

TABLE 1
Summary of Soil Cleanup Levels and Remediation Levels
 Unocal Edmonds Bulk Fuel Terminal Lower Yard
 Phase II Remedial Implementation As-built Report
 11720 Unoco Road
 Edmonds, Washington

Constituent of Concern:	Soil Cleanup Level or Remediation Level (mg/kg):	Note:
TPH	2,975	1
Benzene	18	2
Total cPAHs	0.14	3
Arsenic	20	4

Notes:

mg/kg = Milligrams per kilogram.

TPH = Total petroleum hydrocarbons.

cPAHs = Carcinogenic polynuclear aromatic hydrocarbons

REL = Remediation Level.

DRO = Diesel range organics

GRO = Gasoline range organics

CUL = Cleanup Level.

1. REL based on Method B direct contact. Assumes empirical demonstration will be used to show compliance with residual saturation concentrations (2,000 mg/kg for DRO and 1,000 mg/kg for GRO).

2. REL based on Method B direct contact. Assumes empirical demonstration will be used to show that direct contact cleanup level for benzene is also protective of groundwater.

3. CUL based on Method B direct contact.

4. CUL based on natural background.

TABLE 2
Summary of Phase II Excavations
 Unocal Edmonds Bulk Fuel Terminal Lower Yard
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 11720 Unoco Road
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Excavation Name	Final Excavation Size ¹	
	Final Mass of Excavation (tons) ¹	Final Mass of Excavation (cy) ²
B1	5,000	3,333
B7	250	167
B8	840	560
B9	1,300	867
Asphalt Warehouse Area	4,585	3,056
Willow Creek Sediment Excavation Area	2,000	1,333
Railroad Trestle Area	850	567
Total Final	14,825	9,883

Notes:

cy = Cubic yard

¹ = Final volume in tons based on Cemex (Rinker) waste manifests.

² = Final volume in cubic yards based on Cemex (Rinker) waste manifests using 1.5 cy per ton.

TABLE 3
Excavation Soil Sample Analytical Results
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Sample ID	Sample Depth (feet bgs)	Date Sampled	BTEX (mg/kg)				Total cPAHs Adjusted for Toxicity (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Heavy Oil (Lube) (mg/kg)	Total TPH (mg/kg)
			B	T	E	X					
Site Soil Remediation Level (REL)/Cleanup Level (CUL) (mg/kg)			18	--	--	--	0.14	--	--	--	2,975
EX-AW-E-23-5	5	09/11/08	0.0404 U	0.0674 U	0.0674 U	0.135 U	0.278	596	109	410	1,120
EX-AW-E-23-5(2)	5	09/17/08	0.0363 U	0.0605 U	0.0605 U	0.121 U	NA	11.9 U	6.05 U	29.7 U	23.8 UU
EX-AW-E-24-10	10	09/11/08	0.0354 U	0.0590 U	0.0590 U	0.118 U	0.00891	28.1	5.90 U	29.0 U	45.6
EX-AW-E-24-NSW-5	5	09/11/08	0.0363 U	0.0605 U	0.0605 U	0.121 U	0.00892	357	30.0 JZ	134	521 J
EX-AW-E-25-10	10	09/11/08	0.0405 U	0.0675 U	0.0675 U	0.135 U	0.00982	102	6.75 U	32.8 U	122
EX-AW-E-25-ESW-5	5	09/11/08	0.0327 U [0.0339 U]	0.228 J [0.470 J]	0.0545 U [0.0564 U]	0.109 U [0.320 J]	0.00846 [0.00838]	18.4 [24.6]	75.2 JZ [171 JZ]	28.2 U [27.5 U]	108 J [209 J]
EX-AW-E-25-NSW-5	5	09/11/08	0.0373 U	0.0621 U	0.0621 U	0.124 U	0.00898	16.1	6.21 U	29.7 U	34.1
EX-AW-F-23-5	5	09/11/08	0.0359 U	0.0598 U	0.0598 U	0.120 U	0.00950	2,840	5.98 U	692	3,530
EX-AW-F-23-5(2)	5	09/12/08	0.0339 U	0.0565 U	0.0565 U	0.113 U	NA	11.6 U	5.65 U	29.1 U	23.2 UU
EX-AW-F-24-5	5	09/11/08	0.0345 U	0.0575 U	0.0575 U	0.115 U	NA	10.9 U	12.0	27.3 U	31.1
EX-AW-F-25-5	5	09/11/08	0.0277 U	0.0461 U	0.0461 U	0.0923 U	0.0181	58.1	6.68 JZ	71.8	137 J
EX-AW-F-25-ESW-5	5	09/11/08	0.0372 U	0.0620 U	0.0620 U	0.124 U	0.00846	62.6	6.20 U	27.9 U	79.7
EX-B1-C-46-4	4	08/08/08	0.355	1.06	0.294 U	3.20	0.228	2,920	260 JZ	911	4,090 J
EX-B1-C-46-4(2)	4	09/02/08	0.0302 U	0.0503 U	0.0503 U	0.101 U	0.0142	46.8 JY	5.03 U	92.7	142 J
EX-B1-C-47-4	4	08/08/08	0.0309 U	0.0679	0.0515 U	0.166	0.0414 UU	236	51.8 JZ	123	411 J
EX-B1-D-43-4	4	08/19/08	4.39	32.3	22.5	117	NA	11.6 U	2,000 J	29.0 U	2,020 J
EX-B1-D-44-12	12	08/18/08	0.121 U	0.202 U	0.202 U	0.404 U	0.0369 UU	25.6	20.2 U	60.3 U	65.9
EX-B1-D-44-NSW-4	4	08/18/08	1.23	2.68	0.470 U	9.81	0.554	9,620 J	678 JZ	3,350 J	13,600 J
EX-B1-D-44-NSW-4(2)	4	09/02/08	0.0508	0.107	0.0452 U	0.0903 U	0.0188	101	32.6	153	287
EX-B1-D-45-12	12	08/14/08	0.224 [0.0598 U]	0.956 J [0.0996 UJ]	1.41 J [0.0996 UJ]	4.87 J [0.199 UJ]	NA [NA]	14.6 U [15.4 U]	76.1 JZ [9.96 UJ]	36.4 U [38.5 U]	102 J [31.9 UU]
EX-B1-D-45-NSW-4	4	09/02/08	0.0316 U	0.0526 U	0.0526 U	0.105 U	0.0152	28.8 JY	5.26 U	69.0	100 J
EX-B1-D-46-12	12	08/11/08	0.113 U	0.189 U	0.189 U	0.378 U	0.0431	69.6 JY	18.9 U	158	237 J
EX-B1-D-47-4	4	08/08/08	0.0349 U	0.0582 U	0.0582 U	0.116 U	0.123	135	36.6 JZ	105	277 J
EX-B1-E-41-8	8	08/27/08	0.0325 U	0.0542 U	0.0542 U	0.108 U	0.0205	173	9.58	153	336
EX-B1-E-41-NSW-4	4	08/27/08	0.0314 U	0.0524 U	0.0524 U	0.105 U	NA	10.6 U	7.74	26.6 U	26.3
EX-B1-E-42-8	8	08/27/08	0.0327 U	0.0544 U	0.0544 U	0.109 U	0.0172	130	13.0	122	265
EX-B1-E-42-NSW-4	4	08/27/08	0.156	0.283	2.54	5.88	0.0714	76.8	223	83.1	383
EX-B1-E-43-12	12	08/21/08	0.259 U	0.431 U	0.431 U	0.863 U	NA	40.8 U	43.1 U	102 U	93.0 UU

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Sample ID	Sample Depth (feet bgs)	Date Sampled	BTEX (mg/kg)				Total cPAHs Adjusted for Toxicity (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Heavy Oil (Lube) (mg/kg)	Total TPH (mg/kg)
			B	T	E	X					
Site Soil Remediation Level (REL)/Cleanup Level (CUL) (mg/kg)			18	--	--	--	0.14	--	--	--	2,975
EX-B1-E-44-12	12	08/19/08	0.143 U	0.239 U	0.239 U	0.477 U	NA	28.0 U	23.9 U	69.9 U	60.9 UU
EX-B1-E-45-12	12	08/14/08	0.106 U	0.177 U	0.177 U	0.354 U	NA	19.8 U	17.7 U	49.6 U	43.6 UU
EX-B1-E-46-12	12	08/13/08	0.133 U	0.221 U	0.221 U	0.442 U	NA	23.0 U	22.1 U	57.6 U	51.4 UU
EX-B1-E-47-4	4	08/08/08	0.0336 U	0.147	0.0561 U	0.116	0.0172	21.1	5.61 U	26.9 U	37.4
EX-B1-E-47-SSW-4	4	08/08/08	0.351 U	0.586 U	0.743	4.44	0.756	11,400 J	493 JZ	3,820 J	15,700 J
EX-B1-E-47-SSW-4(2)	4	09/02/08	0.0280 U	0.0466 U	0.0466 U	0.0932 U	NA	10.8 U	4.66 U	27.0 U	21.2 UU
EX-B1-F-42-8	8	08/27/08	0.0332 U	0.0553 U	0.0553 U	0.111 U	0.0165	144	12.4	114	270
EX-B1-F-42-SSW-4	4	08/27/08	0.0327 U [0.0306 U]	0.0546 U [0.0511 U]	0.0546 U [0.0511 U]	0.109 U [0.102 U]	NA [NA]	10.7 U [10.6 U]	5.46 U [5.11 U]	26.8 U [26.6 U]	21.5 UU [21.2 UU]
EX-B1-F-43-4	4	08/21/08	0.0288 U	0.0481 U	0.0481 U	0.0961 U	0.0184	231	35.6 JZ	275	542 J
EX-B1-F-44-4	4	08/18/08	0.0298 U	0.0497 U	0.0497 U	0.0994 U	0.212	58.3	4.97 U	60.2	121
EX-B1-F-45-10	10	08/15/08	0.0671 U	0.112 U	0.112 U	0.224 U	NA	16.8 U	11.2 U	41.9 U	35.0 UU
EX-B1-F-45-SSW-4	4	08/18/08	0.0296 U	0.0493 U	0.0493 U	0.0986 U	0.0719	95.5	21.4 JZ	115	232 J
EX-B1-F-46-4	4	08/08/08	4.81	9.05	4.52	48.6	1.14	8,430 J	1,650 JZ	2,500 J	12,600 J
EX-B1-F-47-4(2)	4	09/02/08	0.0291 U	0.0486 U	0.0486 U	0.0971 U	NA	10.9 U	4.86 U	27.2 U	21.5 UU
EX-B7-B3-4	4	08/01/08	0.0377 U	0.0628 U	0.0628 U	0.126 U	0.0411	1,990	6.28 U	2,060	4,050
EX-B7-B4-4	4	08/01/08	0.366 U [0.0548 U]	0.610 U [0.0913 U]	0.610 U [0.0913 U]	1.22 U [0.183 U]	0.0488 [0.0517]	1,120 [960]	61.0 U [9.13 U]	629 [544]	1,780 [1,510]
EX-B7-B-4-5	5	09/10/08	0.0383 U	0.0638 U	0.0638 U	0.128 U	0.00944 UU	64.2	20.9	30.7 U	100
EX-B8-H-3-10	10	09/10/08	0.0385 U	0.0642 U	0.0642 U	0.128 U	NA	12.2 U	6.42 U	30.5 U	24.6 UU
EX-B8-H-3-NSW-5	5	09/10/08	0.0322 U	0.0537 U	0.0537 U	0.107 U	0.0266	10.9 U	5.37 U	31.2	39.3
EX-B8-H-3-WSW-5	5	09/10/08	0.0427 U	0.0712 U	0.0712 U	0.142 U	0.0439	58.0 JY	7.12 U	342	404 J
EX-B8-I-3-10	10	09/10/08	0.0412 U	0.0686 U	0.0686 U	0.137 U	NA	12.4 U	6.86 U	31.0 U	25.1 UU
EX-B8-I-3-WSW-5	5	09/10/08	0.0833 U	0.139 U	0.139 U	0.278 U	0.0728	2,740	15.0	2,590	5,350
EX-B8-I-3-WSW-5(2)	5	09/11/08	0.0525 U	0.0875 U	0.0875 U	0.175 U	0.0589	352	8.75 U	354	710
EX-B8-J-3-10	10	09/10/08	0.0369 U	0.0616 U	0.0616 U	0.123 U	NA	11.8 U	6.16 U	29.5 U	23.7 UU
EX-B8-J-3-SSW-5	5	09/10/08	0.0302 U [0.0338 U]	0.0504 U [0.0564 U]	0.0504 U [0.0564 U]	0.101 U [0.113 U]	0.00793 UU [0.00793 UU]	51.5 [335 JY]	9.14 [5.64 U]	41.1 [315]	102 [653 J]
EX-B8-J-3-WSW-5	5	09/10/08	0.0302 U	0.0503 U	0.0503 U	0.101 U	0.00800 UU	270 JY	5.03 U	278	551 J
EX-B9-N-3-5	5	09/09/08	0.0331 U	0.0551 U	0.0551 U	0.110 U	NA	10.8 U	5.51 U	26.9 U	21.6 UU
EX-B9-O-3-10	10	09/09/08	0.0353 U	0.0588 U	0.0588 U	0.118 U	NA	11.7 U	9.57	29.3 U	30.1
EX-B9-O-3-WSW-5	5	09/09/08	0.0322 U	0.0537 U	0.0537 U	0.107 U	NA	10.5 U	5.37 U	26.2 U	21.0 UU
EX-B9-P-3-10	10	09/09/08	0.0360 U	0.0600 U	0.0600 U	0.120 U	NA	12.0 U	11.4	29.9 U	32.4
EX-B9-P-3-SSW-5	5	09/09/08	0.0320 U	0.0533 U	0.0533 U	0.107 U	NA	10.6 U	5.33 U	26.4 U	21.2 UU

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Sample ID	Sample Depth (feet bgs)	Date Sampled	BTEX (mg/kg)				Total cPAHs Adjusted for Toxicity (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Heavy Oil (Lube) (mg/kg)	Total TPH (mg/kg)
			B	T	E	X					
Site Soil Remediation Level (REL)/Cleanup Level (CUL) (mg/kg)			18	--	--	--	0.14	--	--	--	2,975
EX-B9-P-3-WSW-5	5	09/09/08	0.0327 U	0.0545 U	0.0545 U	0.109 U	NA	10.3 U	5.45 U	25.9 U	20.8 UU
ISP-E-17-2	2	09/17/08	0.0310 U	0.0516 U	0.0516 U	0.103 U	NA	10.4 U	5.16 U	26.1 U	20.8 UU
ISP-E-18-2	2	09/17/08	0.0312 U	0.0519 U	0.0519 U	0.104 U	0.0248	15.2	5.19 U	27.9 U	31.7
ISP-E-19-2	2	09/22/08	0.0337 U	0.0562 U	0.0562 U	0.112 U	0.00868 UU	51.3 J	5.62 U	42.8	96.9 J
ISP-E-20-2	2	09/22/08	0.0333 U	0.0555 U	0.0555 U	0.111 U	0.0212	105	7.17 JZ	67.4	180 J
ISP-E-21-2	2	09/22/08	0.0318 U	0.0530 U	0.0530 U	0.113	0.00850	16.7	25.0 JZ	27.7 U	55.6 J
ISP-F-17-2	2	09/17/08	0.0319 U	0.0532 U	0.0532 U	0.106 U	NA	10.4 U	5.32 U	26.0 U	20.9 UU
ISP-F-18-2	2	09/17/08	0.0267 U	0.0445 U	0.0445 U	0.0890 U	0.0170	29.0	4.45 U	32.9	64.1
ISP-F-19-2	2	09/22/08	0.0329 U	0.0549 U	0.0549 U	0.110 U	0.0523	14.3	5.49 U	27.5 U	30.8
ISP-F-20-2	2	09/22/08	0.0351 U	0.0585 U	0.0585 U	0.117 U	0.0498	11.6	5.85 U	27.1 U	28.1
ISP-F-21-2	2	09/22/08	0.0344 U	0.0574 U	0.0574 U	0.115 U	NA	11.0 U	5.74 U	27.4 U	22.1 UU
ISP-G-17-2	2	09/17/08	0.0314 U	0.0524 U	0.0524 U	0.105 U	NA	10.4 U	5.24 U	26.1 U	20.9 UU
ISP-G-18-2	2	09/17/08	0.0314 U	0.0523 U	0.0523 U	0.105 U	NA	10.6 U	5.23 U	26.4 U	21.1 UU
ISP-G-19-2	2	09/22/08	0.0305 U [0.0301 U]	0.0508 U [0.0502 U]	0.0508 U [0.0502 U]	0.102 U [0.100 U]	0.306 [0.0187]	38.9 [47.5]	5.08 U [5.02 U]	27.5 U [27.5 U]	55.2 [63.8]
ISP-G-19-2(2)	2	09/25/08	0.0344 U	0.0573 U	0.0573 U	0.115 U	0.0161	75.5	5.73 U	57.1	135
ISP-G-20-2	2	09/22/08	0.0328 U	0.0546 U	0.0546 U	0.109 U	0.00823 UU	11.4	5.46 U	27.1 U	27.7
ISP-G-21-2	2	09/22/08	0.0322 U	0.0536 U	0.0536 U	0.107 U	0.0335	74.1	9.03 JZ	35.0	118 J
EX-RRT-ZZ-2-4	4	08/01/08	0.0552 U	0.0920 U	0.0920 U	0.184 U	NA	15.2 U	20.3	38.0 U	46.9
EX-RRT-ZZ-2-ESW-3	3	08/01/08	0.0800 U	0.133 U	0.133 U	0.560 J	NA	18.2 U	46.4 J	45.4 U	78.2 J
RRT-YY-2-6	6	08/04/08	0.105 U	0.376 J	0.174 U	1.61 J	NA	20.8 U	39.9 J	52.0 U	76.3 J
RRT-YY-2-WSW-3	3	08/04/08	0.0397 U [0.0357 U]	0.0661 U [0.0595 U]	0.0661 U [0.0595 U]	0.132 U [0.119 U]	0.00808 UU [0.00808 UU]	27.1 JY [26.8 JY]	6.61 U [5.95 U]	32.9 [31.6]	63.3 J [61.4 J]
RRT-ZZ-2-NSW-3	3	08/04/08	0.0349 U	0.0581 U	0.0581 U	0.116 U	0.00853 UU	30.2 J	5.81 U	60.4	93.5 J
RRT-ZZ-3-NSW-3	3	08/04/08	0.0382 U	0.0637 U	0.0637 U	0.127 U	NA	11.8 U	6.37 U	29.4 U	23.8 UU

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Notes:

BTEX analyzed by EPA Method 8021B.

cPAHs analyzed by EPA Method 8270 SIM.

Gasoline analyzed by method NWTPH-G.

Diesel and Heavy Oil (Lube) analyzed by method NWTPH-D Extended.

Total TPH calculated by summing the concentrations of gasoline, diesel and heavy oil. If one or more TPH constituents were reported as Non-Detect, half of the reporting limit value was added to the total.

cPAHs adjusted for toxicity according to WAC 173-340-708(8) and *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II Technical Support Document for Describing Available Cancer Potency Factors*. Office of Environmental Health Hazard Assessment, California EPA, May 2005. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

Highlighted cells indicate concentration exceeds REL or CUL.

NA = Indicates analysis not conducted.

[] = Bracketed data indicate duplicate sample.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes

EPA = Environmental Protection Agency

mg/kg = Milligrams per kilogram

cPAHs = Carcinogenic polynuclear aromatic hydrocarbons

REL = Remediation level

CUL = Cleanup level

TPH = Total petroleum hydrocarbons

bgs = below ground surface

Lab Qualifiers	Definition
J	Indicates an estimated value.
JY	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
JZ	Detected hydrocarbons in the gasoline range appear to be due to overlap of diesel range hydrocarbons.
Q4	The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.
U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
UJ	The compound was analyzed for but not detected. The associated value is the estimated compound quantitation limit.
UU	The constituents making up the total are all non-detects.

TABLE 4
Stockpile Soil Sample Analytical Results
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Sample ID	Sample Depth	Date Sampled	BTEX (mg/kg)				Total cPAHs Adjusted for Toxicity (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Heavy Oil (Lube) (mg/kg)	Total TPH (mg/kg)
			B	T	E	X					
Site Soil Remediation Level (REL)/Cleanup Level (CUL) (mg/kg)			18	--	--	--	0.14	--	--	--	2,975
AWSP1-1	1	09/11/08	0.0311 U	0.0518 U	0.0518 U	0.104 U	0.0173	29.8	5.18 U	49.1	81.5
AWSP1-2	2	09/11/08	0.0333 U	0.0555 U	0.0555 U	0.111 U	0.0181	18.0	5.55 U	40.7	61.5
AWSP1-3	3	09/11/08	0.0338 U	0.0564 U	0.0564 U	0.113 U	0.0167	18.9	10.5	44.9	74.3
AWSP1-4	4	09/11/08	0.0316 U	0.0526 U	0.0526 U	0.105 U	0.0138	19.4	5.56	36.9	61.9
AWSP1-5	5	09/11/08	0.0321 U [0.0313 U]	0.0535 U [0.0521 U]	0.0535 U [0.0521 U]	0.107 U [0.104 U]	0.0196 [0.0172]	108 [124]	17.2 JZ [9.60 JZ]	91.8 [95.7]	217 J [229 J]
AWSP2-1	1	09/12/08	0.0317 U	0.0529 U	0.0529 U	0.106 U	0.0411 UU	73.4	7.51 JZ	54.6	136 J
AWSP2-2	2	09/12/08	0.0284 U	0.0473 U	0.0473 U	0.0946 U	0.00800 UU	20.9	4.73 U	26.6 U	36.6
AWSP2-3	3	09/12/08	0.0322 U	0.0537 U	0.0537 U	0.107 U	0.0268	61.5	9.22 JZ	26.9 U	84.2 J
AWSP2-4	4	09/12/08	0.0344 U [0.0331 U]	0.0573 U [0.0551 U]	0.0573 U [0.0551 U]	0.115 U [0.110 U]	0.0179 [0.0265]	243 [255]	12.1 JZ [14.1 JZ]	101 [103]	356 J [372 J]
AWSP2-5	5	09/12/08	0.0352 U	0.0586 U	0.0586 U	0.117 U	0.00808 UU	69.5	5.86 U	31.6	104

Notes:

BTEX analyzed by EPA Method 8021B.

cPAHs analyzed by EPA Method 8270 SIM.

Gasoline analyzed by method NWTPH-G.

Diesel and Heavy Oil (Lube) analyzed by method NWTPH-D Extended.

Total TPH calculated by summing the concentrations of gasoline, diesel and heavy oil. If one or more TPH constituents were reported as Non-Detect, half of the reporting limit value was added to the total.

cPAHs adjusted for toxicity according to WAC 173-340-708(8) and *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II Technical Support Document for Describing Available Cancer Potency Factors*.

Office of Environmental Health Hazard Assessment, California EPA, May 2005. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

Highlighted cells indicate concentration exceeds REL or CUL.

NA = Indicates analysis not conducted.

[] = Bracketed data indicate duplicate sample.

Sample depth is listed as depth below the top of the stockpile.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes

EPA = Environmental Protection Agency

mg/kg = Milligrams per kilogram

cPAHs = Carcinogenic polynuclear aromatic hydrocarbons

REL = Remediation level

CUL = Cleanup level

TPH = Total petroleum hydrocarbons

Lab Qualifiers Definition

J Indicates an estimated value.

JZ Detected hydrocarbons in the gasoline range appear to be due to overlap of diesel range hydrocarbons.

U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

UU The constituents making up the total are all non-detects.

TABLE 5
NPDES Sample Analytical Results
 Unocal Edmonds Bulk Fuel Terminal Lower Yard
 Phase II Remedial Implementation As-built Report
 11720 Unoco Road
 Edmonds, Washington

Sample ID	Date Sampled	BTEX ($\mu\text{g/l}$)				Total cPAHs Adjusted for Toxicity ($\mu\text{g/l}$)	Gasoline ($\mu\text{g/l}$)	Diesel ($\mu\text{g/l}$)	Heavy Oil (Lube) ($\mu\text{g/l}$)	Total TPH ($\mu\text{g/l}$)	Total Metals ($\mu\text{g/l}$)				Turbidity (NTU)	pH (pH Units)	Hardness ($\mu\text{g/L as CaCO}_3$)
		B	T	E	X						Arsenic	Copper	Lead	Zinc			
NPDES-EFF-081508	08/15/08	<0.500	<0.500	<0.500	<1.00	0.00719 UU	<50.0	<238	<476	382 UU	15.4	4.03	<1.00	156	2.93	7.66	1,440,000
NPDES-MID-081508	08/15/08	NA	NA	NA	NA	NA	NA	<238	<476	357 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-082008	08/20/08	<0.500	<0.500	<0.500	<1.00	0.00712 UU	<50.0	<236	<472	379 UU	7.52	2.28	<1.00	98.0	3.32	7.70	1,060,000
NPDES-MID-082008	08/20/08	NA	NA	NA	NA	NA	NA	<236	<472	354 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-082708	08/27/08	<0.500	<0.500	<0.500	<1.00	0.00712 UU	<50.0	<236	<476	381 UU	13.1	4.14	<1.00	215	1.80	7.33	1,970,000
NPDES-MID-082708	08/27/08	NA	NA	NA	NA	NA	NA	<236	<476	356 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-090408	09/04/08	<0.500	<0.500	<0.500	<1.00	0.00782 UU	<50.0	<236	<472	379 UU	12.4	5.82	<1.00	150	14.0	7.98	1,950,000
NPDES-MID-090408	09/04/08	NA	NA	NA	NA	NA	NA	<238	<476	357 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-091208	09/12/08	<0.500	<0.500	<0.500	<1.00	0.00712 UU	<50.0	<238	<476	382 UU	5.48	2.15	<1.00	90.6	2.67	7.69	562,000
NPDES-MID-091208	09/12/08	NA	NA	NA	NA	NA	NA	<238	<476	357 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-091608	09/16/08	<0.500	<0.500	<0.500	<1.00	0.00781 UU	<50.0	<236	<472	379 UU	4.46	1.98	<1.00	86.6	2.42	7.46	483,000
NPDES-MID-091608	09/16/08	NA	NA	NA	NA	NA	NA	<236	<472	354 UU	NA	NA	NA	NA	NA	NA	NA
NPDES-EFF-092508	09/25/08	<0.500	<0.500	<0.500	<1.00	0.00719 UU	<50.0	<238	<476	382 UU	4.35	2.14	<1.00	132	2.00	7.55	644,000
NPDES-MID-092508	09/25/08	NA	NA	NA	NA	NA	NA	<238	<476	357 UU	NA	NA	NA	NA	NA	NA	NA

Notes:

BTEX and MTBE analyzed by EPA Method 8021B.

cPAHs analyzed by EPA Method 8270C-HVI.

Gasoline analyzed by method NWTPH-G.

Diesel and Heavy Oil (Lube) analyzed by method NWTPH-D Extended.

Total metals analyzed by EPA Method 200.8.

Turbidity EPA Method 180.1.

pH analyzed by EPA Method 150.1.

Hardness analyzed by method SM 2340B.

Total TPH calculated by summing the concentrations of gasoline, diesel and heavy oil. If one or more TPH constituents reported as Non-Detect, half of the reporting limit value was added to the total.

cPAHs adjusted for toxicity according to WAC 173-340-708(8) and *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II Technical Support Document for Describing Available Cancer Potency Factors*. Office of Environmental Health Hazard Assessment, California EPA, May 2005. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

NA = Indicates measurement not taken or analysis not conducted.

NPDES = National Pollutant Discharge Elimination System

MID = Indicates compliance sample collected between the carbon filters of the water treatment system.

EFF = Indicates compliance sample collected from the effluent stream of the water treatment system.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes

MTBE = Methyl tert butyl ether

EPA = Environmental Protection Agency

$\mu\text{g/l}$ = Micrograms per liter

cPAHs = Carcinogenic polynuclear aromatic hydrocarbons

CL = Cleanup level

TPH = Total petroleum hydrocarbons

NTU = Nephelometric turbidity units

CaCO_3 = Calcium Carbonate

HVI = High volume injection

Lab Qualifiers

Definition

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The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

UU

The constituents making up the total are all non-detects.

TABLE 6
Monitoring Well Installation Soil Sample Analytical Results
 Unocal Edmonds Bulk Fuel Terminal Lower Yard
 Phase II Remedial Implementation As-built Report
 11720 Unoco Road
 Edmonds, Washington

Sample ID	Sample Depth (feet bgs)	Date Sampled	BTEX (mg/kg)				Total cPAHs Adjusted for Toxicity (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Heavy Oil (Lube) (mg/kg)	Total TPH (mg/kg)
			B	T	E	X					
Site Soil Remediation Level (REL)/Cleanup Level (CUL) (mg/kg)			18	--	--	--	0.14	--	--	--	2,975
MW-129R-4.5	4.5	10/14/08	0.0303 U	0.0506 U	0.0506 U	0.101 U	0.0439	823	24.4 JZ	178	1,030 J
MW-129R-7.0	7	10/14/08	0.0446 U	0.0743 U	0.0743 U	0.149 U	0.0479 UU	2,690	7.43 U	313	3,010
MW-502-6.0	6	10/14/08	0.0337 U	0.0562 U	0.0562 U	0.112 U	NA	11.6 U	5.62 U	29.0 U	23.1 UU
MW-511-8.5	8.5	10/14/08	0.0378 U [0.0361 U]	0.0630 U [0.0601 U]	0.0630 U [0.0601 U]	0.126 U [0.120 U]	NA [NA]	11.7 U [11.5 U]	6.30 U [6.01 U]	29.2 U [28.8 U]	23.6 UU [23.2 UU]
MW-510-6.5	6.5	10/08/08	0.0462 U	0.0770 U	0.0770 U	0.154 U	0.0200 UU	80.5	7.70 U	33.0 U	101
MW-510-12.5	12.5	10/08/08	0.0345 U	0.0574 U	0.0574 U	0.115 U	NA	11.9 U	5.74 U	29.6 U	23.6 UU

Notes:

BTEX analyzed by EPA Method 8021B.

cPAHs analyzed by EPA Method 8270 SIM.

Gasoline analyzed by method NWTPH-G.

Diesel and Heavy Oil (Lube) analyzed by method NWTPH-D Extended.

Total TPH calculated by summing the concentrations of gasoline, diesel and heavy oil. If one or more TPH constituents were reported as Non-Detect, half of the reporting limit value was added to the total.

cPAHs adjusted for toxicity according to WAC 173-340-708(B) and *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II Technical Support Document for Describing Available Cancer Potency Factors*.

Office of Environmental Health Hazard Assessment, California EPA, May 2005. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

Highlighted cells indicate concentration exceeds REL or CUL.

NA = Indicates analysis not conducted.

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BTEX = Benzene, toluene, ethylbenzene, and total xylenes

EPA = Environmental Protection Agency

mg/kg = Milligrams per kilogram

cPAHs = Carcinogenic polynuclear aromatic hydrocarbons

REL = Remediation level

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Lab Qualifiers Definition

- J Indicates an estimated value.
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