

Table 12. Statistical summary of selected well measurements and ground-water-quality data from water samples collected from alluvial aquifers in the Eastern Iowa Basins, Iowa and Minnesota, June–July 1998

[MRL, minimum reporting level; MDL, method detection limit for pesticides and pesticide metabolites; --, not applicable; mg/L, milligrams per liter; μ S/cm, microsiemens per centimeter; $^{\circ}$ C, degrees Celsius; <, less than; μ g/L, micrograms per liter; pCi/L, picocuries per liter]

Constituent (unit of measurement)	Number of samples/ number of observations or detections	MRL or MDL	Minimum value	Maximum value	Median value
Well measurements and physical properties of water					
Well depth (feet below land surface)	32 / --	--	12	193	54
Water level (feet below land surface)	32 / --	--	2	81	11
Specific conductance (μ S/cm at 25 $^{\circ}$ C)	32 / 32	1.0	331	1,150	559
pH (standard units)	32 / 32	.10	5.9	7.4	6.9
Water temperature ($^{\circ}$ C)	32 / 30	--	9.7	15.8	12.0
Dissolved oxygen (mg/L)	32 / 31	--	.1	8.3	1.6
Alkalinity (mg/L as CaCO ₃)	32 / 32	1.0	58	423	262
Major ions, dissolved (mg/L)					
Calcium	32 / 32	.02	39	110	67
Magnesium	32 / 32	.01	8.6	49	21
Sodium	32 / 32	.2	4.6	77	9.3
Potassium	32 / 32	.1	.3	10	1.4
Chloride	32 / 32	.1	.2	113	7.5
Sulfate	32 / 29	.1	<.1	106	28
Fluoride	32 / 29	.1	<.1	1.6	.3
Bromide	32 / 31	.1	<.01	.49	.05
Silica	32 / 32	.1	7.2	28	19
Trace metals, dissolved (mg/L)					
Iron	32 / 22	10	<10	10,700	1,300
Manganese	32 / 21	1	<4	654	45
Nutrients, dissolved (mg/L)					
Nitrite as nitrogen	32 / 12	.01	<.01	.12	<.01
Nitrite plus nitrate as nitrogen	32 / 17	.01	<.05	22	.07
Ammonia as nitrogen	32 / 29	.01	<.02	6.3	.15
Ammonia plus organic nitrogen	32 / 23	.1	<.1	6.4	.4
Phosphorus	32 / 28	.001	<.01	.93	.05
Orthophosphorus as phosphorus	32 / 30	.001	<.01	.77	.04
Carbon, dissolved (mg/L)					
Organic carbon	32 / 32	.1	.5	5.8	1.5
Radiochemical isotopes (pCi/L)					
Radon-222	32 / 32	80	53	2,150	340
Tritium	32 / 25	1.0	<1.0	60	28
Pesticides and pesticide metabolites, dissolved (μg/L)					
2,4,5-T	32 / 0	.035	<.035	<.035	<.035
2,4-D	32 / 0	.15	<.15	<.15	<.15

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Constituent (unit of measurement)	Number of samples/ number of observations or detections	MRL or MDL	Minimum value	Maximum value	Median value
Pesticides and pesticide metabolites, dissolved (µg/L)—Continued					
2,4-DB	32 / 0	0.24	<0.24	<0.24	<0.24
3-hydroxyarbofuran	32 / 1	.014	<.014	.07	<.014
Acetochlor	32 / 0	.002	<.002	<.002	<.002
Acetochlor ethanesulfonic acid	31 / 3	.20	<.20	.50	<.20
Acetochlor oxanilic acid	31 / 0	.20	<.20	<.20	<.20
Acifluorfen	32 / 0	.035	<.035	<.035	<.035
Alachlor	32 / 0	.002	<.002	<.002	<.002
Alachlor ethanesulfonic acid	31 / 9	.20	<.20	7.7	<.20
Alachlor oxanilic acid	31 / 2	.20	<.20	3.2	<.20
Aldicarb	32 / 0	.55	<.55	<.55	<.55
Aldicarb sulfone	32 / 0	.10	<.10	<.10	<.10
Aldicarb sulfoxide	32 / 0	.021	<.021	<.021	<.021
Atrazine	32 / 12	.001	<.001	.26	<.001
Atrazine, deethyl-	31 / 6	.05	<.05	.34	<.05
Atrazine, deisopropyl-	31 / 4	.05	<.05	.21	<.05
Atrazine, hydroxy-	31 / 0	.20	<.20	<.20	<.20
Azinphos, methyl-	32 / 0	.001	<.001	<.001	<.001
Benfluralin	32 / 0	.002	<.002	<.002	<.002
Bentazon	32 / 2	.014	<.014	.22	<.014
Bromacil	32 / 0	.035	<.035	<.035	<.035
Bromoxynil	32 / 0	.035	<.035	<.035	<.035
Butylate	32 / 0	.002	<.002	<.002	<.002
Carbaryl	32 / 0	.003	<.003	<.003	<.003
Carbofuran	32 / 0	.12	<.12	<.12	<.12
Chloramben	32 / 0	.42	<.42	<.42	<.42
Chlorothalonil	32 / 0	.48	<.48	<.48	<.48
Chlorpyrifos	32 / 0	.004	<.004	<.004	<.004
Clopyralid	32 / 0	.23	<.23	<.23	<.23
Cyanazine	32 / 0	.004	<.004	<.004	<.004
Cyanazine amide	31 / 1	.05	<.05	.44	<.05
Dacthal, mono-acid-	32 / 0	.017	<.017	<.017	<.017
DCPA	32 / 0	.002	<.002	<.002	<.002
p,p'-DDE	32 / 0	.006	<.006	<.006	<.006
Diazinon	32 / 0	.002	<.002	<.002	<.002
Dicamba	32 / 0	.035	<.035	<.035	<.035

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Constituent (unit of measurement)	Number of samples/ number of observations or detections	MRL or MDL	Minimum value	Maximum value	Median value
Pesticides and pesticide metabolites, dissolved (µg/L)—Continued					
Dichlobenil	32 / 0	1.2	<1.2	<1.2	<1.2
Dichlorprop	32 / 1	.032	<.032	.10	<.032
Dieldrin	32 / 0	.001	<.001	<.001	<.001
2,6-Diethylaniline	32 / 0	.003	<.003	<.003	<.003
Dinoseb	32 / 0	.035	<.035	<.035	<.035
Disulfoton	32 / 0	.017	<.017	<.017	<.017
Diuron	32 / 0	.020	<.020	<.020	<.020
DNOC	32 / 0	.020	<.020	<.020	<.020
EPTC	32 / 0	.002	<.002	<.002	<.002
Ethalfuralin	32 / 0	.004	<.004	<.004	<.004
Ethoprop	32 / 0	.003	<.003	<.003	<.003
Fenuron	32 / 0	.013	<.013	<.013	<.013
Fluometuron	32 / 0	.035	<.035	<.035	<.035
Fonofos	32 / 0	.003	<.003	<.003	<.003
alpha-HCH	32 / 0	.002	<.002	<.002	<.002
Lindane	32 / 0	.004	<.004	<.004	<.004
Linuron	32 / 0	.002	<.002	<.002	<.002
Malathion	32 / 0	.005	<.005	<.005	<.005
MCPA	32 / 0	.17	<.17	<.17	<.17
MCPB	32 / 0	.14	<.14	<.14	<.14
Methiocarb	32 / 0	.026	<.026	<.026	<.026
Methomyl	32 / 0	.017	<.017	<.017	<.017
Metolachlor	32 / 3	.002	<.002	.02	<.002
Metolachlor ethanesulfonic acid	31 / 14	.20	<.20	.20	<.20
Metolachlor oxanilic acid	31 / 2	.20	<.20	1.7	<.20
Metribuzin	32 / 0	.004	<.004	<.004	<.004
Molinate	32 / 0	.004	<.004	<.004	<.004
1-Naphthol	32 / 0	.007	<.007	<.007	<.007
Napropamide	32 / 0	.003	<.003	<.003	<.003
Neburon	32 / 0	.015	<.015	<.015	<.015
Norflurazon	32 / 0	0.024 – 0.150	<.024	<.150	<.024
Oryzalin	32 / 0	0.310 – 1.06	<.310	<1.06	<.310
Oxamyl	32 / 0	0.018 – 0.210	<.018	<.210	<.018
Parathion	32 / 0	.004	<.004	<.004	<.004
Parathion, methyl-	32 / 0	.006	<.006	<.006	<.006

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Constituent (unit of measurement)	Number of samples/ number of observations or detections	MRL or MDL	Minimum value	Maximum value	Median value
Pesticides and pesticide metabolites, dissolved (µg/L)—Continued					
Pebulate	32 / 0	0.004	<0.004	<0.004	<0.004
Pendimethalin	32 / 0	.004	<.004	<.004	<.004
cis-Permethrin	32 / 0	.005	<.005	<.005	<.005
Phorate	32 / 0	.002	<.002	<.002	<.002
Picloram	32 / 1	.05	<.05	.17	<.05
Prometon	32 / 5	.018	<.018	.19	<.018
Pronamide	32 / 0	.003	<.003	<.003	<.003
Propachlor	32 / 0	.007	<.007	<.007	<.007
Propanil	32 / 0	.004	<.004	<.004	<.004
Propargite	32 / 0	.013	<.013	<.013	<.013
Propham	32 / 0	.035	<.035	<.035	<.035
Propoxur	32 / 0	.035	<.035	<.035	<.035
Silvex	32 / 0	.021	<.021	<.021	<.021
Simazine	32 / 0	.005	<.005	<.005	<.005
Tebuthiuron	32 / 1	.01	<.01	.01	<.01
Terbacil	32 / 0	.007	<.007	<.007	<.007
Terbufos	32 / 0	.013	<.013	<.013	<.013
Thiobencarb	32 / 0	.002	<.002	<.002	<.002
Triallate	32 / 0	.001	<.001	<.001	<.001
Triclopyr	32 / 0	.25	<.25	<.25	<.25
Trifluralin	32 / 0	.002	<.002	<.002	<.002
Volatile organic compounds, total (mg/L)					
1,1,1,2-Tetrachloroethane	32 / 0	0.132 – 0.528	<.132	<.176	<.132
1,1,1-Trichloroethane	32 / 0	0.032 – 0.256	<.032	<.256	<.032
1,1,2,2-Tetrachloroethane	32 / 0	0.132 – 0.528	<.132	<.528	<.132
1,1-Dichloroethane	32 / 0	0.066 – 0.264	<.066	<.264	<.066
1,1-Dichloroethylene	32 / 0	0.044 – 0.176	<.044	<.176	<.044
1,1-Dichloropropene	32 / 0	0.026 – 0.104	<.026	<.104	<.026
1,2,3-Trichlorobenzene	32 / 0	0.266 – 1.06	<.266	<1.06	<.266
1,2,3-Trichloropropane	32 / 0	0.070 – 0.648	<.070	<.648	<.070
1,2,4-Trichlorobenzene	32 / 0	0.188 – 0.752	<.188	<.752	<.188
1,2,4-Trimethylbenzene	32 / 0	0.056 – 0.224	<.056	<.224	<.056
1,2-Dichloroethane	32 / 0	0.134 – 0.536	<.134	<.536	<.134
cis-1,2-Dichloroethene	32 / 0	0.038 – 0.152	<.038	<.152	<.038
trans-1,2-Dichloroethene	32 / 0	0.032 – 0.128	<.032	<.128	<.032

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Constituent (unit of measurement)	Number of samples/ number of observations or detections	MRL or MDL	Minimum value	Maximum value	Median value
Volatile organic compounds, total (mg/L)—Continued					
1,2-Dichloropropane	32 / 0	0.068 – 0.272	<0.068	<0.272	<0.068
1,3,5-Trimethylbenzene	32 / 0	0.044 – 0.176	<.044	<.176	<.044
1,3-Dichlorobenzene	32 / 0	0.054 – 0.216	<.054	<.216	<.054
1,3-Dichloropropane	32 / 0	0.116 – 0.464	<.116	<.464	<.116
cis-1,3-Dichloropropene	32 / 0	0.092 – 0.368	<.092	<.368	<.092
trans-1,3-Dichloropropene	32 / 0	0.134 – 0.536	<.134	<.536	<.134
1,4-Dichlorobenzene	32 / 0	0.050 – 0.20	<.050	<.20	<.050
2,2-Dichloropropane	32 / 0	0.078 – 0.312	<.078	<.312	<.078
2-Hexanone	32 / 0	0.746 – 2.98	<.746	<2.98	<.746
3-Chloropropene	32 / 0	0.196 – 0.784	<.196	<.784	<.196
Acetone	32 / 0	4.9 – 19.6	<4.9	<19.6	<4.9
Acrolein	32 / 0	1.432	<1.432	<1.432	<1.432
Acrylonitrile	32 / 0	1.23 – 4.90	<1.23	<4.90	<1.23
Benzene	32 / 0	0.032 – 0.40	<.032	<.40	<.032
Bromobenzene	32 / 0	0.036 – 0.144	<.036	<.144	<.036
Bromochloromethane	32 / 0	0.044 – 0.176	<.044	<.176	<.044
Bromoethene	32 / 0	0.100 – 0.400	<.100	<.400	<.100
Bromoform	32 / 0	0.104 – 0.416	<.104	<.416	<.104
n-Butylbenzene	32 / 0	0.186 – 0.192	<.186	<.192	<.186
sec-Butylbenzene	32 / 0	0.048 – 0.192	<.048	<.192	<.048
tert-Butylbenzene	32 / 0	0.096 – 0.384	<.096	<.384	<.096
Carbon disulfide	32 / 3	0.080 – 1.48	.017	2.780	.125
Carbon tetrachloride	32 / 0	0.088 – 0.352	<.088	<.352	<.088
Chlorobenzene	32 / 0	0.028 – 0.112	<.028	<.112	<.028
Chloroethane	32 / 0	0.120 – 0.480	<.120	<.480	<.120
Chloroform	32 / 1	0.052 – 0.208	<.052	17	<.052
o-Chlorotoluene	32 / 0	0.042 – 0.168	<.042	<.168	<.042
p-Chlorotoluene	32 / 0	0.056 – 0.224	<.056	<.224	<.056
Dibromochloromethane	32 / 1	0.182 – 0.728	<.182	3.1	<.182
Dibromochloropropane	32 / 0	0.214 – 1.00	<.214	<1.00	<.214
Dibromomethane	32 / 0	0.05 – 0.20	<.05	<.20	<.05
O-Dichlorobenzene	32 / 0	0.048 – 0.192	<.048	<.192	<.048
Dichlorobromomethane	32 / 1	0.048 – 0.192	<.048	7.0	<.048
Dichlorodifluoromethane	32 / 0	0.096 – 0.552	<.096	<.552	<.096
Diisopropyl ether	32 / 0	0.098 – 0.392	<.098	<.392	<.098

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Volatile organic compounds, total (mg/L)—Continued					
Ethylbenzene	32 / 0	0.030 – 0.120	<0.030	<0.120	<0.030
Ethyl ether	32 / 0	0.170 – 0.680	<.170	<.680	<.170
o-Ethyl toluene	32 / 0	0.100 – 0.400	<.100	<.400	<.100
Freon-113	32 / 0	0.032 – 0.12	<.032	<.120	<.032
Hexachlorobutadiene	32 / 0	0.142 – 0.568	<.142	<.568	<.142
Hexachloroethane	32 / 0	0.362 – 1.45	<.362	<1.45	<.362
Isodurene	32 / 0	0.24 – 0.96	<.24	<.96	<.24
Isopropylbenzene	32 / 0	0.032 – 0.128	<.032	<.128	<.032
p-Isopropyltoluene	32 / 0	0.110 – 0.440	<.110	<.440	<.110
Methyl acrylate	32 / 0	0.612 – 5.43	<.612	<5.43	<.612
Methyl acrylonitrile	32 / 0	0.57 – 2.28	<.57	<2.28	<.57
Methyl bromide	32 / 0	0.148 – 0.592	<.148	<.592	<.148
Methyl chloride	32 / 0	0.254 – 1.11	<.254	<1.11	<.254
Methylene chloride	32 / 0	0.382 – 1.53	<.382	<1.53	<.382
Methyl ethyl ketone	32 / 0	1.65 – 6.60	<1.65	<6.60	<1.65
Methyl iodine	32 / 0	0.076 – 0.832	<.076	<.832	<.076
Methyl iso-butyl ketone	32 / 0	0.374 – 1.50	<.374	<1.50	<.374
Methyl methacrylate	32 / 0	0.350 – 1.40	<.350	<1.40	<.350
Methyl tert-butyl ether	32 / 0	0.112 – 0.664	<.112	<.664	<.166
Naphthalene	32 / 0	0.25 – 1.00	<.25	<1.00	<.25
Prehnitene	32 / 0	0.23 – 0.92	<.23	<.92	<.23
n-Propylbenzene	32 / 0	0.042 – 0.168	<.042	<.168	<.042
Styrene	32 / 0	0.042 – 0.168	<.042	<.168	<.042
Tetrachloroethylene	32 / 0	0.038 – 0.408	<.038	<.408	<.038
Tetrahydrofuran	32 / 0	1.15 – 35.2	<.142	<35.2	<1.15
Toluene	32 / 1	0.038 – 0.216	<.054	.18	<.054
Trichloroethylene	32 / 0	0.038 – 0.152	<.038	<.152	<.038
Trichlorofluoromethane	32 / 0	0.092 – 0.368	<.092	<.368	<.092
Vinyl chloride	32 / 0	0.112 – 0.448	<.112	<.448	<.112
m- and p-Xylene	32 / 0	0.064 – 0.256	<.064	<.256	<.064
o-Xylene	32 / 0	0.064 – 0.256	<.064	<.256	<.064