APPENDIX J

HUMAN HEALTH RISK ASSESSMENT TABLES AND FIGURES

Table J.2.1. Summary of Site-related Chemical and COPC Screening for WBG Groundwater[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Max Detect > Tap Water (ug/L)	Tap Water Criteria	MCL Max Detect > (ug/L)	MCL	COPC?
Explosives	1,3-Dinitrobenzene	ug/L	1/8	1.00E-01	1.00E-01	3.40E-02	3.40E-02	9.18E-02	1.07E-01			Yes	3.7E-01	No		None	No
Explosives	2,4-Dinitrotoluene	ug/L	3/9	6.50E-02	5.00E+00	3.30E-02	4.40E-02	8.05E-01	1.63E+00			Yes	7.3E+00	No		None	No
Explosives	3-Nitrotoluene	ug/L	1/8	1.00E-01	1.00E-01	7.60E-02	7.60E-02	9.70E-02	1.03E-01			Yes	3.7E+01	No		None	No
Explosives	HMX	ug/L	1/9	2.50E-01	2.50E-01	8.00E+00	8.00E+00	1.11E+00	2.71E+00			Yes	1.8E+02	No		None	No
Explosives	Nitrobenzene	ug/L	1/8	1.00E-01	1.00E-01	5.90E-02	5.90E-02	9.49E-02	1.05E-01			Yes	3.4E-01	No		None	No
Explosives	RDX	ug/L	2/9	2.50E-01	2.50E-01	1.10E+00	3.20E+01	3.87E+00	1.04E+01			Yes	6.1E-02	Yes		None	Yes
Metals	Barium	ug/L	6/9	1.12E+01	1.77E+01	7.60E+00	9.81E+01	3.68E+01	1.35E+02	8.21E+01	1/9	Yes	2.6E+02	No	2.0E+03	No	No
Metals	Calcium	ug/L	9/9			4.65E+04	1.18E+05	7.38E+04	9.78E+04	1.15E+05	1/9	No		None		None	No
Metals	Copper	ug/L	2/7	1.25E+01	1.25E+01	3.30E+00	9.80E+00	1.08E+01	1.33E+01	0.00E+00	2/7	Yes	1.4E+02	No	* 1300	No	No
Metals	Cyanide	ug/L	1/9	5.00E+00	5.00E+00	1.90E+01	1.90E+01	6.56E+00	9.45E+00	0.00E+00	1/9	Yes	7.3E+01	No		None	No
Metals	Iron	ug/L	1/9	2.94E+01	9.10E+01	1.55E+02	1.55E+02	6.51E+01	8.83E+01	2.79E+02	0/9	No	1.1E+03	No		None	No
Metals	Lead	ug/L	1/9	1.50E+00	1.50E+00	3.10E+00	3.10E+00	1.68E+00	2.01E+00	0.00E+00	1/9	Yes	4.0E-01	Yes	* 15	No	Yes
Metals	Magnesium	ug/L	9/9			1.03E+04	3.42E+04	2.04E+04	2.73E+04	4.33E+04	0/9	No		None		None	No
Metals	Manganese	ug/L	8/9	7.50E+00	7.50E+00	5.80E+01	2.92E+03	5.49E+02	2.96E+04	1.02E+03	1/9	Yes	1.7E+02	Yes		None	Yes
Metals	Mercury	ug/L	1/9	1.00E-01	1.00E-01	8.00E-02	8.00E-02	9.78E-02	1.02E-01	0.00E+00	1/9	Yes	1.1E+00	No	2.0E+00	No	No
Metals	Potassium	ug/L	9/9			7.77E+02	3.25E+03	1.59E+03	2.44E+03	2.89E+03	1/9	No		None		None	No
Metals	Sodium	ug/L	8/9	2.86E+03	2.86E+03	3.06E+03	3.58E+04	1.08E+04	2.92E+04	4.57E+04	0/9	No		None		None	No
Metals	Zinc	ug/L	1/9	8.45E+00	2.84E+01	4.56E+01	4.56E+01	2.07E+01	2.76E+01	6.09E+01	0/9	No	1.1E+03	No		None	No
Organics-Semivolatile	Bis(2-ethylhexyl)phthalate	ug/L	1/8	5.00E+00	5.00E+00	4.50E+00	4.50E+00	4.94E+00	5.06E+00			Yes	4.8E-01	Yes	6.0E+00	No	Yes
Organics-Volatile	Chloroform	ug/L	3/9	2.50E+00	2.50E+00	6.40E-01	1.70E+00	2.05E+00	2.50E+00			Yes	1.6E-02	Yes		None	Yes

SRC = Site-related chemical; COPC = Chemical of potential concern.

[1] Only analytes with detected concentrations are shown on this summary.

[2] Metals that were never detected in background samples have been assigned the background criteria of 0 ug/L.

* Action Level

Table J.2.2. Summary of Site-related Chemical and COPC Screening for WBG Surface Water[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result on	95% UCL Mean	Site Background Criteria	Detects > Site Background Criteria	SRC?	Region IX Tap Water (ug/L)	Max Detect > Tap Water Criteria	COPC?
Metals	Barium	ug/L	1/ 1			7.90E+00	7.90E+00	7.90E+00		4.75E+01	0/ 1	No	2.6E+02	No	No
Metals	Calcium	ug/L	1/ 1			5.73E+03	5.73E+03	5.73E+03		4.14E+04	0/ 1	No		None	No
Metals	Copper	ug/L	1/ 1			5.50E+00	5.50E+00	5.50E+00		7.90E+00	0/ 1	No	1.4E+02	No	No
Metals	Iron	ug/L	1/ 1			8.67E+02	8.67E+02	8.67E+02		2.56E+03	0/ 1	No	1.1E+03	No	No
Metals	Magnesium	ug/L	1/ 1			1.75E+03	1.75E+03	1.75E+03		1.06E+04	0/ 1	No		None	No
Metals	Manganes	ug/L	1/ 1			1.03E+02	1.03E+02	1.03E+02		3.91E+02	0/ 1	No	1.7E+02	No	No
Metals	Potassium	ug/L	1/ 1			5.24E+02	5.24E+02	5.24E+02		3.17E+03	0/ 1	No		None	No
Metals	Sodium	ug/L	1/ 1			1.45E+03	1.45E+03	1.45E+03		2.13E+04	0/ 1	No		None	No
Metals	Zinc	ug/L	1/ 1			1.84E+01	1.84E+01	1.84E+01		4.20E+01	0/ 1	No	1.1E+03	No	No
Organics-Volatile	Acetone	ug/L	1/ 1			7.20E+00	7.20E+00	7.20E+00				Yes	6.1E+01	No	No

SRC = Site-related chemical; COPC = Chemical of potential concern.

[1] Only analytes with detected concentrations are shown on this summary.

Table J.2.3. Summary of Site-related Chemical and COPC Screening for WBG Sediment[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Explosives	1,3,5-Trinitrobenzene	mg/kg	4/17	1.25E-01	1.25E-01	7.10E-02	1.50E-01	1.19E-01	1.27E-01			Yes	1.6E+02	No	3.2E+03	No	Nc
Explosives	1,3-Dinitrobenzene	mg/kg	1/17	1.25E-01	1.25E-01	4.40E-02	4.40E-02	1.20E-01	1.29E-01			Yes	5.5E-01	No	1.1E+01	No	No
Explosives	2,4,6-Trinitrotoluene	mg/kg	4/17	1.25E-01	1.25E-01	9.40E-02	9.70E-01	2.04E-01	2.96E-01			Yes	1.5E+00	No	1.0E+01	No	No
Explosives	2,4-Dinitrotoluene	mg/kg	1/17	1.25E-01	1.25E-01	3.70E-02	3.70E-02	1.20E-01	1.29E-01			Yes	1.1E+01	No	2.1E+02	No	No
Explosives	HMX	mg/kg	1/17	2.50E-01	1.00E+00	1.20E-01	1.20E-01	8.16E-01	9.61E-01			Yes	2.7E+02	No	5.3E+03	No	No
Explosives	Nitrobenzene	mg/kg	1/17	1.25E-01	1.30E-01	7.10E-02	7.10E-02	1.26E-01	1.32E-01			Yes	1.6E+00	No	1.0E+01	No	No
Metals	Aluminum	mg/kg	17/17			4.74E+03	1.79E+04	1.09E+04	1.25E+04	1.39E+04	5/17	Yes	7.5E+03	Yes	1.0E+04	Yes	Yes
Metals	Antimony	mg/kg	1/6	1.50E-01	9.50E-01	3.20E-01	3.20E-01	4.48E-01	6.71E-01	0.00E+00	1/6	Yes	3.0E+00	No	7.5E+01	No	No
Metals	Arsenic	mg/kg	17/17			7.70E+00	1.81E+01	1.23E+01	1.35E+01	1.95E+01	0/17	No	3.8E-02	Yes	3.0E-01	Yes	No
Metals	Barium	mg/kg	17/17			3.68E+01	5.28E+02	1.33E+02	2.01E+02	1.23E+02	6/17	Yes	5.2E+02	Yes	1.0E+04	No	Yes
Metals	Beryllium	mg/kg	2/6	1.20E-01	4.55E-01	4.50E-01	6.00E-01	3.32E-01	4.93E-01	3.80E-01	2/6	Yes	1.5E+01	No	3.4E+02	No	No
Metals	Cadmium	mg/kg	6/17	2.00E-02	9.50E-01	6.00E-02	5.60E-01	2.17E-01	3.28E-01	0.00E+00	6/17	Yes	3.7E+00	No	9.3E+01	No	No
Metals	Calcium	mg/kg	6/6			9.75E+02	3.91E+03	1.76E+03	3.94E+03	5.51E+03	0/6	No		None		None	No
Metals	Chromium	mg/kg	17/17			7.20E+00	2.13E+01	1.31E+01	1.49E+01	1.81E+01	1/17	Yes	3.0E+00	Yes	6.4E+00	Yes	Yes
Metals	Cobalt	mg/kg	6/6			5.70E+00	1.04E+01	7.95E+00	9.99E+00	9.10E+00	1/6	Yes	3.3E+02	No	2.9E+03	No	No
Metals	Copper	mg/kg	6/6			7.80E+00	4.91E+01	1.97E+01	5.68E+01	2.76E+01	1/6	Yes	2.8E+02	No	7.0E+03	No	No
Metals	Cyanide	mg/kg	1/6	5.00E-02	9.50E-01	1.10E-01	1.10E-01	3.97E-01	6.61E-01	0.00E+00	1/6	Yes	1.1E+02	No	2.1E+03	No	No
Metals	Iron	mg/kg	6/6			1.39E+04	2.40E+04	1.76E+04	2.27E+04	2.82E+04	0/6	No	2.2E+03	Yes	1.0E+04	Yes	No
Metals	Lead	mg/kg	17/17			1.02E+01	4.01E+01	1.76E+01	2.12E+01	2.74E+01	1/17	Yes	4.0E+01	Yes	1.0E+02	No	Yes
Metals	Magnesium	mg/kg	6/6			1.18E+03	3.28E+03	2.01E+03	3.47E+03	2.76E+03	1/6	No		None		None	No
Metals	Manganese	mg/kg	17/17			1.83E+02	1.05E+03	5.06E+02	6.65E+02	1.95E+03	0/17	No	3.1E+02	Yes	4.5E+03	No	No
Metals	Mercury	mg/kg	3/17	1.50E-02	9.50E-02	4.00E-02	1.60E-01	4.32E-02	5.97E-02	5.90E-02	1/17	Yes	2.2E+00	No	5.6E+01	No	No
Metals	Nickel	mg/kg	6/6			1.01E+01	2.83E+01	1.72E+01	3.03E+01	1.77E+01	2/6	Yes	1.5E+02	No	3.7E+03	No	No
Metals	Potassium	mg/kg	6/6			6.65E+02	1.58E+03	9.15E+02	1.38E+03	1.95E+03	0/6	No		None		None	No
Metals	Selenium	mg/kg	6/17	1.50E-01	9.50E-01	3.70E-01	1.70E+00	4.51E-01	6.11E-01	1.70E+00	0/17	No	3.7E+01	No	9.4E+02	No	No
Metals	Sodium	mg/kg	5/6	4.83E+02	4.83E+02	2.59E+01	1.07E+02	1.28E+02	2.40E+03	1.12E+02	0/6	No		None		None	No
Metals	Thallium *	mg/kg	2/6	3.80E-01	9.50E-01	1.50E+00	1.80E+00	9.20E-01	1.42E+00	8.90E-01	2/6	Yes	6.0E-01	Yes	1.5E+01	No	Yes
Metals	Vanadium	mg/kg	6/6			1.30E+01	2.92E+01	1.73E+01	2.36E+01	2.61E+01	1/6	Yes	5.2E+01	No	1.3E+03	No	No
Metals	Zinc	mg/kg	17/17			3.83E+01	1.66E+02	8.09E+01	9.85E+01	5.32E+02	0/17	No	2.2E+03	No	1.0E+04	No	No
Organics-Semivolatile	Anthracene	mg/kg	1/3	1.65E-01	1.65E-01	1.50E-01	1.50E-01	1.60E-01	1.75E-01			Yes	1.4E+03	No	2.2E+04	No	No
Organics-Semivolatile	Benzo(a)anthracene	mg/kg	1/3	1.65E-01	1.65E-01	5.60E-01	5.60E-01	2.97E-01	6.81E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(a)pyrene	mg/kg	1/3	1.65E-01	1.65E-01	3.90E-01	3.90E-01	2.40E-01	4.59E-01			Yes	5.6E-03	Yes	3.6E-02	Yes	Yes

Table J.2.3. Summary of Site-related Chemical and COPC Screening for WBG Sediment[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Organics-Semivolatile	Benzo(b)fluoranthene	mg/kg	1/3	1.65E-01	1.65E-01	5.60E-01	5.60E-01	2.97E-01	6.81E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(g,h,i)perylene	mg/kg	1/3	1.65E-01	1.65E-01	1.30E-01	1.30E-01	1.53E-01	1.67E-01			Yes		None		None	Yes
Organics-Semivolatile	Benzo(k)fluoranthene	mg/kg	1/3	1.65E-01	1.65E-01	1.90E-01	1.90E-01	1.73E-01	1.98E-01			Yes	5.6E-01	No	3.6E+00	No	No
Organics-Semivolatile	Chrysene	mg/kg	1/3	1.65E-01	1.65E-01	5.10E-01	5.10E-01	2.80E-01	6.16E-01			Yes	5.6E+00	No	3.6E+01	No	No
Organics-Semivolatile	Fluoranthene	mg/kg	1/3	1.65E-01	1.65E-01	1.50E+00	1.50E+00	6.10E-01	1.91E+00			Yes	2.0E+02	No	3.7E+03	No	No
Organics-Semivolatile	Indeno(1,2,3-cd)pyrene	mg/kg	1/3	1.65E-01	1.65E-01	1.70E-01	1.70E-01	1.67E-01	1.72E-01			Yes	5.6E-02	Yes	3.6E-01	No	Yes
Organics-Semivolatile	Phenanthrene	mg/kg	1/3	1.65E-01	1.65E-01	6.40E-01	6.40E-01	3.23E-01	7.86E-01			Yes		None		None	Yes
Organics-Semivolatile	Pyrene	mg/kg	1/3	1.65E-01	1.65E-01	9.40E-01	9.40E-01	4.23E-01	1.16E+00			Yes	1.5E+02	No	2.6E+03	No	No
Organics-Volatile	Acetone	mg/kg	1/2	2.50E-03	2.50E-03	2.10E-02	2.10E-02	1.18E-02	7.02E-02			Yes	1.4E+02	No	6.1E+02	No	No
Organics-Volatile	Chloroform	mg/kg	1/3	2.50E-03	4.05E-03	2.00E-03	2.00E-03	2.85E-03	4.65E-03			Yes	2.4E-02	No	5.2E-02	No	No
Organics-Volatile	Toluene	mg/kg	1/3	2.50E-03	4.05E-03	2.50E-02	2.50E-02	1.05E-02	3.17E-02			Yes	5.2E+01	No	5.2E+01	No	No

SRC = Site-related chemical; COPC = Chemical of potential concern.

[1] Only analytes with detected concentrations are shown on this summary.

[2] Metals that were never detected in background samples have been assigned the background criteria of 0 mg/kg.

* Thallium concentrations were compared against the Region IX PRGs for Thallium carbonate, the most conservative form of thallium available.

Table J.2.4. Summary of Sire-related Chemical and COPC Screening for WBG Surface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Explosives	1,3,5-Trinitrobenzene	mg/kg	16/99	1.25E-01	1.25E+01	5.50E-02	4.90E+02	6.28E+00	1.46E+01			Yes	1.6E+02	Yes	3.2E+03	No	Yes
Explosives	1,3-Dinitrobenzene	mg/kg	1/99	1.25E-01	3.10E+01	8.40E-02	8.40E-02	6.53E-01	1.22E+00			Yes	5.5E-01	No	1.1E+01	No	No
Explosives	2,4,6-Trinitrotoluene	mg/kg	29/99	1.25E-01	2.25E-01	3.00E-02	3.80E+03	7.95E+01	1.65E+02			Yes	1.5E+00	Yes	1.0E+01	Yes	Yes
Explosives	2,4-Dinitrotoluene	mg/kg	8/99	1.25E-01	6.25E+00	6.50E-02	5.50E-01	1.98E-01	3.01E-01			Yes	1.1E+01	No	2.1E+02	No	No
Explosives	2,6-Dinitrotoluene	mg/kg	3/99	1.25E-01	6.50E+00	7.50E-02	6.20E-01	1.97E-01	3.05E-01			Yes	5.5E+00	No	1.1E+02	No	No
Explosives	2-Nitrotoluene	mg/kg	3/99	1.25E-01	3.10E+01	7.40E-02	1.70E-01	5.54E-01	1.22E+00			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	3-Nitrotoluene	mg/kg	3/99	1.25E-01	1.25E+01	9.10E-02	2.10E+01	5.52E-01	9.71E-01			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	4-Nitrotoluene	mg/kg	2/99	1.25E-01	3.10E+01	1.30E-01	1.90E-01	6.55E-01	1.22E+00			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	HMX	mg/kg	14/99	2.50E-01	5.00E+01	1.10E-01	1.70E+03	1.96E+01	4.81E+01			Yes	2.7E+02	Yes	5.3E+03	No	Yes
Explosives	Nitrobenzene	mg/kg	2/99	1.25E-01	3.10E+01	3.50E-02	5.40E-02	6.59E-01	1.23E+00			Yes	1.6E+00	No	1.0E+01	No	No
Explosives	Nitrocellulose as N	mg/kg	7/20	1.00E+00	2.95E+00	2.50E+00	3.15E+02	2.81E+01	5.83E+01			Yes		None		None	Yes
Explosives	Nitroglycerin	mg/kg	2/21	1.25E+00	2.60E+00	5.50E+00	1.20E+01	2.03E+00	2.96E+00			Yes		None		None	Yes
Explosives	RDX	mg/kg	10/99	2.50E-01	2.50E+01	1.80E-01	9.50E+03	1.01E+02	2.60E+02			Yes	4.0E-01	Yes	2.7E+00	Yes	Yes
Explosives	Tetryl	mg/kg	5/99	3.25E-01	8.00E+01	8.80E-02	4.80E-01	1.69E+00	3.15E+00			Yes	5.5E+01	No	1.1E+03	No	No
Metals	Aluminum	mg/kg	149/149			1.41E+03	5.01E+04	1.24E+04	1.31E+04	1.77E+04	12/149	Yes	7.5E+03	Yes	1.0E+04	Yes	Yes
Metals	Antimony	mg/kg	38/77	1.50E-01	8.00E-01	4.80E-01	2.79E+01	3.36E+00	4.54E+00	9.60E-01	34/77	Yes	3.0E+00	Yes	7.5E+01	No	Yes
Metals	Arsenic	mg/kg	149/149			2.50E+00	3.58E+01	1.32E+01	1.37E+01	1.54E+01	31/149	Yes	3.8E-02	Yes	3.0E-01	Yes	Yes
Metals	Barium	mg/kg	148/149	1.34E+01	1.34E+01	1.17E+01	1.04E+04	3.84E+02	5.47E+02	8.64E+01	69/149	Yes	5.2E+02	Yes	1.0E+04	Yes	Yes
Metals	Beryllium	mg/kg	21/76	9.50E-02	4.05E-01	2.30E-01	3.40E+00	4.21E-01	5.24E-01	8.80E-01	8/76	Yes	1.5E+01	No	3.4E+02	No	No
Metals	Cadmium	mg/kg	102/148	2.00E-02	3.50E-01	6.00E-02	8.77E+02	1.13E+01	2.14E+01	0.00E+00	102/148	Yes	3.7E+00	Yes	9.3E+01	Yes	Yes
Metals	Calcium	mg/kg	77/77			8.05E+02	1.11E+05	1.02E+04	1.37E+04	1.58E+04	11/77	No		None		None	No
Metals	Chromium	mg/kg	149/149			5.40E+00	1.89E+02	1.92E+01	2.16E+01	1.74E+01	54/149	Yes	3.0E+00	Yes	6.4E+00	Yes	Yes
Metals	Cobalt	mg/kg	76/77	9.55E+00	9.55E+00	1.20E+00	1.27E+01	7.87E+00	8.27E+00	1.04E+01	5/77	Yes	3.3E+02	No	2.9E+03	No	No
Metals	Copper	mg/kg	77/77			9.30E+00	1.68E+04	4.17E+02	7.92E+02	1.77E+01	63/77	Yes	2.8E+02	Yes	7.0E+03	Yes	Yes
Metals	Cyanide	mg/kg	7/76	5.00E-02	3.60E-01	6.40E-02	1.20E+00	3.29E-01	3.58E-01	0.00E+00	7/76	Yes	1.1E+02	No	2.1E+03	No	No
Metals	Iron	mg/kg	77/77			9.45E+03	3.91E+04	2.24E+04	2.35E+04	2.31E+04	36/77	No	2.2E+03	Yes	1.0E+04	Yes	No
Metals	Lead	mg/kg	149/149			1.02E+01	2.20E+03	1.68E+02	2.19E+02	2.81E+01	76/149	Yes	4.0E+01	Yes	1.0E+02	Yes	Yes
Metals	Magnesium	mg/kg	77/77			1.41E+03	1.67E+04	3.19E+03	3.63E+03	3.03E+03	24/77	No		None		None	No
Metals	Manganese	mg/kg	149/149			6.54E+01	3.91E+03	5.60E+02	6.02E+02	1.45E+03	7/149	No	3.1E+02	Yes	4.5E+03	No	No
Metals	Mercury	mg/kg	77/149	1.50E-02	6.50E-02	2.50E-02	1.20E+00	7.46E-02	9.43E-02	3.60E-02	63/149	Yes	2.2E+00	No	5.6E+01	No	No

Table J.2.4. Summary of Sire-related Chemical and COPC Screening for WBG Surface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Metals	Nickel	mg/kg	77/77			7.40E+00	1.33E+02	2.08E+01	2.36E+01	2.11E+01	25/77	Yes	1.5E+02	No	3.7E+03	No	No
Metals	Potassium	mg/kg	77/77			4.00E+02	3.05E+03	1.21E+03	1.34E+03	9.27E+02	57/77	No		None		None	No
Metals	Selenium	mg/kg	100/149	1.55E-01	4.85E-01	3.40E-01	5.00E+00	8.63E-01	9.56E-01	1.40E+00	17/149	Yes	3.7E+01	No	9.4E+02	No	No
Metals	Silver	mg/kg	25/149	9.50E-02	7.00E-01	2.20E-01	3.32E+01	8.94E-01	1.29E+00	0.00E+00	25/149	Yes	3.7E+01	No	9.4E+02	No	No
Metals	Sodium	mg/kg	42/76	1.41E+01	5.80E+01	4.35E+01	1.08E+03	1.29E+02	1.66E+02	1.23E+02	23/76	No		None		None	No
Metals	Thallium *	mg/kg	7/77	2.60E-01	6.00E-01	1.40E+00	3.10E+00	4.87E-01	5.89E-01	0.00E+00	7/77	Yes	6.0E-01	Yes	1.5E+01	No	Yes
Metals	Vanadium	mg/kg	77/77			1.12E+01	3.40E+01	2.10E+01	2.19E+01	3.11E+01	3/77	No	5.2E+01	No	1.3E+03	No	No
Metals	Zinc	mg/kg	149/149			2.86E+01	2.49E+04	4.24E+02	7.04E+02	6.18E+01	97/149	Yes	2.2E+03	Yes	1.0E+04	Yes	Yes
Organics-Semivolatile	2-Methylnaphthalene	mg/kg	3/14	1.65E-01	2.00E-01	4.70E-02	1.50E-01	1.62E-01	1.83E-01			Yes		None		None	Yes
Organics-Semivolatile	Acenaphthene	mg/kg	2/14	1.65E-01	3.45E-01	1.40E-01	1.50E-01	1.88E-01	2.11E-01			Yes	2.6E+02	No	2.6E+03	No	No
Organics-Semivolatile	Anthracene	mg/kg	2/14	1.65E-01	3.45E-01	4.40E-01	4.80E-01	2.33E-01	2.84E-01			Yes	1.4E+03	No	2.2E+04	No	No
Organics-Semivolatile	Benzo(a)anthracene	mg/kg	4/14	1.65E-01	3.45E-01	4.30E-02	1.00E+00	2.69E-01	3.87E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(a)pyrene	mg/kg	4/14	1.65E-01	3.45E-01	6.00E-02	8.00E-01	2.49E-01	3.40E-01			Yes	5.6E-03	Yes	3.6E-02	Yes	Yes
Organics-Semivolatile	Benzo(b)fluoranthene	mg/kg	4/14	1.65E-01	3.45E-01	9.30E-02	1.10E+00	2.89E-01	4.19E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(g,h,i)perylene	mg/kg	3/14	1.65E-01	3.45E-01	1.10E-01	3.90E-01	2.01E-01	2.36E-01			Yes		None		None	Yes
Organics-Semivolatile	Benzo(k)fluoranthene	mg/kg	3/14	1.65E-01	3.45E-01	9.10E-02	5.00E-01	2.20E-01	2.70E-01			Yes	5.6E-01	No	3.6E+00	No	No
Organics-Semivolatile	Bis(2-ethylhexyl)phthalate	mg/kg	1/14	1.65E-01	3.45E-01	3.40E-02	3.40E-02	1.87E-01	2.17E-01			Yes	3.2E+00	No	2.1E+01	No	No
Organics-Semivolatile	Carbazole	mg/kg	2/14	1.65E-01	3.45E-01	2.00E-01	2.70E-01	2.01E-01	2.24E-01			Yes	2.2E+00	No	1.5E+01	No	No
Organics-Semivolatile	Chrysene	mg/kg	4/14	1.65E-01	3.45E-01	5.00E-02	1.00E+00	2.70E-01	3.87E-01			Yes	5.6E+00	No	3.6E+01	No	No
Organics-Semivolatile	Di-n-butyl Phthalate	mg/kg	1/14	1.65E-01	3.45E-01	5.30E-02	5.30E-02	1.88E-01	2.16E-01			Yes	5.5E+02	No	1.1E+04	No	No
Organics-Semivolatile	Dibenzo(a,h)anthracene	mg/kg	2/14	1.65E-01	3.45E-01	5.40E-02	1.10E-01	1.79E-01	2.09E-01			Yes	5.6E-03	Yes	3.6E-02	Yes	Yes
Organics-Semivolatile	Dibenzofuran	mg/kg	2/14	1.65E-01	3.45E-01	1.10E-01	1.60E-01	1.86E-01	2.11E-01			Yes	2.1E+01	No	3.2E+02	No	No
Organics-Semivolatile	Fluoranthene	mg/kg	5/14	1.65E-01	3.45E-01	4.00E-02	2.70E+00	4.98E-01	8.78E-01			Yes	2.0E+02	No	3.7E+03	No	No
Organics-Semivolatile	Fluorene	mg/kg	2/14	1.65E-01	3.45E-01	1.80E-01	2.40E-01	1.97E-01	2.20E-01			Yes	1.8E+02	No	2.2E+03	No	No
Organics-Semivolatile	Indeno(1,2,3-cd)pyrene	mg/kg	3/14	1.65E-01	3.45E-01	1.30E-01	4.80E-01	2.11E-01	2.55E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Naphthalene	mg/kg	1/14	1.65E-01	2.10E-01	7.60E-02	7.60E-02	1.77E-01	1.93E-01			Yes	5.5E+00	No	1.9E+01	No	No
Organics-Semivolatile	Phenanthrene	mg/kg	5/14	1.65E-01	2.00E-01	7.00E-02	2.40E+00	4.12E-01	7.25E-01			Yes		None		None	Yes
Organics-Semivolatile	Pyrene	mg/kg	5/14	1.65E-01	3.45E-01	3.60E-02	2.10E+00	4.00E-01	6.74E-01			Yes	1.5E+02	No	2.6E+03	No	No
Organics-Volatile	Chloroform	mg/kg	1/10	2.50E-03	3.10E-03	2.00E-03	2.00E-03	2.60E-03	2.78E-03			Yes	2.4E-02	No	5.2E-02	No	No
Organics-Volatile	Methylene Chloride	mg/kg	1/10	2.50E-03	1.00E-02	1.20E-02	1.20E-02	4.90E-03	6.89E-03			Yes	8.5E-01	No	2.0E+00	No	No

Table J.2.4. Summary of Sire-related Chemical and COPC Screening for WBG Surface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Organics-Volatile	Toluene	mg/kg	6/10	2.50E-03	2.50E-03	7.90E-04	1.70E-01	3.36E-02	1.44E+00			Yes	5.2E+01	No	5.2E+01	No	No

SRC = Site-related chemical. COPC = Chemical of potential concern.

[1] Only analytes with detected concentrations are shown on this summary.

[2] Metals that were never detected in background samples have been assigned the background criteria of 0 mg/kg.

* Thallium concentrations were compared against the Region IX PRGs for Thallium cabonate, the most conservative form of thallium available.

Table J.2.5. Summary of Site-related Chemical and COPC Screening for WBG Subsurface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Explosives	1,3,5-Trinitrobenzene	mg/kg	32/130	1.25E-01	1.25E+01	2.70E-02	4.90E+02	4.91E+00	1.12E+01			Yes	1.6E+02	Yes	3.2E+03	No	Yes
Explosives	1,3-Dinitrobenzene	mg/kg	2/130	1.25E-01	3.10E+01	8.40E-02	2.60E-01	5.93E-01	1.03E+00			Yes	5.5E-01	No	1.1E+01	No	No
Explosives	2,4,6-Trinitrotoluene	mg/kg	49/130	1.25E-01	2.25E-01	3.00E-02	3.80E+03	6.13E+01	1.26E+02			Yes	1.5E+00	Yes	1.0E+01	Yes	Yes
Explosives	2,4-Dinitrotoluene	mg/kg	16/130	1.25E-01	6.25E+00	3.20E-02	5.50E-01	1.77E-01	2.56E-01			Yes	1.1E+01	No	2.1E+02	No	No
Explosives	2,6-Dinitrotoluene	mg/kg	6/130	1.25E-01	6.50E+00	6.50E-02	6.20E-01	1.81E-01	2.62E-01			Yes	5.5E+00	No	1.1E+02	No	No
Explosives	2-Nitrotoluene	mg/kg	5/130	1.25E-01	3.10E+01	7.40E-02	4.80E+00	5.91E-01	1.03E+00			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	3-Nitrotoluene	mg/kg	7/130	1.25E-01	1.25E+01	6.50E-02	2.10E+01	5.23E-01	8.50E-01			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	4-Nitrotoluene	mg/kg	5/130	1.25E-01	3.10E+01	8.40E-02	1.90E-01	6.01E-01	1.04E+00			Yes	5.5E+01	No	1.1E+03	No	No
Explosives	HMX	mg/kg	32/130	2.50E-01	5.00E+01	1.00E-01	1.70E+03	1.52E+01	3.68E+01			Yes	2.7E+02	Yes	5.3E+03	No	Yes
Explosives	Nitrobenzene	mg/kg	6/130	1.25E-01	3.10E+01	3.30E-02	3.60E-01	5.96E-01	1.03E+00			Yes	1.6E+00	No	1.0E+01	No	No
Explosives	Nitrocellulose as N	mg/kg	10/26	1.00E+00	2.95E+00	2.50E+00	3.15E+02	2.55E+01	4.90E+01			Yes		None		None	Yes
Explosives	Nitroglycerin	mg/kg	3/52	1.25E+00	2.60E+00	5.50E+00	1.20E+01	1.68E+00	2.10E+00			Yes		None		None	Yes
Explosives	RDX	mg/kg	23/130	2.50E-01	2.50E+01	1.40E-01	9.50E+03	7.76E+01	1.99E+02			Yes	4.0E-01	Yes	2.7E+00	Yes	Yes
Explosives	Tetryl	mg/kg	12/130	3.25E-01	8.00E+01	5.40E-02	4.80E-01	1.54E+00	2.67E+00			Yes	5.5E+01	No	1.1E+03	No	No
Metals	Aluminum	mg/kg	180/180			1.41E+03	5.01E+04	1.24E+04	1.30E+04	1.95E+04	9/180	No	7.5E+03	Yes	1.0E+04	Yes	No
Metals	Antimony	mg/kg	51/108	1.50E-01	8.00E-01	3.40E-01	2.79E+01	2.54E+00	3.40E+00	9.60E-01	37/108	Yes	3.0E+00	Yes	7.5E+01	No	Yes
Metals	Arsenic	mg/kg	180/180			2.50E+00	3.58E+01	1.33E+01	1.37E+01	1.98E+01	7/180	No	3.8E-02	Yes	3.0E-01	Yes	No
Metals	Barium	mg/kg	179/180	1.34E+01	1.34E+01	1.17E+01	1.04E+04	3.38E+02	4.73E+02	1.24E+02	63/180	Yes	5.2E+02	Yes	1.0E+04	Yes	Yes
Metals	Beryllium	mg/kg	31/107	9.50E-02	4.05E-01	2.30E-01	3.40E+00	4.04E-01	4.80E-01	8.60E-01	9/107	Yes	1.5E+01	No	3.4E+02	No	No
Metals	Cadmium	mg/kg	106/179	2.00E-02	3.50E-01	6.00E-02	8.77E+02	9.47E+00	1.79E+01	0.00E+00	106/179	Yes	3.7E+00	Yes	9.3E+01	Yes	Yes
Metals	Calcium	mg/kg	107/108	3.29E+02	3.29E+02	3.33E+02	1.11E+05	8.37E+03	1.09E+04	3.55E+04	5/108	No		None		None	No
Metals	Chromium	mg/kg	180/180			5.40E+00	1.89E+02	1.87E+01	2.08E+01	2.72E+01	15/180	Yes	3.0E+00	Yes	6.4E+00	Yes	Yes
Metals	Cobalt	mg/kg	107/108	9.55E+00	9.55E+00	1.20E+00	2.54E+01	8.68E+00	9.16E+00	2.32E+01	1/108	No	3.3E+02	No	2.9E+03	No	No
Metals	Copper	mg/kg	108/108			8.30E+00	1.68E+04	3.03E+02	5.71E+02	3.23E+01	53/108	Yes	2.8E+02	Yes	7.0E+03	Yes	Yes
Metals	Cyanide	mg/kg	7/106	5.00E-02	3.60E-01	6.40E-02	1.20E+00	3.22E-01	3.43E-01	0.00E+00	7/106	Yes	1.1E+02	No	2.1E+03	No	No
Metals	Iron	mg/kg	108/108			9.45E+03	3.91E+04	2.31E+04	2.39E+04	3.52E+04	3/108	No	2.2E+03	Yes	1.0E+04	Yes	No
Metals	Lead	mg/kg	180/180			9.90E+00	2.20E+03	1.43E+02	1.85E+02	1.91E+01	100/180	Yes	4.0E+01	Yes	1.0E+02	Yes	Yes
Metals	Magnesium	mg/kg	108/108			1.41E+03	1.67E+04	3.20E+03	3.52E+03	8.79E+03	2/108	No		None		None	No
Metals	Manganese	mg/kg	180/180			8.54E+01	3.91E+03	5.57E+02	6.21E+02	3.03E+03	3/180	No	3.1E+02	Yes	4.5E+03	No	No
Metals	Mercury	mg/kg	82/180	1.50E-02	6.50E-02	2.50E-02	1.20E+00	6.89E-02	8.53E-02	4.40E-02	48/180	Yes	2.2E+00	No	5.6E+01	No	No

Table J.2.5. Summary of Site-related Chemical and COPC Screening for WBG Subsurface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Metals	Nickel	mg/kg	108/108			7.40E+00	1.33E+02	2.12E+01	2.33E+01	6.07E+01	1/108	No	1.5E+02	No	3.7E+03	No	No
Metals	Potassium	mg/kg	108/108			4.00E+02	3.49E+03	1.30E+03	1.41E+03	3.35E+03	1/108	No		None		None	No
Metals	Selenium	mg/kg	102/180	1.55E-01	4.85E-01	3.40E-01	5.00E+00	7.74E-01	8.54E-01	1.50E+00	16/180	Yes	3.7E+01	No	9.4E+02	No	No
Metals	Silver	mg/kg	26/180	9.50E-02	7.00E-01	2.20E-01	3.32E+01	8.51E-01	1.18E+00	0.00E+00	25/180	Yes	3.7E+01	No	9.4E+02	No	No
Metals	Sodium	mg/kg	54/100	1.41E+01	5.80E+01	1.89E+01	1.08E+03	1.15E+02	1.44E+02	1.45E+02	27/100	No		None		None	No
Metals	Thallium *	mg/kg	10/108	2.80E-01	6.00E-01	7.60E-01	3.10E+00	4.50E-01	5.25E-01	9.10E-01	8/108	Yes	6.0E-01	Yes	1.5E+01	No	Yes
Metals	Vanadium	mg/kg	108/108			1.12E+01	4.05E+01	2.13E+01	2.22E+01	3.76E+01	1/108	No	5.2E+01	No	1.3E+03	No	No
Metals	Zinc	mg/kg	180/180			2.86E+01	2.49E+04	3.64E+02	5.96E+02	9.33E+01	73/180	Yes	2.2E+03	Yes	1.0E+04	Yes	Yes
Organics-Semivolatile	2-Methylnaphthalene	mg/kg	4/23	1.65E-01	2.05E-01	4.70E-02	1.50E-01	1.70E-01	1.88E-01			Yes		None		None	Yes
Organics-Semivolatile	Acenaphthene	mg/kg	2/23	1.65E-01	3.45E-01	1.40E-01	1.50E-01	1.92E-01	2.05E-01			Yes	2.6E+02	No	2.8E+03	No	No
Organics-Semivolatile	Anthracene	mg/kg	3/23	1.65E-01	3.45E-01	9.80E-02	4.80E-01	2.15E-01	2.48E-01			Yes	1.4E+03	No	2.2E+04	No	No
Organics-Semivolatile	Benzo(a)anthracene	mg/kg	6/23	1.65E-01	3.45E-01	4.30E-02	1.00E+00	2.47E-01	3.20E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(a)pyrene	mg/kg	6/23	1.65E-01	3.45E-01	6.00E-02	8.00E-01	2.35E-01	2.95E-01			Yes	5.6E-03	Yes	3.6E-02	Yes	Yes
Organics-Semivolatile	Benzo(b)fluoranthene	mg/kg	6/23	1.65E-01	3.45E-01	7.80E-02	1.10E+00	2.69E-01	3.55E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Benzo(g,h,i)perylene	mg/kg	4/23	1.65E-01	3.45E-01	1.10E-01	3.90E-01	2.04E-01	2.27E-01			Yes		None		None	Yes
Organics-Semivolatile	Benzo(k)fluoranthene	mg/kg	4/23	1.65E-01	3.45E-01	9.10E-02	5.00E-01	2.15E-01	2.45E-01			Yes	5.6E-01	No	3.6E+00	No	No
Organics-Semivolatile	Bis(2-ethylhexyl)phthalate	mg/kg	1/23	1.65E-01	3.45E-01	3.40E-02	3.40E-02	1.91E-01	2.08E-01			No	3.2E+00	No	2.1E+01	No	No
Organics-Semivolatile	Carbazole	mg/kg	3/23	1.65E-01	3.45E-01	8.60E-02	2.70E-01	1.95E-01	2.11E-01			Yes	2.2E+00	No	1.5E+01	No	No
Organics-Semivolatile	Chrysene	mg/kg	6/23	1.65E-01	3.45E-01	5.00E-02	1.00E+00	2.51E-01	3.26E-01			Yes	5.6E+00	No	3.6E+01	No	No
Organics-Semivolatile	Di-n-butyl Phthalate	mg/kg	1/23	1.65E-01	3.45E-01	5.30E-02	5.30E-02	1.92E-01	2.08E-01			No	5.5E+02	No	1.1E+04	No	No
Organics-Semivolatile	Dibenzo(a,h)anthracene	mg/kg	3/23	1.65E-01	3.45E-01	5.40E-02	1.10E-01	1.81E-01	2.00E-01			Yes	5.6E-03	Yes	3.6E-02	Yes	Yes
Organics-Semivolatile	Dibenzofuran	mg/kg	2/23	1.65E-01	3.45E-01	1.10E-01	1.60E-01	1.91E-01	2.05E-01			Yes	2.1E+01	No	3.2E+02	No	No
Organics-Semivolatile	Fluoranthene	mg/kg	7/23	1.65E-01	3.45E-01	4.00E-02	2.70E+00	4.20E-01	6.55E-01			Yes	2.0E+02	No	3.7E+03	No	No
Organics-Semivolatile	Fluorene	mg/kg	2/23	1.65E-01	3.45E-01	1.60E-01	2.40E-01	1.97E-01	2.10E-01			Yes	1.8E+02	No	2.2E+03	No	No
Organics-Semivolatile	Indeno(1,2,3-cd)pyrene	mg/kg	4/23	1.65E-01	3.45E-01	1.30E-01	4.80E-01	2.14E-01	2.42E-01			Yes	5.6E-02	Yes	3.6E-01	Yes	Yes
Organics-Semivolatile	Naphthalene	mg/kg	1/23	1.65E-01	2.10E-01	7.60E-02	7.60E-02	1.85E-01	1.95E-01			No	5.5E+00	No	1.9E+01	No	No
Organics-Semivolatile	Phenanthrene	mg/kg	7/23	1.65E-01	2.05E-01	7.00E-02	2.40E+00	3.38E-01	5.25E-01			Yes		None		None	Yes
Organics-Semivolatile	Pyrene	mg/kg	7/23	1.65E-01	3.45E-01	3.60E-02	2.10E+00	3.47E-01	5.16E-01			Yes	1.5E+02	No	2.6E+03	No	No
Organics-Volatile	Acetone	mg/kg	1/11	2.50E-03	6.00E-03	5.20E-02	5.20E-02	9.18E-03	1.70E-02			Yes	1.4E+02	No	6.1E+02	No	No
Organics-Volatile	Chloroform	mg/kg	1/15	2.50E-03	3.10E-03	2.00E-03	2.00E-03	2.73E-03	2.68E-03			Yes	2.4E-02	No	5.2E-02	No	No

Table J.2.5. Summary of Site-related Chemical and COPC Screening for WBG Subsurface Soil[1]

Analysis Type	Analyte	Units	Results > Detection Limit	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Average Result	95% UCL on Mean	Site Background Criteria[2]	Detects > Site Background Criteria	SRC?	Region IX Residential Soil (mg/kg)	Max Detect > Residential Soil Criteria	Region IX Industrial Soil (mg/kg)	Max Detect > Industrial Soil Criteria	COPC?
Organics-Volatile	Methylene Chloride	mg/kg	1/15	2.50E-03	1.00E-02	1.20E-02	1.20E-02	4.26E-03	5.58E-03			Yes	8.5E-01	No	2.0E+00	No	No
Organics-Volatile	Toluene	mg/kg	12/15	2.50E-03	3.00E-03	4.30E-04	1.70E-01	2.31E-02	2.03E-01			Yes	5.2E+01	No	5.2E+01	No	No

SRC = Site-related chemical; COPC = Chemical of potential concern.

[1] Only analytes with detected concentrations are shown on this summary.

[2] Metals that were never detected in background samples have been assigned the background criteria of 0 mg/kg.

* Thallium concentrations were compared against the Region IX PRGs for Thallium caborate, the most conservative form of thallium available.

Tables J.2.6. Summary of quantitative and qualitative COPCs for each medium

Chemical	Groundwater	Surface Water	Sediment	Surface Soil	Sub-surface Soil
Quantitative COPCs					
Inorganics					
Antimony				X	X
Arsenic				X	
Barium			X	X	X
Cadmium				X	X
Chromium			X	X	X
Manganese	X				
Thallium			X	X	X
Zinc				X	X
Organics					
1,3,5-Trinitrobenzene				X	X
2,4,6-Trinitrotoluene				X	X
Benzo(a)anthracene			X	X	X
Benzo(a)pyrene			X	X	X
Benzo(b)fluoranthene			X	X	X
Bis(2-ethylhexyl)phthalate	X				
Chloroform	X				
Dibenzo(a,h)anthracene				X	X
HMX				X	X
Indeno(1,2,3-cd)pyrene			X	X	X
RDX	X			X	X
Qualitative COPCs					
Inorganics					
Aluminum			X	X	
Copper				X	X
Lead	X		X	X	X
Organics					
2-Methylnaphthalene				X	X
Benzo(g,h,i)perylene			X	X	X
Nitrocellulose as N				X	X
Nitroglycerin				X	X
Phenanthrene			X	X	X

COPC = Chemical of potential concern.

Quantitative COPCs are those COPCs for which risks and/or hazards have been calculated.
Qualitative COPCs are those COPCs for which risks and/or hazards have not been calculated, based on a lack of toxicity data.

Table J.4.1. Noncarcinogenic reference doses

Analyte	Oral chronic RfD (mg/kg-d)	Confidence level*	% GI absorption[a]	Dermal chronic RfD (mg/kg-d)	Inhalation chronic RfD (mg/kg-d)	RfD basis (vehicle)	Critical effect	Uncertainty factor; modifying factor*,[b]
1,3,5-Trinitorobenzene	3.00E-02	Medium (O)	65	1.95E-02		Oral: (rat)	Methemoglobinemia and spleen-erythroid cell hyperplasia	(O)UF=100
2,4,6-Trinitrotoluene	5.00E-04	Medium (O)	60	3.00E-04		Oral: (dog)	Liver effects	(O)UF=1000
Antimony	4.00E-04	Low	2	8.00E-06		Oral: water	Gastrointestinal liver, cardiovascular, and developmental toxicity	(O)UF=1000
Arsenic	3.00E-04	Medium (O)	41	1.23E-04		Oral: water	Hyperpigmentation and keratosis and possible vascular complications	(O)UF=3
Barium	7.00E-02	Medium (O)	7	4.90E-03	1.43E-04	Oral: water: Inhalation	(O): increased blood pressure (human)(I): baritosis (human)	(O)UF=3 (I)UF=1000
Bis(2-ethylhexyl)phthalate	2.00E-02	Medium (O)	19	3.80E-03		Oral: (guinea pig)	Increased relative liver weight (guinea pig)	(O)UF=1000
Cadmium	1.00E-03	High	1	1.00E-05		Oral	Renal toxicity, osteomalacia, osteoporosis, and significant proteinuria	(O)UF=10
Chloroform	1.00E-02	Medium (O)	20	2.00E-03		Oral: (dog)	Liver fatty cyst formation (dog)	(O)UF=1000
Chromium[c]	3.00E-03	Low (O)	2	6.00E-05	2.86E-05	Oral	(O): local gastrointestinal effects at very high doses (animals) (I): respiratory effects (human)	UF=500
HMX	5.00E-02	Low (O)	15	7.50E-03		Oral: (rat)	(O): Hepatic lesions	(O)UF=1000
Manganese	4.60E-02	NA	4	1.84E-03	1.43E-05	Oral: water Inhalation:	(O): lethargy, tremors, mental disturbance, muscle tonus, and central nervous system effects (I) Impaired neurobehavioral function (human)	(O)UF=1 (O)MF=3 (I)UF=1000
RDX	3.00E-03	High (O)	100	3.00E-03		Oral	(O): Inflammation of the prostate	(O)UF=100 (O)MF=1
Thallium[d]	8.00E-05	Low (O)	50	4.00E-05		Oral: (rat)	(O): Increased levels of SGOT and LDH	(O)UF=3000
Zinc	3.00E-01	Medium	20	6.00E-02		Oral: (human)	(O): copper deficiency and hypochromic microcytic anemia (human) (I): pulmonary and gastrointestinal effects (human)	UF=10

Notes: NA = not available; MF = modifying factor; UF = uncertainty factor. All RfDs are from IRIS or were derived from values in IRIS.

*(I) indicates inhalation; (O) indicates oral.

[a]GI% absorption default values of 20, 50, or 80 were used in accordance with EPA (1995a); other chemical-specific GI% absorption values were taken from Energy Systems (1996).

[b]The default MF is 1.

[c]Chromium evaluated with toxicity of Chromium VI (particulates) for soil and sediment; chromium was not a COPC for groundwater or surface water.

[d]Thallium evaluated with toxicity of Thallium Carbonate.

Table J.4.2. Carcinogenic slope factors

Analyte	Oral slope factor $(mg/kg\text{-}day)^{-1}$	% GI absorption[a]	Dermal slope factor $(mg/kg\text{-}day)^{-1}$	Inhalation slope factor $(mg/kg\text{-}day)^{-1}$	EPA class	TEF[b]	Type of cancer
2,4,6-Trinitrotoluene	3.00E-02	60	5.00E-02		C		Urinary bladder papilloma and carcinoma (rats)
Arsenic[c]	1.50E+00	41	3.66E+00	5.00E+01[c]	A		Respiratory system tumors
Benzo(*a*)anthracene[b]	7.30E-01[b]	31	2.35E+00[b]	3.10E-01[b]	B2	0.1	Stomach tumors (mouse)
Benzo(*a*)pyrene[b,c]	7.30E+00[b]	31	2.35E+01[b]	3.10E+00[b,c]	B2	1.0	Stomach, nasal cavity, larynx, trachea, and pharynx tumors
Benzo(*b*)fluoranthene[b]	7.30E-01[b]	31	2.35E+00[b]	3.10E-01[b]	B2	0.1	Tumors
Bis(2-ethylhexyl)phthalate	1.40E-02	19	7.37E-02		B2		Liver neoplastic nodule and hepatocellular carcinoma
Cadmium[c]		1		6.10E+00[c]	B1		Respiratory tract and lung tumors
Chloroform	6.10E-03	20	3.05E-02	8.10E-02[e]	B2		Colon, rectum, bladder, and liver carcinoma (mouse)
Chromium[d]		2		4.10E+01[e]	A		Lung tumors
Dibenzo(*a,h*)anthracene[b]	7.30E+00[b]	31	2.35E+01[b]	3.10E+00[b]	B2	1.0	Immunodepressive effects (mouse)
Indeno(*1,2,3-cd*)pyrene[b]	7.30E-01[b]	31	2.35E+00[b]	3.10E-01[b]	B2	0.1	Tumors
RDX	1.10E-01	100	1.10E-01		C		Hepatocellular adenomas and carcinomas (mice)

NOTES: Unless otherwise footnoted, slope factors are from IRIS or have been derived from values in IRIS.

[a] GI% absorption default values of 20, 50, or 80 were used in accordance with EPA (1995a); other chemical-specific GI% absorption values were taken from Energy Systems (1996).
[b] Toxicity Equivalence Factor (TEF) have been used, based on the relative potency of each compound relative to that of benzo(*a*)pyrene (EPA 1995a).
[c] EPA-withdrawn toxicity values or provisional values were used.
[d] Chromium evaluated with toxicity of Chromium VI.
[e] Value is from HEAST.

Table J.6.1 General uncertainty factors in risk assessment

Uncertainty factor	Effect of uncertainty	Comment
Use of cancer slope factors	May overestimate risks	Slope factors are upper 95th percent confidence limit of the slope of the dose-response curve; considered unlikely to underestimate true risk
Risks/doses within an exposure route assumed to be additive	May over- or underestimate risks	Does not account for synergism or antagonism
Toxicity values derived primarily from animal studies	May over- or underestimate risks	Extrapolation from animal to humans may induce error due to differences in pharmacokinetics, target organs, and population variability
Toxicity values derived primarily from high doses; most exposures are at low doses	May over- or underestimate risks	Assumes linearity at low doses; tends to have conservative exposure assumptions
Toxicity values	May over- or underestimate risks	Not all values represent the same degree of certainty; all are subject to change as new evidence becomes available
Effect of absorption	May over- or underestimate risks	The assumption that absorption is equivalent across species is implicit in the derivation of the critical toxicity values; absorption may actually vary with species and age
Effect of applying critical toxicity values to soil exposures	May overestimate risks	Assumes bioavailability of contaminants sorbed onto soils is the same as detected in laboratory studies; contaminants detected in studies may be more bioavailable
Exposures assumed constant over time	May over- or underestimate risks	Does not account for environmental fate, transport, or transfer that may alter the concentration
Metal analysis for total metals only	May overestimate risks	Does not distinguish between valences or speciation; assume the metal is present in its most toxic form
Not all chemicals at the site have toxicity values	May overestimate risks	These chemicals are not addressed quantitatively
Exposure assumptions	May over- or underestimate risks	Assumptions regarding media intake, population characteristics, and exposure patterns may not characterize exposures

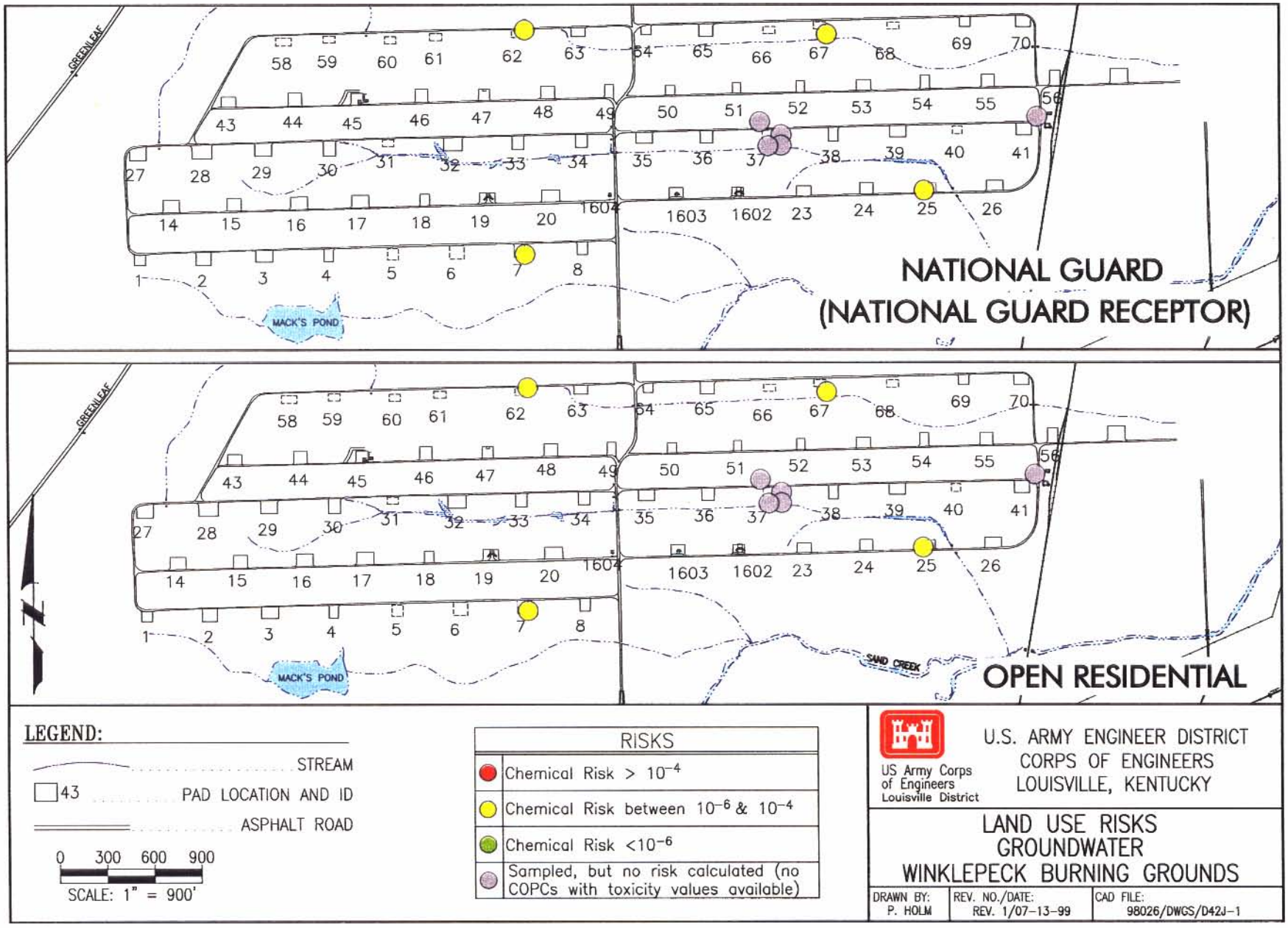


Figure J.1. Chemical Risks from Direct Exposure to Groundwater: A Comparison of Land Uses

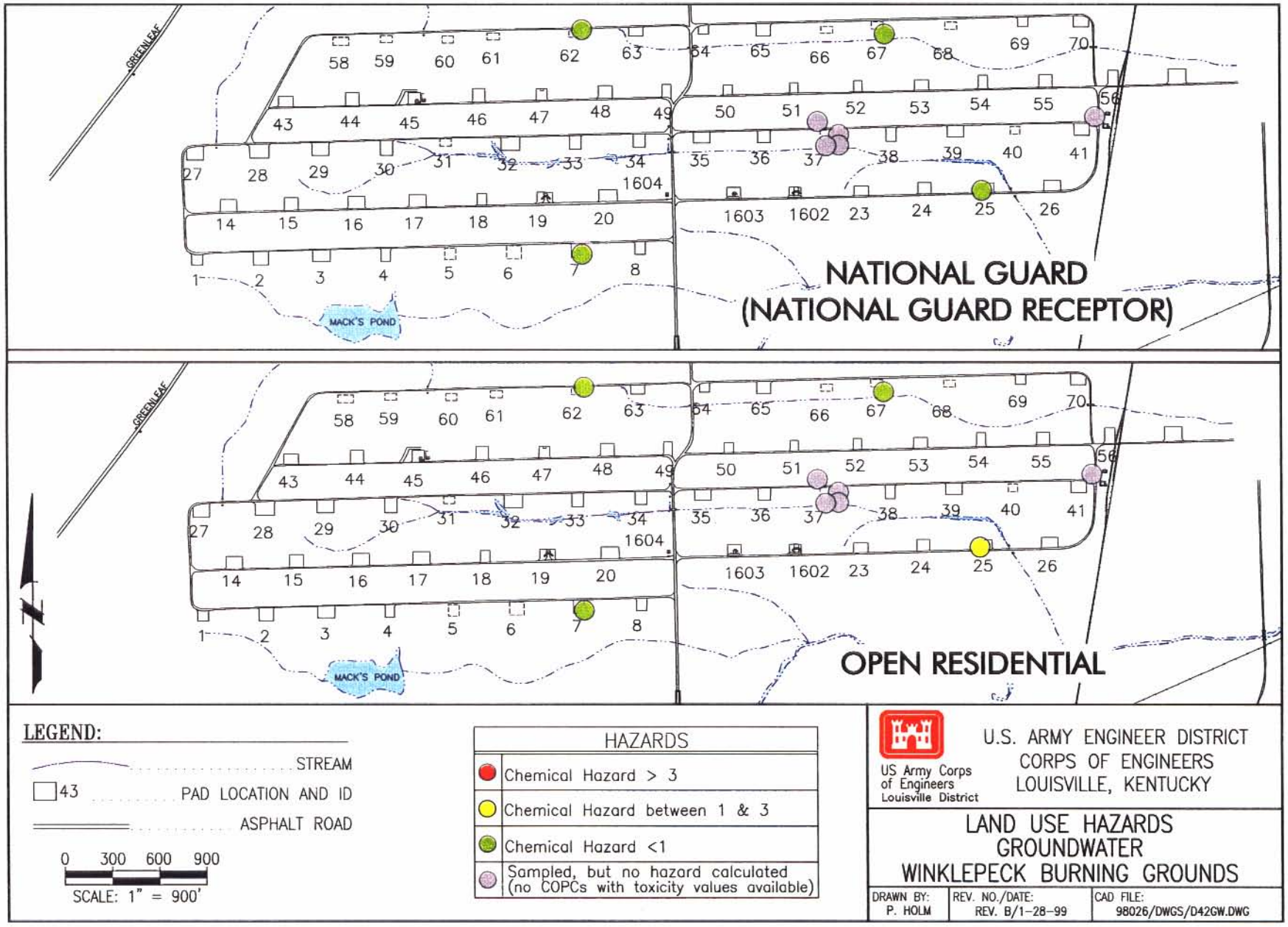


Figure J.2. Chemical Hazards from Direct Exposure to Groundwater: A Comparison of Land Uses

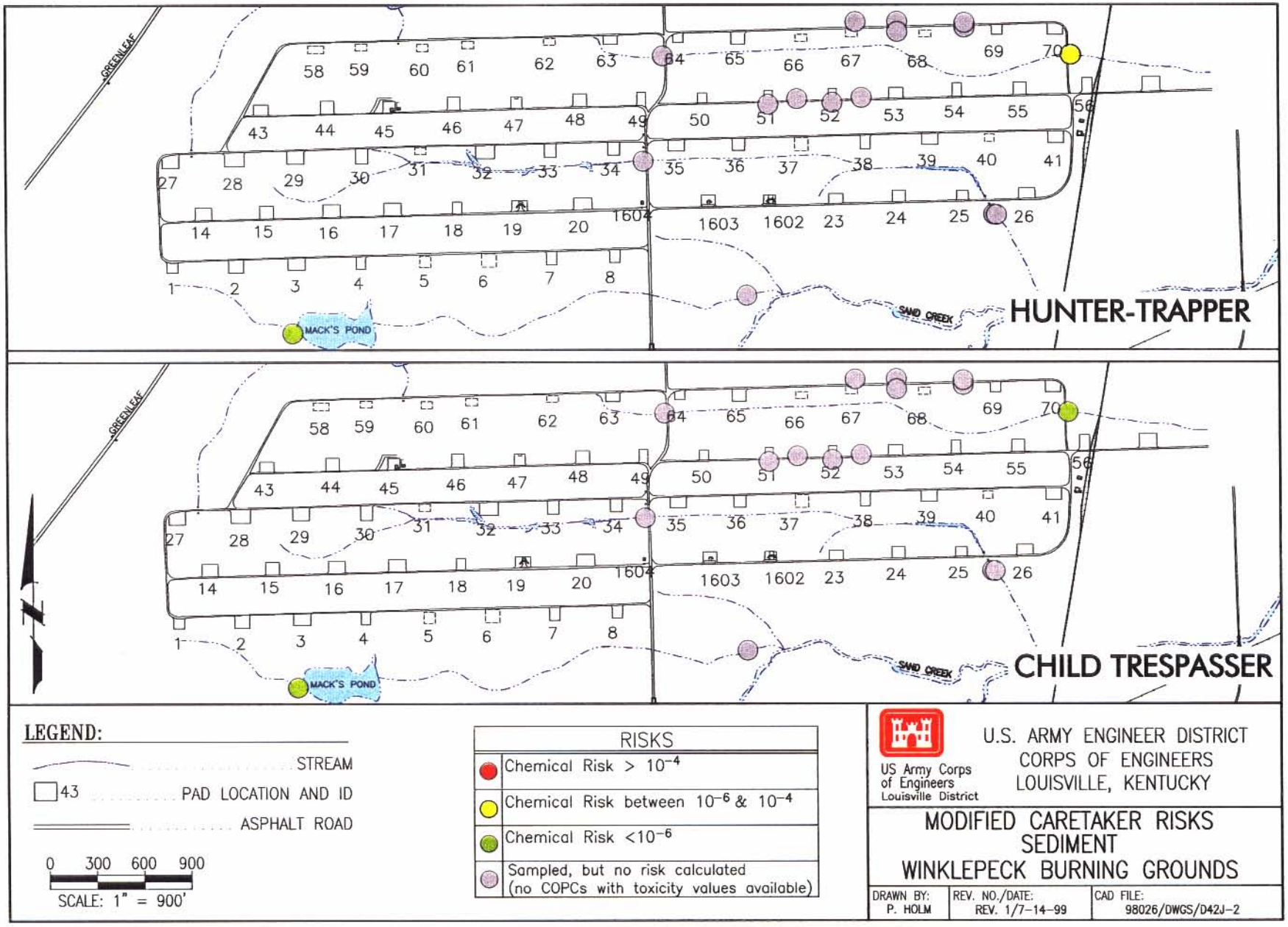


Figure J.3. Chemical Risks from Direct Exposure to Sediment: Modified Caretaker Land Use

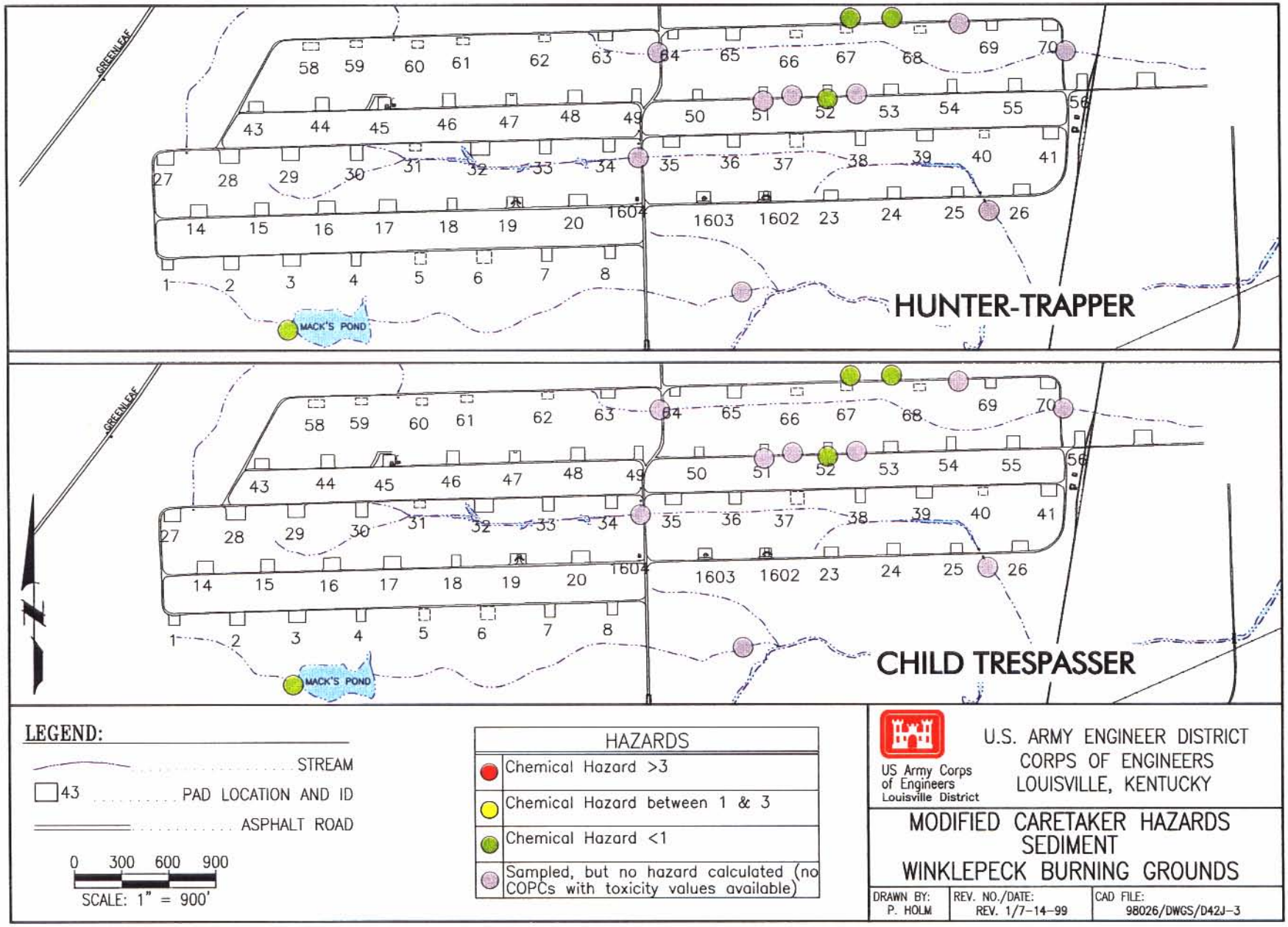
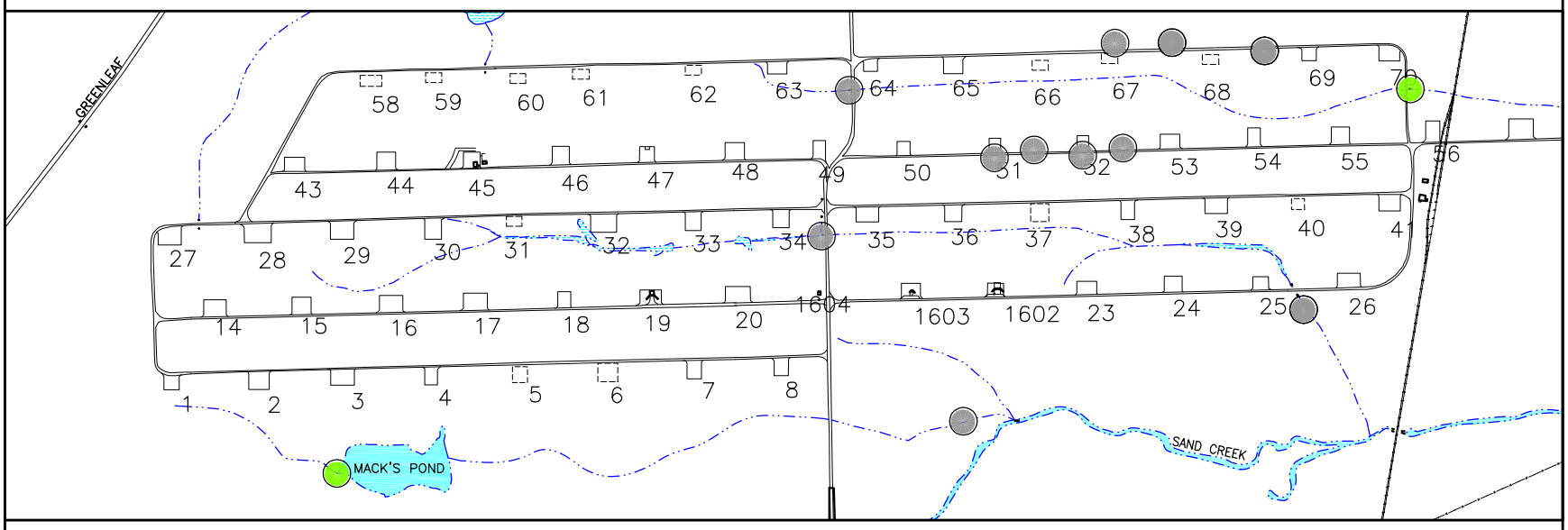
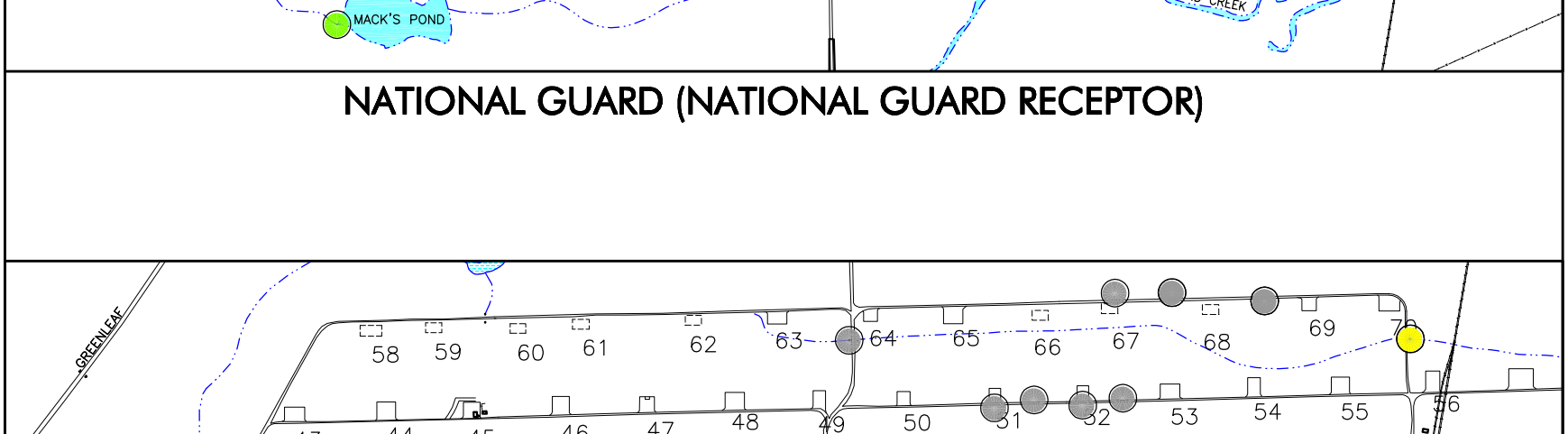


Figure J.4 Chemical Hazards from Direct Exposure to Sediment: Modified Caretaker Land Use



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS	
	Chemical Risk > 10^{-4}
	Chemical Risk between 10^{-6} & 10^{-4}
	Chemical Risk $<10^{-6}$
	Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

NATIONAL GUARD RISKS
SEDIMENT
WINKLEPECK BURNING GROUNDS

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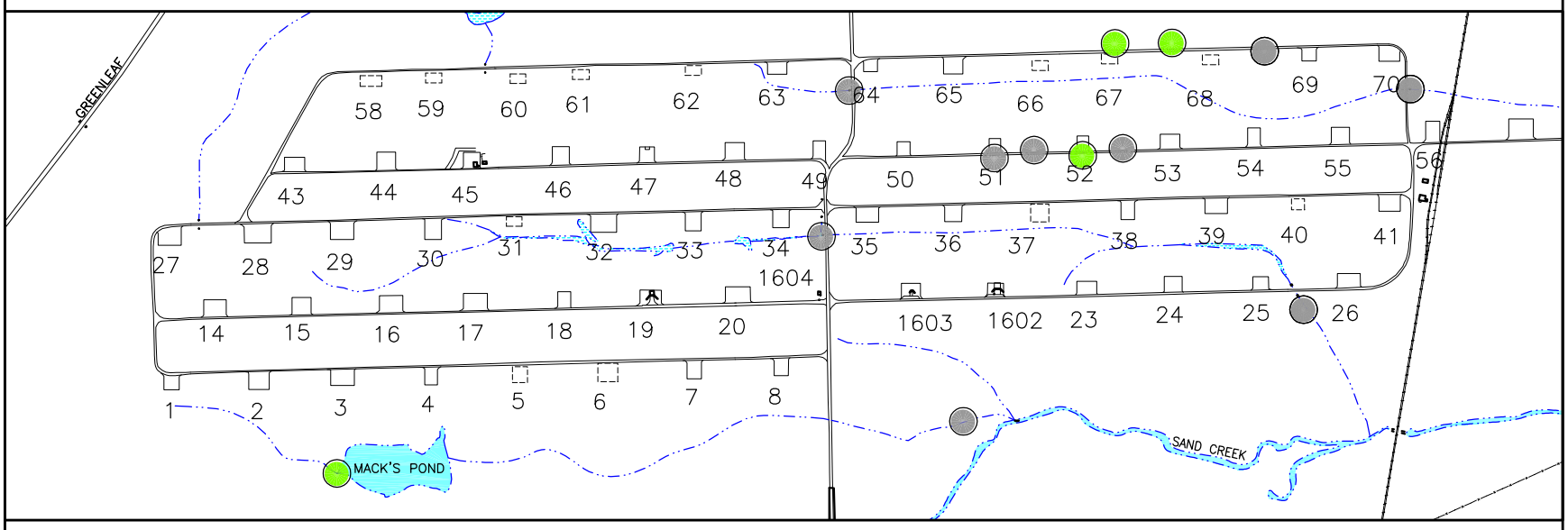
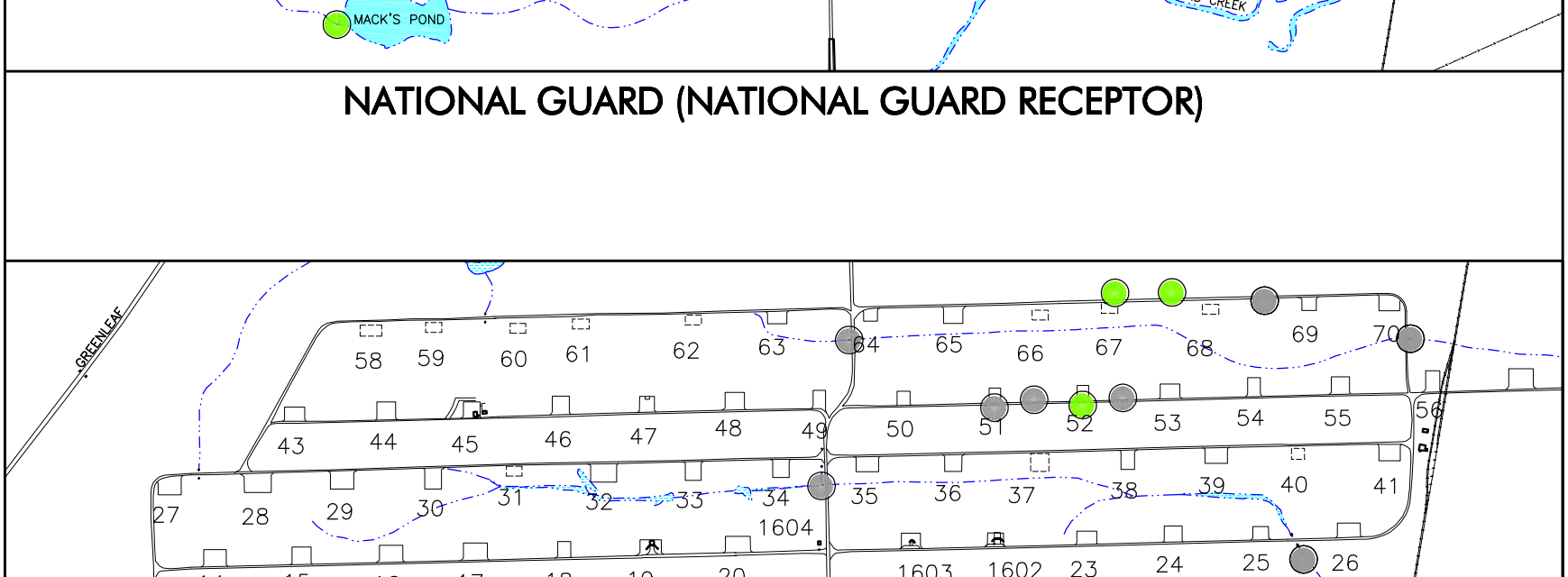
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-4

Figure J-5. Chemical Risks from Direct Exposure to Sediment: National Guard Land Use



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS
Chemical Hazard > 3
Chemical Hazard between 1 & 3
Chemical Hazard <1
Sampled, but no hazard calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

NATIONAL GUARD HAZARDS
SEDIMENT
WINKLEPECK BURNING GROUNDS

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-5

Figure J-6. Chemical Hazards from Direct Exposure to Sediment: National Guard Land Use

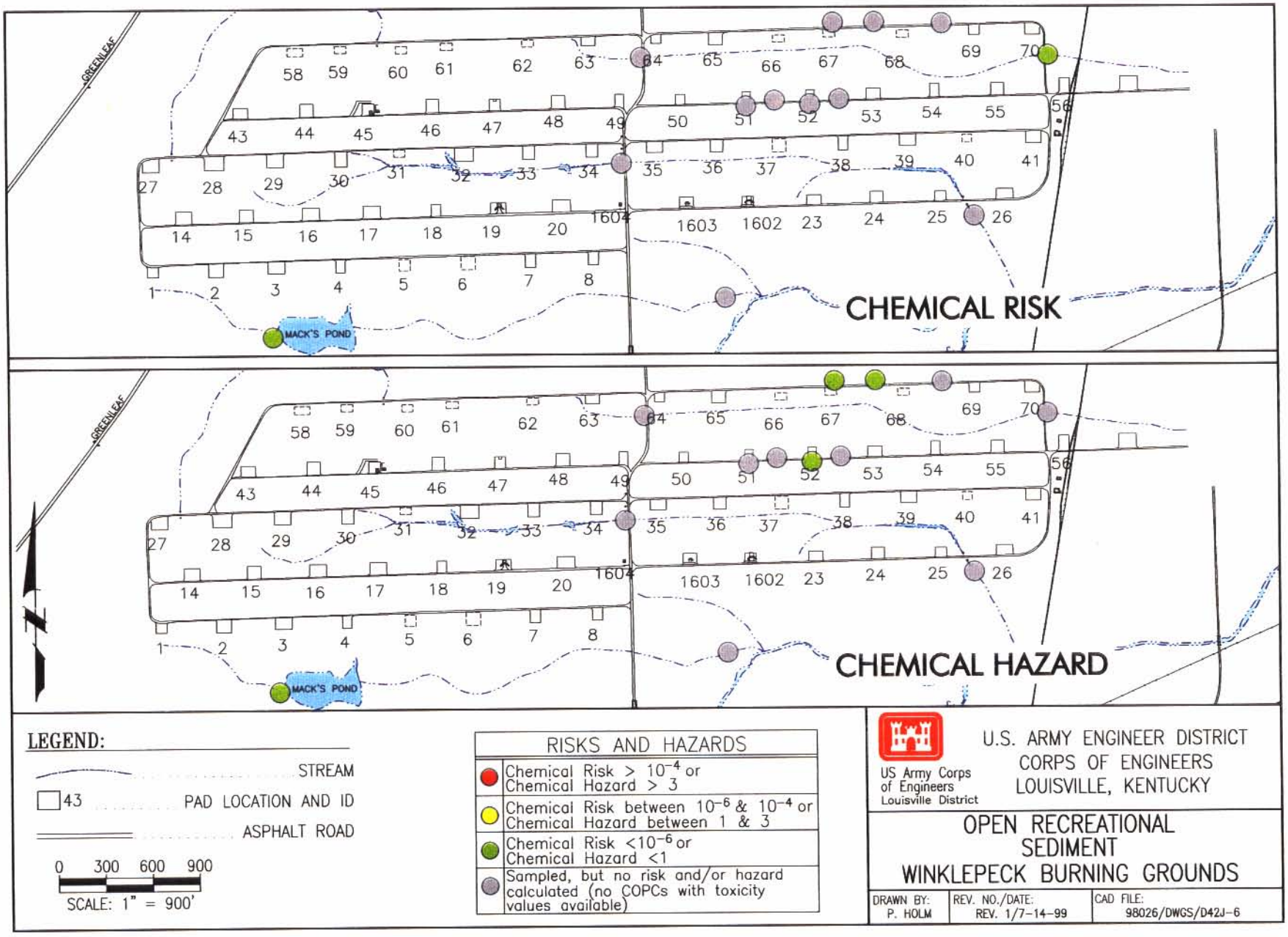


Figure J.7. Chemical Risks and Hazards from Direct Exposure to Sediment: Open Recreational Land Use

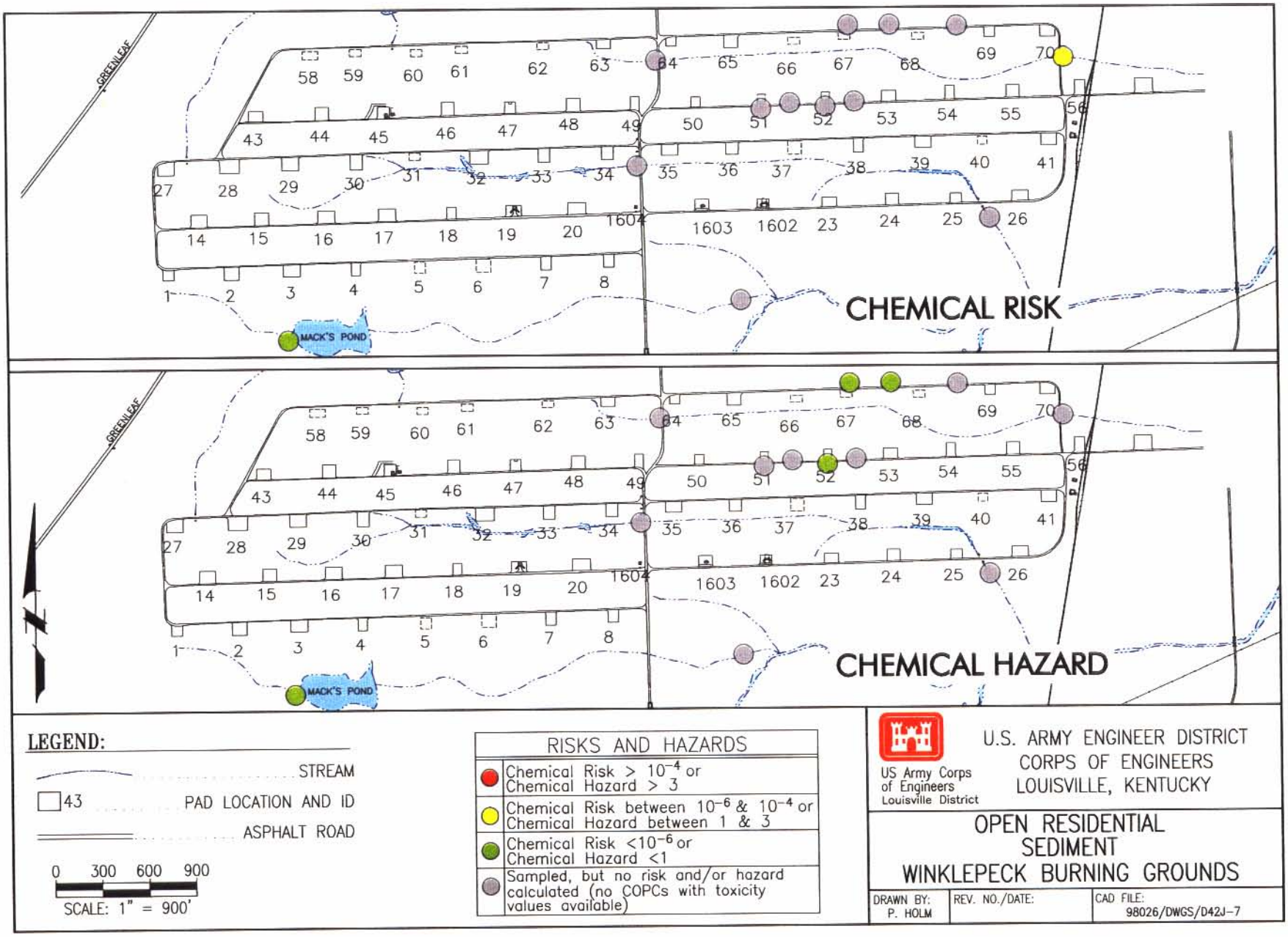
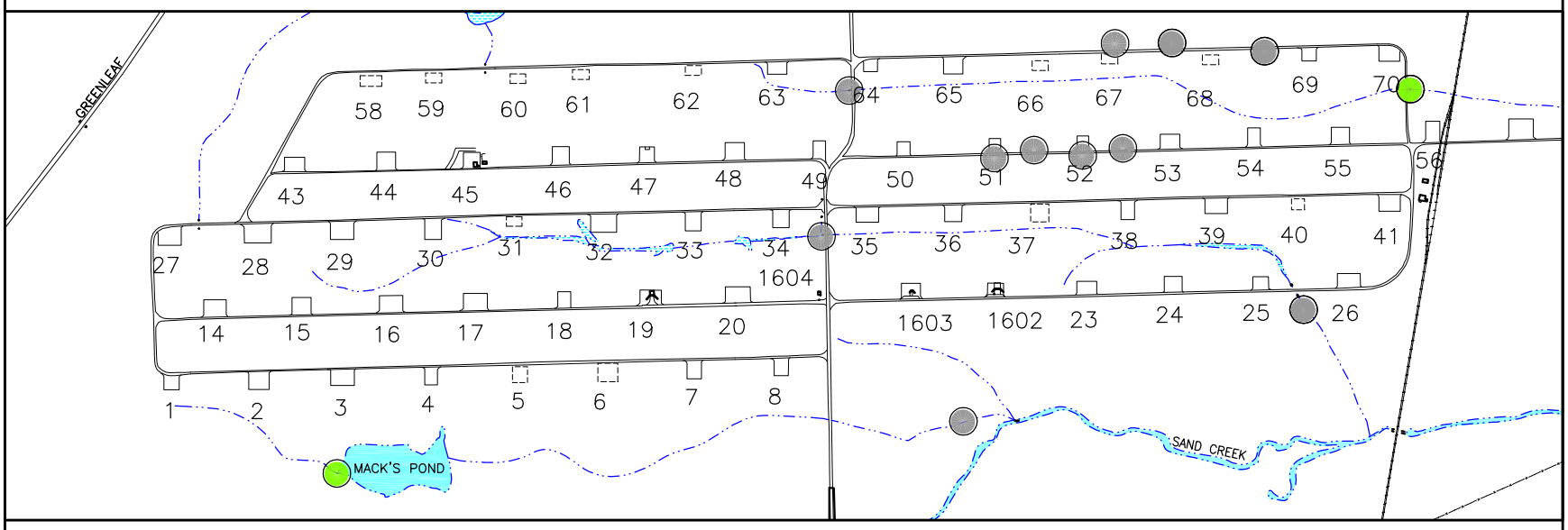
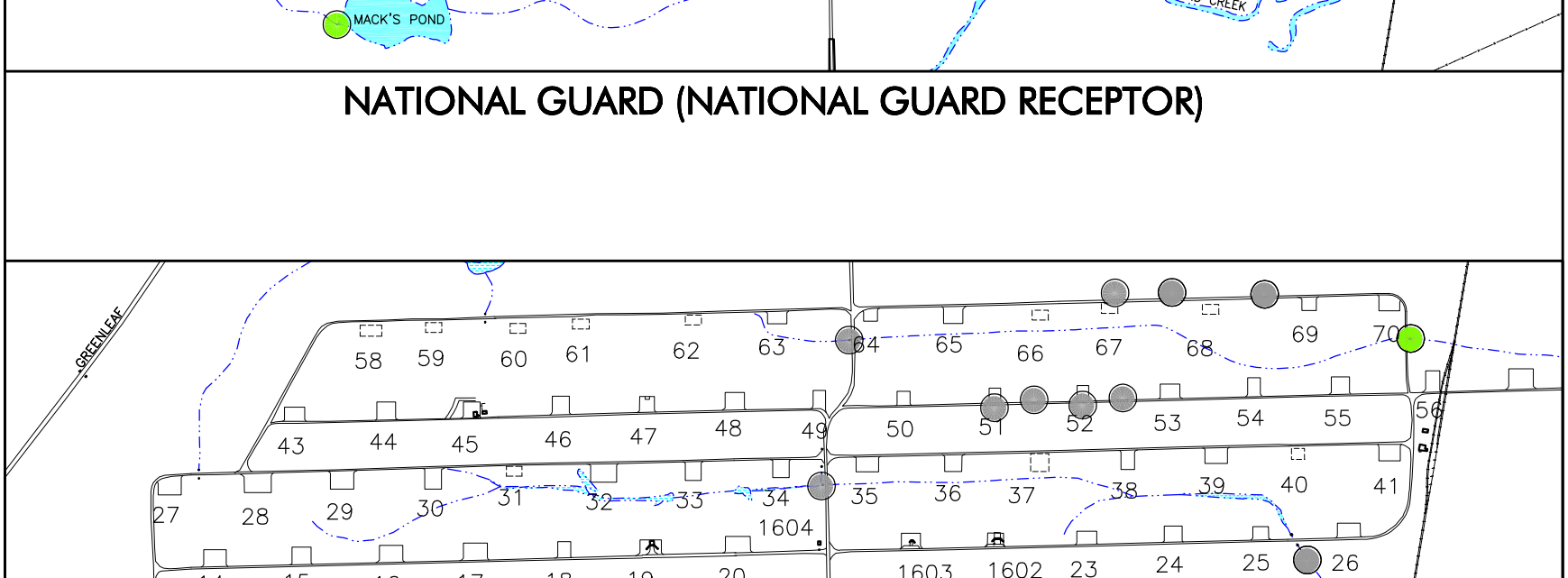


Figure J.8 Chemical Risks and Hazards from Direct Exposure to Sediment: Open Residential Land Use



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

OPEN RECREATIONAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS
Chemical Risk > 10^{-4}
Chemical Risk between 10^{-6} & 10^{-4}
Chemical Risk $<10^{-6}$
Sampled, but no risk calculated (no COPCs with toxicity values available)

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LOUISVILLE, KENTUCKY

LAND USE RISKS
SEDIMENT
WINKLEPECK BURNING GROUNDS

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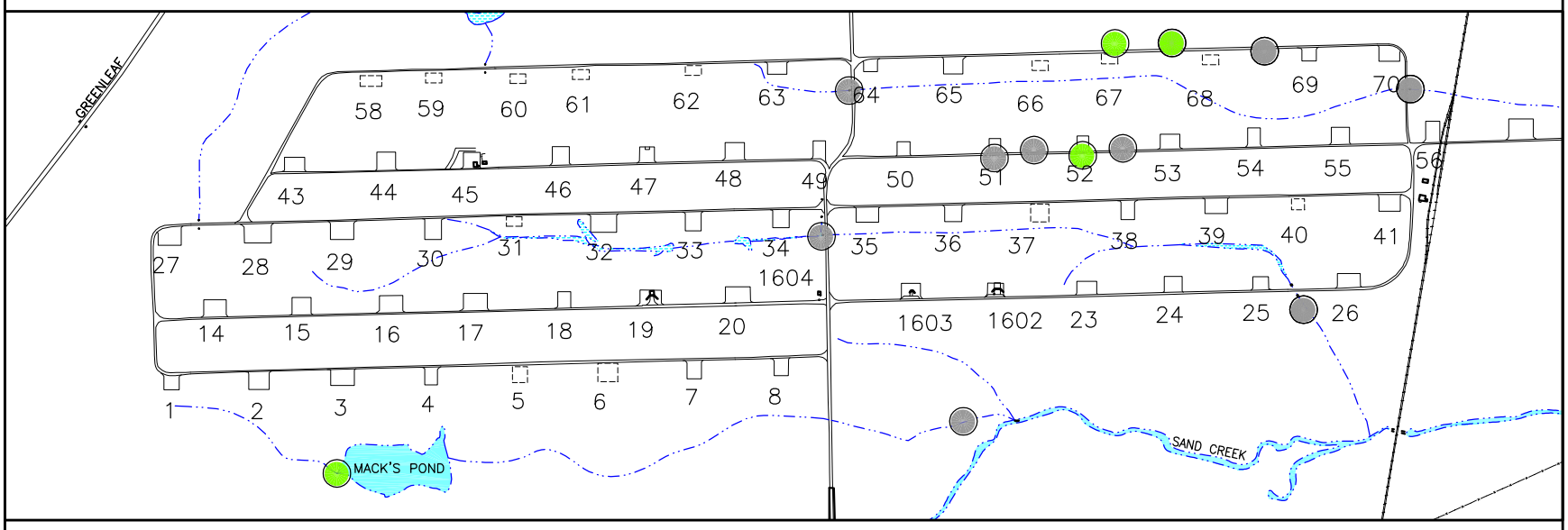
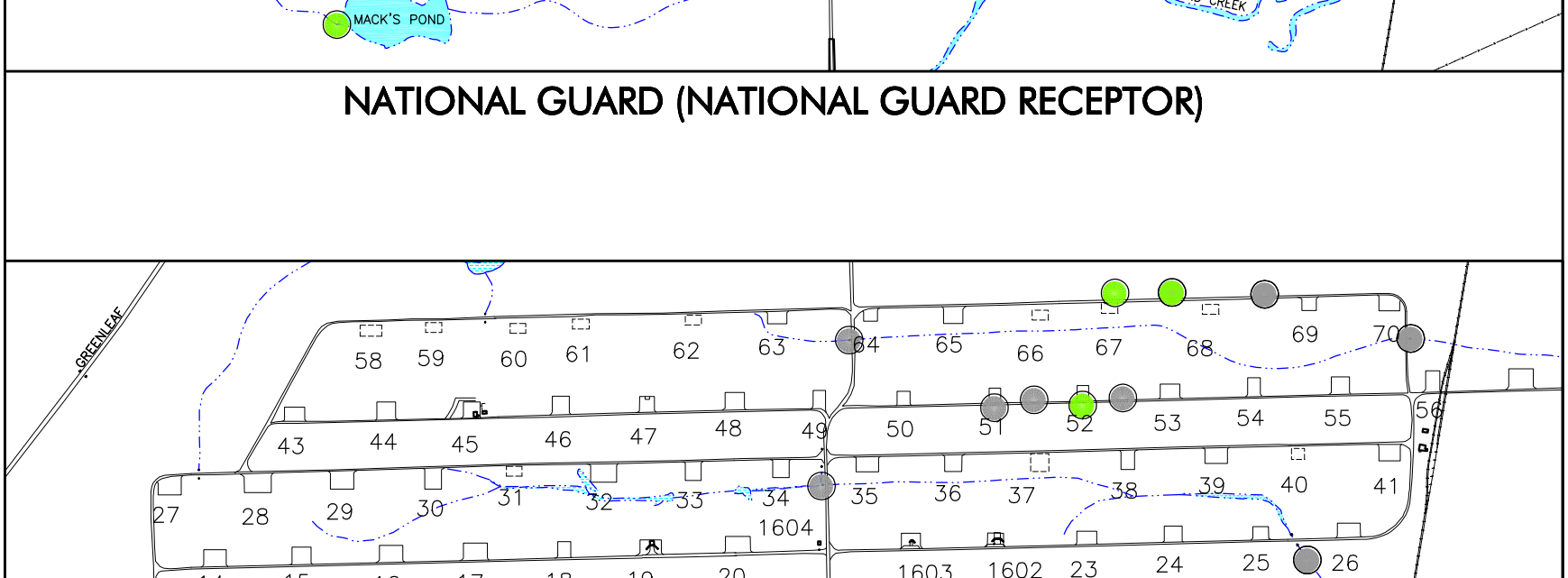
Figure J-9. Chemical Risks from Direct Exposure to Sediment: A Comparison of Land Uses



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

OPEN RECREATIONAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS
Chemical Hazard > 3
Chemical Hazard between 1 & 3
Chemical Hazard <1
Sampled, but hazard risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

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LOUISVILLE, KENTUCKY

LAND USE HAZARDS
SEDIMENT
WINKLEPECK BURNING GROUNDS

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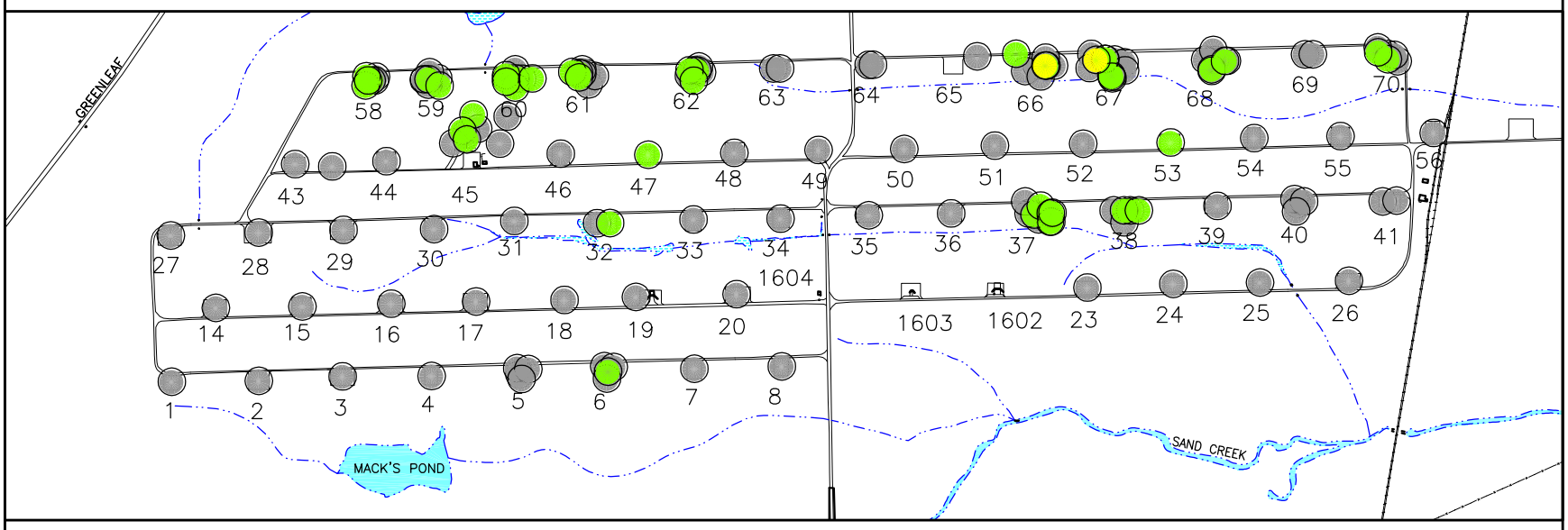
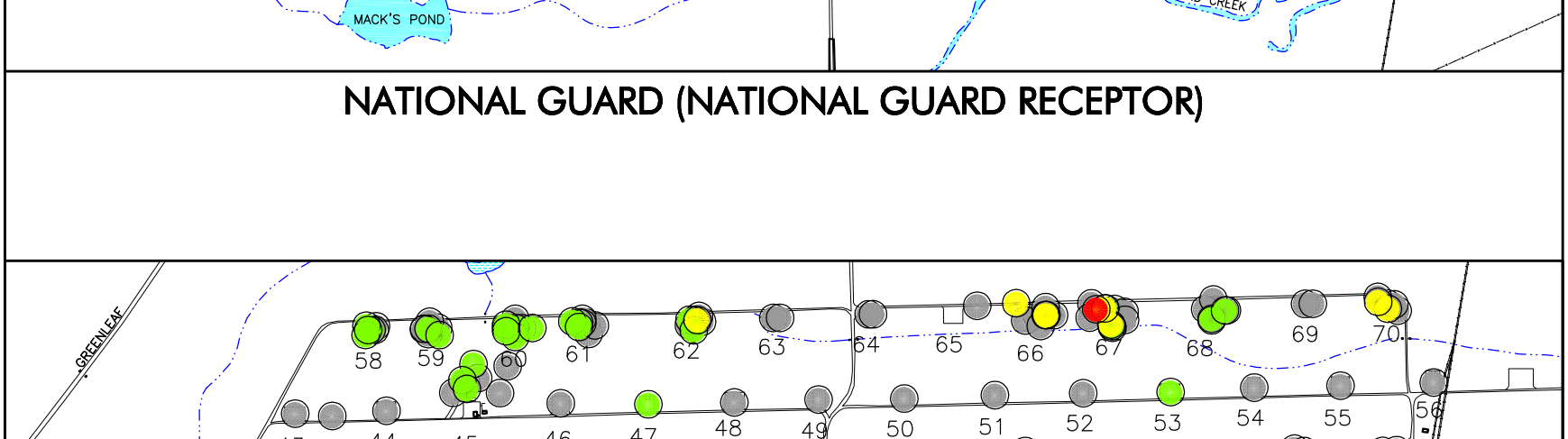
Figure J-10. Chemical Hazards from Direct Exposure to Sediment: A Comparison of Land Uses



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

OPEN INDUSTRIAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS
Chemical Risk > 10^{-4}
Chemical Risk between 10^{-6} & 10^{-4}
Chemical Risk <10^{-6}
Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

LANS USE RISKS
SUBSURFACE SOIL
WINKLEPECK BURNING GROUNDS

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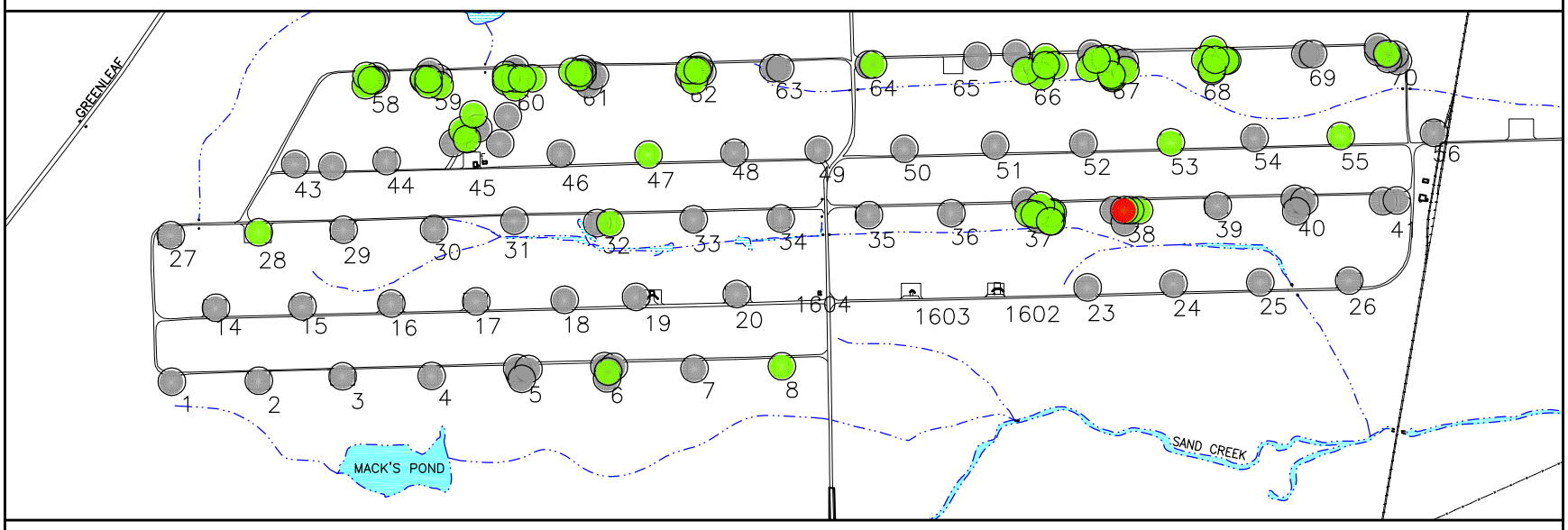
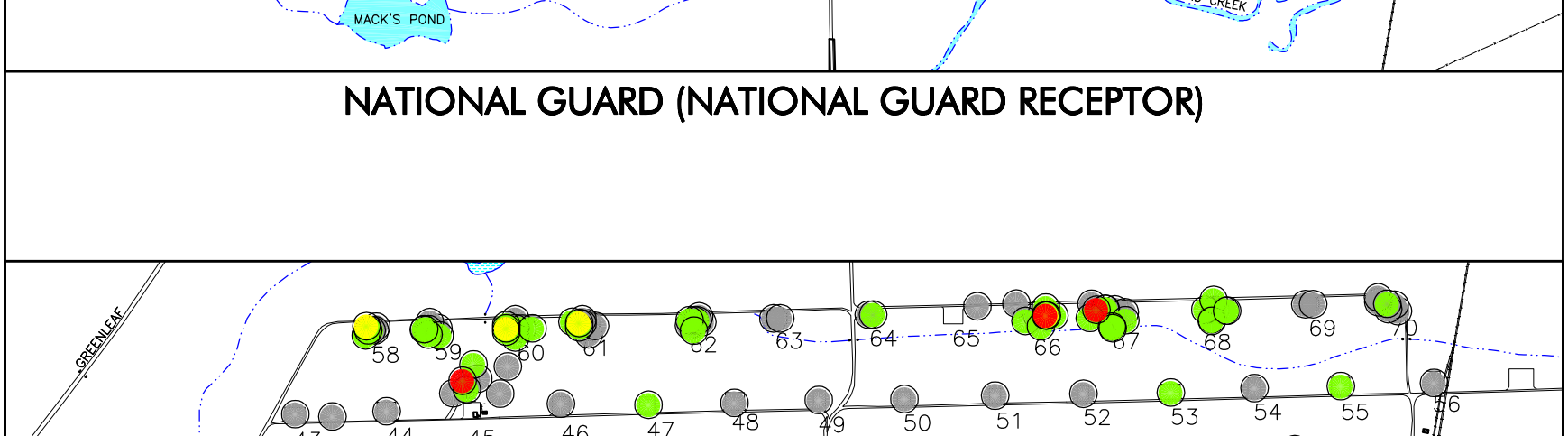
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-10

Figure J-11. Chemical Risks from Direct Exposure to Subsurface Soils: A Comparison of Land Uses



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

OPEN INDUSTRIAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS	
	Chemical Hazard > 3
	Chemical Hazard between 1 & 3
	Chemical Hazard <1
	Sampled, but no hazard calculated (no COPCs with toxicity values available)

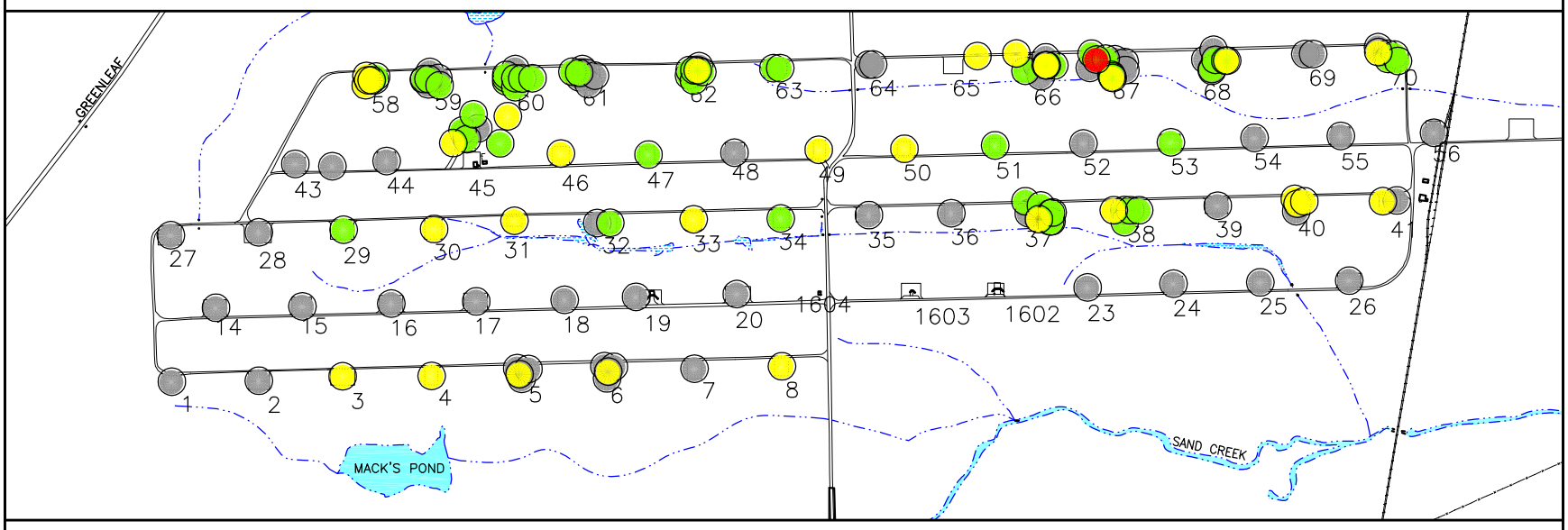
US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

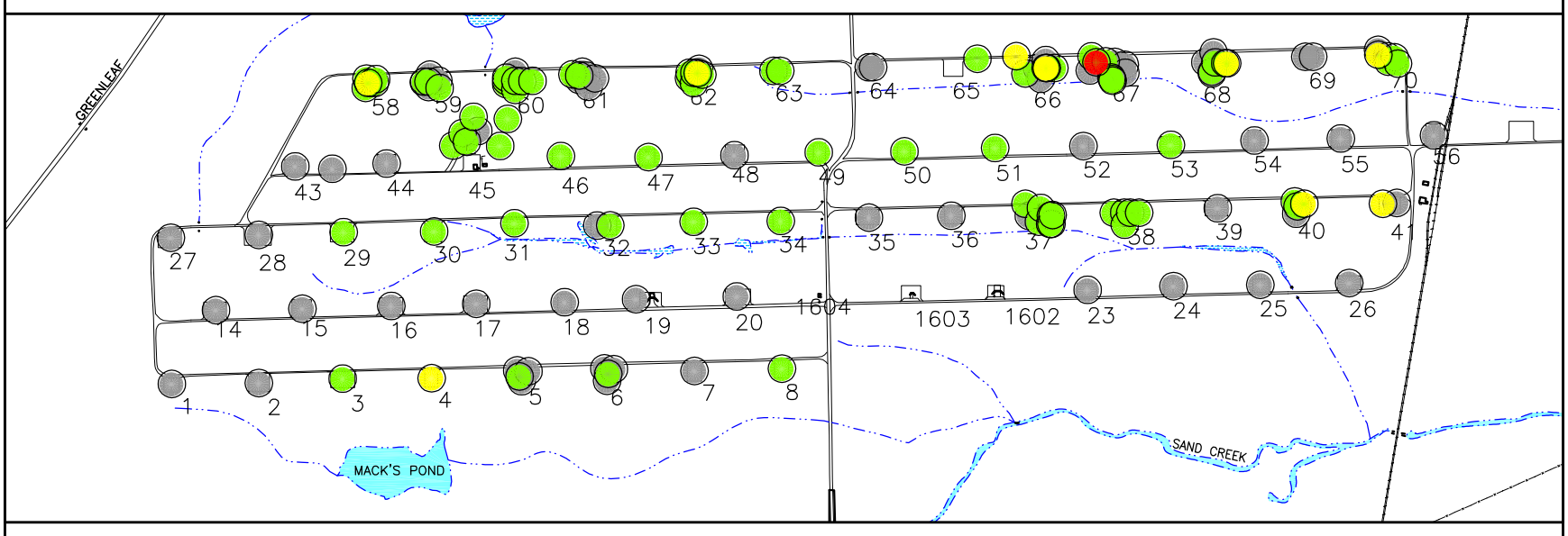
LAND USE HAZARDS
SUBSURFACE SOIL
WINKLEPECK BURNING GROUNDS

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-11

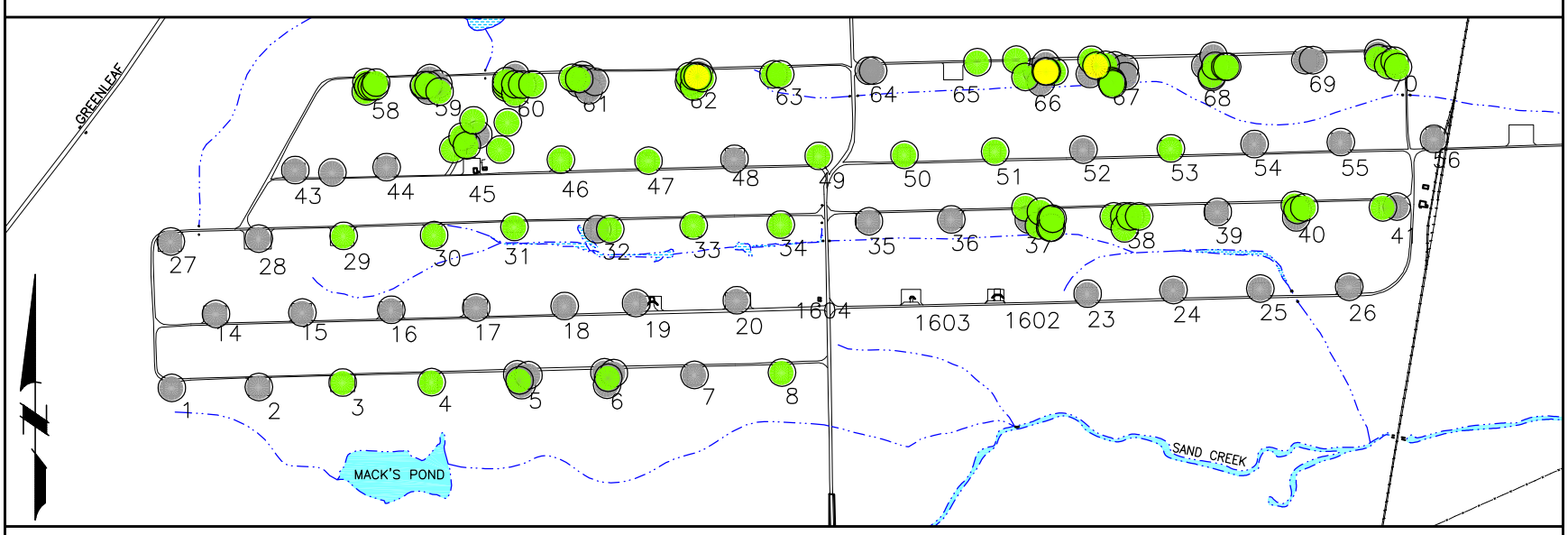
Figure J-12. Chemical Hazards from Direct Exposure to Subsurface Soils: A Comparison of Land Uses



SECURITY GUARD/MAINTENANCE WORKER



HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS	
	Chemical Risk > 10^{-4}
	Chemical Risk between 10^{-6} & 10^{-4}
	Chemical Risk $<10^{-6}$
	Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers
Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

MODIFIED CARETAKER RISKS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

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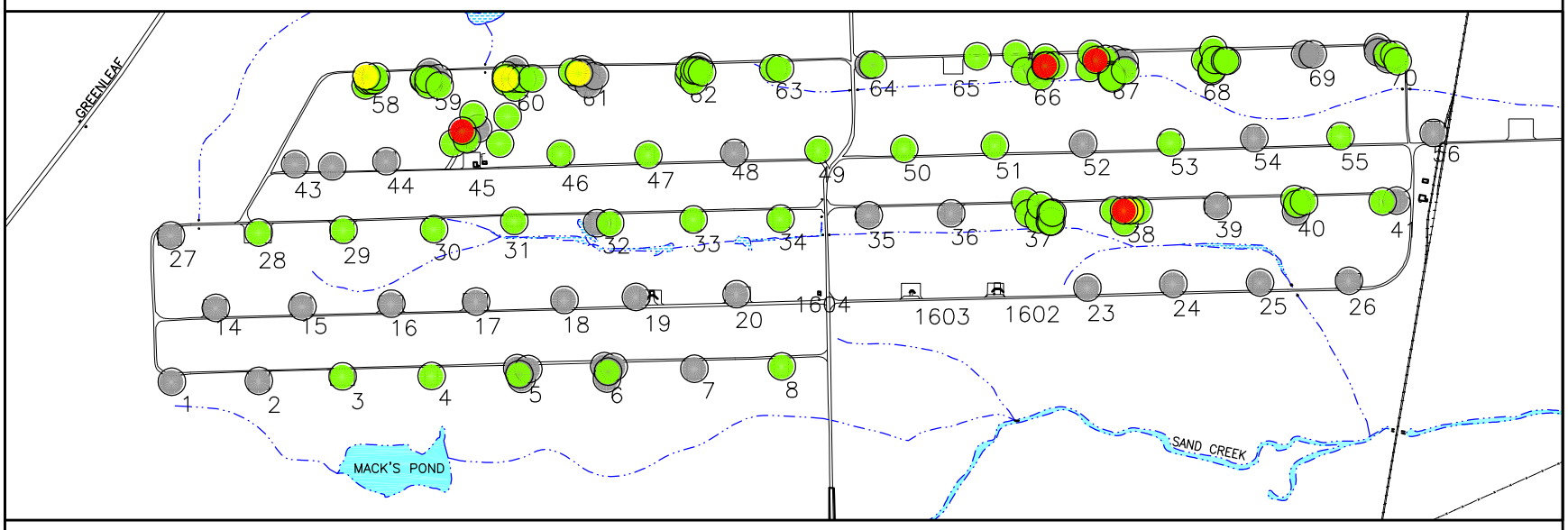
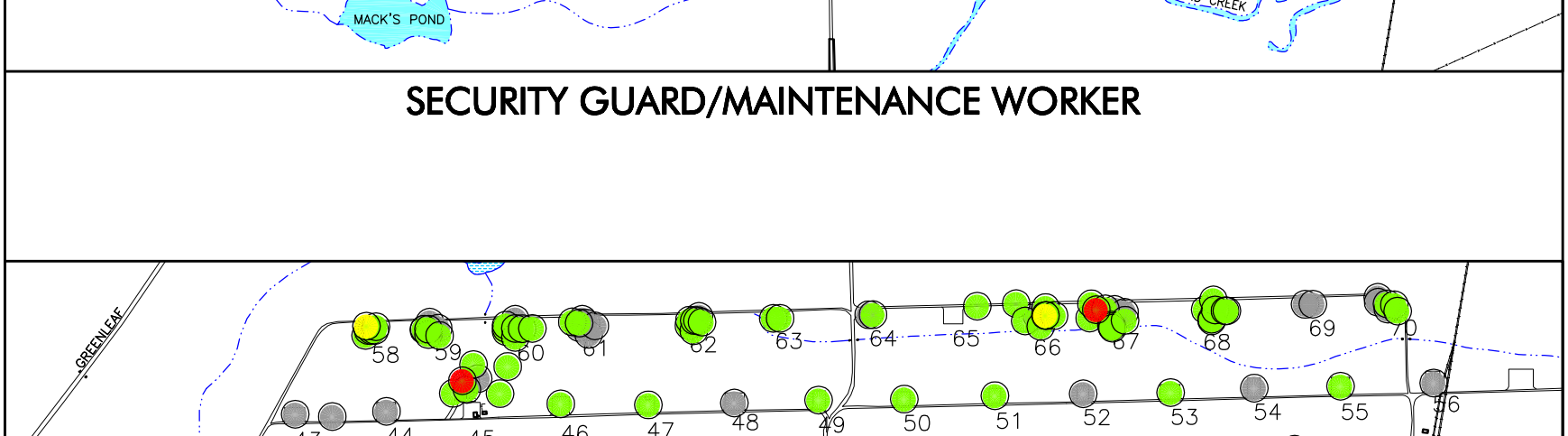
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-12

Figure J-13. Chemical Risks from Direct Exposure to Surface Soils: Modified Caretaker Land Use



SECURITY GUARD/MAINTENANCE WORKER

HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS	
	Chemical Hazard > 3
	Chemical Hazard between 1 & 3
	Chemical Hazard <1
	Sampled, but no hazard calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

MODIFIED CARETAKER HAZARDS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

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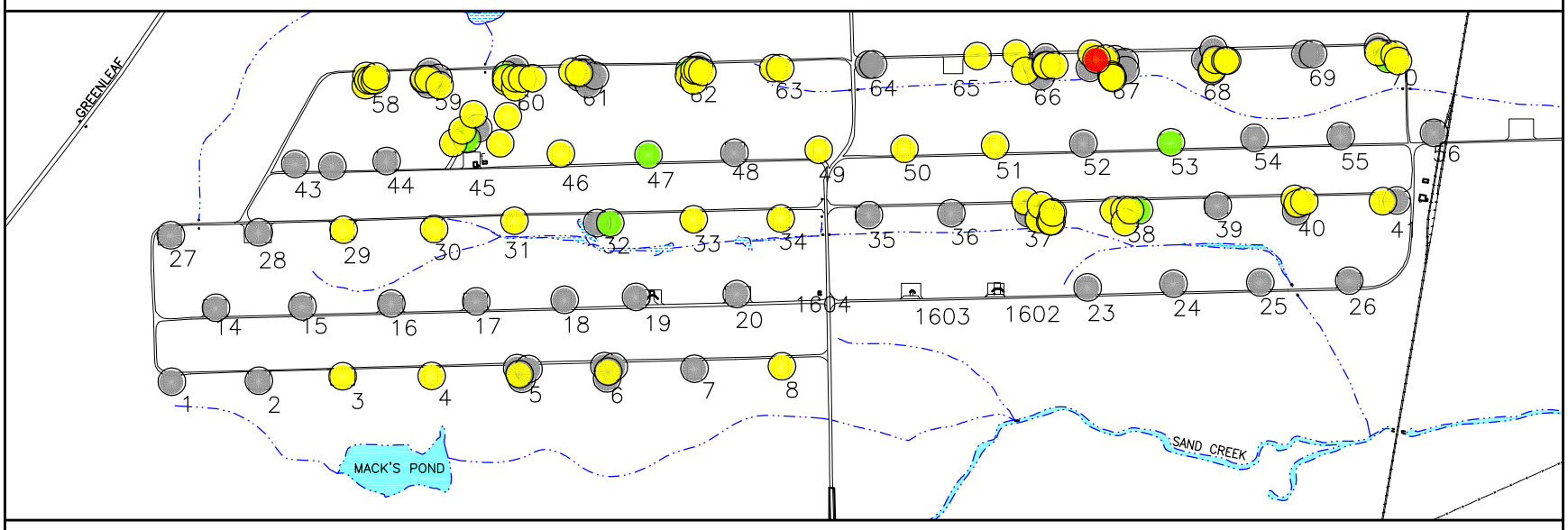
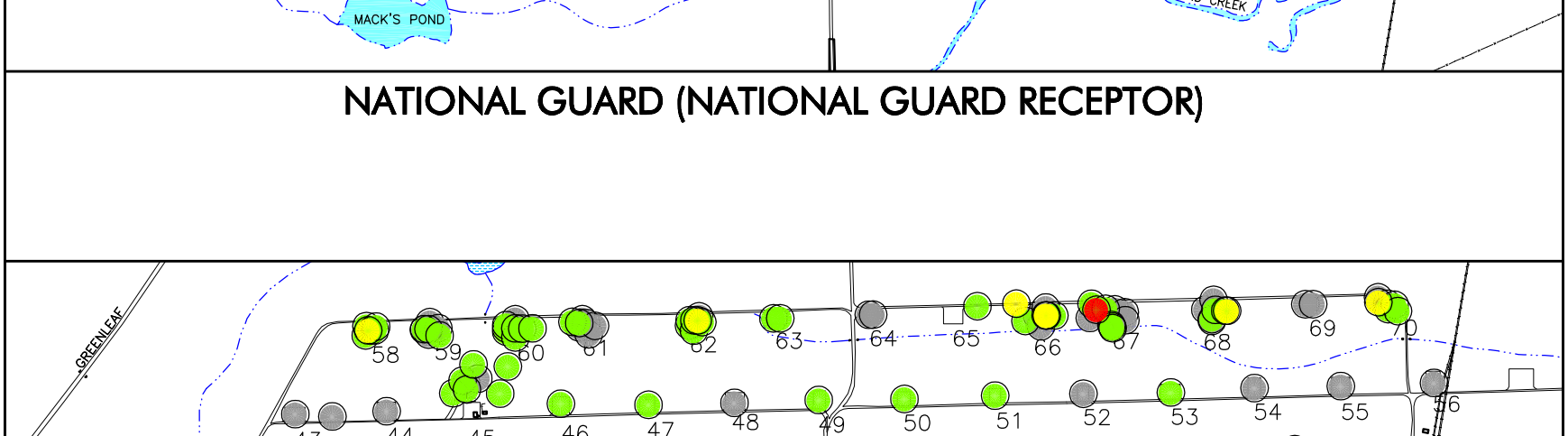
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-13

Figure J-14. Chemical Hazards from Direct Exposure to Surface Soils: Modified Caretaker Land Use



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS	
	Chemical Risk > 10^{-4}
	Chemical Risk between 10^{-6} & 10^{-4}
	Chemical Risk $<10^{-6}$
	Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

NATIONAL GUARD RISKS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

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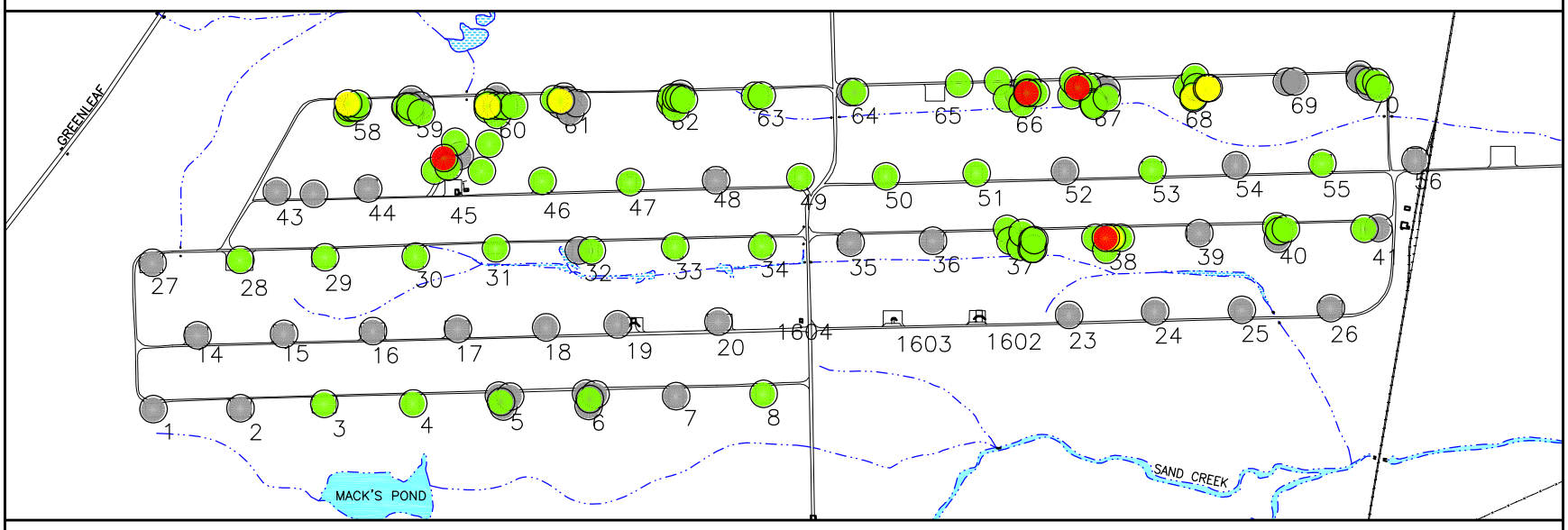
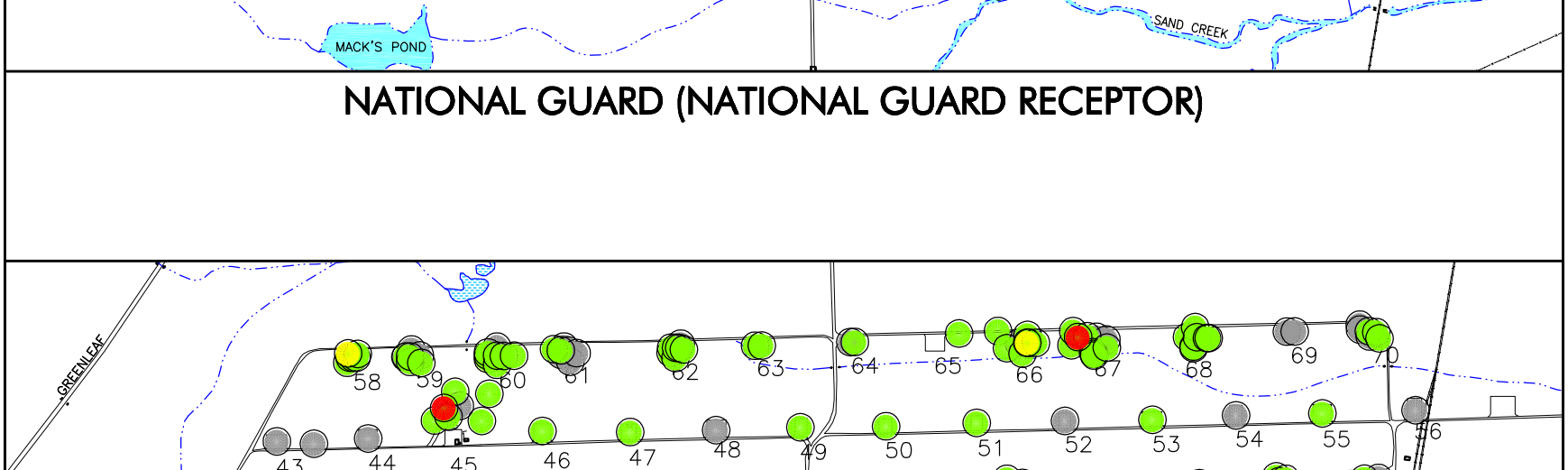
Figure J-15. Chemical Risks from Direct Exposure to Surface Soils: National Guard Land Use



NATIONAL GUARD (NATIONAL GUARD RECEPTOR)

HUNTER-TRAPPER



CHILD TRESPASSER

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS
Chemical Hazard > 3
Chemical Hazard between 1 & 3
Chemical Hazard <1
Sampled, but no hazard calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

NATIONAL GUARD HAZARDS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

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Figure J-16. Chemical Hazards from Direct Exposure to Surface Soils: National Guard Land Use

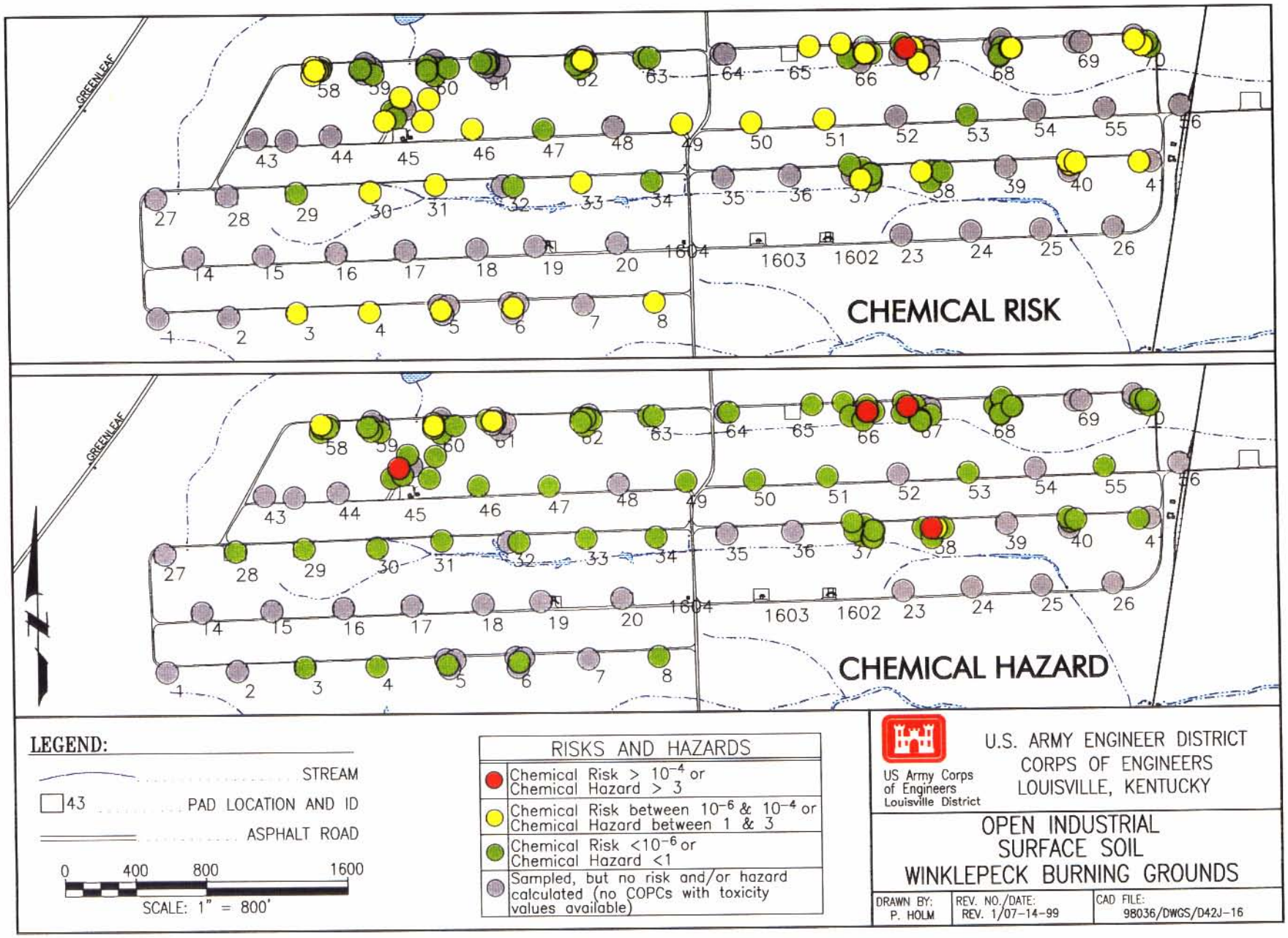


Figure J.17. Chemical Risks and Hazards from Direct Exposure to Surface Soils: Open Industrial Land Use

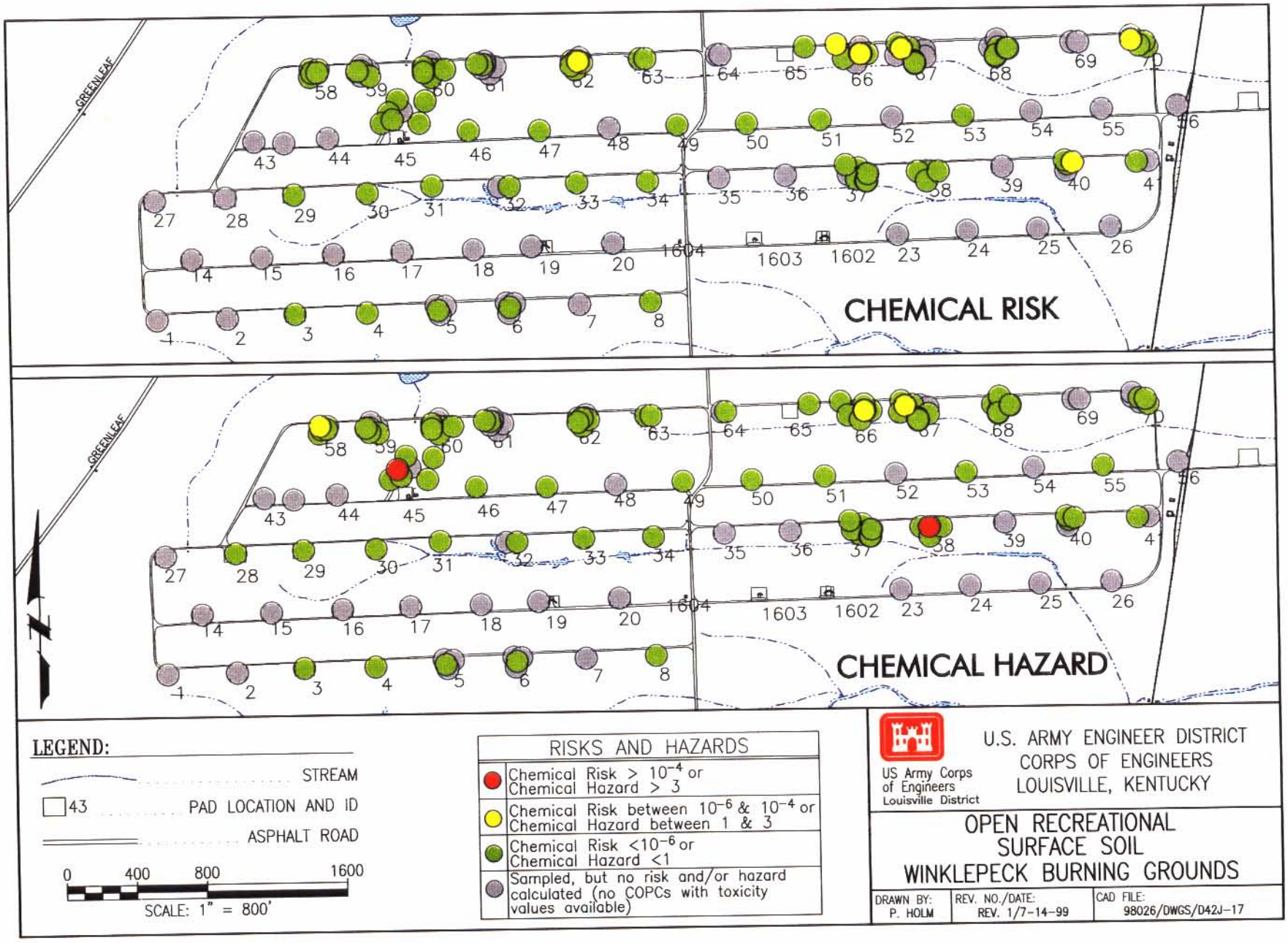


Figure J.18. Chemical Risks and Hazards from Direct Exposure to Surface Soils: Open Recreational Land Use

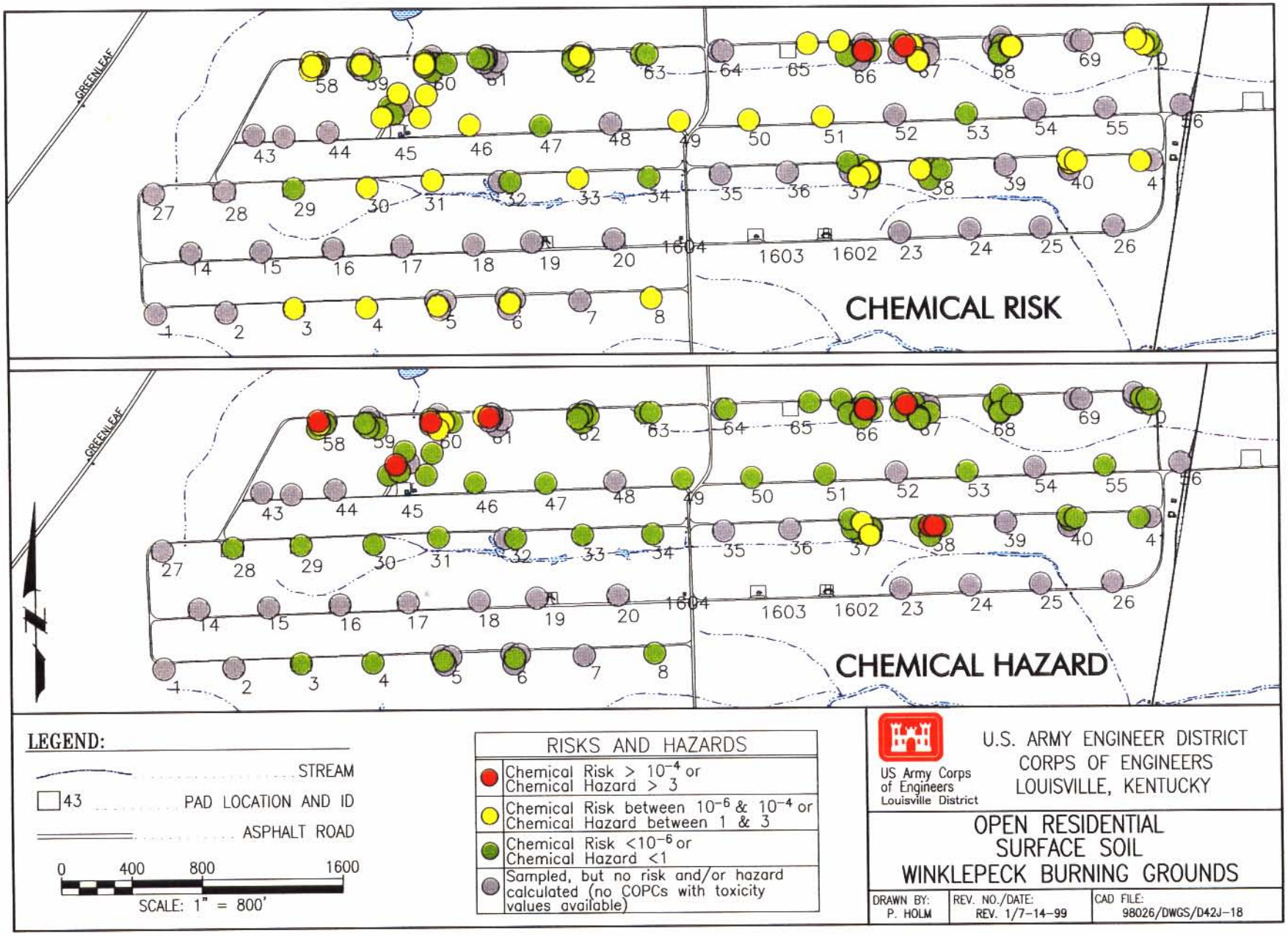
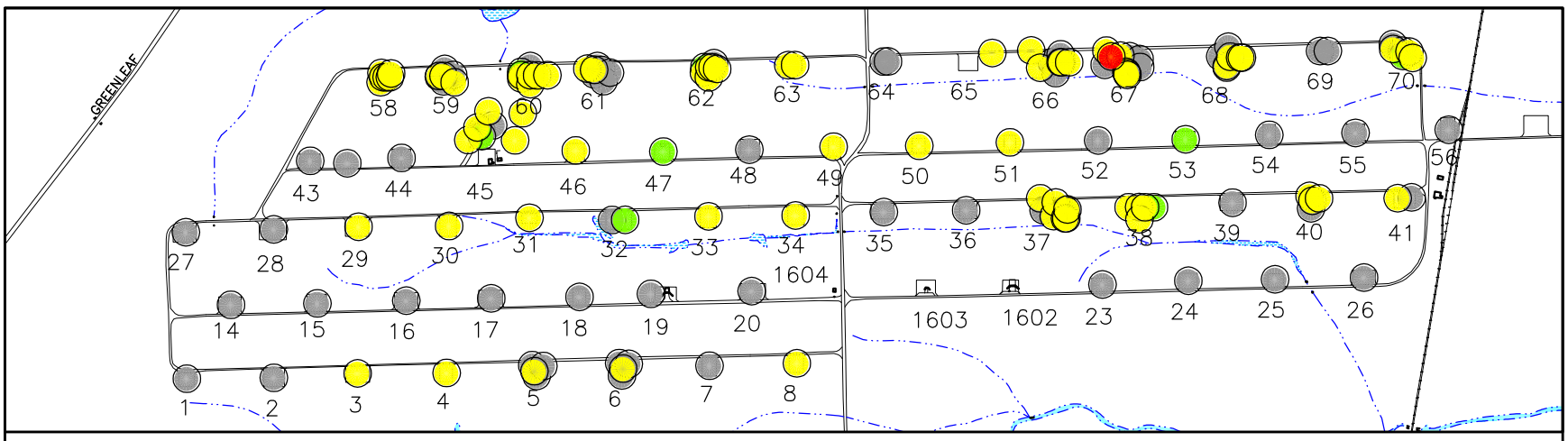
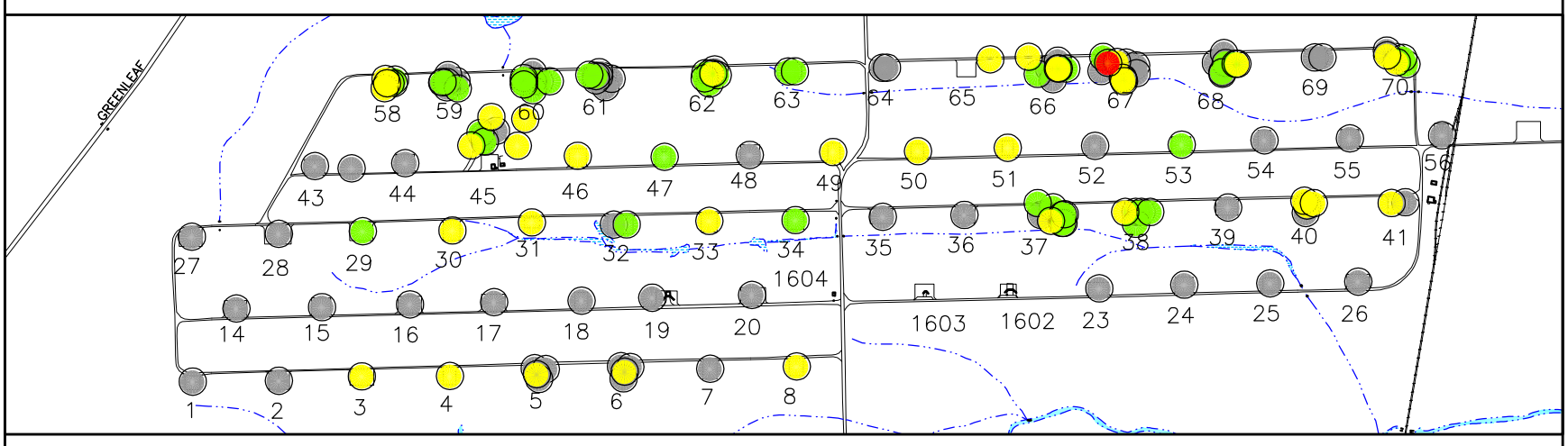


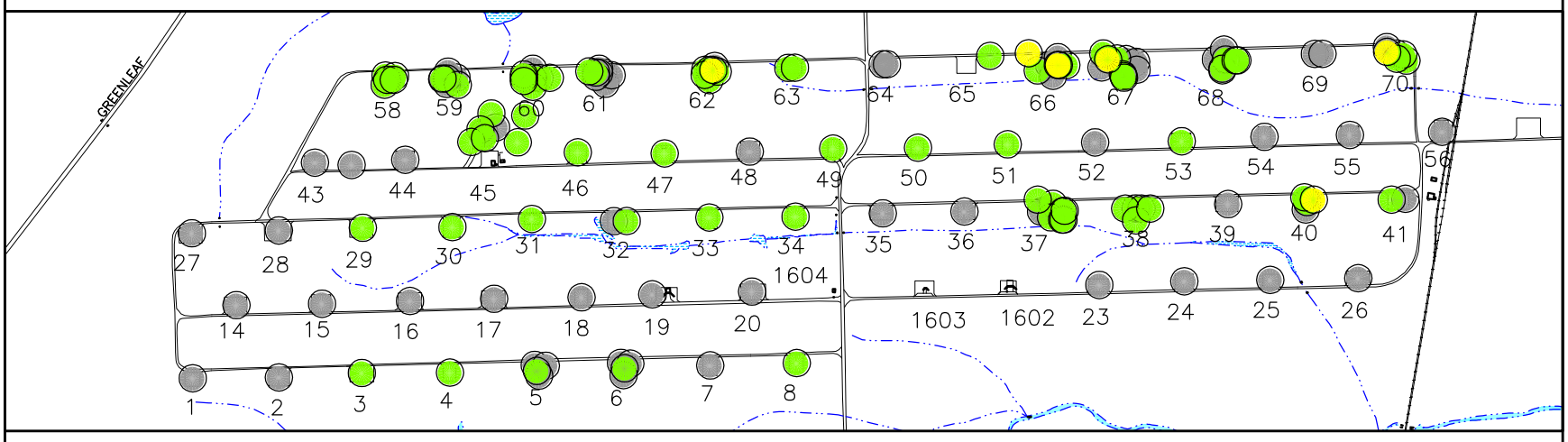
Figure J.19. Chemical Risks and Hazards from Direct Exposure to Surface Soils: Open Residential Land Use



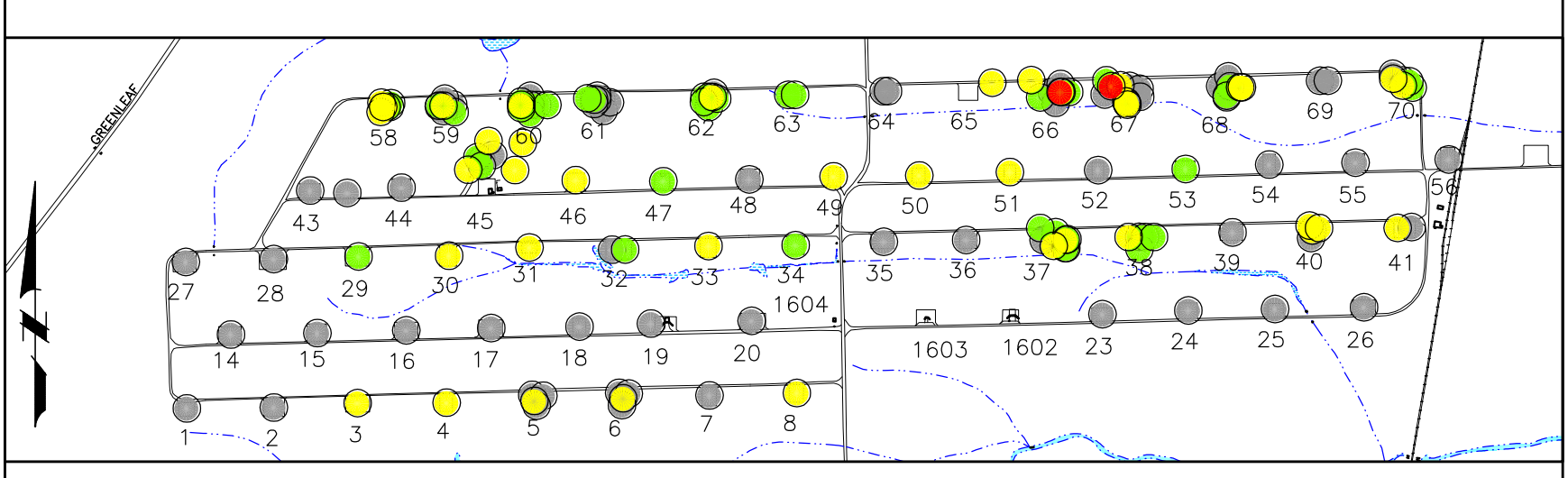
NATIONAL GUARD (NATIONAL GUARD RECEPTOR)



OPEN INDUSTRIAL



OPEN RECREATIONAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS
Chemical Risk > 10^{-4}
Chemical Risk between 10^{-6} & 10^{-4}
Chemical Risk $<10^{-6}$
Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

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CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

LAND USE RISKS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

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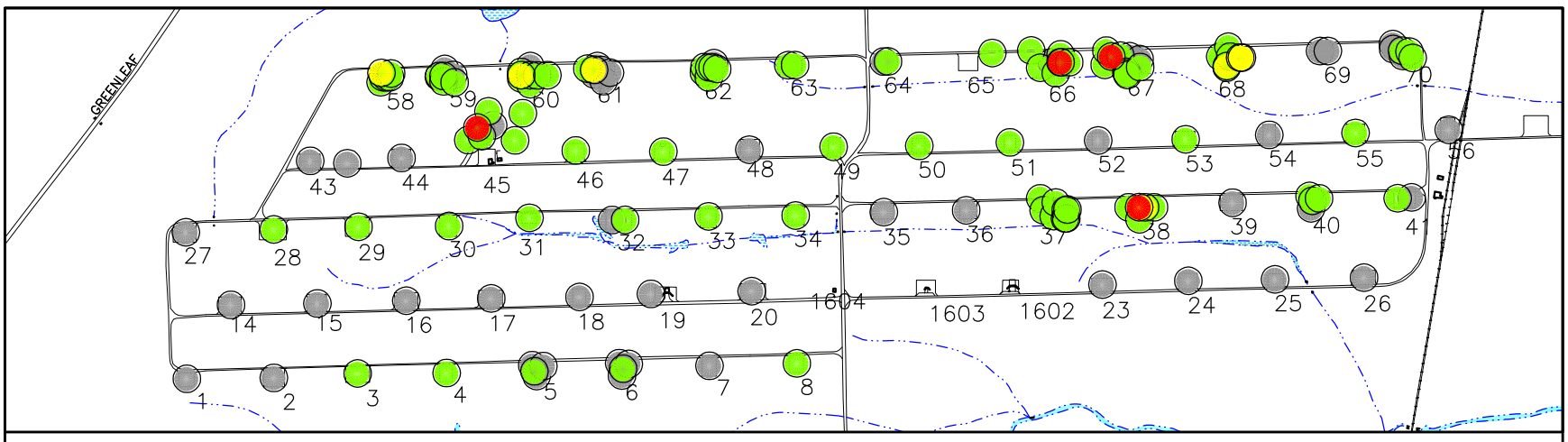
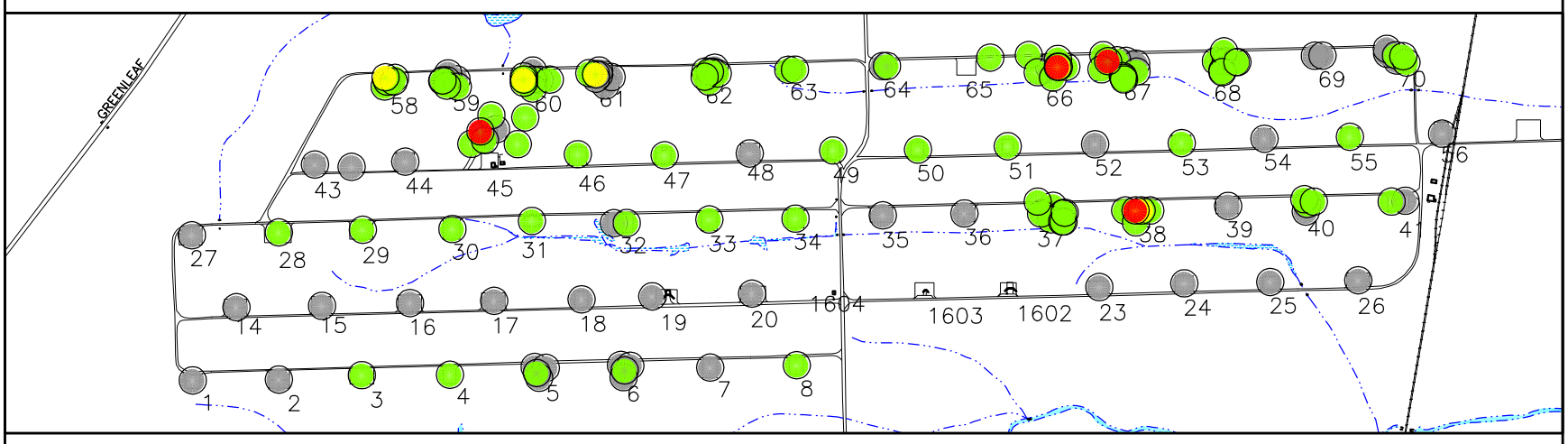
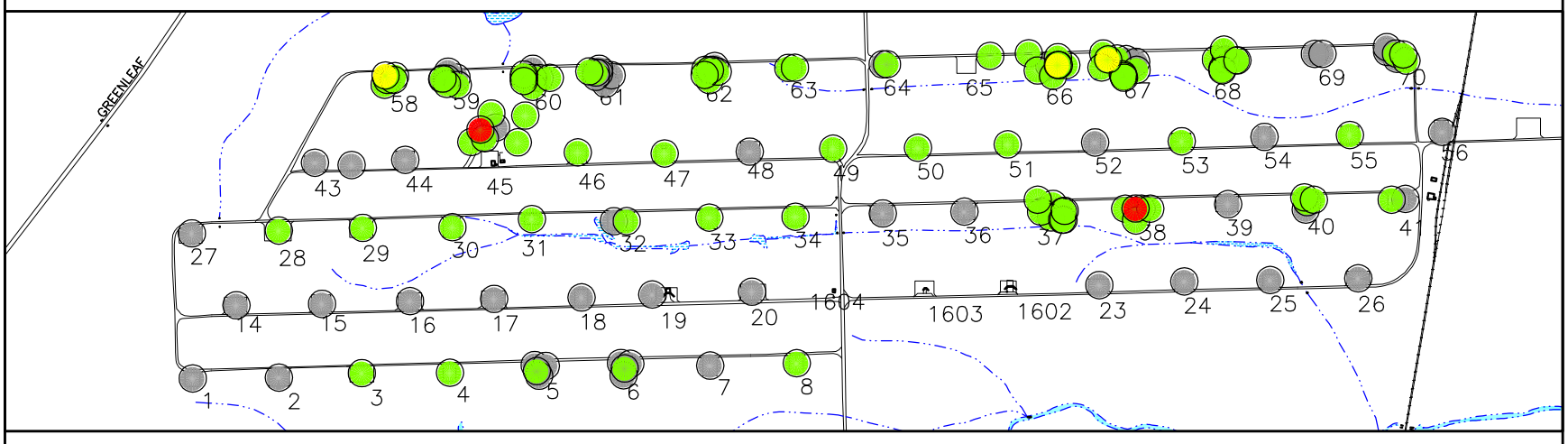
Figure J-20. Chemical Risks from Direct Exposure to Surface Soils: A Comparison of Land Uses



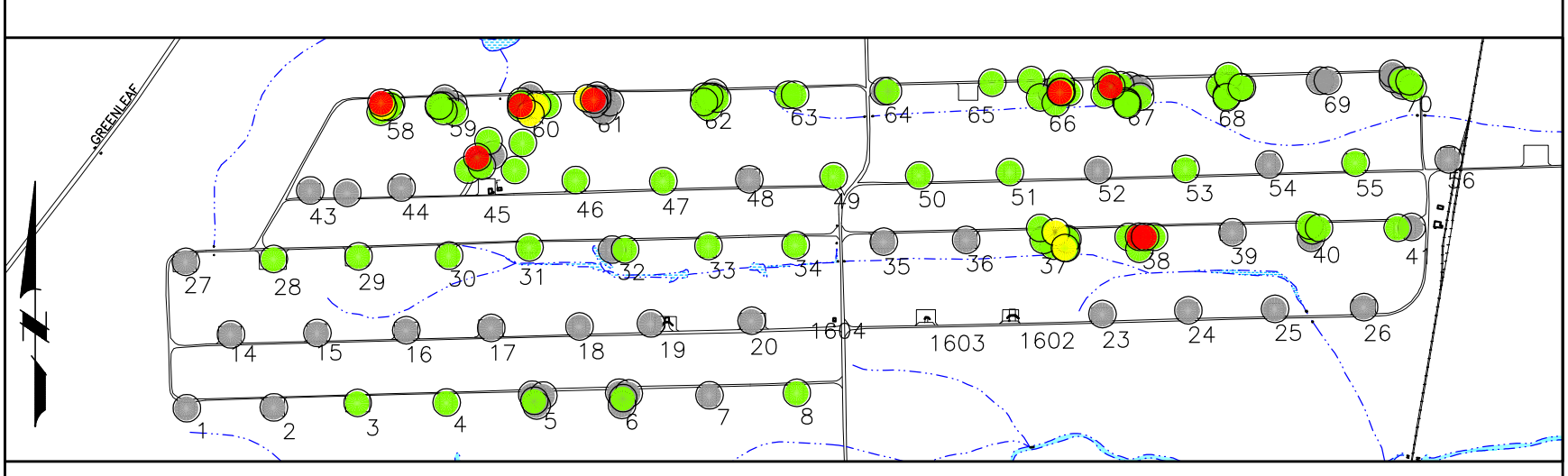
NATIONAL GUARD (NATIONAL GUARD RECEPTOR)



OPEN INDUSTRIAL



OPEN RECREATIONAL



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS
Chemical Hazard > 3
Chemical Hazard between 1 & 3
Chemical Hazard <1
Sampled, but no hazard calculated (no COPCs with toxicity values available)

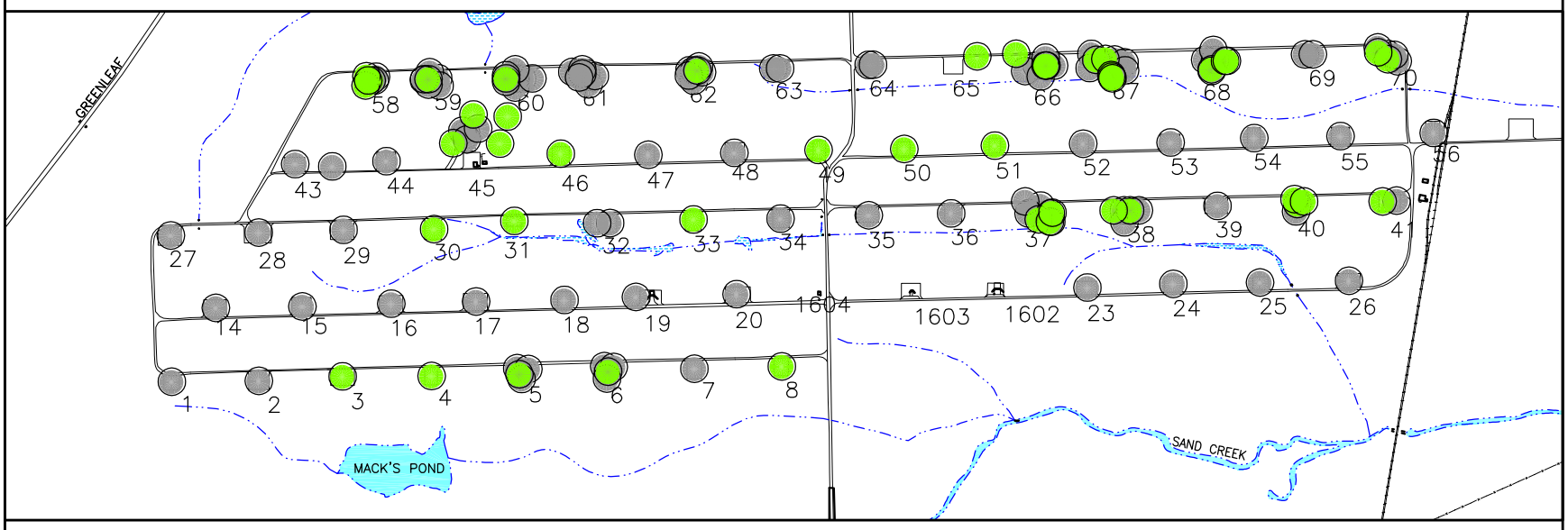
US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

LAND USE HAZARDS
SURFACE SOIL
WINKLEPECK BURNING GROUNDS

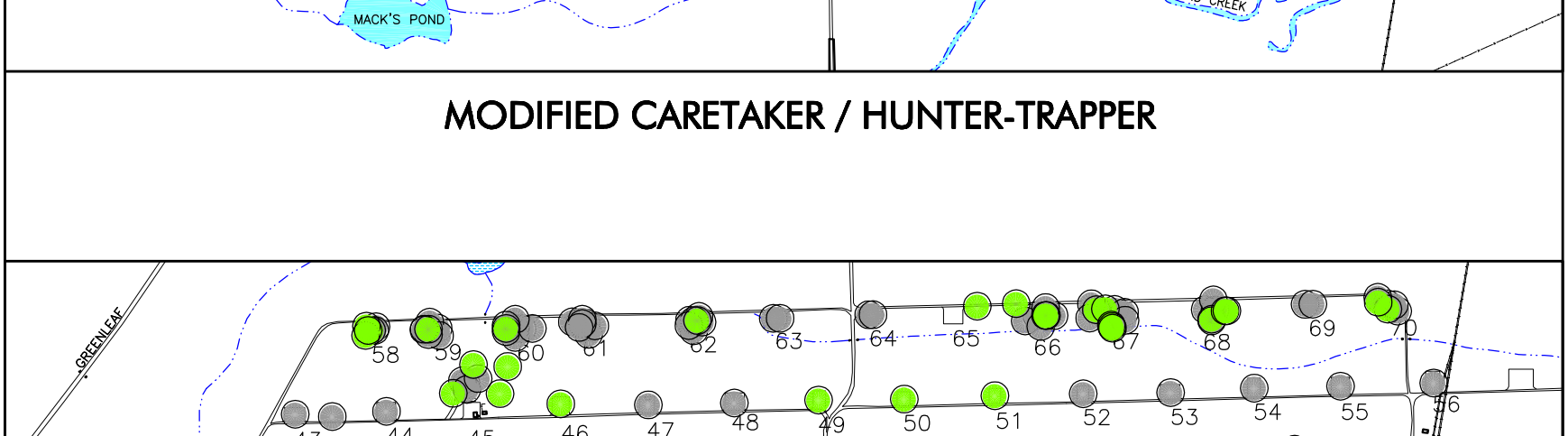
DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-20

Figure J-21. Chemical Hazards from Direct Exposure to Surface Soils: A Comparison of Land Uses



MODIFIED CARETAKER / HUNTER-TRAPPER

NATIONAL GUARD / HUNTER-TRAPPER



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

RISKS	
	Chemical Risk > 10^{-4}
	Chemical Risk between 10^{-6} & 10^{-4}
	Chemical Risk $<10^{-6}$
	Sampled, but no risk calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

LAND USE RISKS FOR INDIRECT PATHWAYS/SURFACE SOIL WINKLEPECK BURNING GROUNDS

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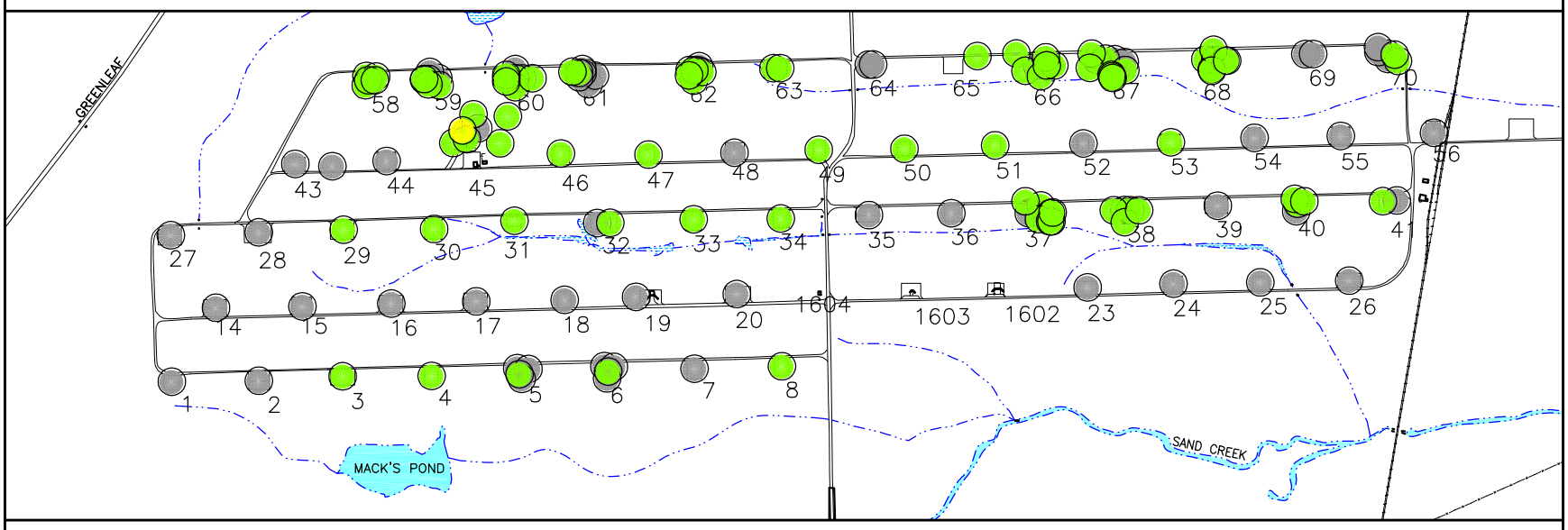
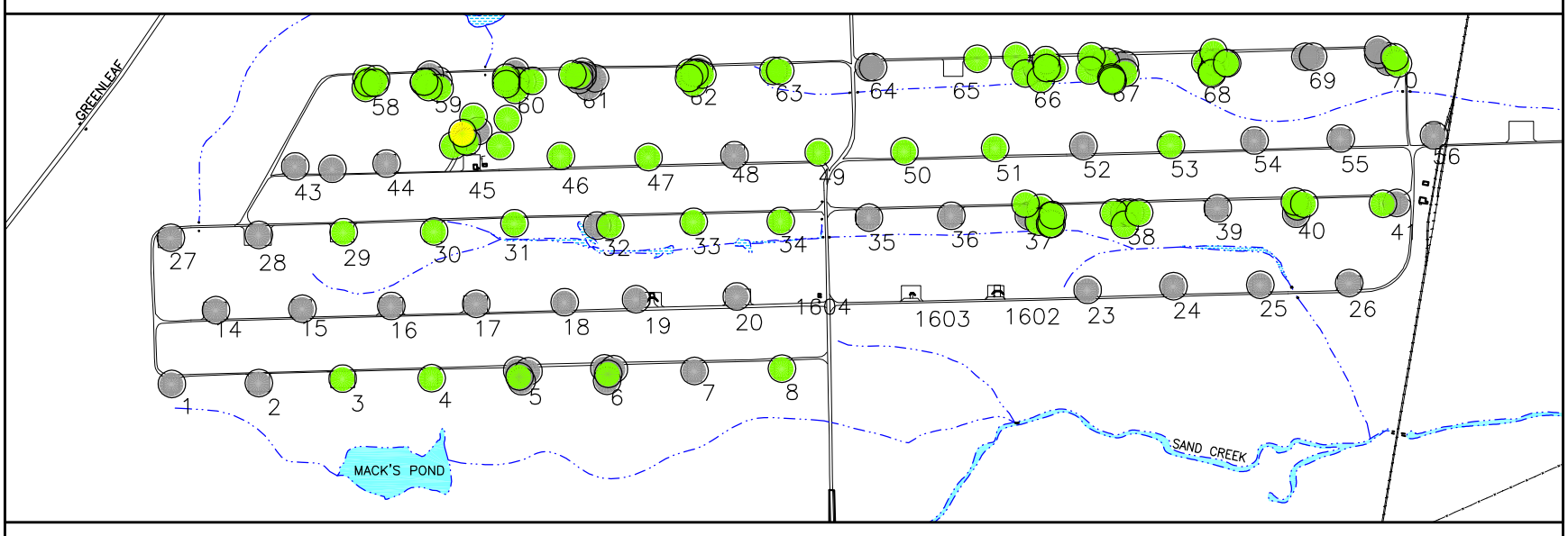
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-21

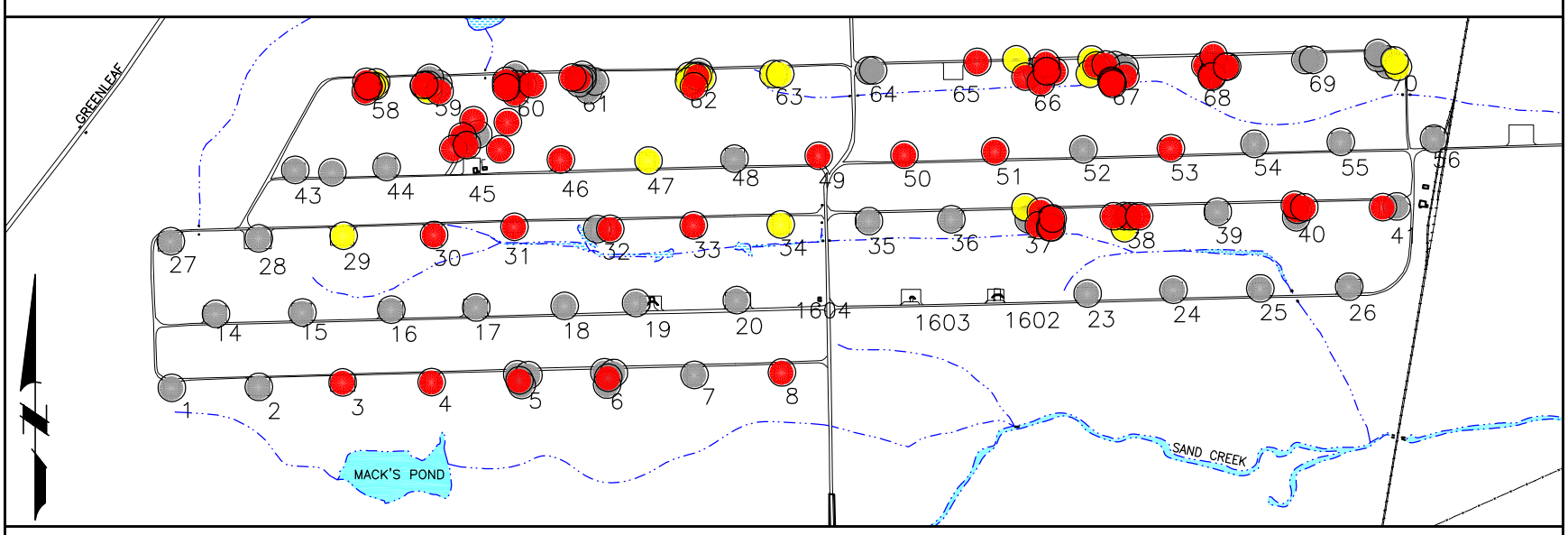
Figure J- 22. Chemical Risks from Indirect Exposure to Surface Soils (Ingestion of Foodstuffs): A Comparison of Land Uses



MODIFIED CARETAKER / HUNTER-TRAPPER



NATIONAL GUARD / HUNTER-TRAPPER



OPEN RESIDENTIAL

LEGEND:

STREAM

43 PAD LOCATION AND ID

ASPHALT ROAD

0 400 800 1600

SCALE: 1" = 800'

HAZARDS	
	Chemical Hazard > 3
	Chemical Hazard between 1 & 3
	Chemical Hazard <1
	Sampled, but no hazard calculated (no COPCs with toxicity values available)

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

LAND USE HAZARDS FOR INDIRECT PATHWAYS/SURFACE SOIL
WINKLEPECK BURNING GROUNDS

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/7-14-99	98026/DWGS/D42J-22

Figure J-23. Chemical Hazards from Indirect Exposure to Surface Soils (Ingestion of Foodstuffs):A Comparison of Land Uses