

**Polychlorinated Biphenyl/Arochlor Monitoring
Surface Soil, Sediment, Surface Water, Groundwater
1988 - 2006
Paducah Gaseous Diffusion Plant**

2008

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(Note: This document does not distinguish between those locations where PCBs & Arochlors have been detected and those locations where PCBs and Arochlors have been remediated or contained)



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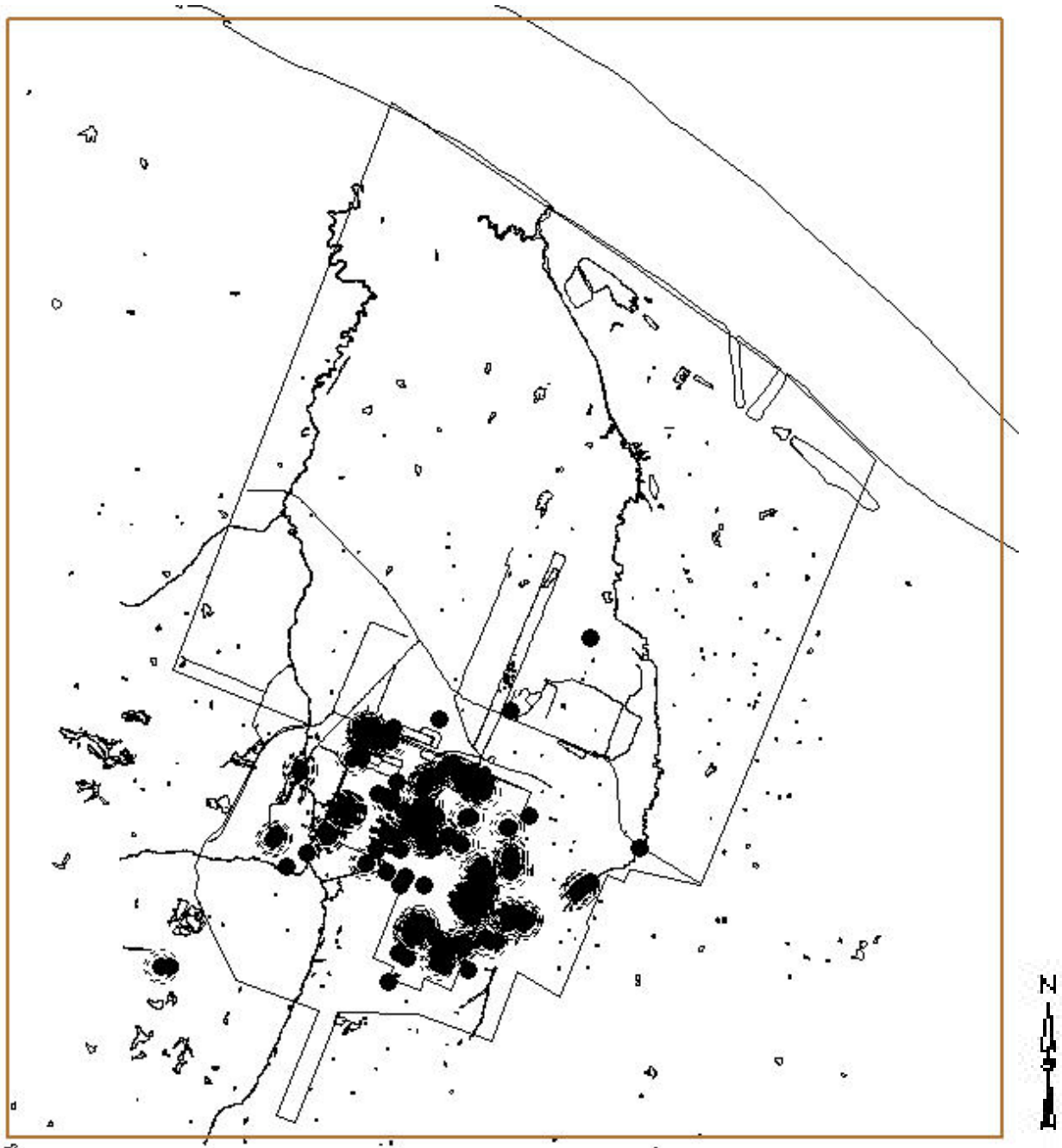
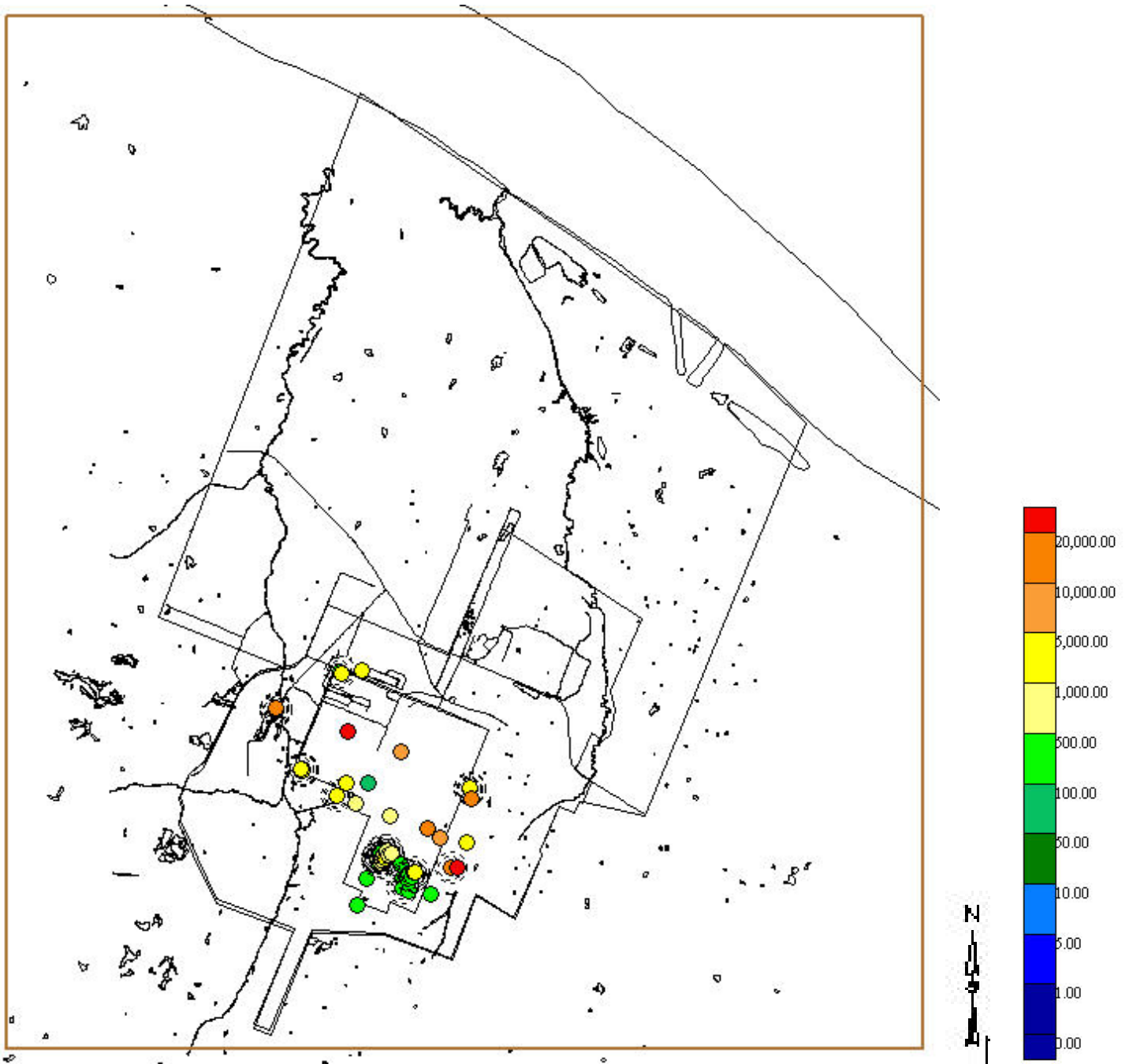


Figure 1. PCB Detects in soil 0-1' bgs (1988 – 2006)

Table 1. Summary PCB Soil Samples 0-1' bgs	
Sample Collection /Analysis	1988 - 2006
Total Samples Collected and Analyzed	30,823
Total Detects	1642
Total Non-detects	28,802
Total Detect w/sample Coords	816



**Figure 2. Total PCBs – Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg**

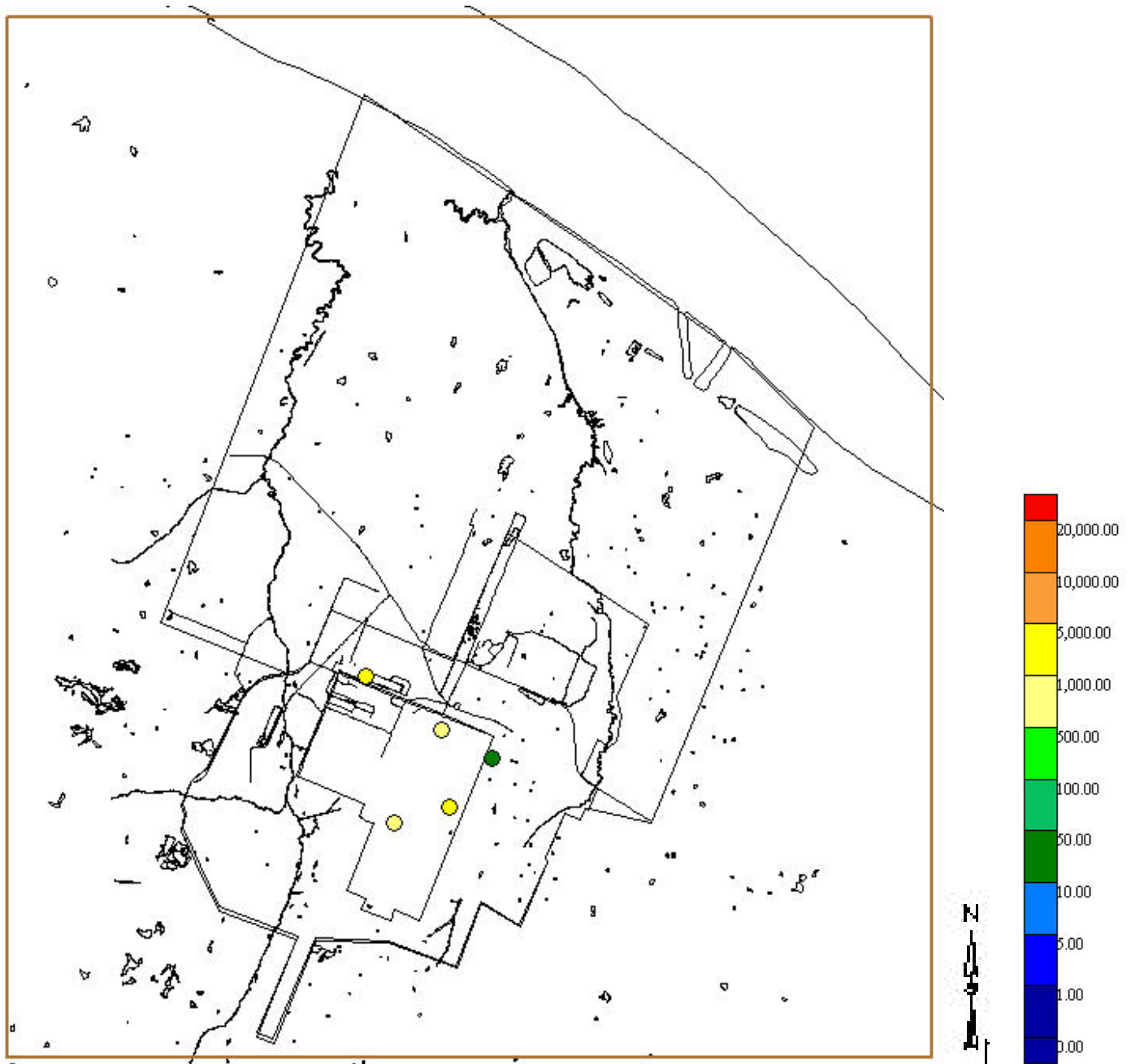


Figure 3. PCB 1016 – Detects in Soil 0-1' bgs (1988 – 2006)
 Results reported in ug/kg

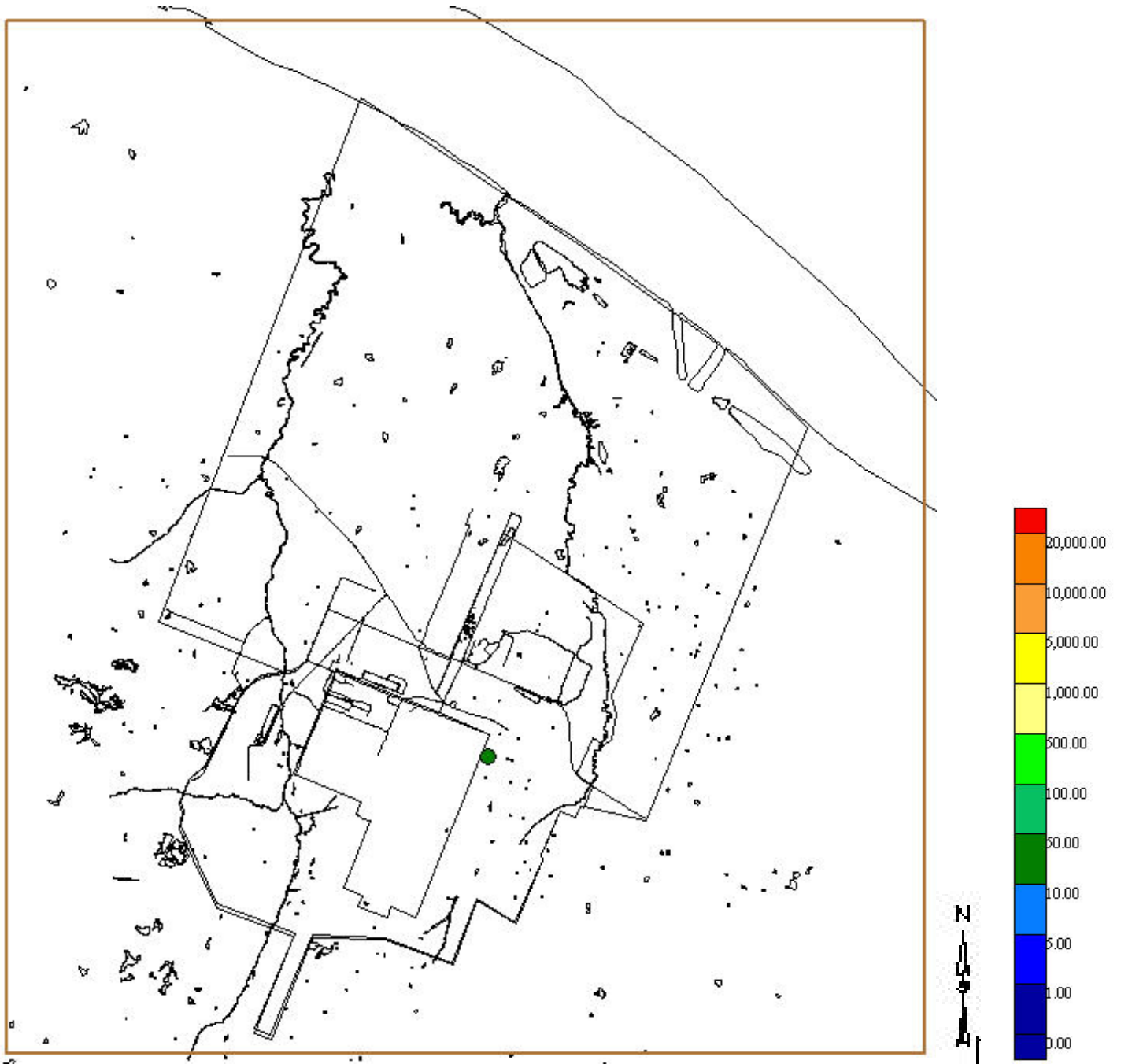
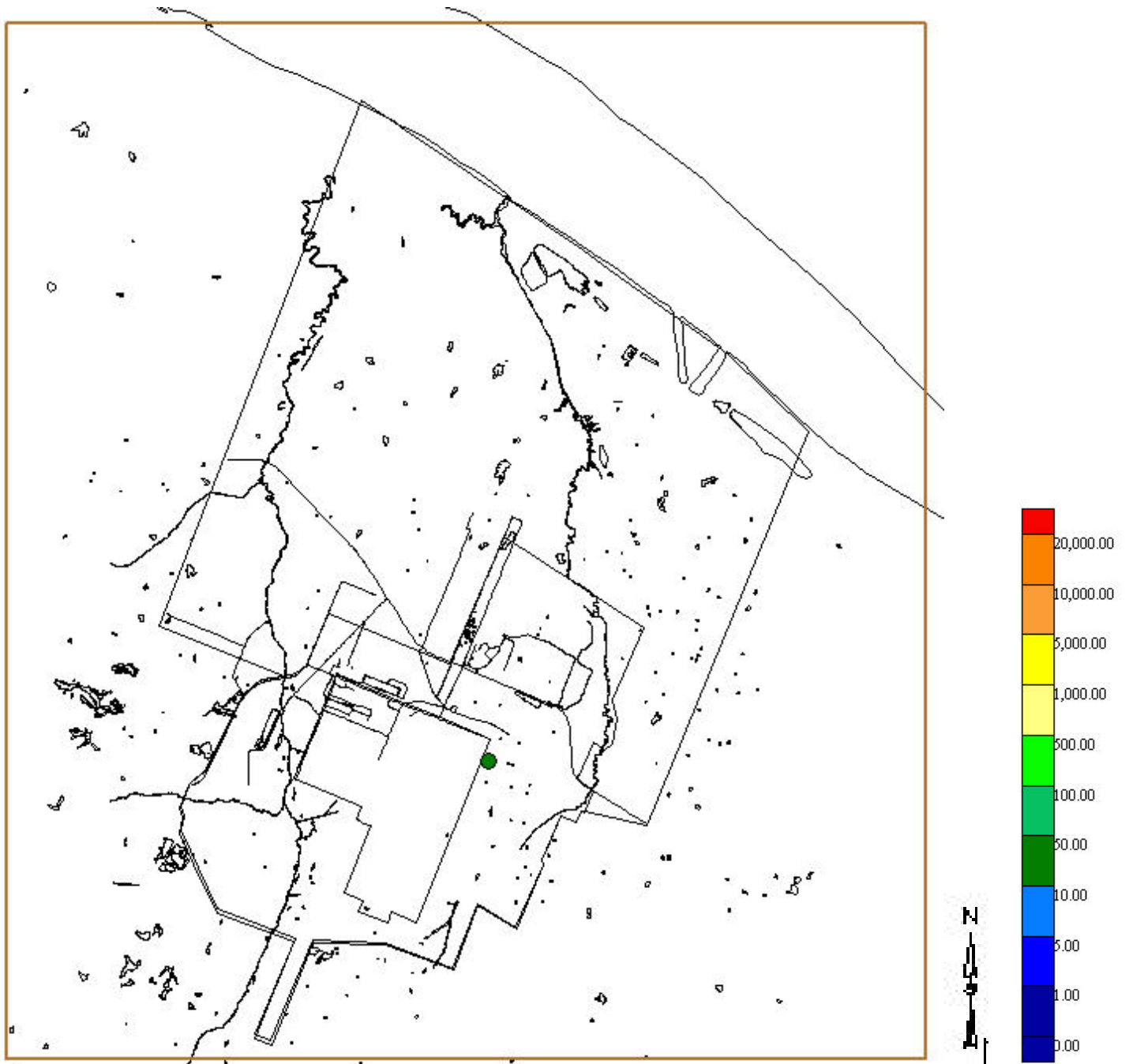


Figure 4. PCB Arochlor 1221 – Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg



**Figure 5. PCB Arochlor 1232– Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg**

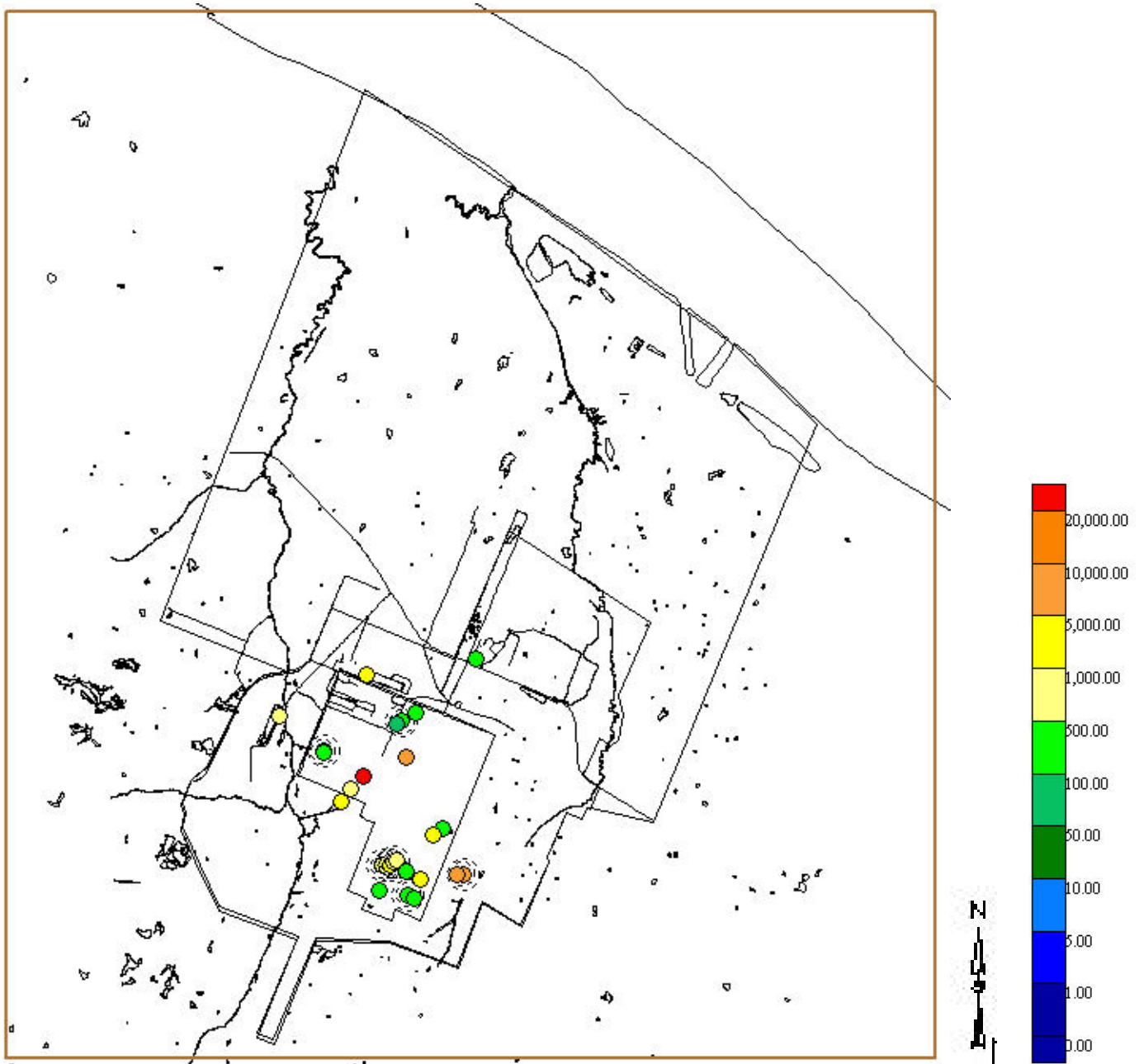


Figure 6. PCB Arochlor 1242– Detects in Soil 0-1’ bgs (1988 – 2006)
Results reported in ug/kg

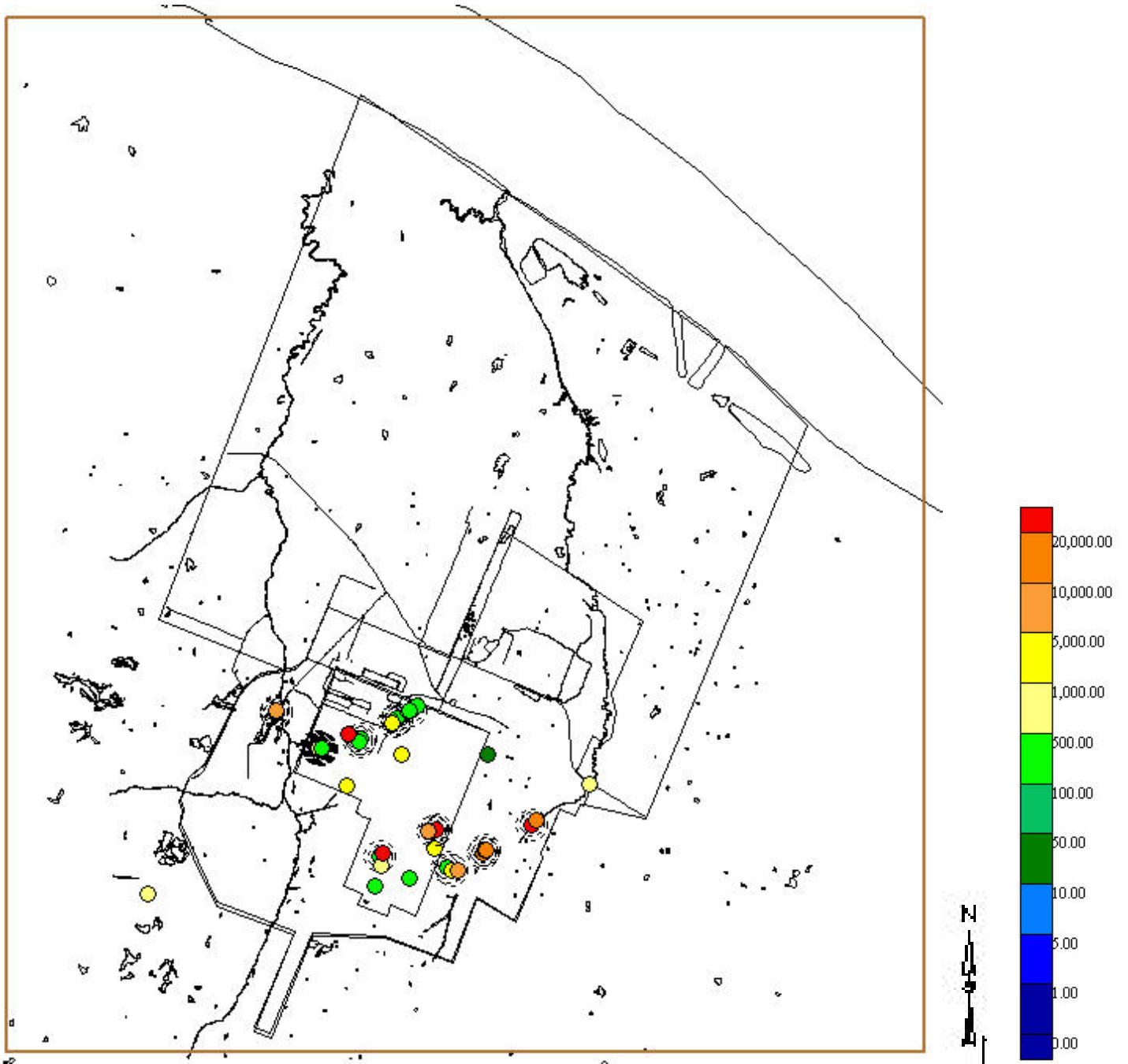
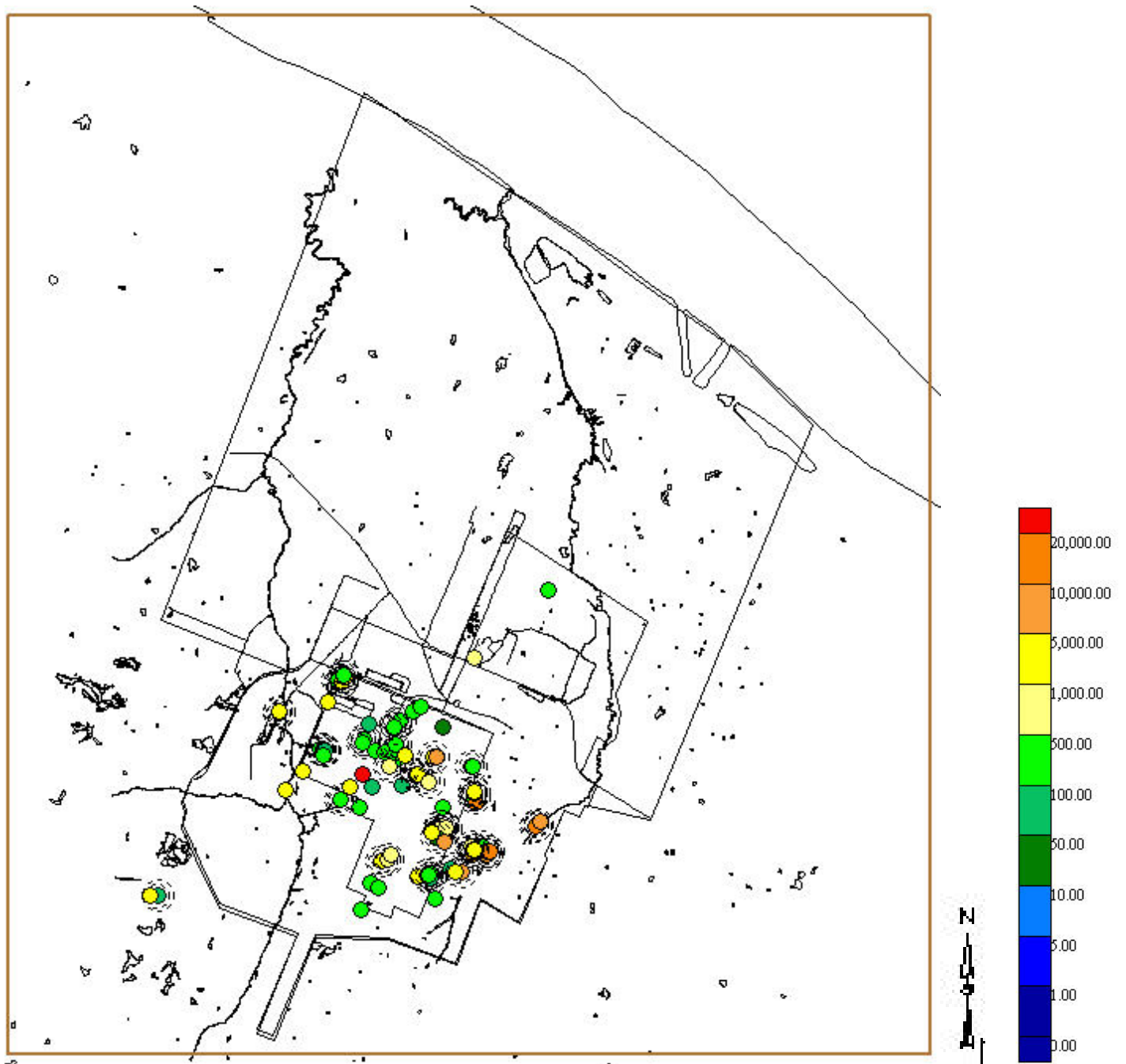


Figure 7. PCB Arochlor 1248- Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg



**Figure 8. PCB Arochlor 1254– Detects in Soil 0-1' bgs (1988 – 2006
Results reported in ug/kg**

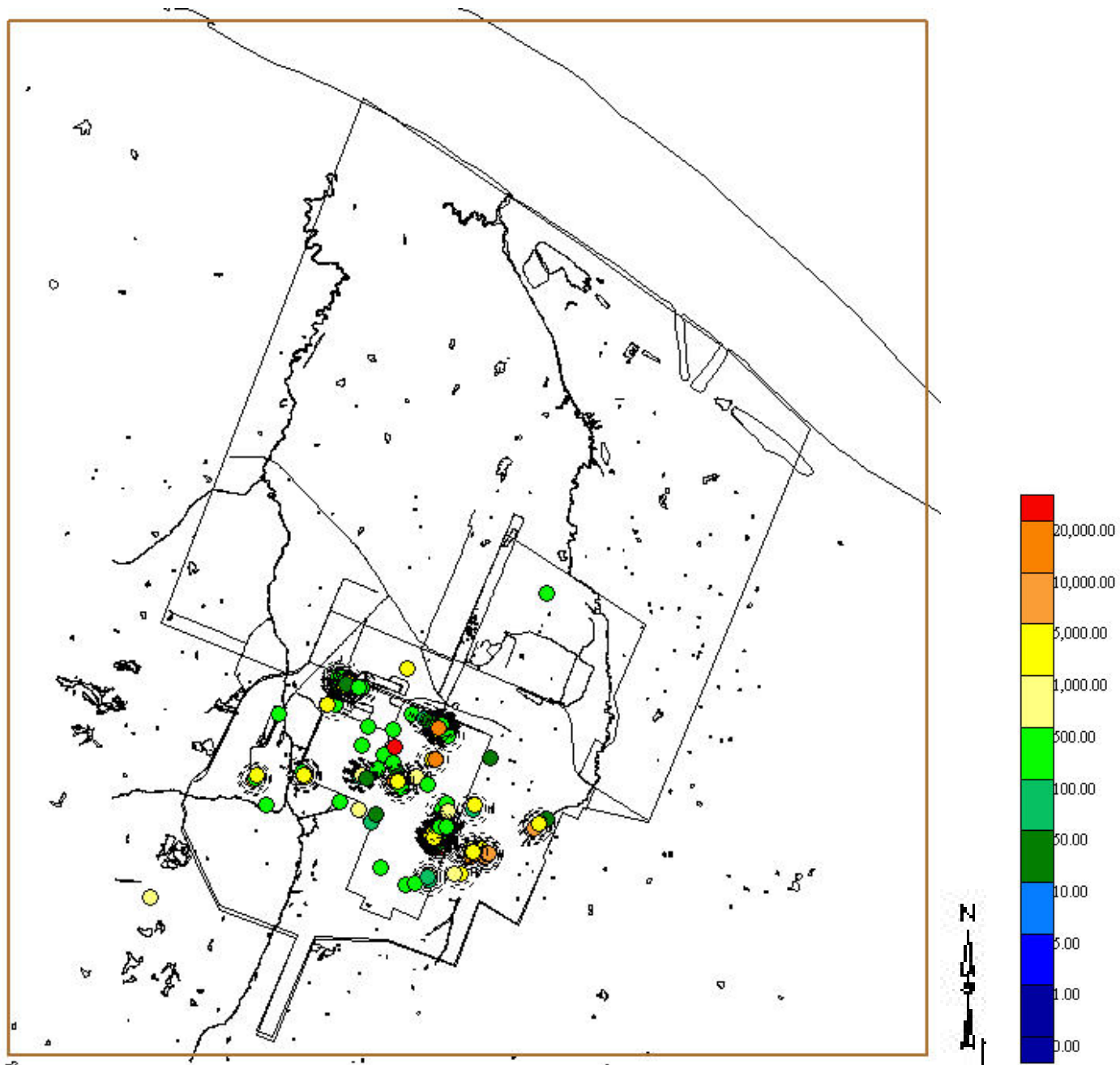
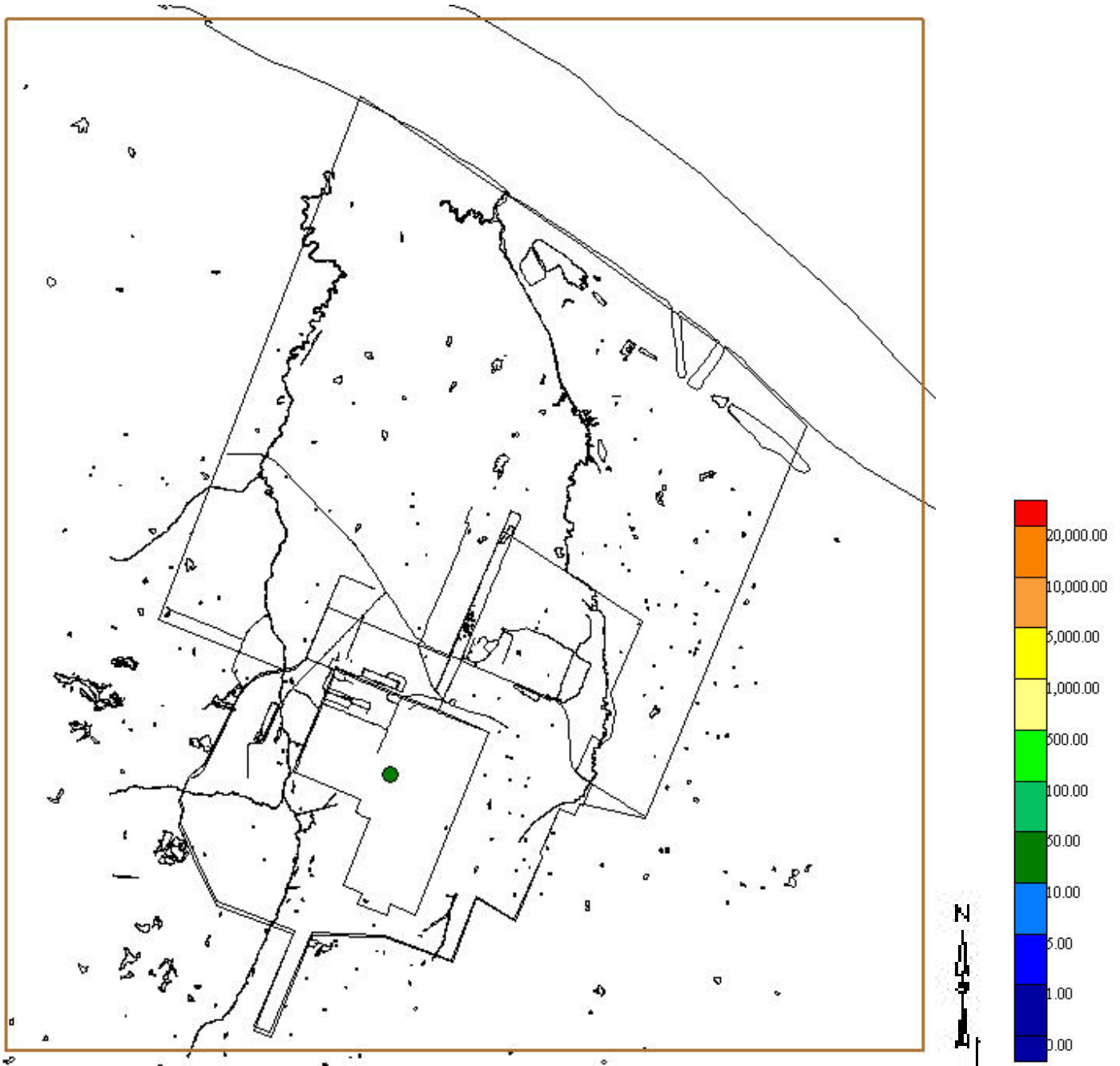


Figure 9. PCB Arochlor 1260- Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg



**Figure 10. PCB Arochlor 1262– Detects in Soil 0-1' bgs (1988 – 2006)
Results reported in ug/kg**

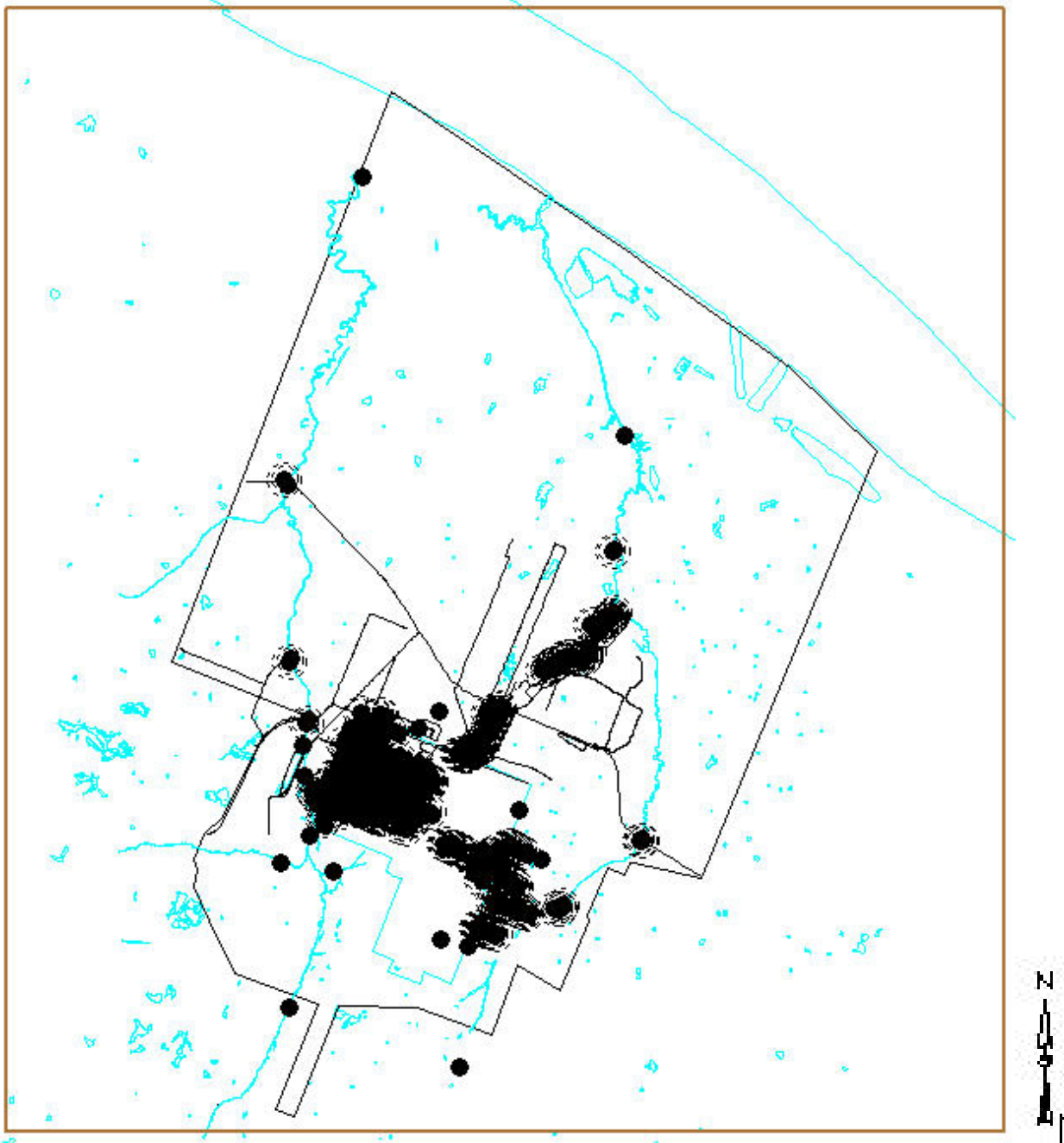


Figure 11. All PCB Arochlors Sediment Sampling Locations (1988 – 2006)

Table 2. Summary: PCB Sediment Samples 0-1' bgs	
Sample Collection /Analysis	1988 - 2006
Total Samples Collected and Analyzed	28,132
Total Detects	1,113
Total Non-detects	22,041

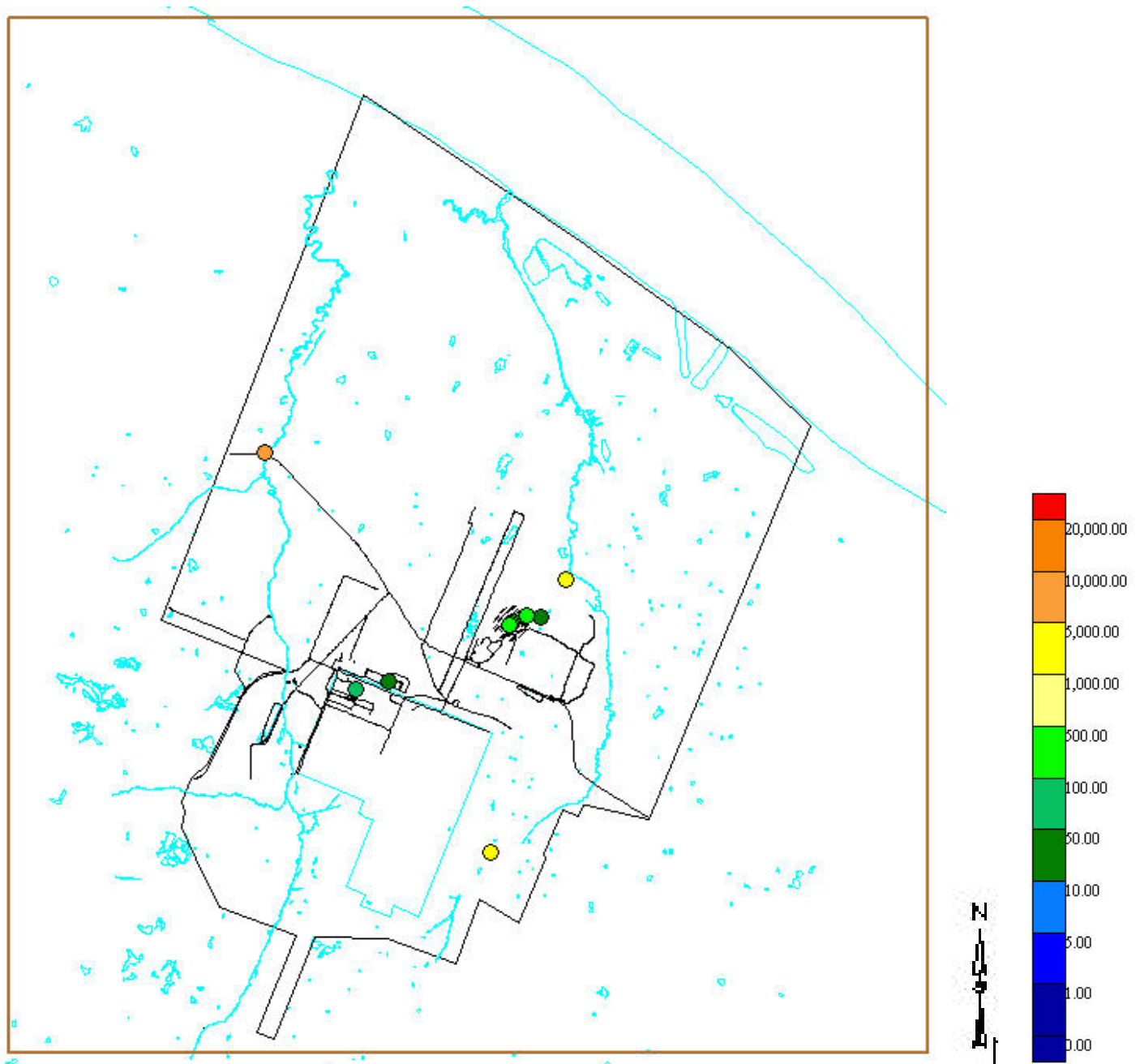


Figure 12. PCB_Arochlor 1016 in SEDIMENT (1988 – 2006)
Results reported in ug/kg

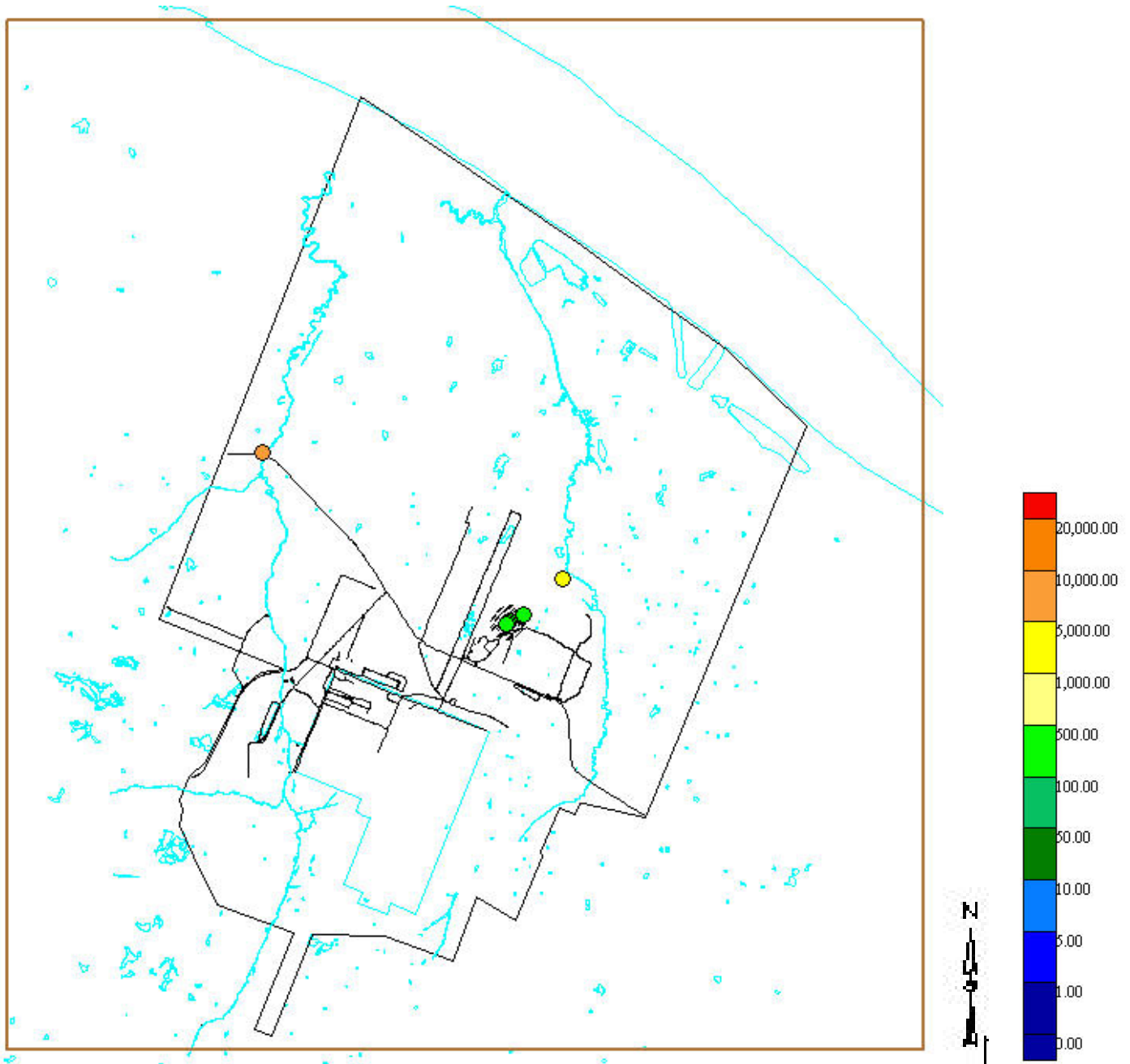


Figure 13. PCB_Arochlor 1260 in SEDIMENT (2001– 2006)
Results reported in ug/kg

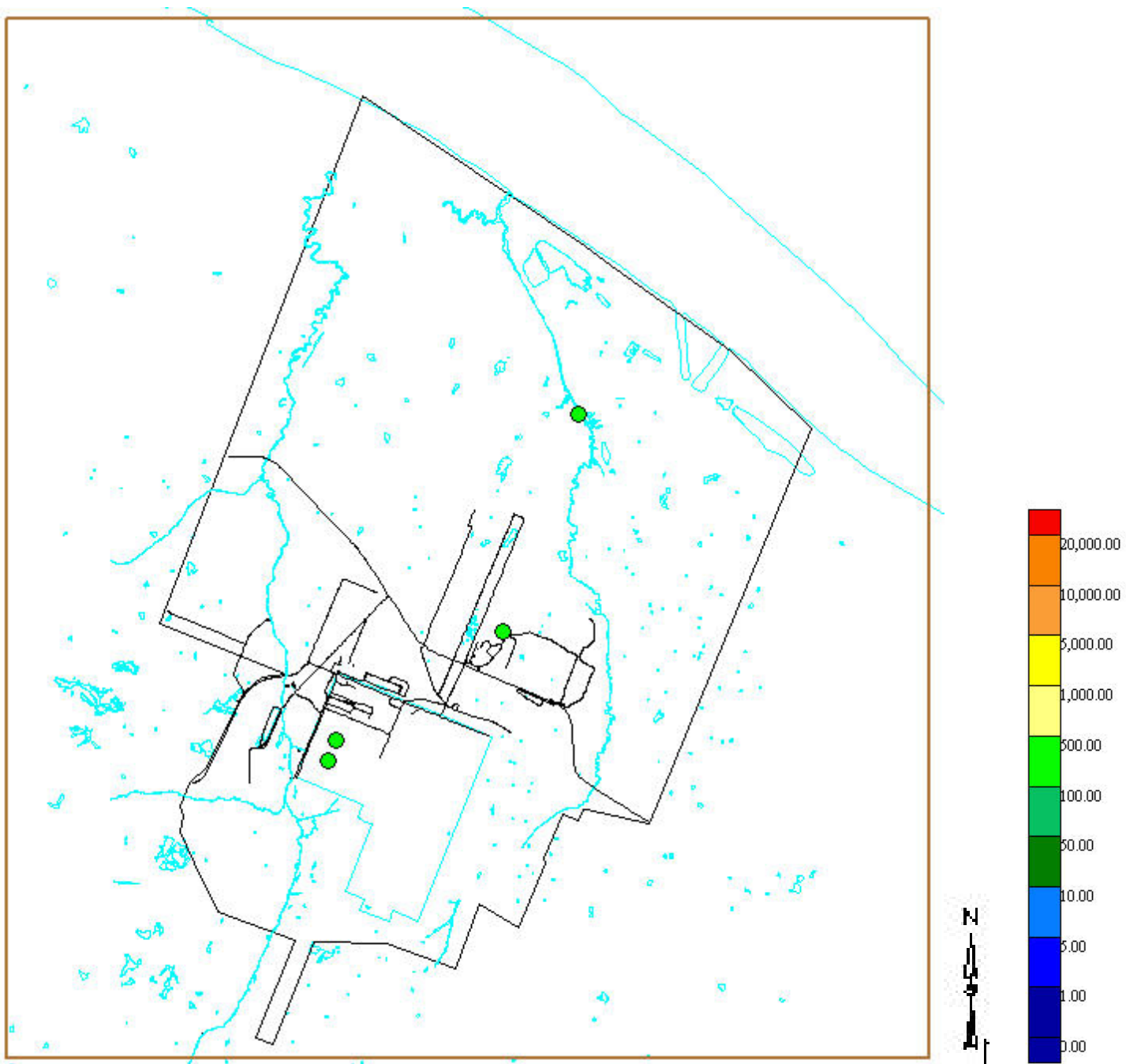


Figure 14. PCB_Arochlor 1268 in SEDIMENT (2001– 2006)
Results reported in ug/kg

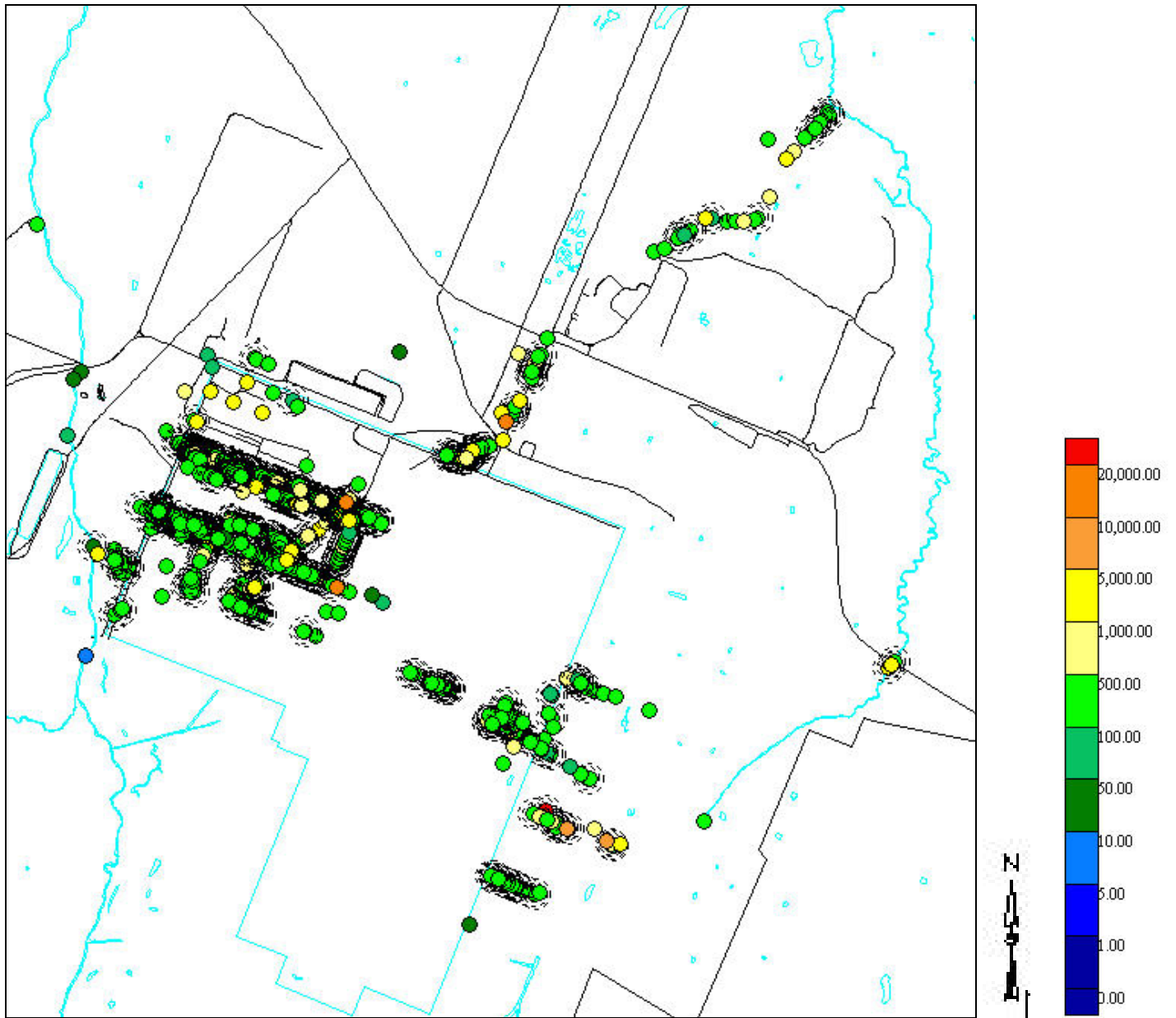


Figure 15. PCB_Arochlor 1260 in SEDIMENT (2001– 2006)
Results reported in ug/kg

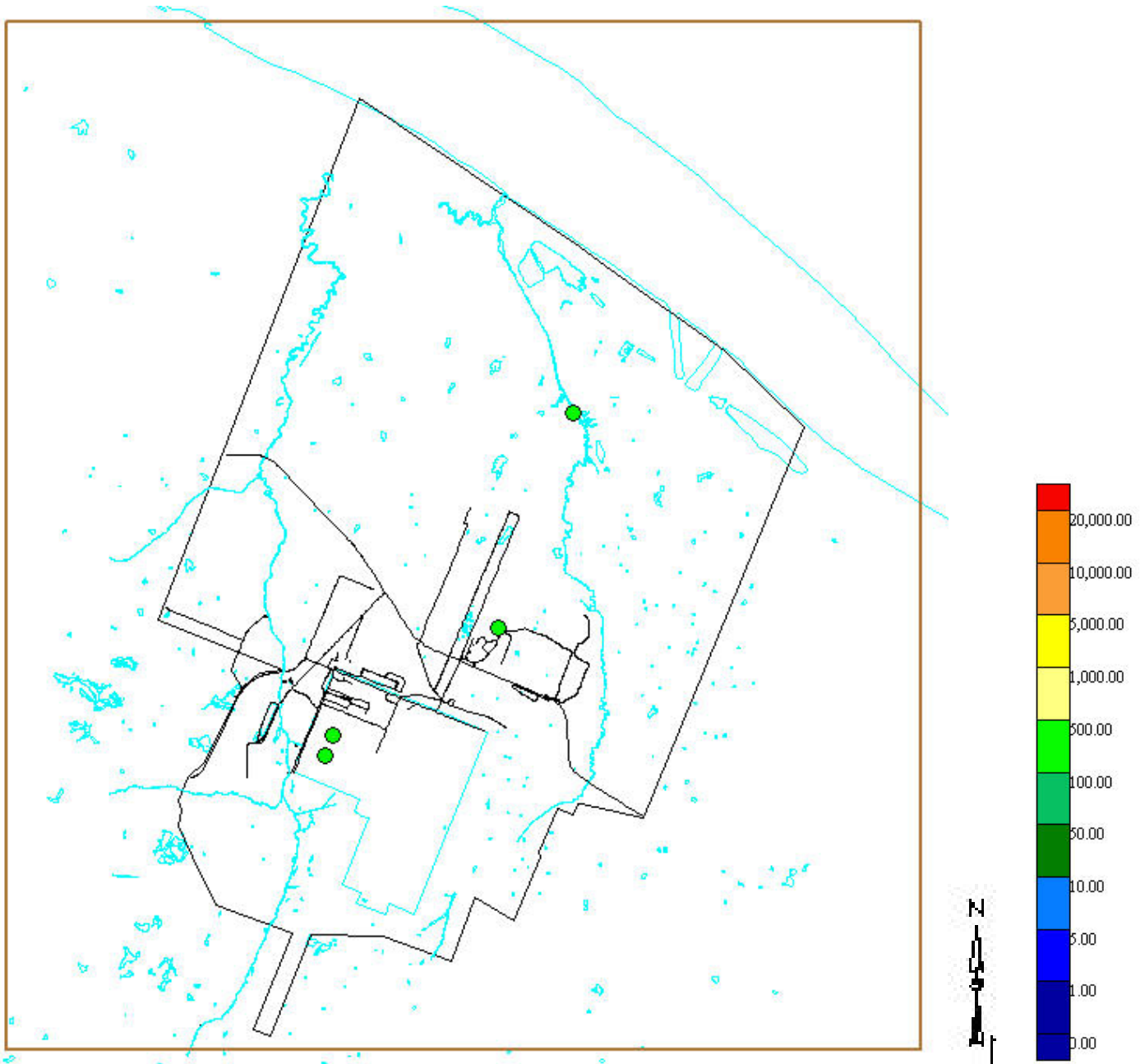


Figure 16. PCB_Arochlor 1260 in SEDIMENT (1988 – 2006)
Results reported in ug/kg

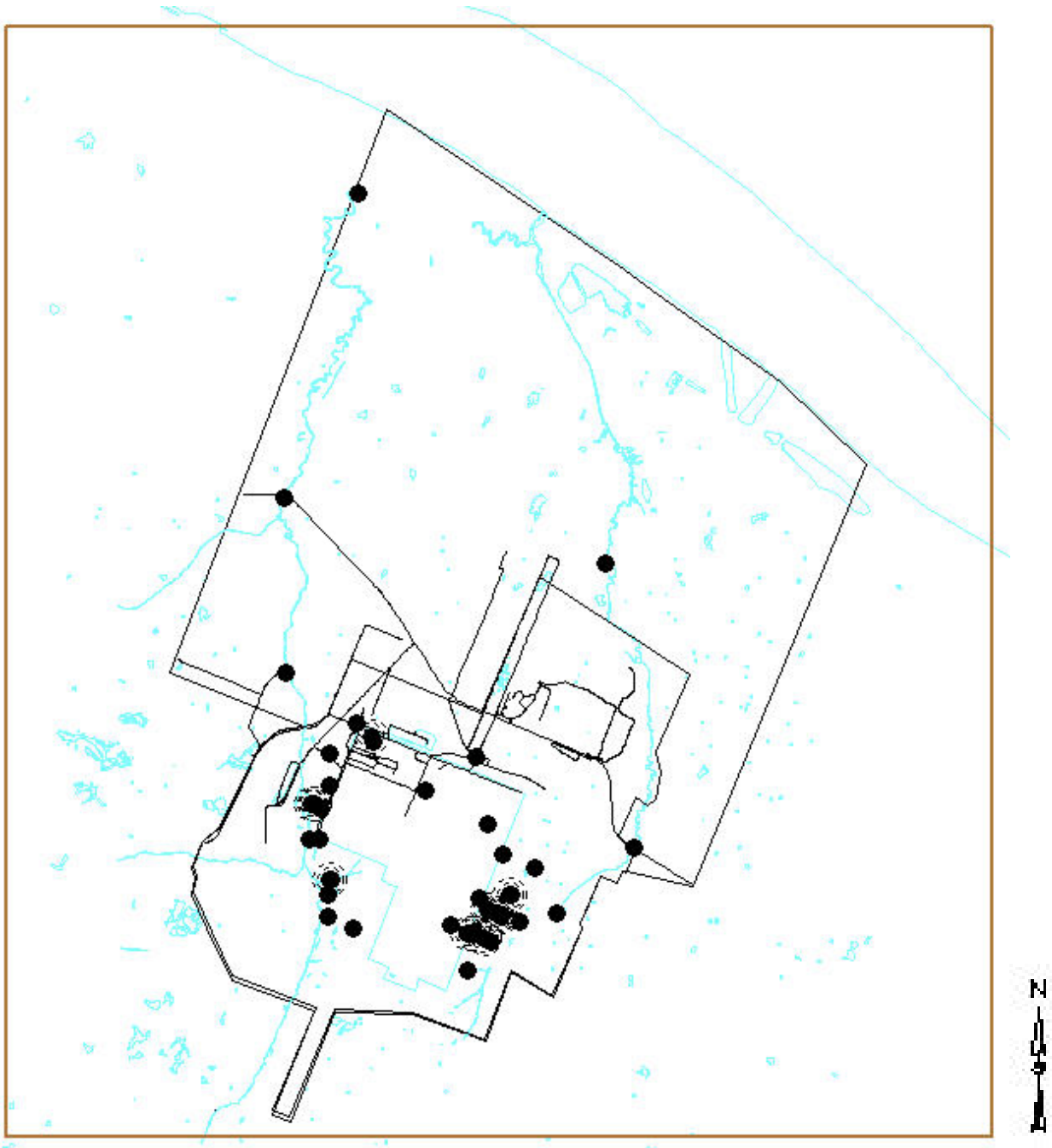


Figure 17. PCB & Arochlors in Surface Water (1988 – 2006)

Table 3. Summary: PCB & Arochlors in Surface Water	
Sample Collection /Analysis	1988 - 2006
Total Samples Collected and Analyzed	18,642
Total Detects	1,113
Total Non-detects	17,166

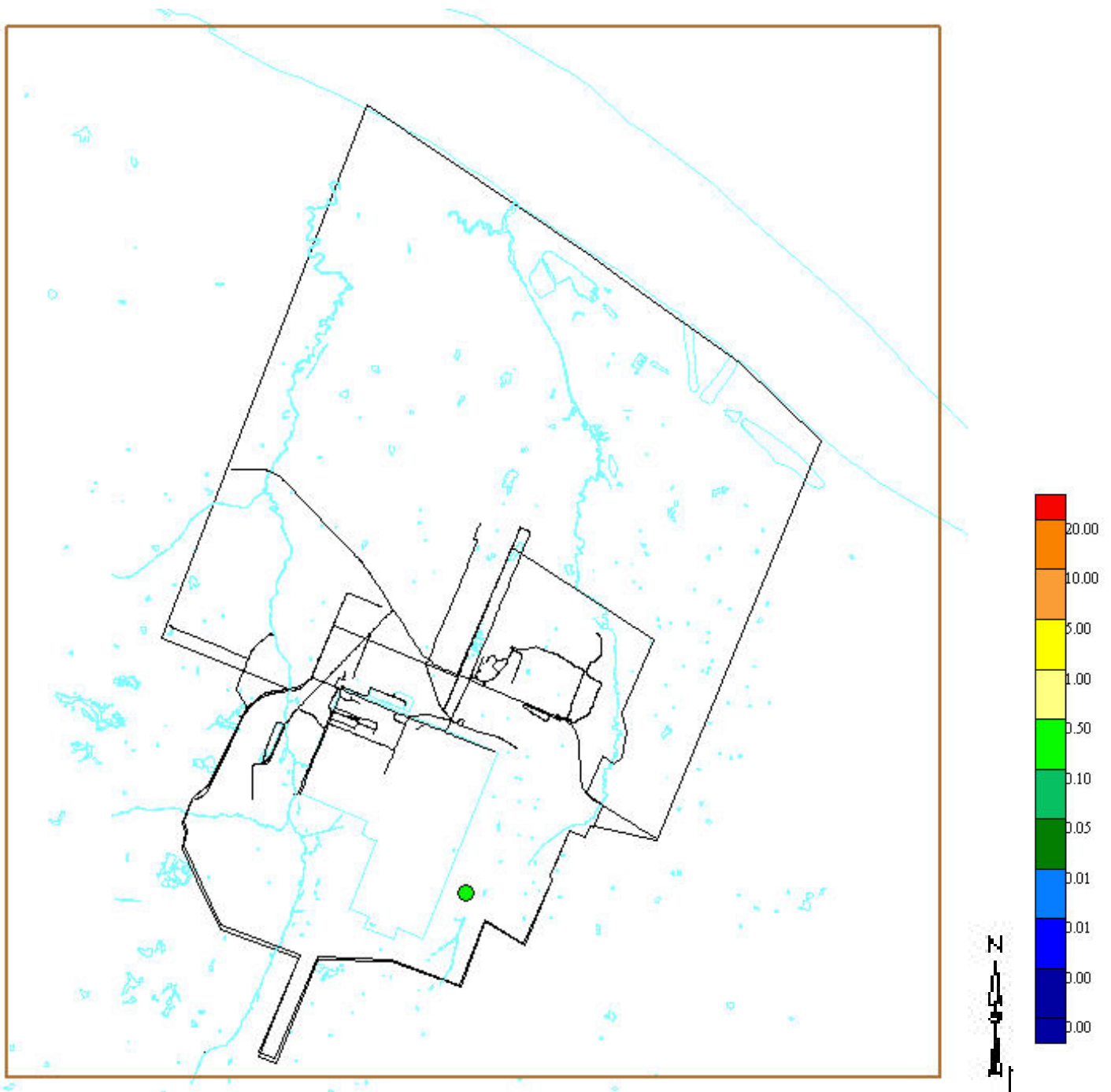


Figure 18. PCB Arochlor 1016 in Surface Water (1988 – 2006)
Results reported in ug/L

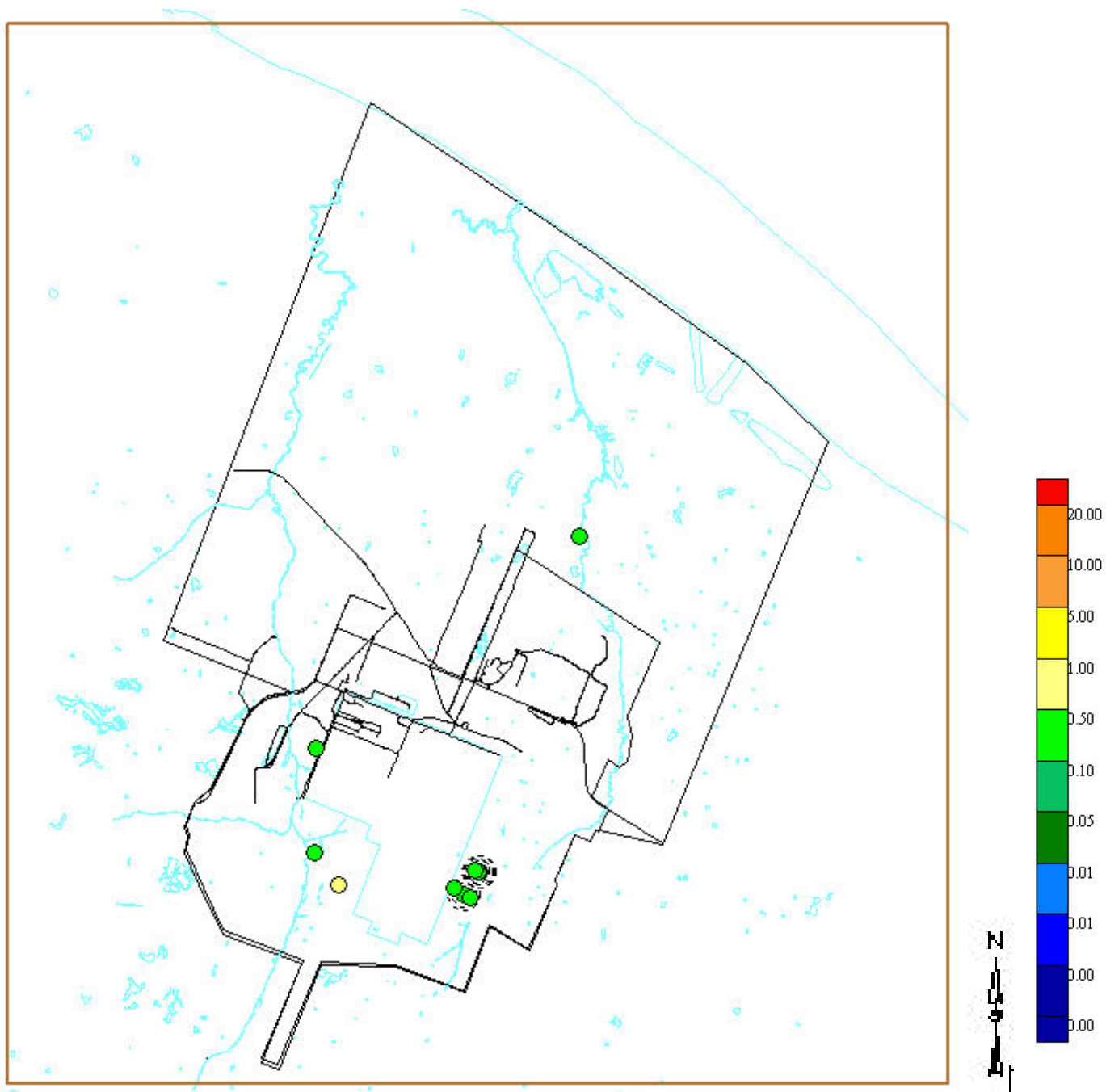


Figure 19. PCB Arochlor 1242 in Surface Water (1988 – 2006)
Results reported in ug/L

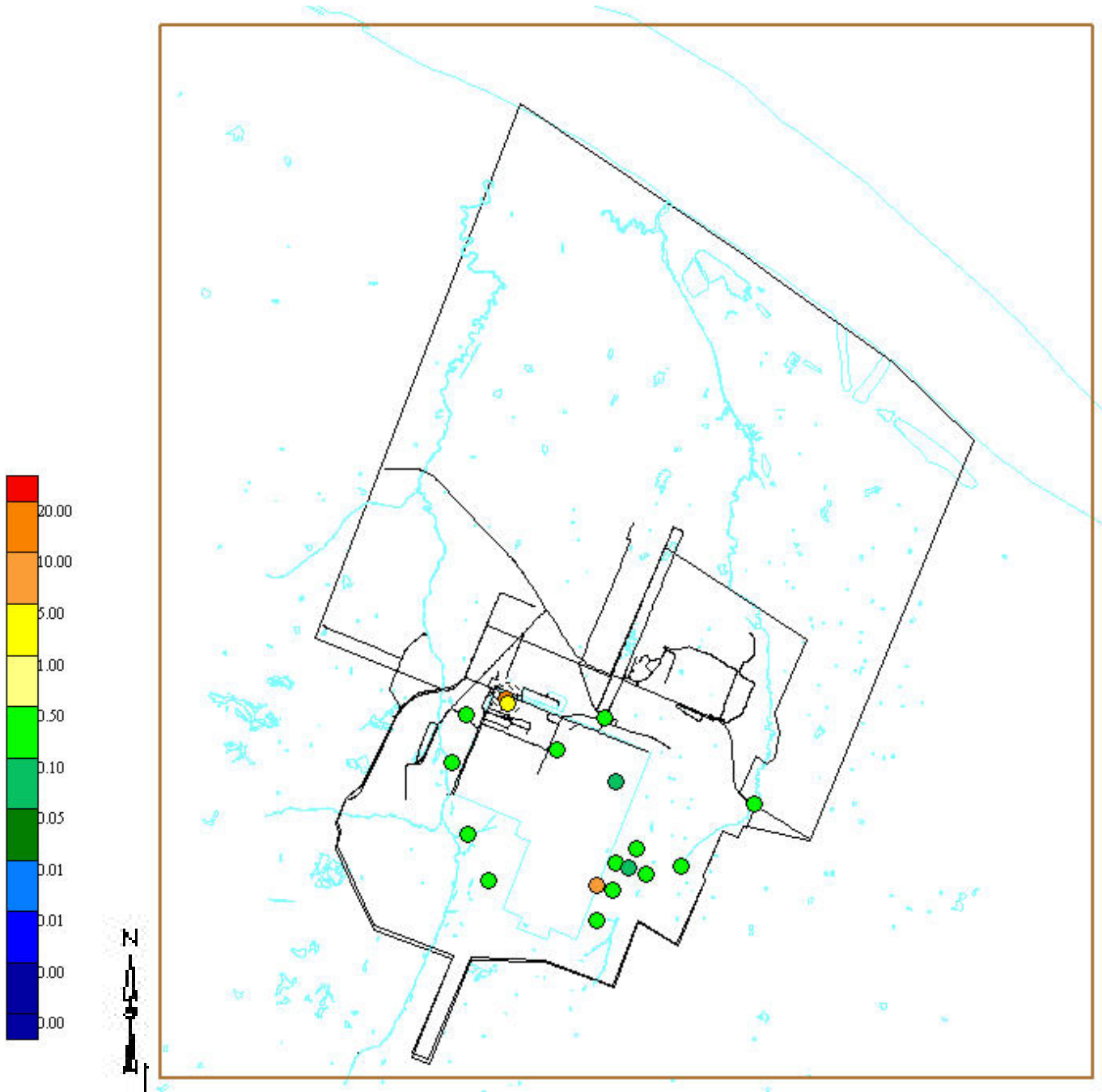


Figure 20. PCB Arochlor 1248 in Surface Water (1988 – 2006)
Results reported in ug/L

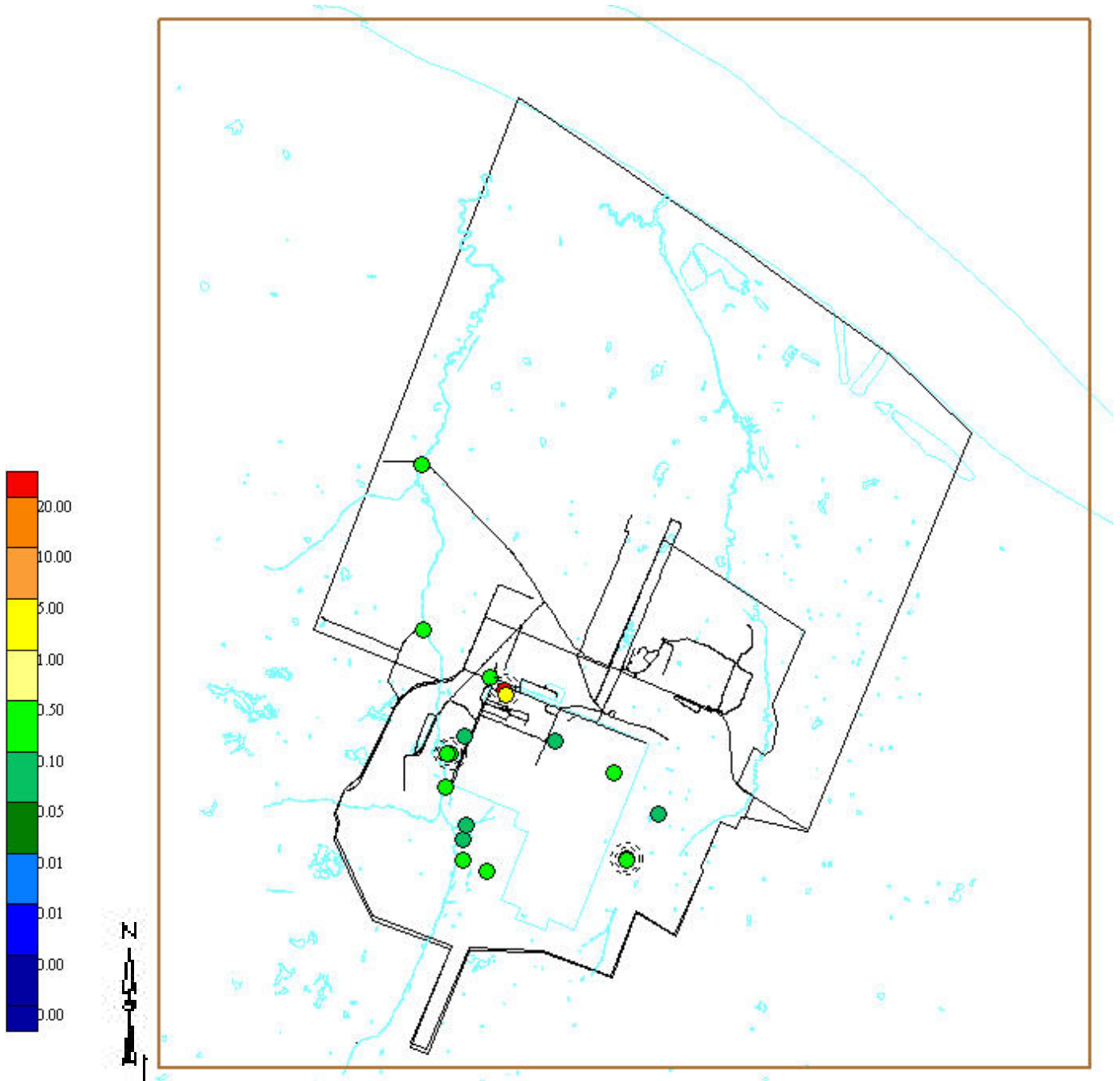


Figure 21. PCB Arochlor 1254 in Surface Water (1988 – 2006)
Results reported in ug/L

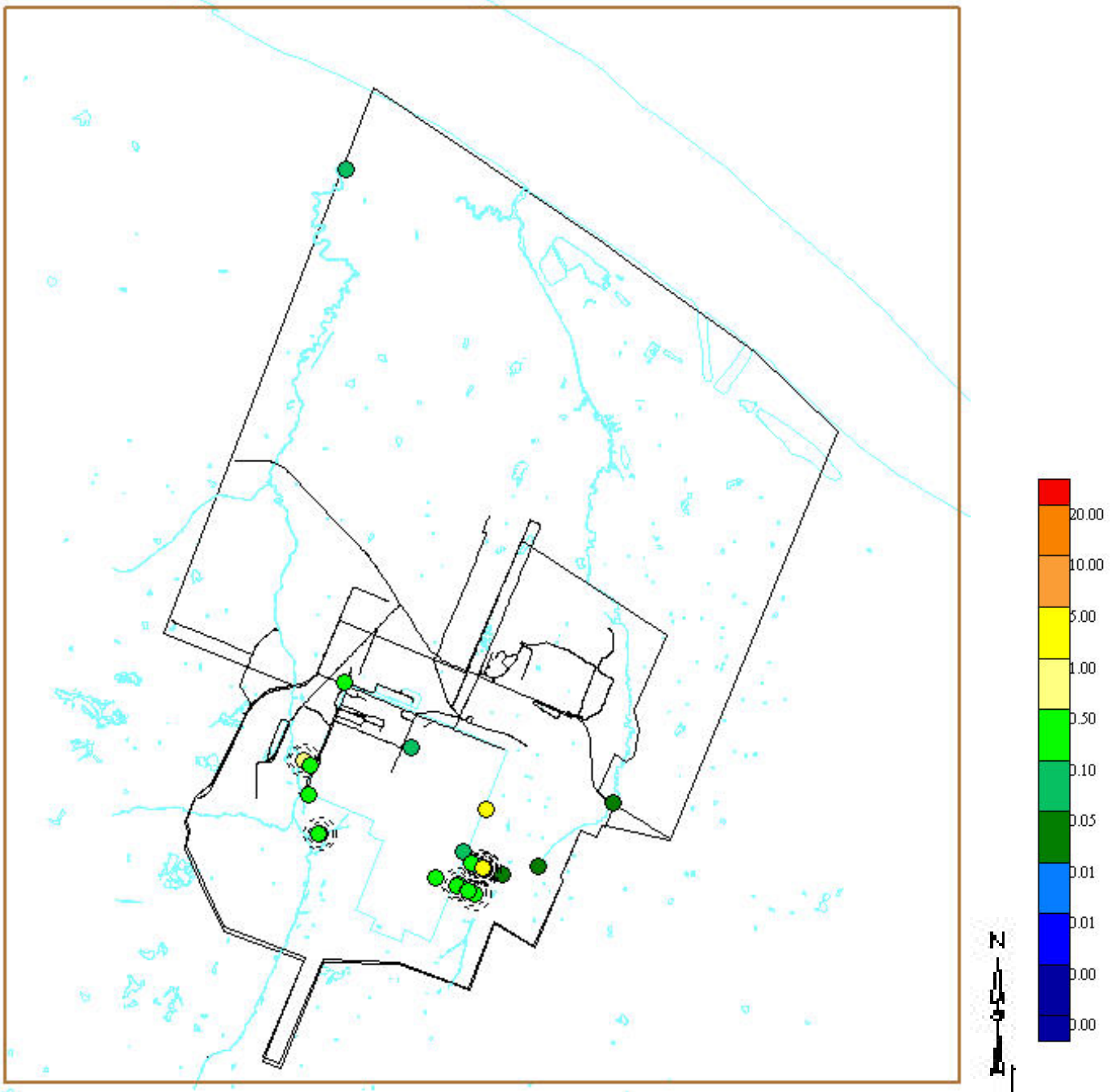


Figure 22. PCB Arochlor 1260 in Surface Water (1988 – 2006)
Results reported in ug/L

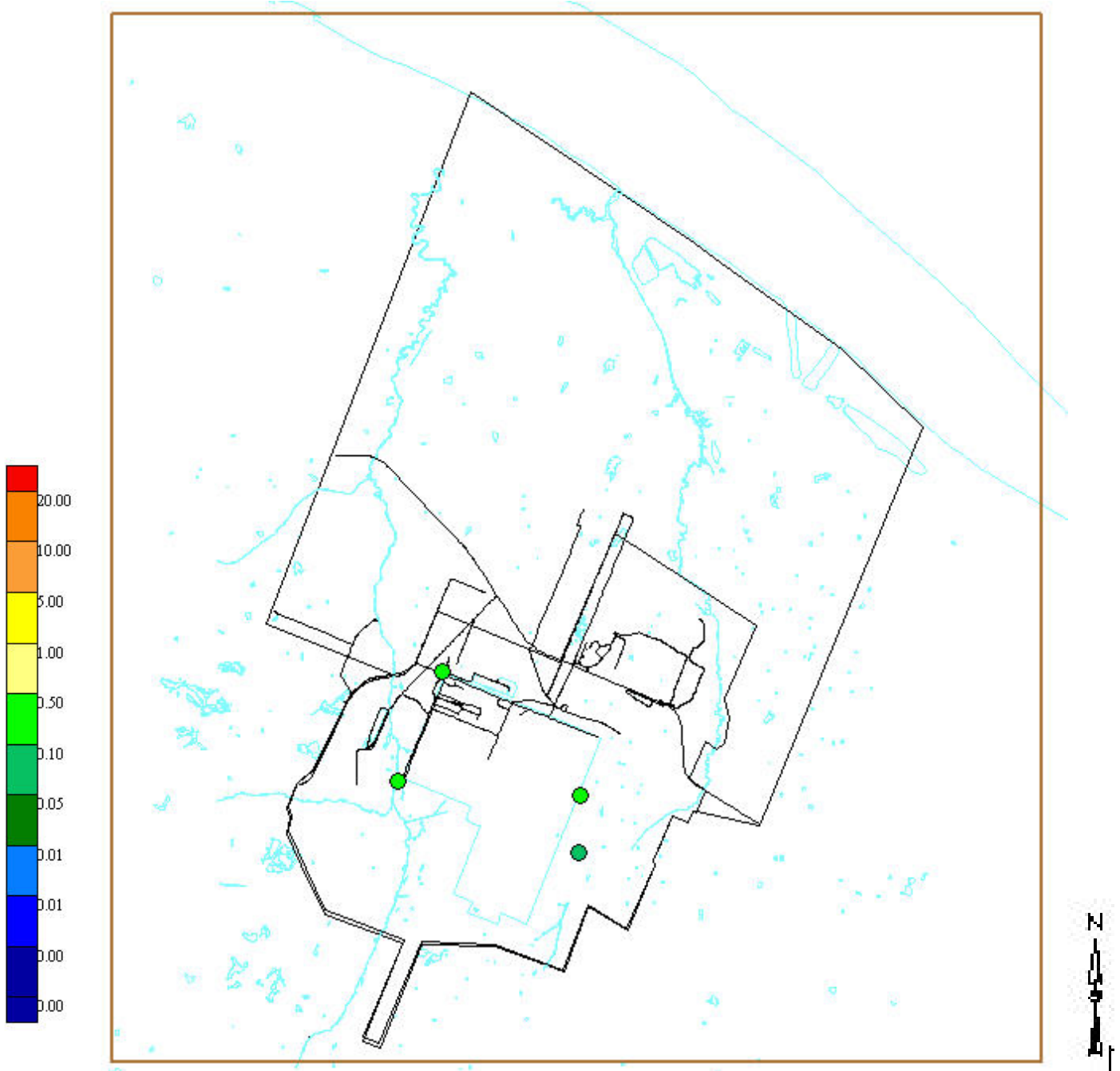


Figure 23. PCB Arochlor 1268 in Surface Water (1988 – 2006)
Results reported in ug/L

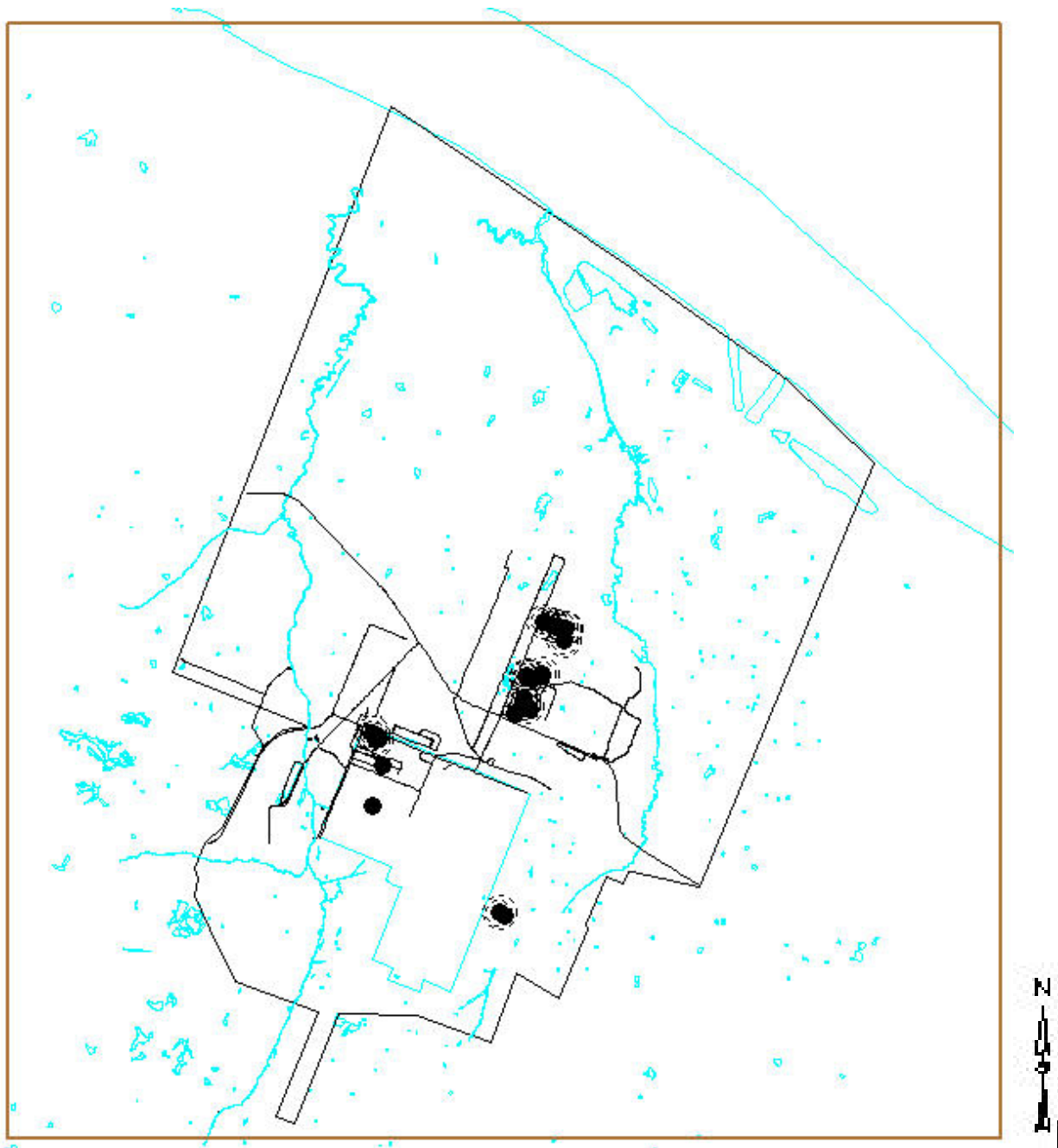


Figure 24. PCB & Arochlors in Groundwater (1988 – 2006)

Table 4. Summary: PCB & Arochlors in Groundwater	
Sample Collection /Analysis	1988 - 2006
Total Samples Collected and Analyzed	5,982
Total Detects	68
Total Non-detects	5,401

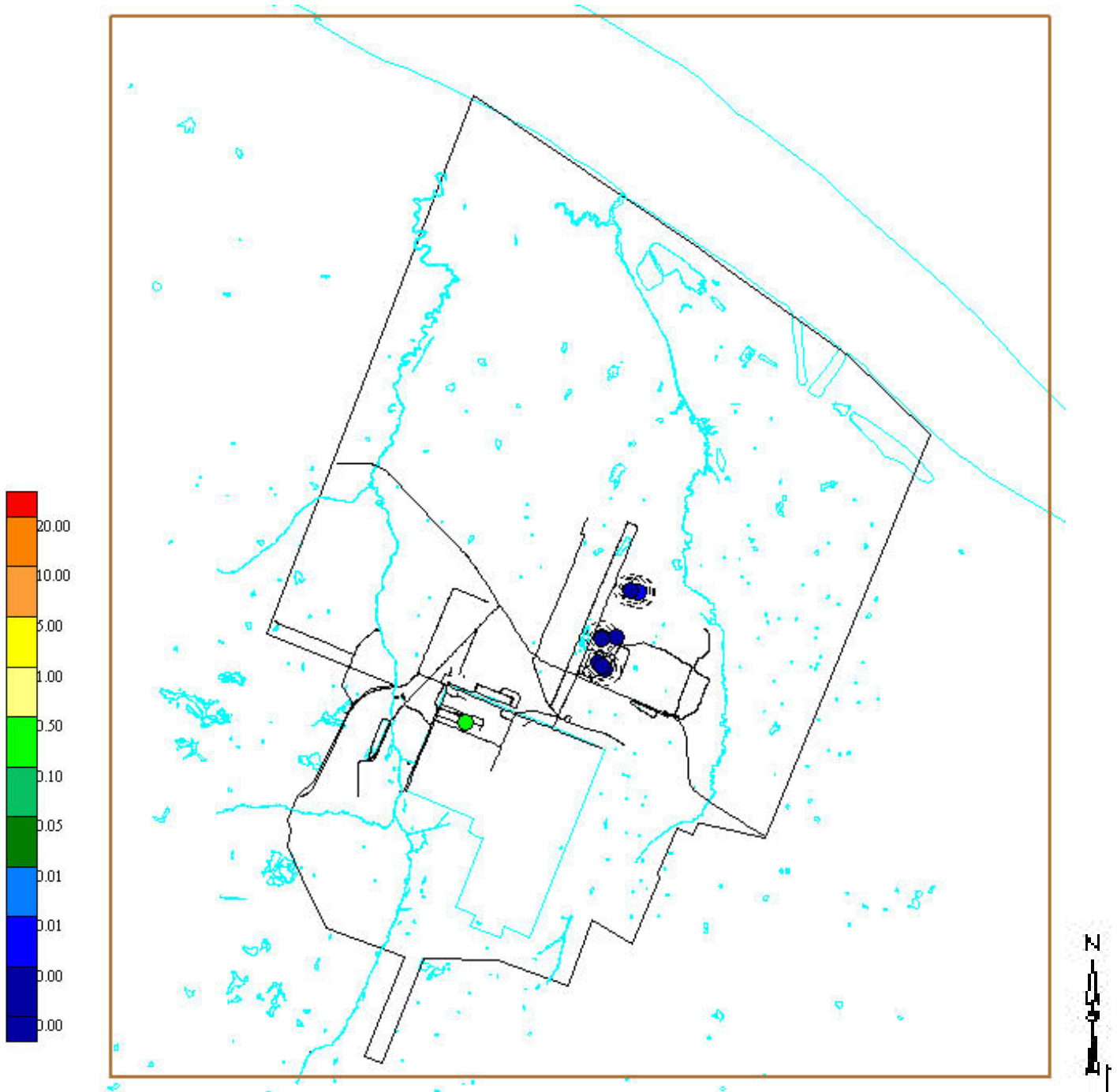


Figure 25. PCB Arochlor 1016 in Groundwater (1988 – 2006)
Results reported in ug/L

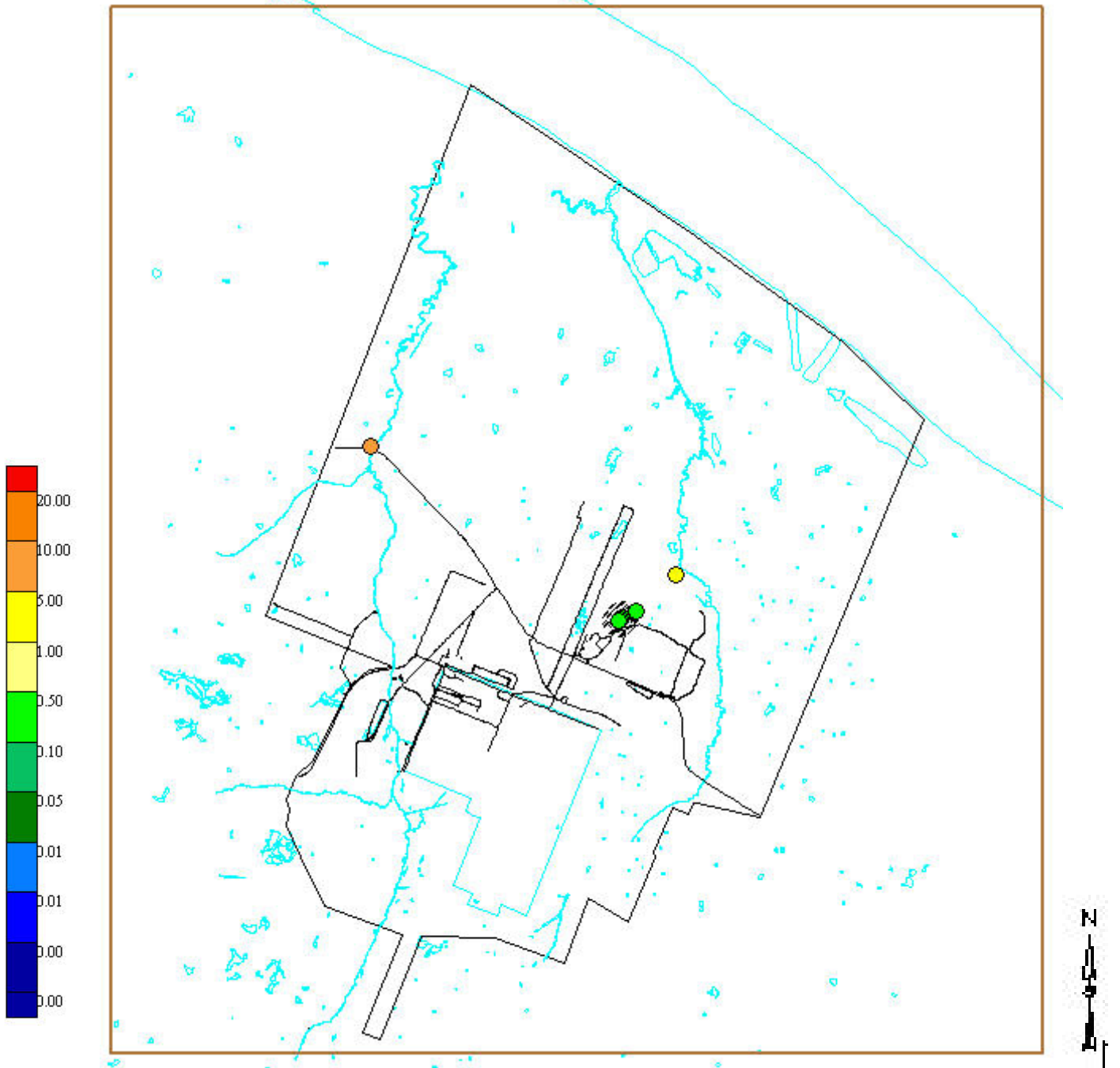


Figure 26. PCB Arochlor 1016 in Groundwater (2001 – 2006)
Results reported in ug/L

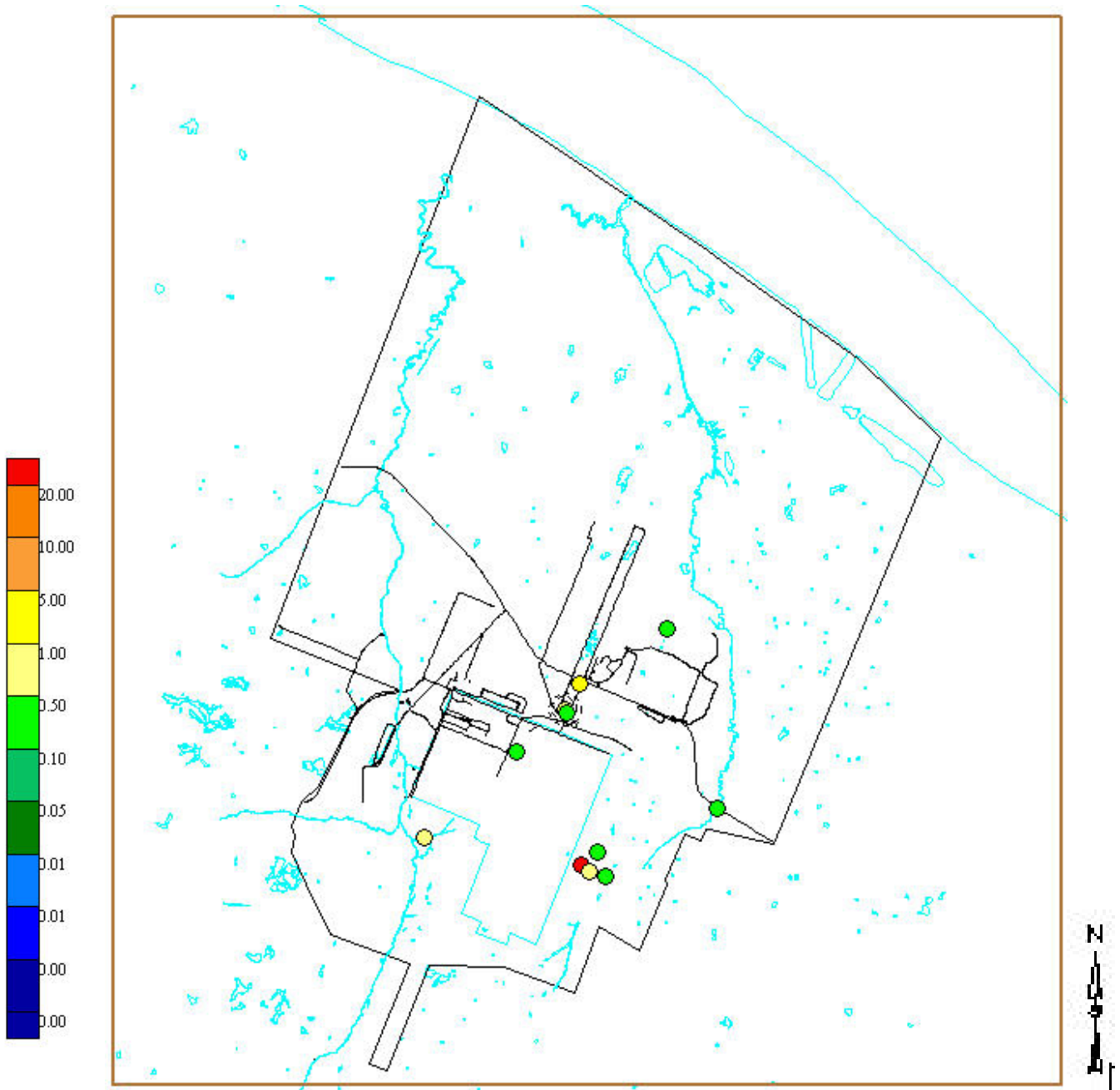


Figure 26. PCB Arochlor 1242 in Groundwater (1988 – 2006)
Results reported in ug/L

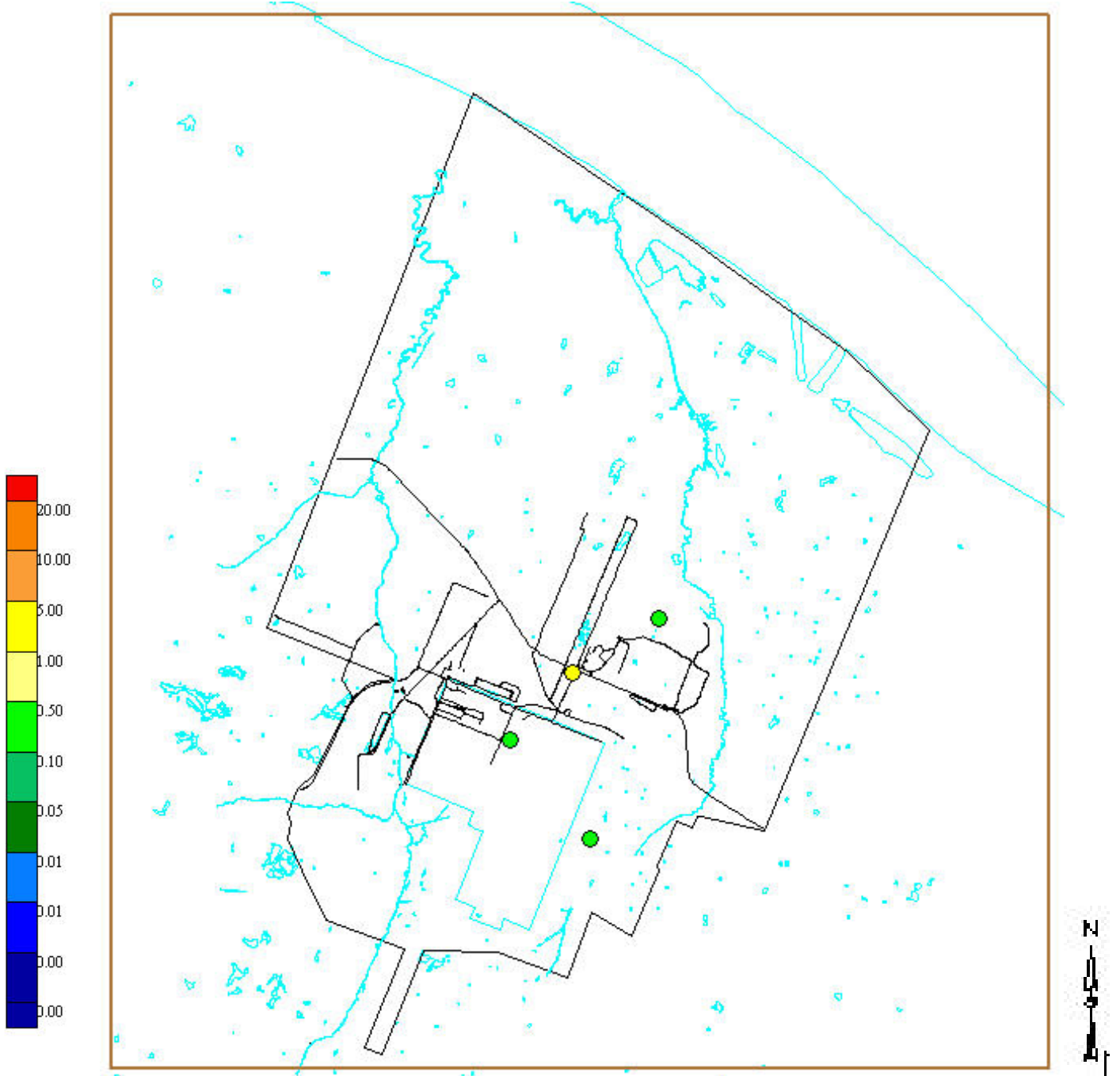


Figure 27. PCB Arochlor 1242 in Groundwater (2001 – 2006)
Results reported in ug/L

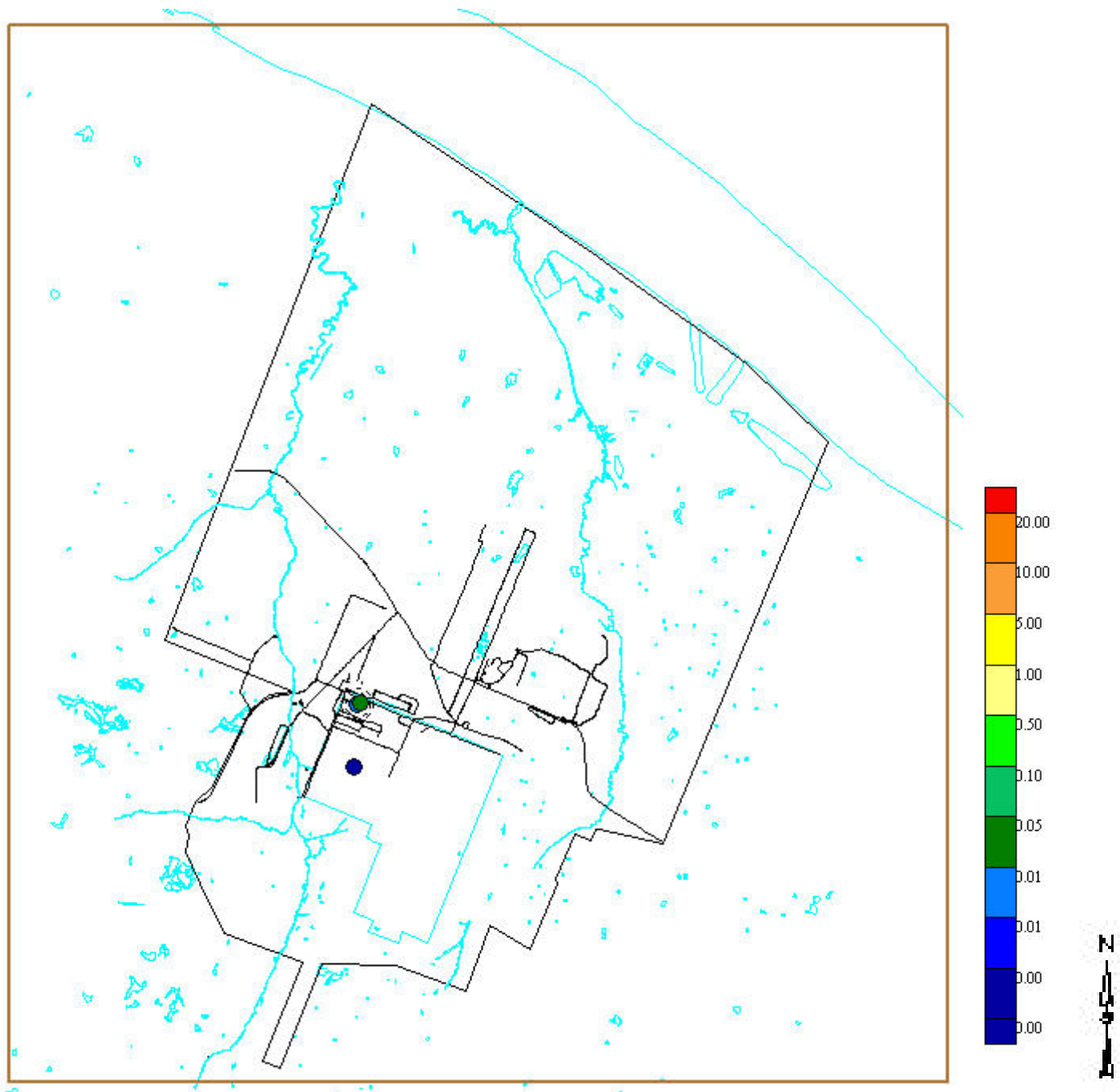


Figure 28. PCB Arochlor 1248 in Groundwater (1988 – 2006)
Results reported in ug/L

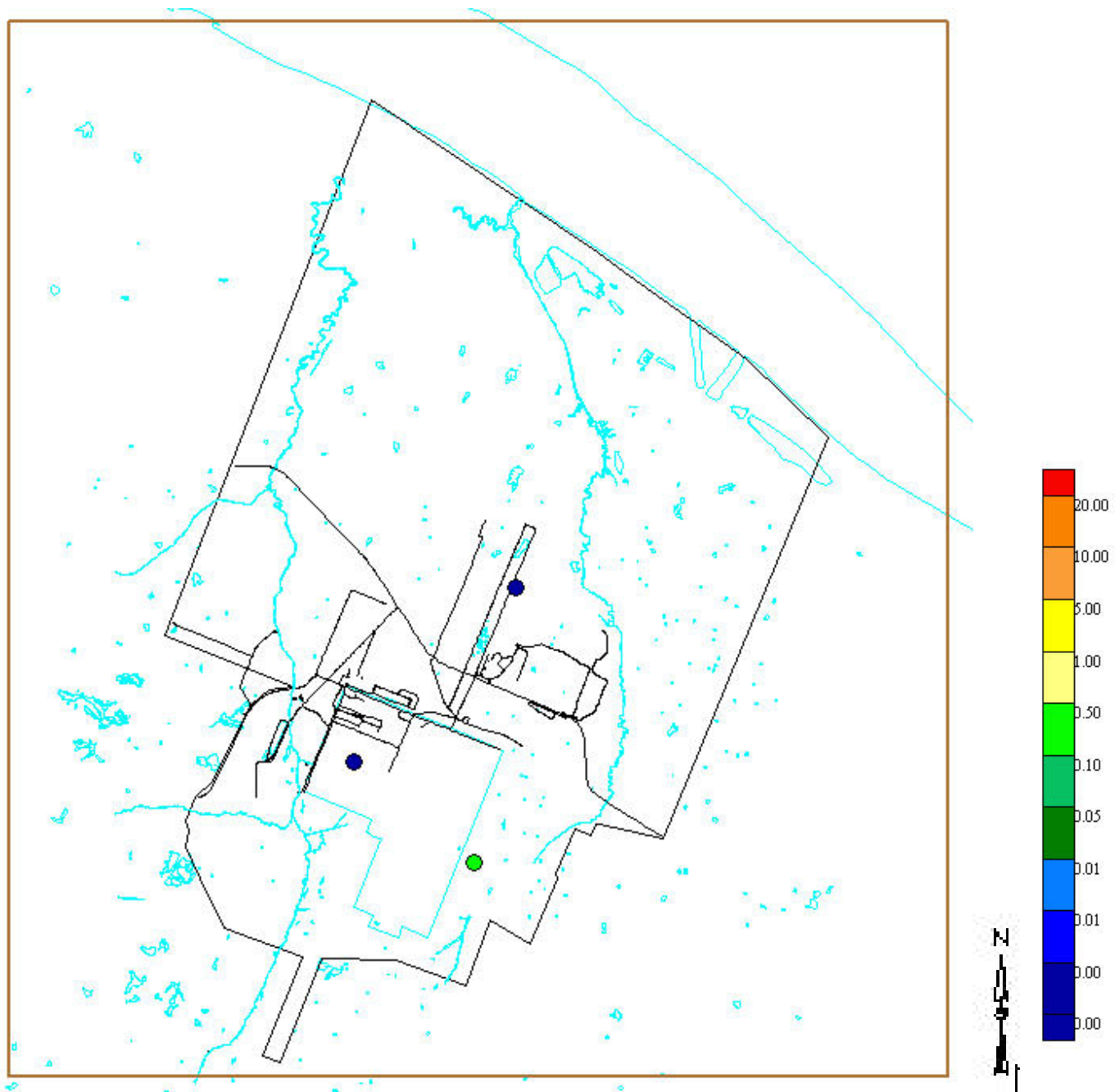


Figure 29. PCB Arochlor 1254 in Groundwater (1988 – 2006)
Results reported in ug/L

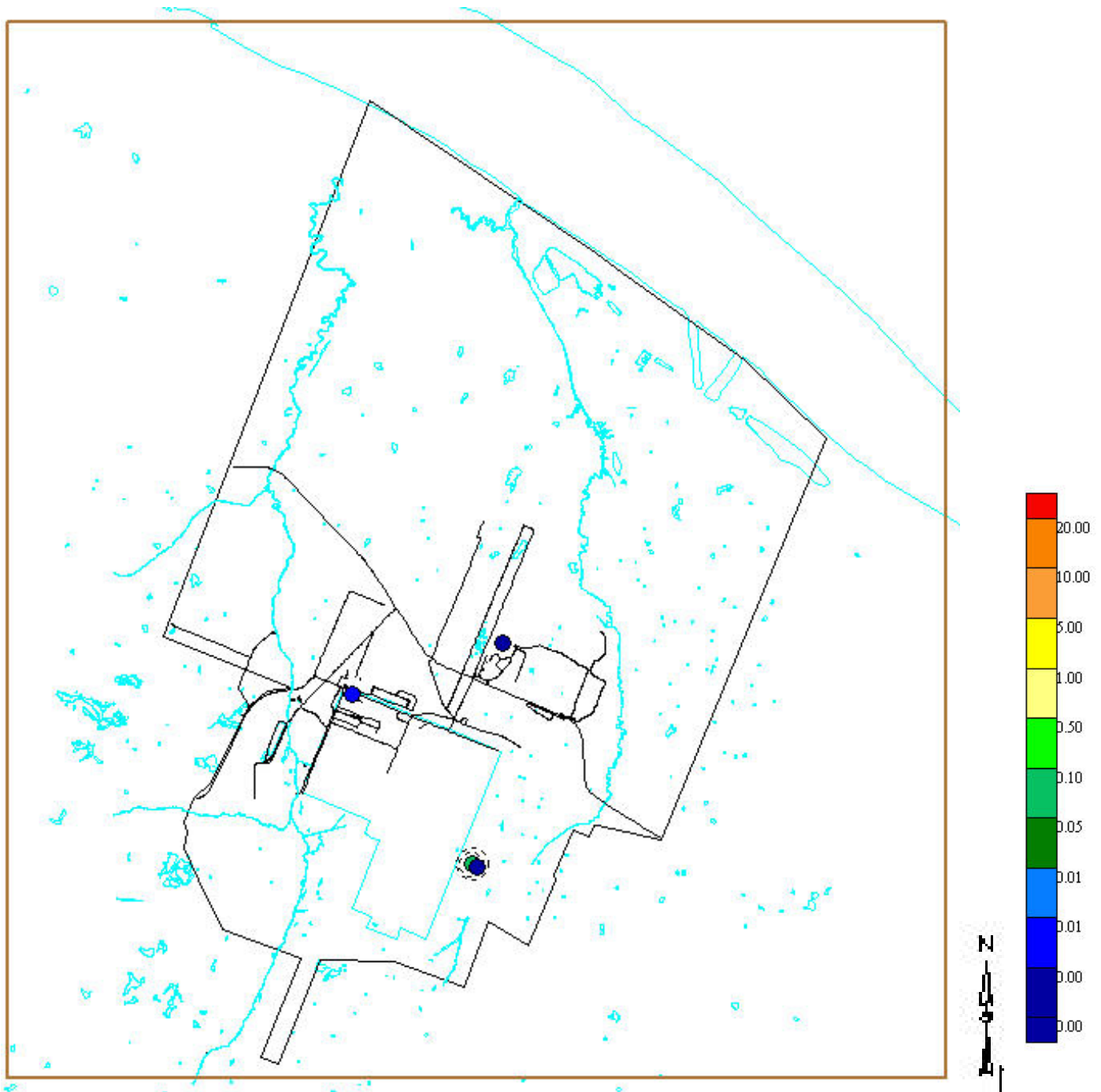


Figure 30. PCB Arochlor 1260 in Groundwater (1988 – 2006)
Results reported in ug/L

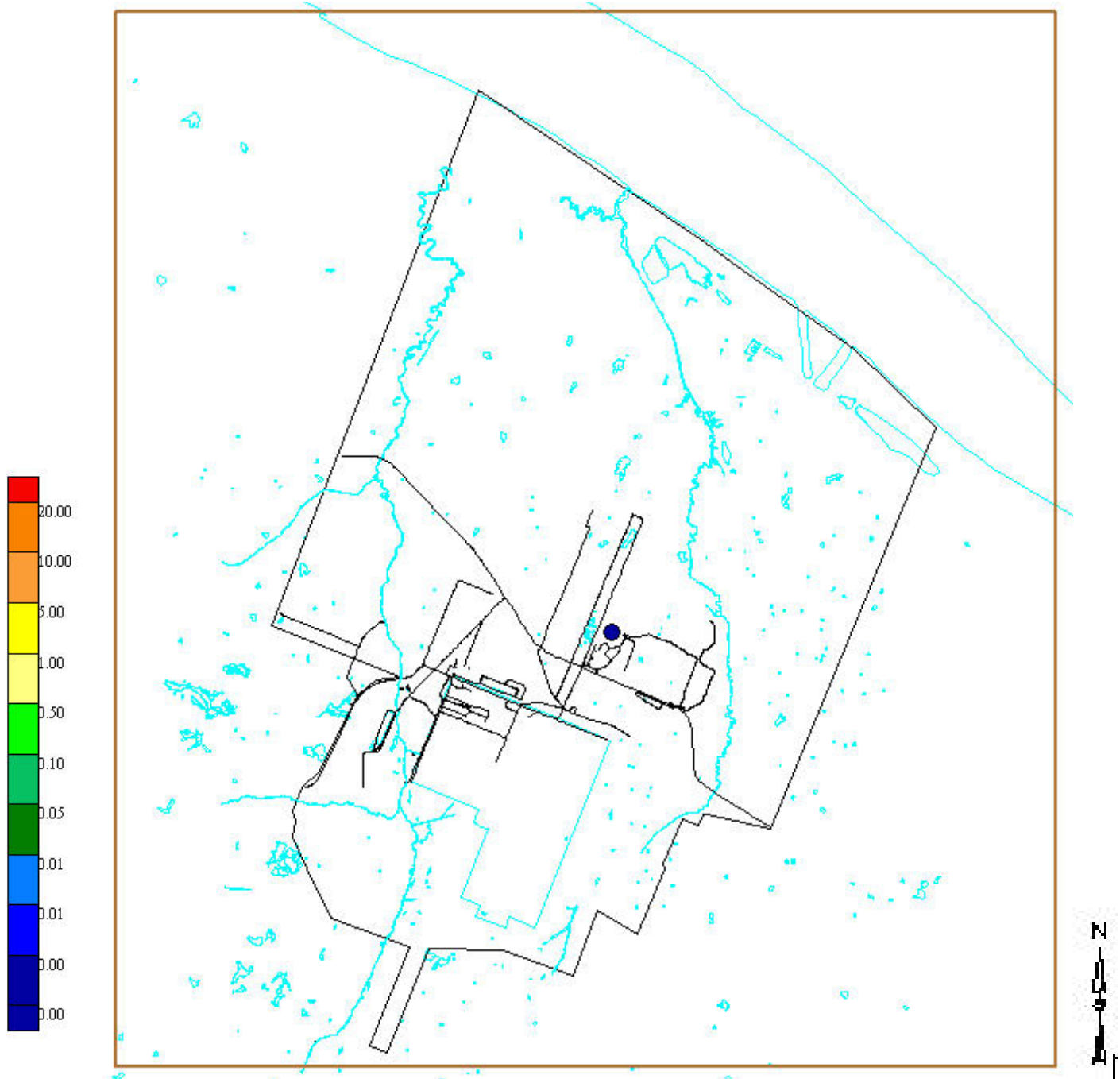


Figure 31. PCB Arochlor 1260 in Groundwater (2001 – 2006)
Results reported in ug/L

Risk and Regulatory Concentrations for PCBs and Arochlors in Soil, Sediment, Surface Water and Groundwater at the PGDP (PGDP Risk Methods Document)

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
12674112	Aroclor 1016	mg/l					0.00000017
12674112	Aroclor 1016	mg/l					0.00000017
11104282	Aroclor 1221	mg/l					0.00000017
11104282	Aroclor 1221	mg/l					0.00000017
11141165	Aroclor 1232	mg/l					0.00000017
11141165	Aroclor 1232	mg/l					0.00000017
53469219	Aroclor 1242	mg/l					0.00000017
53469219	Aroclor 1242	mg/l					0.00000017
12672296	Aroclor 1248	mg/l					0.00000017
12672296	Aroclor 1248	mg/l					0.00000017
11097691	Aroclor 1254	mg/l					0.00000017
11097691	Aroclor 1254	mg/l					0.00000017
11096825	Aroclor 1260	mg/l					0.00000017
11096825	Aroclor 1260	mg/l					0.00000017

Table A.2 Groundwater Action Levels for Significant COPCs at the PGDP
(Values calculated on 12/12/2001 and are based on the best available information.)

Parameter	Chemical	Units	Adult Resident			Child Resident		
			Hazard	Cancer	Action	Hazard	Cancer	Action
12674112	Aroclor 1016	mg/L	2.96E-03	5.28E-03	2.96E-03	1.40E-03	5.28E-03	1.40E-03
11104282	Aroclor 1221	mg/L		1.12E-02	1.12E-02		1.12E-02	1.12E-02
11141165	Aroclor 1232	mg/L		1.28E-02	1.28E-02		1.28E-02	1.28E-02
53469219	Aroclor 1242	mg/L		1.23E-02	1.23E-02		1.23E-02	1.23E-02
12672296	Aroclor 1248	mg/L		7.75E-03	7.75E-03		7.75E-03	7.75E-03
11097691	Aroclor 1254	mg/L	1.28E-03	7.93E-03	1.28E-03	5.82E-04	7.93E-03	5.82E-04
11096825	Aroclor 1260	mg/L		4.28E-03	4.28E-03		4.28E-03	4.28E-03
56553	Benz[a]anthracene	mg/L		1.32E-03	1.32E-03		1.32E-03	1.32E-03
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.93E-03	7.93E-03		7.93E-03	7.93E-03
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.53E-02	4.53E-02		4.53E-02	4.53E-02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.51E-05	9.51E-05		9.51E-05	9.51E-05

Table A.1. Soil/Sediment Action Levels for Significant COPCs at the PGDP
(Values calculated in 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
			Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
12674112	Aroclor 1016	mg/kg	1.59E+02	5.83E+03	3.59E+02	6.37E+01	4.25E+01	4.25E+01	1.03E+02	2.83E+01	2.83E+01	2.73E+01	2.83E+01	2.73E+01
11104282	Aroclor 1221	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
11141165	Aroclor 1232	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
53469219	Aroclor 1242	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
12672296	Aroclor 1248	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
11097691	Aroclor 1254	mg/kg	1.00E+02	5.83E+03	1.00E+02	1.82E+01	4.25E+01	1.82E+01	5.80E+01	2.83E+01	2.83E+01	7.81E+00	2.83E+01	7.81E+00
11096825	Aroclor 1260	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		1.00E+05	1.00E+05		1.21E+03	1.21E+03		8.07E+02	8.07E+02		8.07E+02	8.07E+02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.98E+01	1.98E+01		2.88E+01	2.88E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01



Table A.3. Surface Water Action Levels for Significant COPCs at the PGDP
 (Values calculated on 12/12/2001 and are based on the best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
			Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
12674112	Arsenic 1016	mg/L	8.88E-03	7.40E-01	8.88E-03	2.19E-03	7.29E-03	2.19E-03	2.87E-03	4.97E-03	2.87E-03	4.96E-03	4.26E-03	4.26E-03
11104282	Arsenic 1221	mg/L		6.36E+00	6.36E+00		6.26E-02	6.26E-02		4.13E-02	4.13E-02		3.66E-02	3.66E-02
11144165	Arsenic 1232	mg/L		4.18E+01	4.18E+01		4.11E-01	4.11E-01		2.24E-01	2.24E-01		2.40E-01	2.40E-01
53469219	Arsenic 1242	mg/L		1.58E+01	1.58E+01		1.56E-01	1.56E-01		9.71E-02	9.71E-02		9.09E-02	9.09E-02
12672296	Arsenic 1248	mg/L		1.98E+00	1.98E+00		1.56E-02	1.56E-02		1.06E-02	1.06E-02		9.09E-03	9.09E-03
11097091	Arsenic 1254	mg/L	5.73E-03	1.67E+00	5.73E-03	1.41E-03	1.65E-02	1.41E-03	1.88E-03	1.12E-02	1.88E-03	1.14E-03	9.61E-03	3.14E-03
11096825	Arsenic 1269	mg/L		5.32E-01	5.32E-01		5.24E-03	5.24E-03		3.58E-03	3.58E-03		3.08E-03	3.08E-03
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.67E+00	1.67E+00		1.65E-02	1.65E-02		1.12E-02	1.12E-02		9.61E-03	9.61E-03
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		9.55E+00	9.55E+00		9.40E-02	9.40E-02		6.38E-02	6.38E-02		5.49E-02	5.49E-02
30328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.20E-03	9.20E-03		9.06E-06	9.06E-06		6.20E-05	6.20E-05		5.29E-05	5.29E-05