Table 7-1. Fate and Transport Parameters for COPCs at the Former Rayonier Mill Site.

Chemical Name	COPC Soil	COPC Ground Water	Henry's Constant (unitless)	Water Solubility (mg/L)	K_d[1] (L/kg)	R^2 (unitless)
PCDD/Fs						
2,3,7,8-TCDD	X		--	0.000000245 [3]	28,344 [4]	141721
1,2,3,4- TCDD	X		0.00080993 [5]	--	28,344 [4]	141721
1,3,6,8-TCDD	X		0.00277167 [6]	--	28,344 [4]	141721
PCBs						
Aroclor 1016	X		-- [7]	.22-.25 [8]	107.3 [9]	538
Aroclor 1221	X		0.179 [7]	0.59 [8]	11	56
Aroclor 1232	X		-- [7]	--	60	301
Aroclor 1242	X		0.082-0.123 [7]	0.27 [8]	68	341
Aroclor 1248	X		0.094 [7]	0.017 [8]	52	261
Aroclor 1254	X		0.0048-0.144 [7]	0.01 [8]	680	3401
Aroclor 1260	X	X	0.0035-0.124 [7]	0.027 [8]	822.4 [9]	4113
SVOCs						
Benzo(a)anthracene	X	X	0.000137 [9]	0.0094 [9]	357.537 [9]	1789
Benzo(a)pyrene	X		0.0000463 [9]	0.00162 [9]	968.774 [9]	4845
Benzo(b)fluoranthene	X		0.00455 [9]	0.0015 [9]	1230 [9]	6151
Benzo(k)fluoranthene	X		0.000034 [9]	0.0008 [9]	1230 [9]	6151
Bis(2-ethylhexyl) phthalate	X		0.00000418 [9]	0.34 [9]	111 [9]	--
Chrysene	X	X	0.00388 [9]	0.0016 [9]	398 [9]	1991
Dibenzo(a,h)anthracene	X		0.000000603 [9]	0.00249 [9]	1789.1 [9]	8947
Indeno(1,2,3-cd)pyrene	X		0.0000656 [9]	0.000022 [9]	3470 [9]	17351
Pesticides						
4,4-DDD		X	0.000164 [9]	0.09 [9]	45.8 [9]	230
4,4-DDE		X	0.000861 [9]	0.12 [9]	86.41 [9]	433
4,4-DDT		X	0.000332 [9]	0.025 [9]	677.9 [9]	3391
Chlordane		X	0.00199 [9]	0.056 [9]	51.31 [9]	257.55
Dieldrin		X	0.000619 [9]	0.195 [9]	25.55 [9]	128.75
Endrin		X	0.000308 [9]	0.25 [9]	10.81 [9]	55.05
Heptachlor		X	0.0447 [9]	0.18 [9]	9.528 [9]	48.64
Inorganics						
Arsenic	X	X	non-volatile	Soluble	29 [9]	146
Chromium(III)	X	X	non-volatile	Insoluble	1000 [9]	5001
Chromium(VI)	X	X	non-volatile	Soluble	19 [9]	96
Copper		X	non-volatile	NA	22 [9]	111
Lead	X	X	non-volatile	Soluble	10000 [9]	50001
Nickel (soluble salts)		X	non-volatile	NA	65 [9]	326
Mercury		X	0.47 [9]	NA	52 [9]	261
Select Petroleum Hydrocarbons						
Dodecane	X		325.6 [8]	0.0037 [8]	95 [8]	476

Table 7-1. Fate and Transport Parameters for COPCs at the Former Rayonier Mill Site.

Chemical Name	COPC Soil	COPC Ground Water	Henry's Constant (unitless)	Water Solubility (mg/L)	K_d[1] (L/kg)	R[2] (unitless)
Select Petroleum Hydrocarbons (Continued)						
Hexadecane	X		9.2796 [8]	0.00009 [8]	209 [8]	1046
N-Pentadecane	X		529.1 [8]	0.000076 [8]	800 [8]	4001
N-Undecane	X		77.33 [8]	0.044 [8]	26 [8]	131
VOCs						
2,4,6-Trichlorophenol		X	0.000319 [9]	800 [9]	0.381	3
Pentachlorophenol		X	0.000001 [9]	1950 [9]	0.592	4
Conventionals						
N-Ammonia (un-ionized)		X	0.0000161 [8]	482000 [8]	NA	NA

NA: not applicable

[1]Kd values for organic chemicals calculated using Koc value in citation and an foc = 0.001.

[2]R = Retardation Factor = 1 + (r_b*K_d/n), where r_b = 1.5 g/cm3 and n = 0.3.

[3]Mackay, D.; Shiu, W.Y.; Ma, K.C. (1992a) Illustrated handbook of physical-chemical properties and environmental fate for organic chemicals: polynuclear aromatic hydrocarbons, polychlorinated dioxins, dibenzofurans. Chelsea, MI: Lewis Publishers.

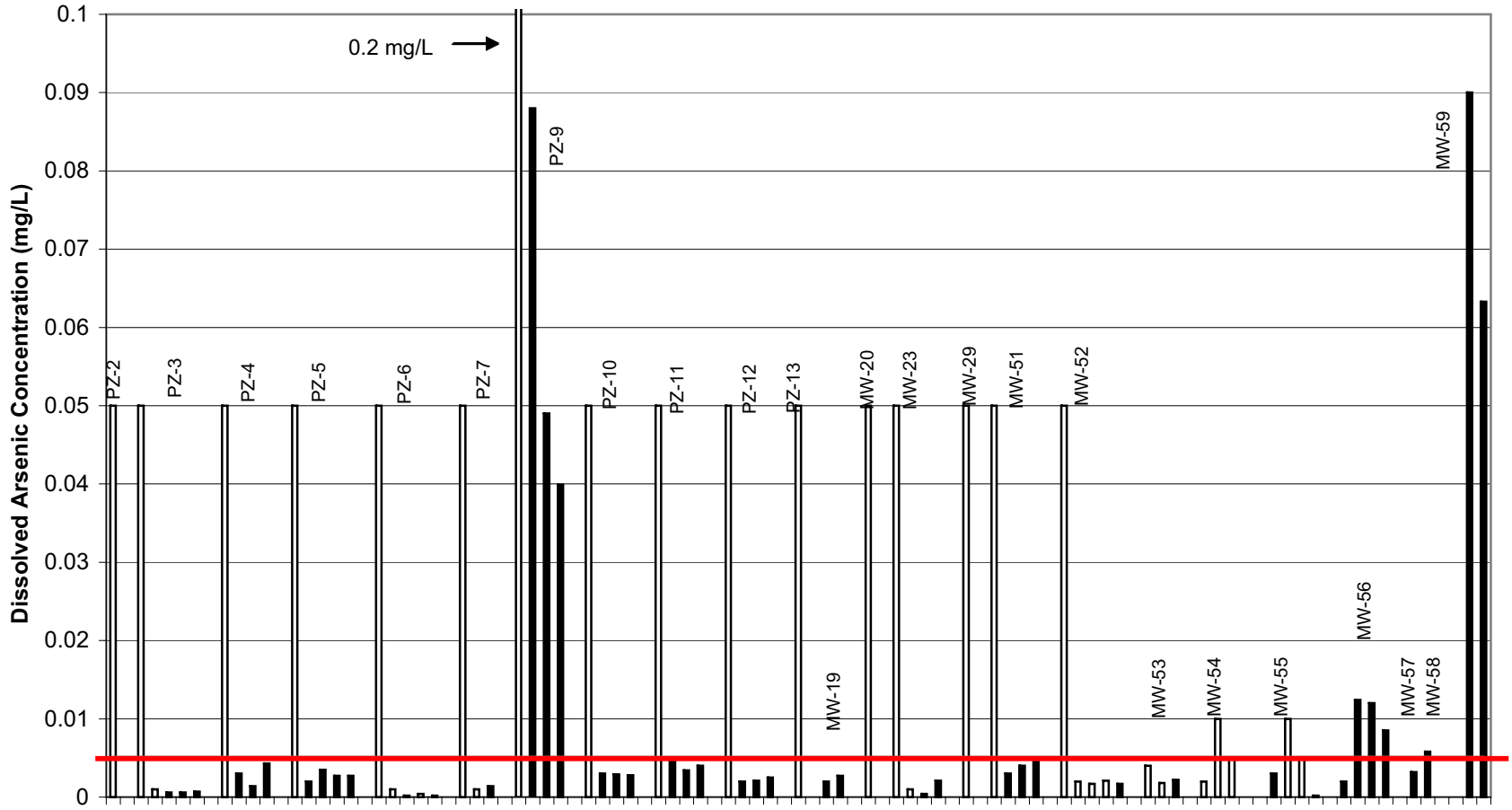
[4]Jackson, D.R.; Roulier; M.H., Grotta, H.M.; Rust, S.W.; Warner, J.S. (1986) Solubility of 2,3,7,8-TCDD in contaminated soils. In: Chlorinated dioxins dibenzofurans in perspective. Rappe, C.; Choudhary, G.; Keith, L.H.; Eds. Michigan: Lewis Publishers, Inc.

[5]Santl, H.; Brandsch, R.; Gruber, L. (1994) Experimental determination of Henry's Law Constant (HLC) for some lower chlorinated dibenzodioxins. Chemosphere 29(9-11):2209-2214.

[6]Webster, G.R.B.; Friesen, E.J.; Sarna, L.P.; Muir, D.C.G. (1985) Environmental fate modeling of chlorodioxins: determination of physical constants. Chemosphere 14 (6/7): 609-622.

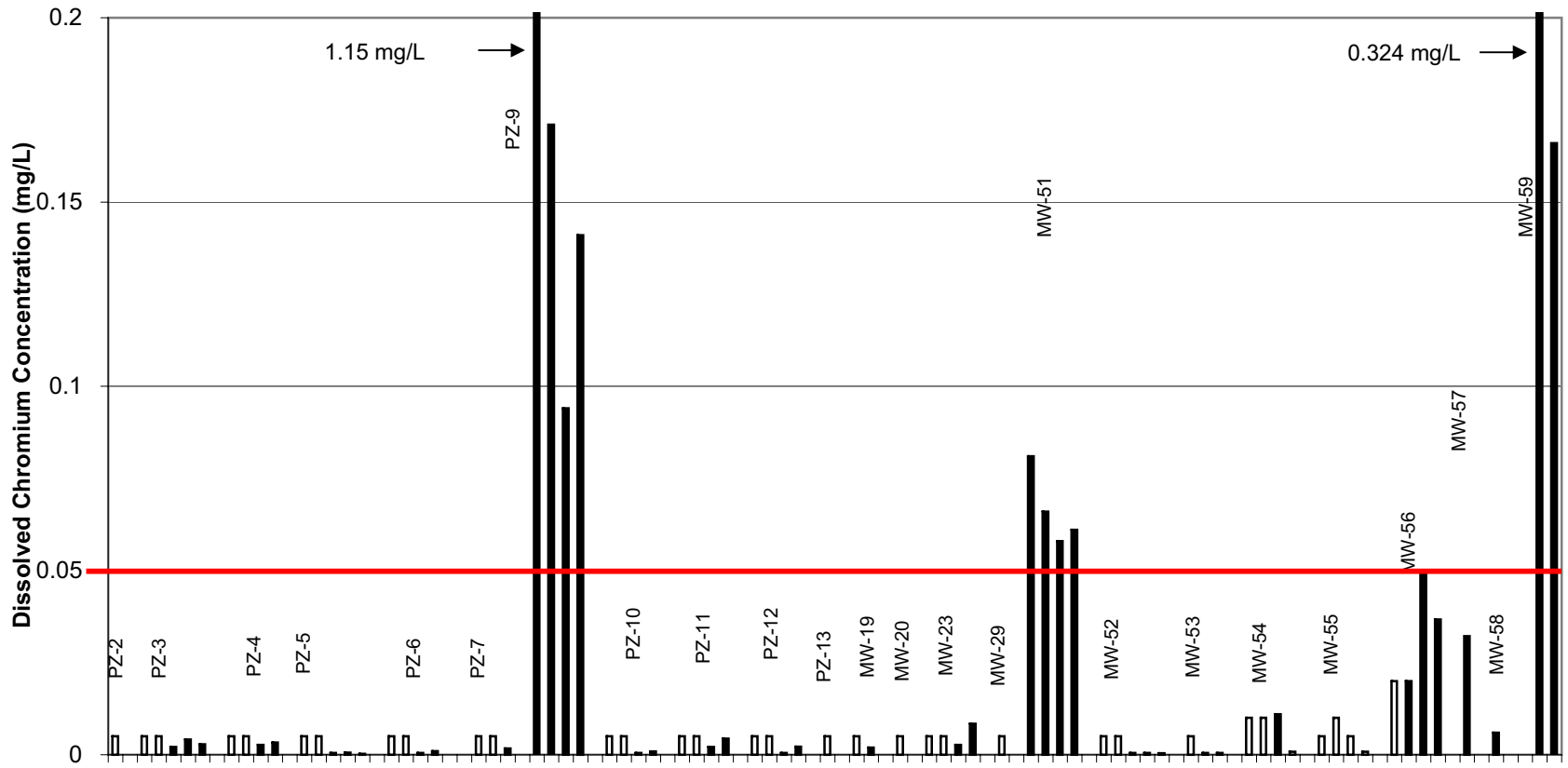
[7]Compilation of Henry's Law Constants for Inorganic and Organic Species of Potential Importance in Environmental Chemisty http://www.mpch-mainz.mpg.de/~sander/res/henry.html

[8]Hazardous Substances Data Bank (HSDB); (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB)



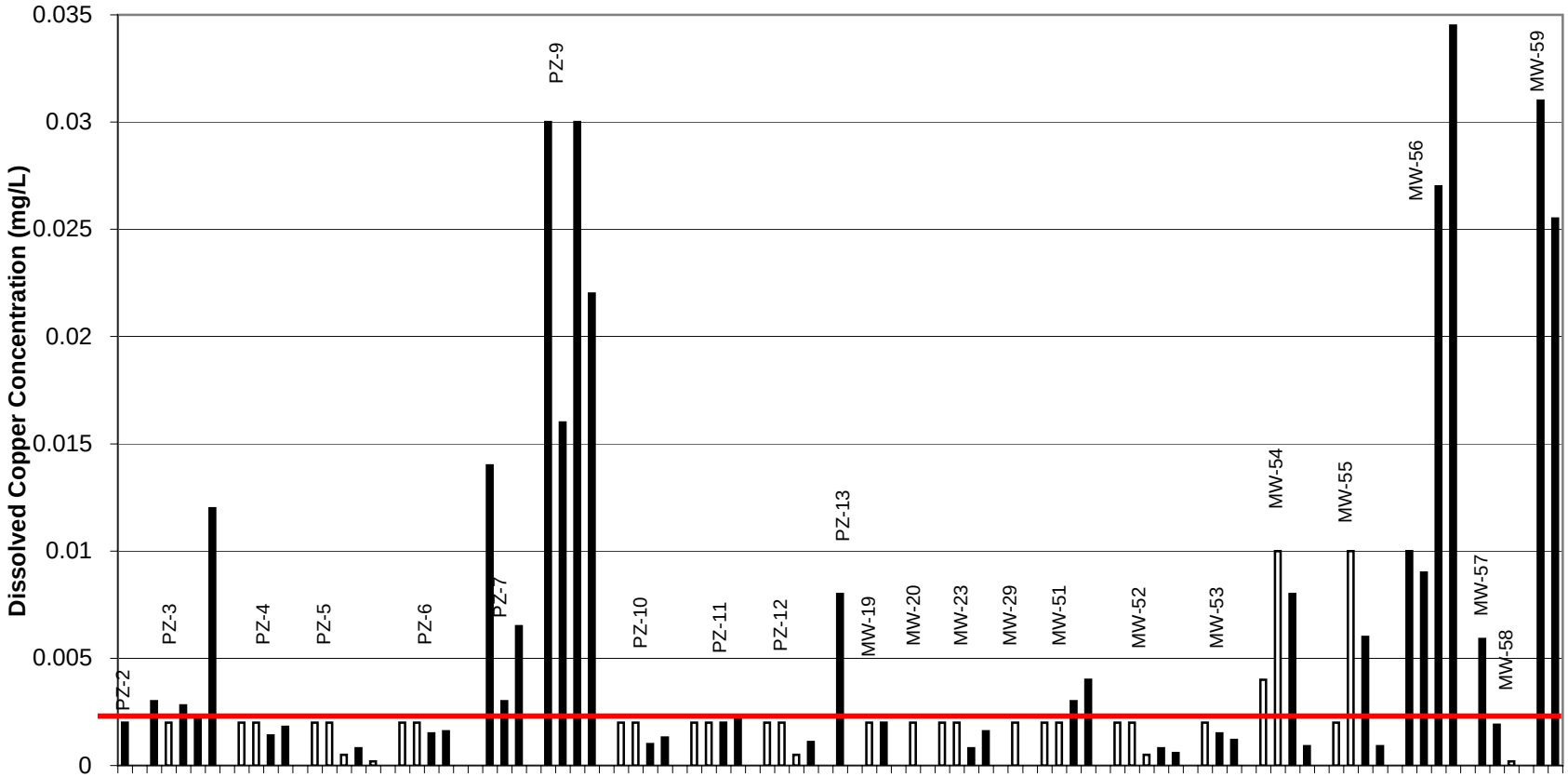
▮ detected above detection limit
▯ undetected at detection limit shown
Dates for each well are shown in ascending order and range from 1997-2003.
Not all dates were sampled, see Table 6-3 and Appendix A for details.

Figure 7-1. Historical Detected Dissolved Arsenic Concentrations
Screening Criteria: 0.005 mg/L.



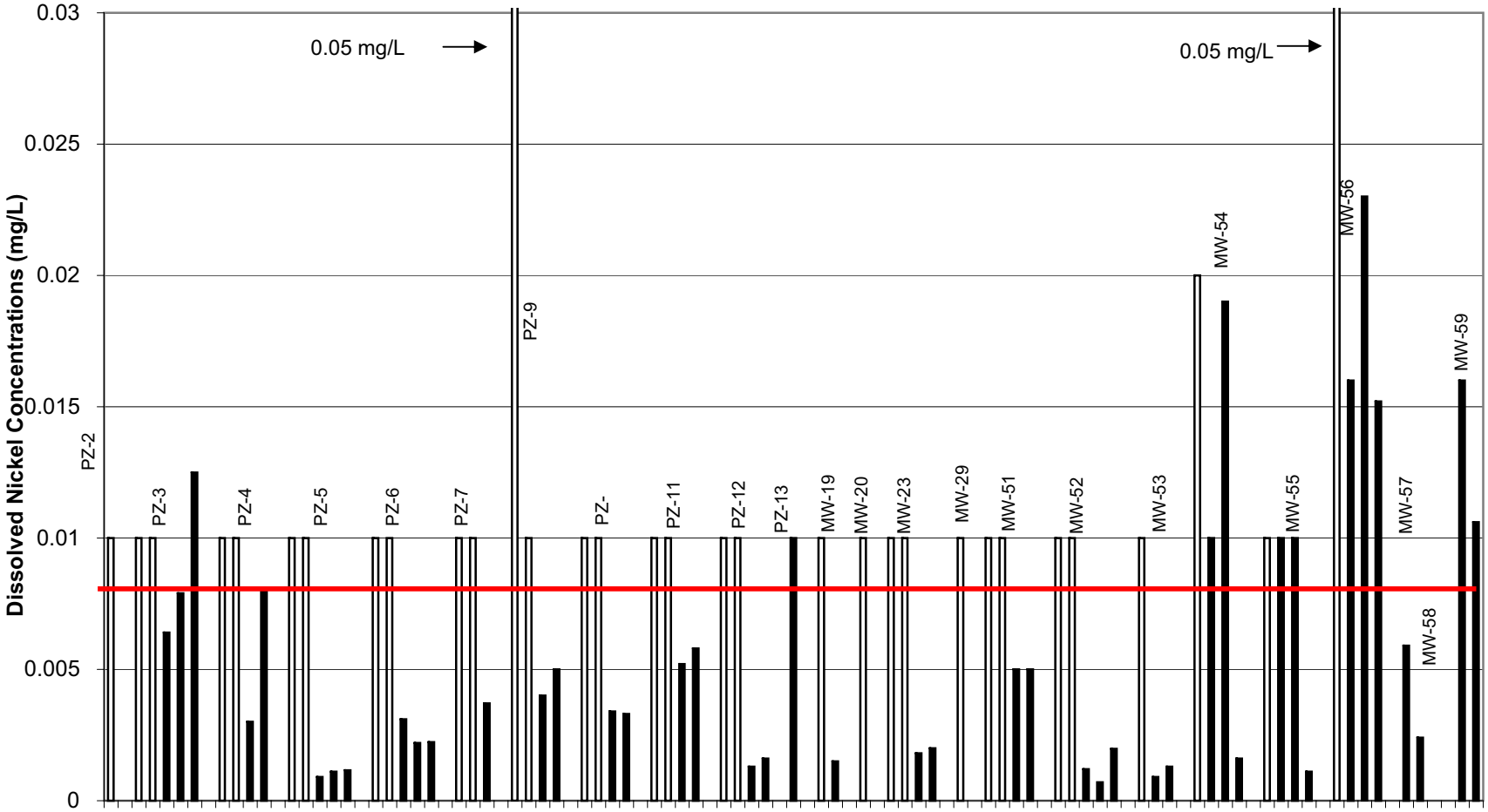
▮ detected above detection limit
▯ undetected at detection limit shown
Dates for each well are shown in ascending order and range from 1997-2003.
Not all dates were sampled, see Table 6-3 and Appendix A for details.

Figure 7-2. Historical Detected Dissolved Chromium Concentrations
Screening Criteria: 0.05 mg/L.



▮ detected above detection limit
▯ undetected at detection limit shown
Dates for each well are shown in ascending order and range from 1997-2003.
Not all dates were sampled, see Table 6-3 and Appendix A for details.

Figure 7-3. Historical Detected Dissolved Copper Concentrations
Screening Criteria: 0.0024 mg/L.



▮ detected above detection limit
▯ undetected at detection limit shown
Dates for each well are shown in ascending order and range from 1997-2003.
Not all dates were sampled, see Table 6-3 and Appendix A for details.

Figure 7-4. Historical Detected Dissolved Nickel Concentration.
Screening Criteria: 0.0082 mg/L.