trichloroethane, 1,1,1-	210		430		880		8,000		30,000		37,000	
Trichloroethane, 1,1,2-	0.0063		0.019		0.029		0.28		1.3		1.3	
Trichloroethene	0.013		0.053		0.087		0.49		2.0		3.3	
Trichlorofluoromethane (Freon 11)	68		140		280		1,100		4,200		5,200	
Trichlorophenol, 2,4,6-	2.4		8.9		8.9		4.4		17		16	
Trimethylbenzene, 1,2,4-	2.8		5.6		12		15		54		61	
Trimethylbenzene, 1,3,5-	50		110		110		110		500		600	
Vinyl chloride	0.0006		0.0014		0.010		0.027		0.066		0.49	
Xylenes	24		49		100		190		710		830	
Generic Gasoline	31		31		130		110		110		450	
Generic Diesel/Heating Oil	9,500		9,500		>Max		100		100		430	
Generic Mineral/Insulating Oil	>Max		>Max		>Max		300		300		1,300	

Contaminated Medium →		GROUNDWATER (μg/L (ppb))						GROUNDWATER (μg/L (ppb))						GROUNDWATER (μg/L (ppb))	
Exposure Pathway →		Volatilization to Outdoor Air (RBC_{wo})						Vapor Intrusion into Buildings (RBC_{wi})						GW in Excavation (RBC_{we})	
Receptor Scenario →		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Construction & Excavation Worker	
Direct or Indirect Pathway (see notes)		IVW		IVW		IVW		IVW		IVW		IVW		DS	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note
Acenaphthene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Acrylonitrile	c, v	2,200		5,300		9,800		700		1,700		9,200		250	
Aldrin	c, v	-	>S	-	>S	-	>S	-		-	>S	-	>S	3.5	
Anthracene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Arsenic	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	6,300	
Barium	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Benz[a]anthracene	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Benzene	c, v	3,100		7,400		14,000		210		510		2,800		1,800	
Benzidine	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	17	
Benzo[a]pyrene (BaP equivalents) **	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Benzo[b]fluoranthene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Benzo[k]fluoranthene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Beryllium	c *, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	270,000	
Bis(2-ethylhexyl)phthalate	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Bromodichloromethane	c, v	1,400		3,200		6,000		180		420		2,300		450	
Bromoform	c, v	130,000		300,000		550,000		36,000		85,000		470,000		14,000	
Bromomethane	nc, v	32,000		32,000		130,000		2,100		2,100		27,000		1,200	
Cadmium	c*, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	130,000	
Carbon tetrachloride	c, v	1,800		4,200		7,700		92		220		1,200		1,800	
Chlorobenzene	nc, v	-	>S	-	>S	-	>S	67,000		67,000		-	>S	10,000	
Chlorodibromomethane (dibromochloromethane)	c, v	3,900		9,300		17,000		980		2,300		13,000		610	
Chloroethane (ethyl chloride)	nc, v	-	>S	-	>S	-	>S	2,800,000		2,800,000		-	>S	2,400,000	
Chloroform	c, v	1,400		3,400		6,300		120		290		1,600		720	
Chloromethane	nc, v	440,000		440,000		1,800,000		26,000		26,000		330,000		22,000	
Chlordane	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Chromium (III)	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Chromium (VI)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	9,400	
Chrysene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Copper	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	5,400,000	
Cyanide (hydrogen cyanide) *	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	81,000	
DDD (4,4'-Dichlorodiphenyldichloroethane)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	31	
DDE (4,4'-Dichlorodiphenyldichloroethene)	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
DDT (4,4'-Dichlorodiphenyltrichloroethane)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Dibenz[a,h]anthracene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
1,2-Dichlorobenzene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	37,000	
1,4-Dichlorobenzene	c, v	4,900		12,000		21,000		540		1,300		7,100		1,500	
3,3-Dichlorobenzidine	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
1,1-Dichloroethane	c, v	16,000		37,000		68,000		1,100		2,600		14,000		10,000	
1,1-Dichloroethene	c, v	570,000		570,000		2,400,000		29,000		29,000		360,000		44,000	
cis-1,2-Dichloroethene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	18,000	
trans-1,2-Dichloroethene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	180,000	
Dichloroethylether	c, v	5,700		13,000		30,000		2,300		5,500		30,000		51	
Dichloromethane	c, v	1,000,000	>S	1,900,000	>S	12,581,128	>S	90,000		160,000		3,300,000		79,000	
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	77,000	
Dieldrin	c, v	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	2.4	
Dinitrotoluene, 2,6-	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	830	
Di-N-propylnitrosamine (N-nitroso-di-N-propylamine)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	370	
Dioxane, 1,4-	c, nv	820,000		1,900,000		4,500,000		340,000		810,000		4,500,000		3,400	
Diphenylnitrosamine	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
EDB (1,2-dibromoethane)	c, v	180		430		790		45		110		590		27	
EDC (1,2-dichloroethane)	c, v	2,100		4,900		9,000		300		700		3,900		630	
Endosulfan, (alpha-beta)	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Endrin	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	170	
Ethylbenzene	c, v	9,900	>S	23,000	>S	43,000	>S	620	>S	1,500	>S	8,200	>S	4,500	
Fluoranthene	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S
Fluorene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S
Formaldehyde	c *, nv	1,500,000		3,700,000		8,500,000		650,000		1,500,000		8,500,000		1,300	

Contaminated Medium →	Soil Gas (μg/m^3)						AIR (μg/m^3)					
Exposure Pathway →	Vapor Intrusion into Buildings (RBCsv)						INHALATION (RBC_{air})					
Receptor Scenario →	Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)	ICA		ICA		ICA		DCA		DCA		DCA	
Contaminant		Note		Note		Note		Note		Note		Note
Acenaphthene	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Acrylonitrile	8.3		20		180		0.041		0.098		0.18	
Aldrin	0.11		0.27	>Pv	2.5	>Pv	0.0006		0.0014		0.0025	
Anthracene	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Arsenic	-	NV	-	NV	-	NV	0.0007		0.0015		0.0029	
Barium	-	NV	-	NV	-	NV	0.52		0.52		2.2	
Benz[a]anthracene	-	>Pv	-	>Pv	-	>Pv	0.0092		0 018		0.11	
Benzene	72		170		1,600		0.36		0.85		1.6	
Benzidine	-	NV	-	NV	-	NV	0.000015		0.000029		0.00018	
Benzo[a]pyrene (BaP equivalents) **	-	NV	-	NV	-	NV	0.0009		0.0018		0.011	
Benzo[b]fluoranthene	-	NV	-	NV	-	NV	0.0092		0.018		0.11	
Benzo[k]fluoranthene	-	NV	-	NV	-	NV	0.0092		0.018		-	>Pv
Beryllium	-	NV	-	NV	-	NV	0.0012		0.0028		0.0051	
Bis(2-ethylhexyl)phthalate	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Bromodichloromethane	15		36		330		0.076		0.18		0.33	
Bromoform	510		1,200		11,000		2.6		6.0		11	
Bromomethane	1,000		1,000		22,000		5.2		5.2		22	
Cadmium	-	NV	-	NV	-	NV	0.0016		0.0037		0.0068	
Carbon tetrachloride	94		220		2,000		0.47		1.1		2.0	
Chlorobenzene	10,000		10,000		220,000		52		52		220	
Chlorodibromomethane (dibromochloromethane)	21		49		450		0.10		0.25		0.45	
Chloroethane (ethyl chloride)	2,100,000		2,100,000		43,800,000		10000		10000		44000	
Chloroform	24		58		530		0.12		0.29		0.53	
Chloromethane	19,000		19,000		390,000		94		94		390	
Chlordane	5.6		13		-		0.028		0.066		0.12	
Chromium (III)	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Chromium (VI)	-	NV	-	NV	-	NV	0.000012		0.000023		0.00015	
Chrysene	-	NV	-	NV	-	NV	0.092		0.18		1.1	
Copper	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Cyanide (hydrogen cyanide) *	-	NV	-	NV	-	NV	0.83		0.83		3.5	
DDD (4,4'-Dichlorodiphenyldichloroethane)	-	NV	-	NV	-	NV	0.041		0.096		0.18	
DDE (4,4'-Dichlorodiphenyldichloroethene)	5.8		14		-	>Pv	0.029		0.068		0.13	
DDT (4,4'-Dichlorodiphenyltrichloroethane)	-	NV	-	NV	-	NV	0.029		0.068		0.13	
Dibenz[a,h]anthracene	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
1,2-Dichlorobenzene	42,000		42,000		880,000		210		210		880	
1,4-Dichlorobenzene	51		120		1,100		0.26		0.6		1.1	
3,3-Dichlorobenzidine	-	NV	-	NV	-	NV	0.0083		0.02		0.036	
1,1-Dichloroethane	350		830		7,700		1.8		4.1		7.7	
1,1-Dichloroethene	42,000		42,000		880,000		210		210		880	
cis-1,2-Dichloroethene	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
trans-1,2-Dichloroethene	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Dichloroethylether	1.7		4		37		0.0085		0.02		0.037	
Dichloromethane	20,000		37,000		1,200,000		100		190		1200	
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Dieldrin	-	NV	-	NV	-	NV	0.0006		0.0014		0.0027	
Dinitrotoluene, 2,6-	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	
Di-N-propylnitrosamine (N-nitroso-di-N-propylamine)	-	NV	-	NV	-	NV	0.0014		0.0033		0.0061	
Dioxane, 1,4-	110		270		2,500		0.56		1.3		2.5	
Diphenylnitrosamine	-	NV	-	NV	-	NV	1.1		2.6		4.7	
EDB (1,2-dibromoethane)	0.94		2.2		20		0.0047		0.011		0.02	
EDC (1,2-dichloroethane)	22		51		470		0.11		0.26		0.47	
Endosulfan, (alpha-beta)	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Endrin	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Ethylbenzene	220		530		4,900		1.1		2.7		4.9	
Fluoranthene	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Fluorene	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Formaldehyde	43		100		940		0.22		0.51		0.94	

Contaminated Medium →		GROUNDWATER (µg/L (ppb))						GROUNDWATER (µg/L (ppb))						GROUNDWATER (µg/L (ppb))		Soil Gas (µg/m³)						AIR (µg/m³)					
Exposure Pathway →		Volatilization to Outdoor Air (RBC_{wo})						Vapor Intrusion into Buildings (RBC_{wi})						GW in Excavation (RBC_{we})		Vapor Intrusion into Buildings (RBCsv)						INHALATION (RBC_{air})					
Receptor Scenario →		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Construction & Excavation Worker		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)		IVW		IVW		IVW		IVW		IVW		IVW		DS		ICA		ICA		ICA		DCA		DCA		DCA	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note
Heptachlor	c, v	-	>S	-	>S	-	>S	88.		-	>S	-	>S	1.8		0.43		1.0		9.4		0.0022		0.0051		0.0094	
Heptachlor Epoxide	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	3.2		0.22		0.51		4.7		0.0011		0.0026		0.0047	
Hexachlorobenzene	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	1.2		2.9		27		0.0061		0.014		0.027	
Hexachlorocyclohexane, alpha- (alpha-HCH)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	18	>S	-	NV	-	NV	-	NV	0.0016		0.0037		0.0068	
Hexachlorocyclohexane, gamma- (Lindane)	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	100		-	NV	-	NV	-	NV	0.0091		0.021		0.04	
Hexachloroethane	c*, v	5,000		12,000		22,000		570		1,400		7,500		700		51		120		1,100		0.26		0.60		1.1	
Indeno[1,2,3-cd]pyrene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Lead	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Manganese	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	3,200,000		-	NV	-	NV	-	NV	0.052		0.052		0.22	
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	1,700		-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Mercury	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	0.31		0.31		1.3	
MTBE (methyl t-butyl ether)	c, v	350,000		830,000		1,500,000		67,000		160,000		870,000		63,000		2,200		5,100		47,000		11		26		47	
Naphthalene	c, v	3,600		8,500		16,000	>S	840		2,000		11,000		500		17		39		360		0.083		0.20		0.36	
Nickel	c*, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	13,446,802	>S	-	NV	-	NV	-	NV	0.011		0.026		0.047	
Pentachlorophenol	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	53		-	NV	-	NV	-	NV	0.55		1.3		2.4	
Polychlorinated biphenyls (Total PCBs) **	c*, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	30		0.99		2.3		22		0.0038		0.0090		0.017	
iso-Propylbenzene (cumene)	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	51,000		83,000		83,000		1,800,000		420		420		1800	
Pyrene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Silver	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	1,100,000		-	NV	-	NV	-	NV	-		-		-	
Styrene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	170,000		210,000		210,000		4,400,000		1000		1000		4400	
2,3,7,8-TCDD (dioxin) equivalents **	c, v	0.022		0.052		0.11		0.083		0.020		0.11		0.00045		0.000015		0.000035		0.0000032		5.6 x 10-8		1.3 x 10-7		2.5 x 10-7	
Tetrachloroethene (PCE)	c*, v	64,000		150,000		-	>S	3,700		8,700		48,000		5,600		2,200		5,100		47,000		11		26		47	
Toluene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	220,000		1,000,000		1,000,000		21,900,000		5200		5200		22000	
Toxaphene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	18.00		-	NV	-	NV	-	NV	0.0088		0.021		0.038	
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	6,300,000		6,300,000		131,400,000		31000		31000		130000	
Trichloroethane, 1,1,1-	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	1,100,000		1,000,000		1,000,000		21,900,000		5200		5200		22000	
Trichloroethane, 1,1,2-	c *, v	4,700		5,600		21,000		870		1,000		11,000		49		35		42		770		0.18		0.21		0.77	
Trichloroethene	c *, v	3,300		6,900		20,000		200		430		3,700		3,000		95		200		2,900		0.47		1.0		2.9	
Trichlorofluoromethane (Freon 11)	nc, v	780,000		780,000		-	>S	36,000		36,000		460,000		160,000		150,000		150,000		3,100,000		730.0000		730.0000		3100.0000	
Trichlorophenol, 2,4,6-	c *, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	1,700		-	NV	-	NV	-	NV	0.91		2.1		4.0	
Trimethylbenzene, 1,2,4-	nc, v	-	>S	-	>S	-	>S	5,800		5,800		-	>S	1,700		1,500		1,500		31,000		7.3		7.3		31	
Trimethylbenzene, 1,3,5-	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	15,000		-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Vinyl chloride	c, v	350		430		5,900		17		21		880		960		33		41		2,800		0.17		0.20		2.8	
Xylenes	nc, v	-	>S	-	>S	-	>S	86,000		86,000		-	>S	23,000		21,000		21,000		440,000		100		100		440	
Generic Gasoline	nc, v	>S		>S		>S		22,000		22,000		>S		14,000		79,000		79,000		1,700,000		390		390		1,700	
Generic Diesel/Heating Oil	nc, v	>S		>S		>S		>S		>S		>S		>S		21,000		21,000		440,000		100		100		440	
Generic Mineral/Insulating Oil	nc, nv	>S		>S		>S		>S		>S		>S		>S		30,000		30,000		620,000		150		150		620	

NOTES:

Direct or Indirect Pathway Codes have the following meanings: DC means it is a direct contact pathway with a limiting value of Csat. IVS means it is an indirect pathway with a limiting value of Csat. DS means it is a direct contact pathway with a limiting value equal to the solubility, S. IVW means it is an indirect pathway with a limiting value equal to the solubility, S. DCA means it is a direct contact pathway with a limiting value equal to the vapor pressure, Pv.

The symbols in the "Note" columns are explained below. The references can be found in *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003)

c	This chemical is a known or suspected carcinogen. The RBCs in this row were calculated using equations for carcinogens.
c*	The RBCs in this row were calculated using equations for both carcinogens and noncarcinogens (where lower). For some scenarios the RBCs based on non-carcinogenic effects are lower than RBCs based on cancer effects for these chemicals. You should use the lower of the calculated RBCs for each exposure scenario, as shown in this table.
>Csat	This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to "ChemData" page for the corresponding value of Csat. Soil concentrations in excess of Csat indicate that free product might be present. See Section B.2.1.4 for additional information.
L	The values for lead reported in this table are not calculated. See Section B.3.4 for the source of the lead numbers and information on applying them.
>Max	The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg or 1,000,000 mg/L. Therefore, this substance is deemed not to pose risks in this scenario.\
NA	Not Available
nc	This chemical is a noncarcinogen. The RBCs in this row were calculated using equations for noncarcinogens. When carcinogenic RBCs can be calculated and the noncancer RBC is lower, (nc) is shown in the notes.
nv	This chemical is considered "nonvolatile" for purposes of the exposure calculations. A chemical is defined as nonvolatile if the Henry's law constant is less than 1 x 10^{-5} atm/m³-mole or vapor pressure less than one mm mercury.
>Pv	The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent cannot create an unacceptable risk by this pathway. See Section B.2.1.4 for additional information.
>S	This groundwater RBC exceeds the solubility limit. Refer to Appendix D for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present. See Section B.2.1.4 for additional information.
v	This chemical is classified as "volatile" for purposes of the exposure calculations in this document. A chemical is defined as volatile if the Henry's law constant is greater than or equal to 1 x 10^{-5} atm/m³-mole or vapor pressure greater than or equal to one mm mercury.
*	Leaching-to-Groundwater RBCs are not provided for inorganic chemicals. If this pathway is of concern, then site-specific leaching tests must be performed.
**	Compounds in this category are considered in aggregate as a chemical class and should be evaluated as single substances. See notes to accompany Risk-Based Concentrations for Individual Chemicals, November 1, 2015.
-	When "Show All Values" is not selected on the Main Menu, all RBC values for indirect pathways that exceed a limit (Csat, S, or Pv) are removed from the table and replaced with "-".