Recommendations

1. The Upper Mississippi River Conservation Committee's Water Quality Technical Section should update this assessment and associated databases at 5-year intervals. This update should include:
   - any additional historical water quality data that may not have been included in the initial assessment;
   - any corrections to the compiled databases; and
   - new water quality monitoring data that help to describe water quality conditions of the UMR.

2. State, Federal and local agencies need to continue to coordinate their monitoring efforts to more effectively monitor the entire length of the Upper Mississippi River. Special attention should be focused on sections of the lower UMR where less monitoring data are available.

3. Statistical trend analyses of water quality data from specific monitoring locations throughout the UMR should be conducted where long term (>20 years) data are available. These analyses are an excellent tool for evaluating temporal and spatial changes in water quality and will provide a better basis for assessing the effectiveness of pollution abatement activities along the UMR mainstem or in the watershed.

4. Monitoring agencies should be encouraged to include appropriate flow data for their water quality monitoring sites as part of their databases. The source and method for obtaining this flow should be identified and be consistent between water quality sampling events. Flow information is vital for assessing water quality trends and to estimate parameter flux (loadings) at a particular site. Loading information will become more important in the future, especially for quantifying the sources and magnitude of pollutant loads, and for documenting load reductions associated with watershed management practices that address key Mississippi River issues (such as euthrophication and sedimentation) of regional and national significance.

5. UMR States and Federal agencies should coordinate consistent sampling and analysis of contaminant concentrations in fish from the Upper Mississippi River mainstem at 5-year intervals. The lack of a uniform approach by all five UMR states limits the ability to assess temporal or spatial changes.

References

Bahnick, D., C. Sauer, B. Butterworth, and D.W. Kuehl. 1994. A National Study of Mercury Contamination in Fish IV: Analytical Methods and Results. *Chemosphere* 29(3):537-547.

Balogh, S.J., D.R. Engstrom, J.E. Almendinger, M.L. Meyer, and D. K.ent Johnson. 1999. History of Mercury Loading in the Upper Mississippi River Reconstructed from the Sediments of Lake Pepin. *Environ. Science & Technol.* 33, 3297-3302.

Carlson B.D., D.B. Propst, D.J. Stynes, and R.S. Jackson. 1995. *Economic Impact of Recreation on the Upper Mississippi River System.* Technical Report EL-95-16, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS 45 p.

CENR. 2000. *Integrated Assessment of Hypoxia in the Northern Gulf of Mexico*. National Science and Technology Council Committee on Environment and Natural Resources, Washington, DC.

Engstrom D.R. and J.E. Almendinger. 1998. *Historical Changes in Sediment and Phosphorus Loading to the Upper Mississippi River: Mass-Balance Reconstructions from the Sediments of Lake Pepin*. Final Research Report Prepared for the Metropolitan Council Environmental Services. St. Croix Watershed Research Station, Science Museum of Minnesota, Marine on St. Croix, MN. 28 p.

Goolsby, D.A., W.A. Battaglin, G.B. Lawrence, R.S. Artz, B.T. Aulenbach, R.P. Hooper, D.R. Keeney, and G.J. Stensland. 1999. *Flux and Sources of Nutrients in the Mississippi-Atchafalaya River Basin. Topic 3, Report for the Integrated Assessment of Hypoxia in the Gulf of Mexico*. NOAA Costal Ocean Program Decision Analysis Series No. 17. NOAA Coastal Ocean Program, Silver Spring, MD. 130 p.

Johnson, D.K. and P.W. Aasen. 1989. *The Metropolitan Wastewater Treatment Plant and the Mississippi River: 50 Years of Improving Water Quality*. Journal of the Minnesota Academy of Science, Vol. 55:134-138.

Kroening, S.E. and W.J. Andrews. 1997. *Water Quality Assessment of Part of the Upper Mississippi River Basin, Minnesota and Wisconsin-- Nitrogen and Phosphorus in Streams, Stream-bed Sediment, and Ground Water, 1971-94.* U.S. Geological Survey, Water-Resources Investigations Report 97-4107, 61p.

Mackenthun, K.M. 1973. *Toward a Cleaner Aquatic Environment*. U.S. Environmental Protection Agency, Washington, DC, 273 p.

Meade R.H. 1995. *Contaminants in the Mississippi River*, 1987-92. U.S. Geological Survey Circular 1133, Denver, CO, 140 p.

Stark, J.R., P.E. Hanson, R.M. Goldstein, J.D. Fallon, A.L. Fong, K.E. Lee, S.E. Kroening, and W.J. Andrews. 2000. *Water Quality in the Upper Mississippi River Basin, Minnesota, Wisconsin, South Dakota, Iowa, and North Dakota, 1995-98.* U.S. Geological Survey Circular 1211, Denver, CO, 35 p.

Sullivan, J.F. 1988. *A Review of the PCB Contaminant Problem of the Upper Mississippi River System.* Wisconsin Department of Natural Resources. La Crosse, WI. 50 p.

Sullivan, J.F., 2000. *Long-Term Water Quality Trends Observed at Wisconsin's Ambient Monitoring Sites of the Upper Mississippi River*. Wisconsin Department of Natural Resources. La Crosse, WI, 18 p.

Sullivan, J.F. and M. Endris., 1998. *Zebra Mussel-Induced Water Quality Problems in the Mississppi River - Are We Seeing Impacts? Proceedings of the fifty-fourth annual meeting of the Upper Mississippi River Conservation Committee*, Moline, IL, pp. 18-22.

Upper Mississippi River Basin Association. 1989. *How Clean is the River? An Examination of the Water Quality of the Upper Mississippi River*, Upper Mississippi River Basin Association, Saint Paul, MN, 67 p.

Upper Mississippi River Conservation Committee., 2000. *A River That Works and a Working River– A Strategy for the Natural Resources of the Upper Mississippi River System*, Dan McGuiness Editor, Rock Island, IL, 40 pp.

U. S. Army Corps of Engineers. 2000. *Upper Mississippi River System Habitat Needs Assessment: Summary Report*, U. S. Army Corps of Engineers, St. Louis District, St. Louis, MO, 53 pp.

U.S. Environmental Protection Agency. 1998. *National Strategy for the Development of Regional Nutrient Criteria*. Office of Water, USEPA, EPA-822-F-98-002, Washington, DC, 53 p.

U.S. Environmental Protection Agency. 2000. *Progress in Water Quality, An Evaluation of the National Investment in Municipal Wastewater Treatment.* EPA-832-R-00-008. 450 p.

Wiener, J. G., Anderson, R. V., and McConville, D. R., eds., 1984. *Contaminants in the Upper Mississippi River, Proceedings of the 15th Annual Meeting of the Mississippi River Research Consortium*, La Crosse, Wisconsin, April 14-15, 1982; Butterworth Publishers, Stoneham, MA, 368 p.

Appendix A

UMR Water Quality Assessment

Contributor List

Appendix A: Upper Mississippi River Water Quality Assessment Multi-Agency Contributing Members

Note: Each person on this list contributed in some way to the gathering of the data, the analysis of the data, or the writing of the report.

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Appendix B

UMR Water Quality Assessment

Annotated Workplan

Appendix B:

Annotated Workplan**:**
Upper Mississippi River Water Quality Assessment Project
Upper Mississippi River Conservation Committee
Water Quality Technical Section

Proposed Goal:

Summarize upper Mississippi River water quality to guide decision making on the study, management, and evaluation of the resource for future generations.

Lead Agency:

Upper Mississippi River Conservation Committee, Water Quality Technical Section

Coordination & facilitation assisted by US EPA Region 5

Proposed Audience:

General public*, policymakers, water quality planners and technical staff

* *The "General public" is a very non-specific audience. This proposed audience should be more clearly defined in the future. Currently, the Goals and Objectives reflect outputs geared at technical staff and water resource managers.*

Proposed Objectives:

I. Increase coordination/cooperation among water quality and natural resource agencies at the state, federal, and local level along the Upper Mississippi River.

II. Develop a system enabling access to pertinent data and information associated with the Upper Mississippi River.

III. Produce consistent *(not necessarily common)* interpretations of water quality data on the Upper Mississippi River for developing a UMR water quality report (first a minimal and then a more comprehensive report), and for use in State and Tribal water quality reports.

Strategy:

The overall goal of this project will be achieved by meeting specific objectives. These objectives will be re-evaluated as the project progresses. Coordination and commitment are needed from the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin; EPA Regions 5 and 7; the Corps of Engineers, the USGS, the USFWS, local organizations, and the Upper Mississippi River Basin Association. Other partners will be identified and included as appropriate (may include Tribes, Universities, Volunteer Monitoring groups, watershed groups, etc.).

Objective I: Increase coordination/cooperation among water quality and natural resource agencies at the state, federal, and local level along the Upper Mississippi River

A. Reach agreement on the specific goals and objectives of an Upper Mississippi River assessment project (already started).

B. Develop the necessary partnerships to insure success. (Already begun and continues over the long term).

C. Provide a forum for water quality technical staff from border states to discuss water quality assessments (see also Objective III)

1. Convene independent meetings between technical staff of border states to discuss and compare reach segments, assessments, and supporting information (e.g., Minnesota and Wisconsin, Wisconsin and Iowa, etc.)

2. Attend UMRCC Water Quality Technical Section meetings to discuss consistent interpretations and knowledge of water quality. (Participants would include Tech Section members as well as State 305[b] staff, field researchers working on the Mississippi, other experts, etc.)

- Attend the March and September 1999 UMRCC meetings to discuss progress on this project and formulate a preliminary workplan.
- Attend the October 2000 UMRCC meeting to make presentation of preliminary findings**.**

Products: Goals and objectives statement; list of partners; meetings of the UMRCC tech section; meetings between border states

Objective II. Develop a system enabling access to pertinent data associated with the Upper Mississippi River. (Already started by the USGS)

Products: System enabling access to pertinent data

Objective III. Produce consistent *(not necessarily common)* interpretations of water quality data on the Upper Mississippi River for developing a UMR water quality report (first a minimal and then a more comprehensive report) and for use in State and Tribal water quality reports.

A. Design a methodology for producing consistent interpretations of water quality data on the Upper Mississippi River

1. Conduct pre-planning and formulate details of workplan via e-mail and conference calls (1999-2000)

2. Hold discussions between UMRCC Water Quality Technical Section members and other government/ border State technical staff to resolve issues such as:

a. Definition of waterbodies/ river reaches (completed June 1999)
b. Decision on what constitutes useable data (e.g., 15 years old, and taken in 5-yr. intervals)(completed June 1999)
c. Selection of parameters to be included in the initial report (list completed May 1999)
d. Tabulation of water quality standards for States which border the Mississippi (Reg. 5) (completed May 1999)

B. Produce minimal assessment report(s)

1. Using current border state assessments, assist state technical staff to reconcile information (reach segments and assessments). The initial assessment comparison will focus on the condition of main stem waters, and attempt to identify causes and sources of water quality problems. (Audience: technical water quality assessment staff)

2. Maintain assessment information in the US EPA Waterbody System or its successor Assessment Database.

3. Produce minimal assessment report including reconciled information, causes and sources of water quality problems, and maps of assessments.

C. Produce technical report of water quality condition for the main river system of the Upper Mississippi River Basin**.**

1. Produce an outline of the components and goals of the study/ report. (Initial draft completed May 1999)

2. Formulate initial workplan for the study/ report (completed October 1999)

3. Develop format for requesting data from various agencies (completed November 1999)

4. Receive data from various agencies in consistent format (completed Fall, 2000)

5. Make decisions and secure methodology to statistically analyze the data:

– EPA staff (Huang, Manoyan, Stoltenberg)(in progress Summer, 2000)
– Purchase MiniTab software to assist (completed Nov. 2000)

6. Combine preliminary findings into a presentation for the October 2000 UMRCC meeting (completed Oct. 2000)

7. Produce stand alone technical report providing expert interpretations of available, high quality data.
   – Complete Draft report (target spring 2001)
   – Complete Final report (estimated fall 2001)
   – Develop provisions for periodic updates (estimated fall 2001)

D. Utilize information from Objective III B and C in state reports as appropriate.

Products: Updated WBS information, Minimal assessment reconciliation report (either hard copy or internet availability); Consistent methodology, coordinated interpretation of the water quality data, technical and interpretive report.

Appendix C

UMR Water Quality Assessment

Data Base Format

Appendix C

Water Quality Data Base Format
Upper Mississippi River Assessment

November 22, 1999

Use these columns for the spreadsheets (column headings in parenthesis). If data are missing or not available, enter a period (.) as a missing value code.

YEAR (YEAR): Enter the year of data collection, 4 numeric characters.

MONTH (MONTH): Enter the month of data collection, 2 numeric characters.

DAY (DAY): Enter the day of data collection, 2 numeric characters.

RIVER MILE (MILE): Determine Mississippi River mile of sampling point to nearest 0.1 mile from USCOE navigation charts (maximum of 5 characters [XXX.X]).

AGENCY (AGENCY): Identify collecting agency using appropriate 8 or less character abbreviation. For those agencies using STORET, use the appropriate agency code used in the STORET system.

STORET NUMBER (STORET): Use appropriate STORET Number if this site is on EPA STORET system. If not on STORET system, enter appropriate site number (8 numeric characters max.).

SITE NAME/NUMBER (SITE): Identify other/additional sampling location name or number, using up to 12 characters (e.g. LD23, LTRM site coding, or HWY47 BRIDGE).

POOL NUMBER (POOL): Up to 3 numeric characters if in the

navigation pool system; if below L&D 26, enter (27), and for L&D 5A, enter (5.5).

HYDROLOGIC UNIT CODE (HUC): Identify code using appropriate USGS designation (8 or 11 characters, as appropriate). Call local USGS office if there are questions. Use the state line as boundary between basins as necessary.

LATITUDE (LAT): Enter the latitude of the sampling point, as degrees and fraction of degrees (XX.XXXXX). Enter 5 digits to right of decimal.

LONGITUDE (LON): Enter the longitude of the sampling point, as degrees and fraction of degrees (-XX.XXXXX). Enter 5 digits to right of decimal, and note that this is a negative number (we are located to the west of the Prime Meridian).

Note: If your Lat/Lon is based on something other than the NAD 1927 datum (USGS topo maps), please include a note with your dataset indicating which datum is used.

PARAMETER LIST (PARAM): Use the following codes and units, allowing up to 6 characters for each (plus one character for each qualifier):

Qualifier
Dissolved Oxygen (**DO**) mg/l
Qualifier
Temperature (**TEMP**) °C
Qualifier
Conductance (**COND**) uS/cm at 25C
Qualifier
Field pH (**pHF**) std units
Qualifier
Lab pH (**pHL**) std units
Qualifier
Turbidity (**TURB**) ntu
Qualifier
Flow (**FLOW**) cfs (estimated daily avg.)
Qualifier

Total Suspended Solids (**TSS**) mg/l
Qualifier
Ammonium-Nitrogen as N (**NH4**) mg/l
Qualifier
Nitrate+Nitrite-Nitrogen as N (**NOX**) mg/l
Qualifier
Total Nitrogen, calc. or measured (**TN**) mg/l
Qualifier
Total Phosphorus as P (**TP**) mg/l
Qualifier
Soluble Reactive Phosphorus as P (**SRP**) mg/l
Qualifier
Total Dissolved Silica as Si (**Si**) mg/l
Qualifier
Total Chloride as Cl (**Cl**) mg/l
Qualifier
Corrected Chlorophyll-a (**CHLA**) ug/l

Notes: Flows should be based on nearest gaging station on the day of sampling (USCOE or USGS). These will likely be provisional or estimated values.

For values which must be **qualified** (e.g., less than, greater than, not detected, etc.), enter a one-character qualifier in the first space, and explain somewhere in the dataset the meaning of the qualifier.

If data are missing or not available enter a period (.) as a missing value code.

OTHER INFORMATION:

Data Format: Report to coordinator in a tabular format. An electronic format on Lotus 1-2-3, or DBase, or Excel is required to facilitate data transfer. Use the attached sample format as a guide.

Criteria for Site Inclusion: Sites should be representative of the Mississippi River main channel (i.e., no backwater or isolated sites).

If you have any questions on the data format, please call Dave Stoltenberg, USEPA, Chicago (312-353-5784), or John Sullivan, WDNR, LaCrosse (608-785-9995).

Appendix D

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

DESCRIPTIVE STATISTICS
1980-1999 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch

Upper Mississippi River Water Quality Data: Descriptive Statistics: DO by HUC7

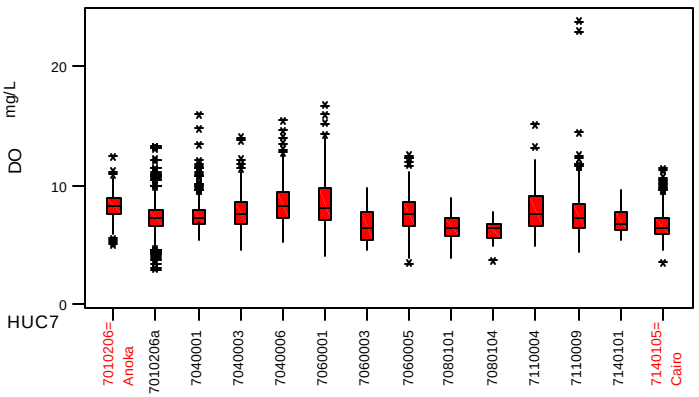
Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
DO	7010206	605	9	8.2371	8.2000	8.2301
	7010206a	1330	12	7.2922	7.2000	7.2689
	7040001	613	7	7.4749	7.3000	7.3775
	7040003	432	3	7.6269	7.6000	7.5851
	7040006	204	4	8.492	8.200	8.383
	7060001	306	10	8.529	8.050	8.426
	7060003	14	1	6.550	6.350	6.442
	7060005	422	0	7.5810	7.5000	7.5568
	7080101	125	5	6.423	6.300	6.412
	7080104	23	1	6.113	6.300	6.152
	7110004	204	0	7.934	7.600	7.857
	7110009	379	11	7.547	7.300	7.413
	7140101	71	0	6.955	6.700	6.913
	7140105	534	22	6.6416	6.4000	6.5715

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
DO	7010206	0.9845	0.0400	5.0000	12.4000	7.6000	8.8650
	7010206a	1.1403	0.0313	2.8600	13.2600	6.6075	7.9125
	7040001	1.1250	0.0454	5.3000	16.0000	6.8000	7.9000
	7040003	1.4042	0.0676	4.5000	14.0000	6.7000	8.5000
	7040006	1.768	0.124	5.200	15.500	7.300	9.475
	7060001	2.227	0.127	4.000	16.800	7.000	9.825
	7060003	1.453	0.388	4.600	9.800	5.375	7.650
	7060005	1.4877	0.0724	3.4000	12.5000	6.6000	8.5000
	7080101	1.126	0.101	3.800	8.900	5.700	7.200
	7080104	0.874	0.182	3.700	7.700	5.600	6.700
	7110004	1.686	0.118	4.800	15.100	6.625	8.975
	7110009	2.014	0.103	4.300	23.900	6.300	8.400
	7140101	0.941	0.112	5.400	9.700	6.200	7.700
	7140105	1.2023	0.0520	3.5000	11.4000	5.8000	7.3000

* NOTE * N missing=85

1980 - 1999 Summer Months (June 1st to September 15)
Boxplots of DO by HUC7



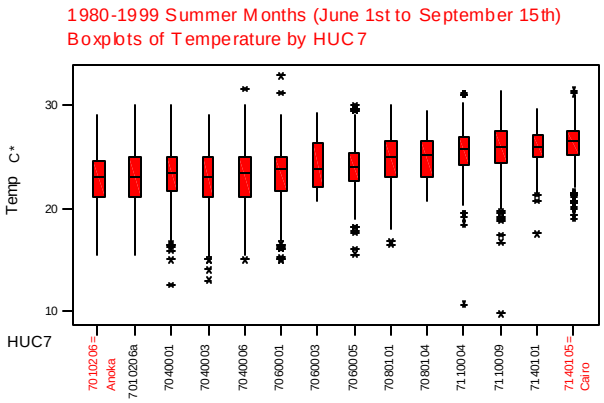
Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

Upper Mississippi River Water Quality Data :Descriptive Statistics: Temp by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
Temp	7010206	608	6	22.849	23.000	22.910
	7010206a	1330	12	22.915	23.050	22.980
	7040001	613	7	23.235	23.400	23.300
	7040003	434	1	22.753	23.000	22.846
	7040006	207	1	23.121	23.400	23.133
	7060001	311	5	23.269	23.800	23.351
	7060003	15	0	24.227	23.800	24.108
	7060005	422	0	24.061	24.100	24.075
	7080101	129	1	24.599	25.000	24.719
	7080104	24	0	24.963	25.150	24.955
	7110004	204	0	25.596	25.800	25.686
	7110009	389	1	25.863	26.000	25.974
	7140101	71	0	25.765	26.000	25.871
	7140105	548	8	26.359	26.500	26.458

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
Temp	7010206	2.638	0.107	15.500	29.200	21.000	24.700
	7010206a	2.626	0.072	15.400	30.000	21.000	25.000
	7040001	2.586	0.104	12.500	30.000	21.700	25.100
	7040003	2.746	0.132	13.000	29.000	21.000	24.900
	7040006	2.666	0.185	15.000	31.600	21.200	25.000
	7060001	2.777	0.157	15.000	32.900	21.700	25.000
	7060003	2.550	0.658	20.700	29.300	22.000	26.400
	7060005	2.314	0.113	15.500	30.100	22.800	25.425
	7080101	2.708	0.238	16.500	30.000	23.100	26.500
	7080104	2.292	0.468	20.700	29.400	23.075	26.575
	7110009	2.553	0.129	9.800	31.500	24.450	26.975
	7140101	2.372	0.282	17.500	29.800	24.900	27.500
	7140105	2.009	0.086	19.000	31.500	25.225	27.200
							27.600



* NOTE * N missing = 1399

Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

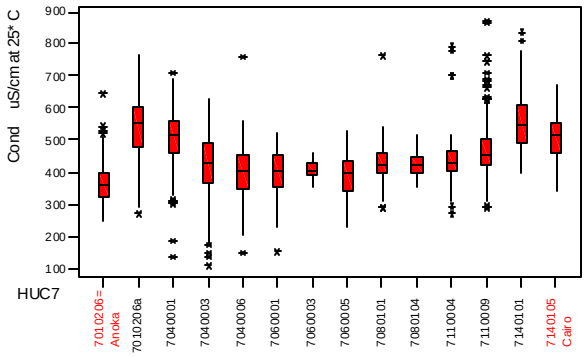
Upper Mississippi River Water Quality Data: Descriptive Statistics: Cond By HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
Cond	7010206	222	392	366.31	360.00	363.02
	7010206a	543	799	544.27	550.00	544.95
	7040001	483	137	506.87	515.00	508.61
	7040003	423	12	427.60	430.00	429.64
	7040006	204	4	397.69	401.50	398.13
	7060001	300	16	397.80	405.50	400.26
	7060003	15	0	407.53	406.00	407.46
	7060005	419	3	387.77	397.00	388.90
	7080101	125	5	429.56	424.00	428.24
	7080104	23	1	422.04	421.00	420.86
	7110004	204	0	432.77	432.00	429.72
	7110009	381	9	466.28	456.00	462.18
	7140101	71	0	558.4	546.0	553.0
	7140105	535	21	512.26	515.00	512.10

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
Cond	7010206	59.71	4.01	247.00	646.00	322.00	400.00
	7010206a	85.06	3.65	272.00	767.00	481.00	605.00
	7040001	77.39	3.52	136.00	710.00	461.00	559.00
	7040003	92.78	4.51	109.00	629.00	368.00	494.00
	7040006	77.98	5.46	150.00	760.00	346.25	451.00
	7060001	65.75	3.80	153.00	521.00	354.25	455.75
	7060003	28.32	7.31	357.00	459.00	393.00	428.00
	7060005	59.31	2.90	227.00	529.00	343.00	435.00
	7080101	58.60	5.24	290.00	765.00	398.00	459.00
	7080104	40.79	8.51	351.00	518.00	400.00	450.00
	7110004	63.85	4.47	272.00	793.00	404.00	464.00
	7110009	78.54	4.02	292.00	873.00	420.00	500.50
	7140101	92.2	10.9	396.0	837.0	490.0	609.0
	7140105	63.18	2.73	340.00	674.00	460.00	555.00

1980 - 1999 Summer months (June 1st to September 15th)
Boxplots of Conductance by HUC7



* NOTE * N missing = 1399

Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

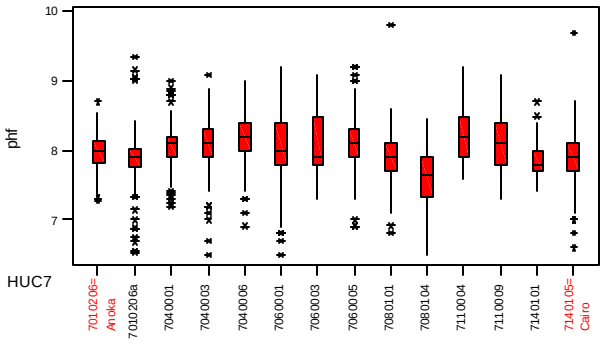
Upper Mississippi River Water Quality Data: Descriptive Statistics: phf by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
phf	7010206	221	393	7.9627	7.9800	7.9669
	7010206a	511	831	7.8649	7.8900	7.8702
	7040001	487	133	8.0819	8.1000	8.0833
	7040003	288	147	8.0994	8.1000	8.1142
	7040006	104	104	8.1865	8.2000	8.1989
	7060001	223	93	8.0386	8.0000	8.0498
	7060003	15	0	8.067	7.900	8.046
	7060005	267	155	8.1348	8.1000	8.1286
	7080101	129	1	7.8813	7.9000	7.8808
	7080104	24	0	7.6396	7.6500	7.6545
	7110004	93	111	8.2118	8.2000	8.1988
	7110009	175	215	8.1116	8.1000	8.1015
	7140101	70	1	7.8757	7.8000	7.8645
	7140105	545	11	7.8917	7.9000	7.8889

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
phf	7010206	0.2606	0.0175	7.2700	8.7000	7.8100	8.1350
	7010206a	0.2696	0.0119	6.5300	9.3500	7.7500	8.0200
	7040001	0.2530	0.0115	7.2000	9.0000	7.9000	8.2000
	7040003	0.3365	0.0198	6.5000	9.1000	7.9000	8.3000
	7040006	0.4174	0.0409	6.9000	9.0000	8.0000	8.4000
	7060001	0.4639	0.0311	6.5000	9.2000	7.8000	8.4000
	7060003	0.511	0.132	7.300	9.100	7.800	8.500
	7060005	0.3685	0.0226	6.9000	9.2000	7.9000	8.3000
	7080101	0.3382	0.0298	6.8000	9.8000	7.7000	8.1000
	7080104	0.4010	0.0819	6.5000	8.4500	7.3250	7.9000
	7110004	0.3665	0.0380	7.6000	9.2000	7.9000	8.5000
	7110009	0.3689	0.0279	7.3000	9.1000	7.8000	8.4000
	7140101	0.2446	0.0292	7.4000	8.7000	7.7000	8.0000
	7140105	0.3360	0.0144	6.6000	9.7000	7.7000	8.1000

1980-1999 Summer Months (June 1st to September 15th)
Boxplots of phf by HUC7



* NOTE * N missing = 2195

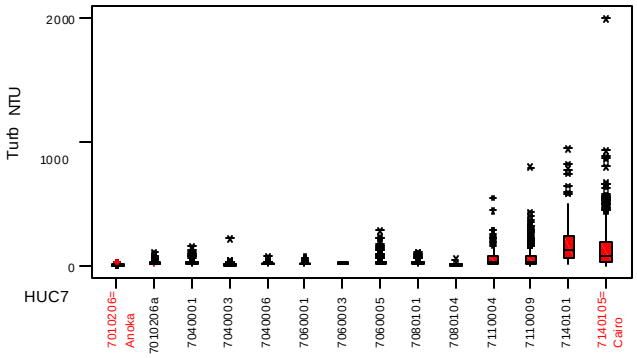
Upper Mississippi River Water Quality Data: Descriptive Statistics: Turb by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
Turb	7010206	566	48	8.501	7.700	8.113
	7010206a	1149	193	19.412	17.000	18.246
	7040001	568	52	27.590	25.000	26.287
	7040003	253	182	13.339	11.000	12.035
	7040006	148	60	17.974	16.000	17.269
	7060001	278	38	18.900	17.000	18.056
	7060003	15	0	19.27	16.00	18.23
	7060005	417	5	35.83	30.00	31.94
	7080101	128	2	31.67	27.00	29.89
	7080104	24	0	14.64	10.05	13.25
	7110004	201	3	63.26	37.00	53.06
	7110009	389	1	67.71	34.00	56.10
	7140101	71	0	197.1	128.0	168.3
	7140105	551	5	146.95	85.00	126.24

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
Turb	7010206	3.919	0.165	2.700	36.000	5.900	9.600
	7010206a	11.954	0.353	0.700	110.000	11.250	24.000
	7040001	16.653	0.699	2.500	160.000	16.000	36.000
	7040003	14.538	0.914	3.000	224.000	8.000	15.500
	7040006	8.128	0.668	6.000	74.000	13.000	21.000
	7060001	9.599	0.576	2.500	71.000	13.000	23.000
	7060003	9.66	2.49	9.00	43.00	11.00	25.00
	7060005	27.49	1.35	9.00	284.00	22.50	40.00
	7080101	18.97	1.68	1.90	110.00	21.25	37.75
	7080104	12.83	2.62	3.80	56.00	5.58	19.25
	7110004	70.83	5.00	12.00	550.00	22.50	82.50
	7110009	82.52	4.18	0.50	800.00	22.00	77.50
	7140101	207.7	24.6	20.0	950.0	63.0	242.0
	7140105	168.77	7.19	3.00	2000.00	38.00	200.00

1980-1999 Summer Months (June 1st to September 15th)
Boxplots of Turb by HUC7



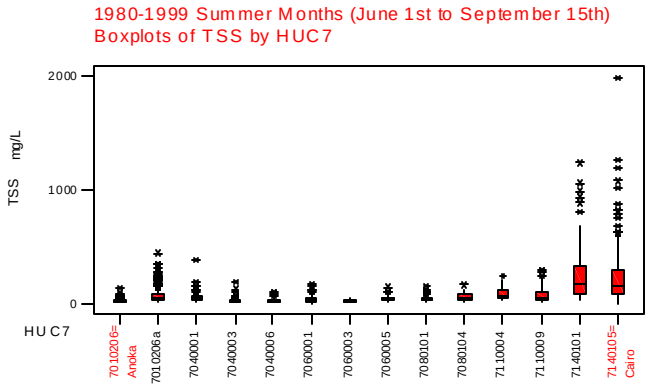
* NOTE * N missing = 589

Upper Mississippi River Water Quality Data: Descriptive Statistics: TSS by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
TSS	7010206	339	275	26.292	23.000	24.984
	7010206a	729	613	64.47	50.00	58.54
	7040001	415	205	46.47	47.00	44.75
	7040003	351	84	21.293	18.000	19.686
	7040006	122	86	24.75	22.00	23.29
	7060001	176	140	36.99	32.00	34.39
	7060003	15	0	21.93	17.00	20.85
	7060005	127	295	44.86	39.00	43.23
	7080101	119	11	44.97	37.00	42.32
	7080104	22	2	56.77	50.50	53.30
	7110004	58	146	84.74	62.50	80.54
	7110009	112	278	79.47	54.00	73.37
	7140101	69	2	273.6	163.0	246.3
	7140105	239	317	223.8	155.0	192.3

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
TSS	7010206	12.707	0.690	8.000	133.000	19.000	31.000
	7010206a	49.91	1.85	7.00	440.00	32.00	77.50
	7040001	29.85	1.47	3.00	383.00	29.00	60.00
	7040003	14.694	0.784	5.000	181.000	14.000	25.000
	7040006	13.52	1.22	8.00	100.00	16.00	29.00
	7060001	26.04	1.96	2.00	171.00	19.00	47.75
	7060003	12.58	3.25	8.00	50.00	12.00	31.00
	7060005	22.54	2.00	12.00	143.00	28.00	56.00
	7080101	23.85	2.19	15.00	154.00	29.00	54.00
	7080104	36.11	7.70	17.00	166.00	30.50	75.00
	7110004	52.26	6.86	26.00	242.00	40.75	121.00
	7110009	60.76	5.74	18.00	295.00	33.00	107.75
	7140101	271.0	32.6	30.0	1232.0	90.0	326.5
	7140105	236.2	15.3	1.0	1979.0	80.0	292.0



* NOTE *N missing = 2454

Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

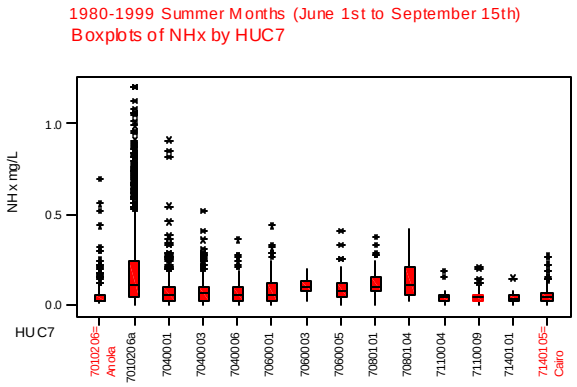
Upper Mississippi River Water Qaulity Data: Descriptive Statistics: NHx by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
NHx	7010206	606	8	0.05279	0.03000	0.04385
	7010206a	1271	71	0.18440	0.11000	0.15868
	7040001	495	125	0.07948	0.06000	0.06766
	7040003	340	95	0.07787	0.06650	0.06995
	7040006	135	73	0.07379	0.06000	0.06755
	7060001	189	127	0.08126	0.06000	0.07398
	7060003	15	0	0.1062	0.1070	0.1052
	7060005	123	299	0.09366	0.08200	0.08832
	7080101	117	13	0.12106	0.10500	0.11666
	7080104	23	1	0.1357	0.1100	0.1276
	7110004	60	144	0.04158	0.04050	0.03805
	7110009	120	270	0.04743	0.04200	0.04404
	7140101	69	2	0.03941	0.03800	0.03825
	7140105	241	315	0.05254	0.04000	0.04784

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
NHx	7010206	0.06130	0.00249	0.01000	0.70000	0.02000	0.06250
	7010206a	0.20250	0.00568	0.00000	1.20000	0.05000	0.24000
	7040001	0.08876	0.00399	0.00099	0.91000	0.03000	0.09600
	7040003	0.06761	0.00367	0.00099	0.52000	0.03000	0.09675
	7040006	0.05735	0.00494	0.00099	0.36000	0.03000	0.10000
	7060001	0.07174	0.00522	0.00099	0.44000	0.02700	0.12000
	7060003	0.0437	0.0113	0.0290	0.1970	0.0780	0.1350
	7060005	0.06675	0.00602	0.00099	0.41300	0.05000	0.12500
	7080101	0.06555	0.00606	0.00700	0.38000	0.08200	0.15900
	7080104	0.0976	0.0203	0.0200	0.4200	0.0600	0.2100
	7110004	0.03403	0.00439	0.00099	0.19000	0.02300	0.05825
	7110009	0.03645	0.00333	0.00099	0.21500	0.02625	0.06000
	7140101	0.02309	0.00278	0.00099	0.15000	0.02450	0.05300
	7140105	0.04518	0.00291	0.00099	0.27000	0.02350	0.06900

* NOTE * N missing = 1543



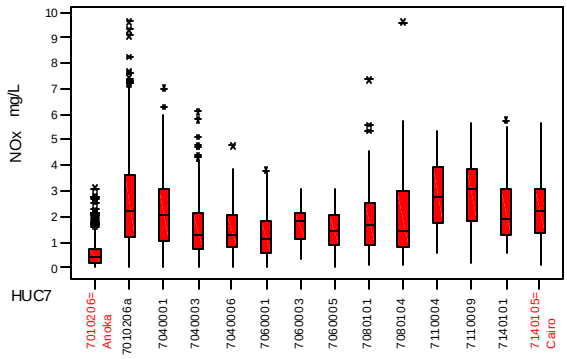
Upper Mississippi River Water Quality Data: Descriptive Statistics: NOx by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
NOx	7010206	341	273	0.5580	0.3700	0.4946
	7010206a	741	601	2.5096	2.2000	2.3997
	7040001	407	213	2.2154	2.1000	2.1432
	7040003	340	95	1.5177	1.2720	1.4362
	7040006	135	73	1.4125	1.2480	1.3534
	7060001	189	127	1.2701	1.1120	1.2273
	7060003	15	0	1.661	1.807	1.657
	7060005	123	299	1.4883	1.4600	1.4802
	7080101	119	11	1.858	1.684	1.764
	7080104	24	0	2.349	1.465	2.122
	7110004	60	144	2.848	2.796	2.836
	7110009	116	274	3.034	3.060	3.023
	7140101	69	2	2.364	1.872	2.297
	7140105	237	319	2.3145	2.2000	2.2771

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
NOx	7010206	0.5611	0.0304	0.0100	3.1000	0.1700	0.7200
	7010206a	1.6837	0.0619	0.0100	9.6500	1.2000	3.5900
	7040001	1.3396	0.0664	0.0099	7.0300	1.0400	3.1100
	7040003	1.0875	0.0590	0.0100	6.1020	0.6992	2.1235
	7040006	0.9625	0.0828	0.0099	4.8000	0.7600	2.1070
	7060001	0.8750	0.0637	0.0099	3.8280	0.5650	1.8265
	7060003	0.784	0.202	0.314	3.053	1.069	2.126
	7060005	0.7954	0.0717	0.0099	3.1000	0.8700	2.0150
	7080101	1.286	0.118	0.100	7.390	0.920	2.519
	7080104	2.287	0.467	0.100	9.600	0.850	3.000
	7110004	1.287	0.166	0.600	5.400	1.782	3.920
	7110009	1.431	0.133	0.200	5.715	1.815	3.888
	7140101	1.434	0.173	0.570	5.780	1.301	3.064
	7140105	1.1182	0.0726	0.0830	5.7000	1.3500	3.0930

1980-1999 Summer Months (June 1st to September 15th)
Boxplots of NOx by HUC7



* NOTE *
N missing = 2431

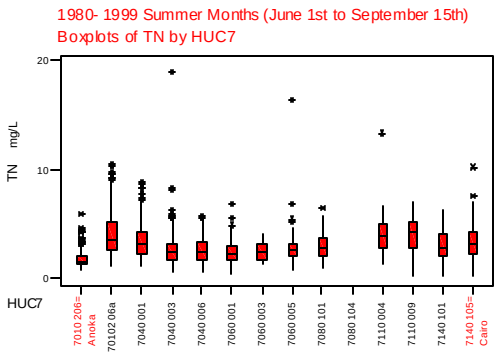
Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

Upper Mississippi River Water Quality Data: Descriptive Statistics: TN by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
TN	7010206	240	374	1.6856	1.4600	1.6053
	7010206a	546	796	3.9234	3.4450	3.8081
	7040001	383	237	3.3225	3.1600	3.2246
	7040003	343	92	2.5481	2.3000	2.4159
	7040006	136	72	2.5722	2.3350	2.5101
	7060001	189	127	2.3278	2.2100	2.2668
	7060003	15	0	2.372	2.291	2.330
	7060005	130	292	2.657	2.420	2.512
	7080101	106	24	2.891	2.711	2.845
	7080104	0	24	*	*	*
	7110004	58	146	3.937	3.875	3.814
	7110009	108	282	4.022	4.193	4.012
	7140101	69	2	2.994	2.671	2.961
	7140105	207	349	3.2604	3.1010	3.1892

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
TN	7010206	0.7392	0.0477	0.6600	5.8800	1.2100	1.9375
	7010206a	1.8174	0.0778	1.1300	10.3600	2.5725	5.0825
	7040001	1.4220	0.0727	1.1000	8.8100	2.1710	4.1560
	7040003	1.4564	0.0786	0.6000	19.0400	1.6400	3.1000
	7040006	1.1283	0.0968	0.5800	5.5700	1.6700	3.1915
	7060001	1.0207	0.0742	0.3700	6.8700	1.5800	2.8835
	7060003	0.819	0.212	1.214	4.072	1.649	3.020
	7060005	1.523	0.134	0.700	16.370	1.958	3.081
	7080101	1.181	0.115	0.950	6.380	1.956	3.618
	7080104	*	*	*	*	*	*
	7110004	1.799	0.236	1.180	13.340	2.677	4.980
	7110009	1.495	0.144	0.099	7.070	2.644	5.078
	7140101	1.415	0.170	0.099	6.270	1.900	3.953
	7140105	1.3980	0.0972	0.0990	10.1900	2.2070	4.2700



* NOTE *N missing = 2817

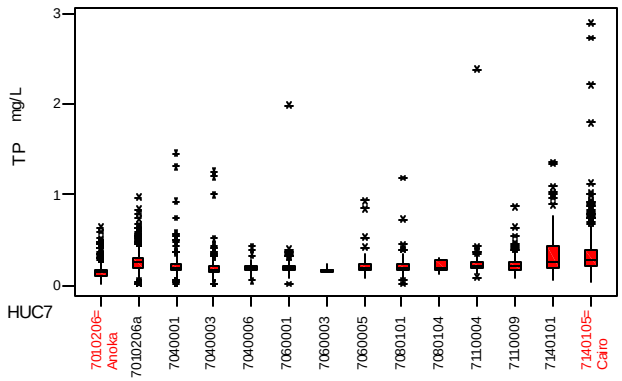
Upper Mississippi River Water Quality Data: Descriptive Statistics: TP by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
TP	7010206	364	250	0.14818	0.13000	0.13746
	7010206a	753	589	0.25735	0.25000	0.25092
	7040001	395	225	0.21442	0.20000	0.20233
	7040003	346	89	0.18675	0.17250	0.17647
	7040006	137	71	0.18599	0.18400	0.18473
	7060001	188	128	0.2037	0.1900	0.1935
	7060003	15	0	0.16167	0.15300	0.15885
	7060005	130	292	0.21284	0.19100	0.20078
	7080101	129	1	0.2082	0.1970	0.1969
	7080104	24	0	0.2055	0.1900	0.2056
	7110004	58	146	0.2599	0.2165	0.2223
	7110009	120	270	0.23119	0.20600	0.22055
	7140101	69	2	0.3613	0.2600	0.3324
	7140105	243	313	0.3643	0.2800	0.3197

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
TP	7010206	0.08584	0.00450	0.01000	0.64000	0.10000	0.17000
	7010206a	0.09922	0.00362	0.01000	0.96800	0.20000	0.30000
	7040001	0.12025	0.00605	0.02300	1.45200	0.16600	0.24000
	7040003	0.11047	0.00594	0.02300	1.25700	0.14175	0.20900
	7040006	0.05355	0.00458	0.04700	0.42500	0.15350	0.21350
	7060001	0.1412	0.0103	0.0100	1.9830	0.1613	0.2200
	7060003	0.03230	0.00834	0.13100	0.22900	0.13200	0.17700
	7060005	0.10803	0.00948	0.07500	0.93300	0.16000	0.24225
	7080101	0.1156	0.0102	0.0120	1.1820	0.1620	0.2290
	7080104	0.0593	0.0121	0.1080	0.3000	0.1600	0.2700
	7110004	0.2908	0.0382	0.0820	2.3840	0.1845	0.2473
	7110009	0.10289	0.00939	0.07600	0.87000	0.17575	0.26000
	7140101	0.2889	0.0348	0.0550	1.3560	0.1835	0.4235
	7140105	0.3303	0.0212	0.0320	2.8870	0.2090	0.3960

1980-1999 Summer Months (June 1st to September 15th)
Boxplots of TP by HUC7



* NOTE *N missing = 2376

Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

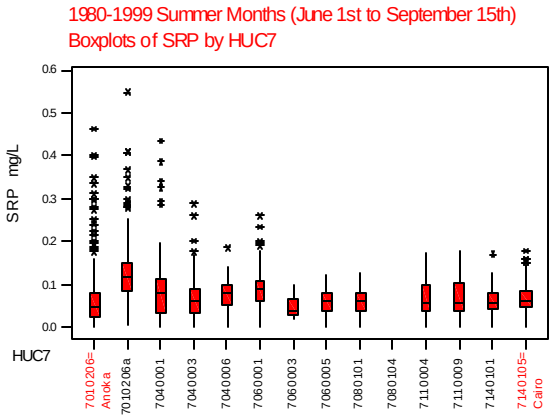
Upper Mississippi River Water Quality Data: Descriptive Statistics: SRP by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
SRP	7010206	246	368	0.07090	0.04850	0.06063
	7010206a	523	819	0.12078	0.11800	0.11730
	7040001	400	220	0.07974	0.07900	0.07596
	7040003	224	211	0.06657	0.06100	0.06372
	7040006	74	134	0.07774	0.08200	0.07758
	7060001	188	128	0.08556	0.08850	0.08414
	7060003	15	0	0.05020	0.04100	0.04869
	7060005	117	305	0.05774	0.06100	0.05725
	7080101	90	40	0.06056	0.05900	0.06026
	7080104	0	24	*	*	*
	7110004	57	147	0.06672	0.05700	0.06488
	7110009	103	287	0.06686	0.05600	0.06497
	7140101	66	5	0.06317	0.05800	0.06222
	7140105	210	346	0.06940	0.06100	0.06802

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1
SRP	7010206	0.07452	0.00475	0.00300	0.46400	0.02400
	7010206a	0.05952	0.00260	0.00500	0.55000	0.08500
	7040001	0.05623	0.00281	0.00099	0.43700	0.03500
	7040003	0.04450	0.00297	0.00099	0.29000	0.03400
	7040006	0.03373	0.00392	0.00099	0.18700	0.05325
	7060001	0.04564	0.00333	0.00099	0.26000	0.06000
	7060003	0.02375	0.00613	0.01900	0.10100	0.03100
	7060005	0.02923	0.00270	0.00099	0.12500	0.03700
	7080101	0.03033	0.00320	0.00099	0.12900	0.03675
	7080104	*	*	*	*	*
	7110004	0.03853	0.00510	0.00200	0.17500	0.04050
	7110009	0.04141	0.00408	0.00099	0.17700	0.03700
	7140101	0.03251	0.00400	0.00200	0.17100	0.04475
	7140105	0.03566	0.00246	0.00099	0.17900	0.04675

	Q3
SRP	0.08325
	0.15200
	0.11275
	0.08900
	0.10225
	0.11000
	0.06900
	0.07850
	0.08000
	*
	0.09900
	0.10300
	0.07925
	0.08700



* NOTE * N missing = 3034

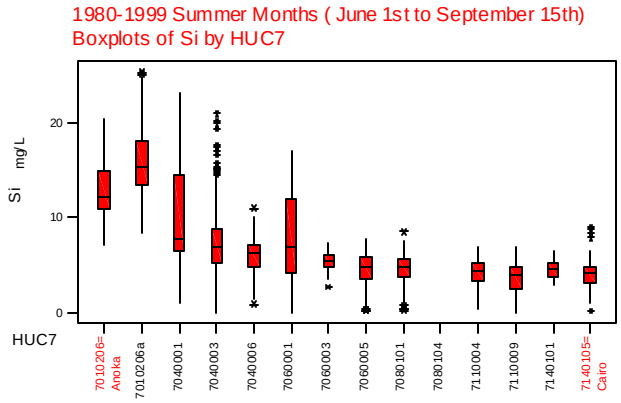
Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

Upper Mississippi River Water Quality Data: Descriptive Statistics: Si by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
Si	7010206	27	587	12.343	12.290	12.238
	7010206a	100	1242	15.757	15.290	15.608
	7040001	273	347	9.854	7.820	9.636
	7040003	150	285	7.849	6.983	7.583
	7040006	72	136	5.948	6.150	5.965
	7060001	158	158	7.675	7.003	7.650
	7060003	14	1	5.302	5.324	5.357
	7060005	116	306	4.521	4.868	4.583
	7080101	90	40	4.428	4.710	4.493
	7080104	0	24	*	*	*
	7110004	56	148	4.016	4.449	4.086
	7110009	103	287	3.599	3.849	3.639
	7140101	66	5	4.537	4.608	4.523
	7140105	209	347	4.0778	4.2810	4.0670

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
Si	7010206	2.948	0.567	7.050	20.270	10.900	14.800
	7010206a	3.588	0.359	8.400	25.250	13.408	17.982
	7040001	4.897	0.296	1.036	23.090	6.411	14.405
	7040003	4.215	0.344	0.010	20.900	5.185	8.848
	7040006	2.008	0.237	0.866	11.000	4.670	7.063
	7060001	4.473	0.356	0.008	17.000	4.271	12.000
	7060003	1.190	0.318	2.699	7.245	4.933	6.108
	7060005	1.737	0.161	0.198	7.670	3.646	5.854
	7080101	1.671	0.176	0.241	8.531	3.758	5.588
	7080104	*	*	*	*	*	*
	7110004	1.655	0.221	0.300	6.770	3.218	5.168
	7110009	1.597	0.157	0.010	7.025	2.423	4.759
	7140101	0.912	0.112	2.760	6.546	3.745	5.236
	7140105	1.2880	0.0891	0.1740	9.0000	3.1775	4.8640



* NOTE * N missing = 3913

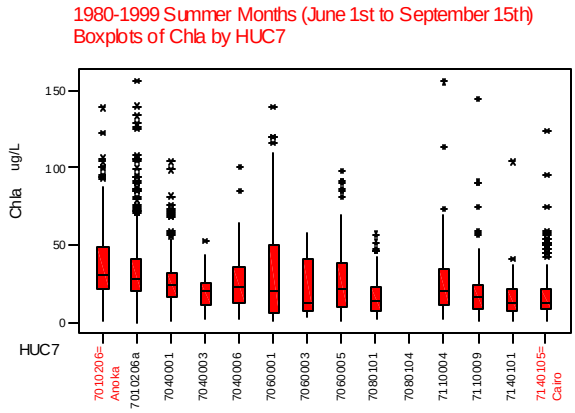
Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

Upper Mississippi River Water Quality Data: Descriptive Statistics: Chla by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
Chla	7010206	317	297	37.24	31.04	35.59
	7010206a	649	693	32.637	27.540	30.698
	7040001	337	283	25.703	24.000	24.559
	7040003	137	298	19.131	20.000	18.811
	7040006	56	152	27.88	22.50	26.00
	7060001	114	202	31.52	20.00	28.12
	7060003	8	7	21.25	12.50	21.25
	7060005	107	315	27.51	21.00	25.53
	7080101	82	48	17.22	14.00	16.16
	7080104	0	24	*	*	*
	7110004	52	152	27.98	20.00	23.89
	7110009	78	312	22.26	16.00	18.90
	7140101	58	13	16.52	13.00	14.81
	7140105	188	368	18.30	13.00	16.39

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
Chla	7010206	21.82	1.23	0.71	139.50	21.94	49.22
	7010206a	20.088	0.789	0.000	156.600	20.000	40.280
	7040001	14.994	0.817	1.000	104.400	16.000	31.975
	7040003	10.318	0.881	2.000	53.000	11.500	26.000
	7040006	21.05	2.81	2.00	101.00	12.25	36.00
	7060001	31.82	2.98	1.00	140.00	6.00	49.78
	7060003	20.70	7.32	3.00	58.00	7.00	41.50
	7060005	22.25	2.15	0.90	98.00	10.00	38.00
	7080101	12.34	1.36	2.00	57.00	8.00	23.00
	7080104	*	*	*	*	*	*
	7110004	27.54	3.82	2.00	156.00	11.25	34.75
	7110009	22.96	2.60	0.90	145.00	8.75	24.25
	7140101	14.69	1.93	0.90	104.00	8.00	21.00
	7140105	16.93	1.23	0.90	124.00	9.00	21.00



* NOTE * N missing = 3164

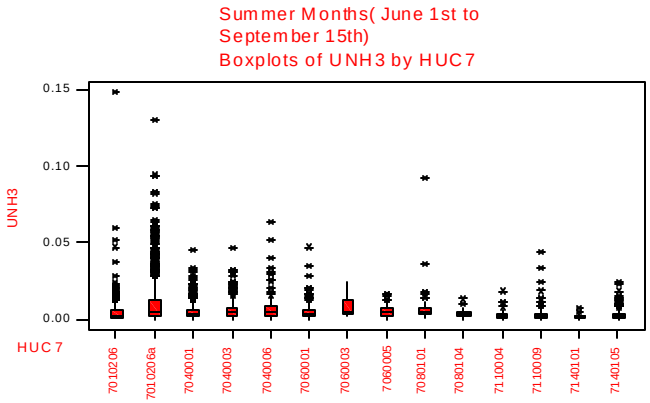
Water Division: Water Quality Branch Created by Simon Manoyan (11/02/2001)

Upper Mississippi River Water Quality Data: Descriptive Statistics:UNH3 by HUC7

Summer Months (June 1st to September 15th) 1980-1999

Variable	HUC7	N	N*	Mean	Median	TrMean
UNH3	7010206	600	14	0.00453	0.00204	0.00352
	7010206a	1258	84	0.00999	0.00512	0.00813
	7040001	485	135	0.00507	0.00324	0.00434
	7040003	339	96	0.00593	0.00403	0.00512
	7040006	131	77	0.00720	0.00453	0.00570
	7060001	183	133	0.00493	0.00329	0.00413
	7060003	15	0	0.00735	0.00393	0.00641
	7060005	122	300	0.00507	0.00475	0.00483
	7080101	117	13	0.00618	0.00509	0.00504
	7080104	23	1	0.00351	0.00308	0.00320
	7110004	52	152	0.00285	0.00211	0.00237
	7110009	105	285	0.00377	0.00196	0.00276
	7140101	68	3	0.00169	0.00154	0.00160
	7140105	237	319	0.00266	0.00125	0.00214

Variable	HUC7	StDev	SE Mean	Minimum	Maximum	Q1	Q3
UNH3	7010206	0.00828	0.00034	0.00014	0.14858	0.00102	0.00558
	7010206a	0.01317	0.00037	0.00005	0.13062	0.00184	0.01251
	7040001	0.00548	0.00025	0.00004	0.04538	0.00172	0.00620
	7040003	0.00627	0.00034	0.00003	0.04622	0.00199	0.00730
	7040006	0.00921	0.00080	0.00008	0.06341	0.00261	0.00794
	7060001	0.00574	0.00042	0.00009	0.04689	0.00186	0.00582
	7060003	0.00676	0.00174	0.00231	0.02466	0.00290	0.01280
	7060005	0.00329	0.00030	0.00002	0.01656	0.00265	0.00666
	7080101	0.00911	0.00084	0.00016	0.09264	0.00324	0.00691
	7080104	0.00302	0.00063	0.00008	0.01343	0.00157	0.00424
	7110004	0.00314	0.00044	0.00006	0.01829	0.00108	0.00342
	7110009	0.00614	0.00060	0.00003	0.04369	0.00108	0.00352
	7140101	0.00112	0.00014	0.00005	0.00741	0.00100	0.00227
	7140105	0.00361	0.00023	0.00001	0.02382	0.00058	0.00345



* NOTE * N missing = 1612

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

DESCRIPTIVE STATISTICS
1980-1984 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch

Upper Mississippi River Water Quality Data Descriptive Statistics: DO mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
DO mg/L	07010206	155	0	8.3290	8.3000	8.3460
	07010206	320	0	7.0822	7.0500	7.0931
	07040001	87	0	7.4138	7.4000	7.3747
	07040003	50	0	7.736	7.700	7.741
	07040006	20	0	8.095	8.100	8.072
	07060001	18	1	7.578	7.200	7.312
	07080101	2	0	6.850	6.850	6.850
	07080104	1	0	8.4000	8.4000	8.4000
	07110009	11	0	5.891	5.600	5.889
	07140105	4	1	5.550	6.000	5.550

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
DO mg/L	07010206	1.0684	0.0858	5.0000	12.4000	7.7000
	07010206	1.1032	0.0617	3.0000	10.0000	6.4000
	07040001	0.8888	0.0953	5.6000	10.6000	6.7000
	07040003	1.104	0.156	5.200	9.900	6.975
	07040006	1.363	0.305	5.700	10.900	6.875
	07060001	1.982	0.467	5.700	13.700	5.800
	07080101	1.061	0.750	6.100	7.600	*
	07080104	*	*	8.4000	8.4000	*
	07110009	1.812	0.546	2.600	9.200	5.200
	07140105	1.792	0.896	3.000	7.200	3.750

Variable	HUC	Q3
DO mg/L	07010206	9.1000
	07010206	7.8000
	07040001	7.9000
	07040003	8.300
	07040006	9.375
	07060001	8.425
	07080101	*
	07080104	*
	07110009	6.800
	07140105	6.900

* NOTE * N missing = 2

Upper Mississippi River Water Quality Data Descriptive Statistics: Temp C by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	Mean	Median	TrMean	StDev
Temp C	07010206	155	22.585	23.000	22.617	2.764
	07010206	320	22.823	23.000	22.878	2.550
	07040001	87	23.101	23.000	23.149	2.728
	07040003	50	22.174	22.000	22.164	3.335
	07040006	20	22.725	23.250	22.722	2.971
	07060001	19	22.263	23.000	22.382	3.393
	07080101	2	21.88	21.88	21.88	1.59
	07080104	1	25.000	25.000	25.000	*
	07110009	11	26.364	25.500	26.278	2.367
	07140105	5	25.10	27.00	25.10	2.75

Variable	HUC	SE Mean	Minimum	Maximum	Q1	Q3
Temp C	07010206	0.222	16.000	28.000	20.000	25.000
	07010206	0.143	16.500	28.000	21.000	25.000
	07040001	0.292	15.000	28.500	20.500	25.500
	07040003	0.472	14.000	28.500	20.000	24.250
	07040006	0.664	17.500	28.000	20.000	25.375
	07060001	0.778	15.000	27.500	20.500	24.000
	07080101	1.13	20.75	23.00	*	*
	07080104	*	25.000	25.000	*	*
	07110009	0.714	23.000	30.500	25.000	28.500
	07140105	1.23	21.00	27.00	22.25	27.00

Upper Mississippi River Water Quality Data Descriptive Statistics: Cond. uS/cm by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Cond. uS	07010206	49	106	377.10	377.00	377.04
	07010206	94	226	551.29	559.00	556.40
	07040001	36	51	481.6	479.0	481.1
	07040003	50	0	374.9	375.0	378.0
	07040006	20	0	400.6	390.5	391.2
	07060001	19	0	392.4	399.0	395.0
	07080101	2	0	418.50	418.50	418.50
	07080104	1	0	438.00	438.00	438.00
	07110009	11	0	448.2	444.0	454.8
	07140105	4	1	574.0	574.0	574.0

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cond. uS	07010206	49.32	7.05	275.00	476.00	342.00
	07010206	85.38	8.81	272.00	767.00	500.00
	07040001	77.0	12.8	329.0	637.0	421.3
	07040003	83.5	11.8	150.0	540.0	320.0
	07040006	107.8	24.1	210.0	760.0	345.0
	07060001	58.2	13.4	270.0	470.0	350.0
	07080101	7.78	5.50	413.00	424.00	*
	07080104	*	*	438.00	438.00	*
	07110009	59.3	17.9	317.0	520.0	434.0
	07140105	71.5	35.8	505.0	643.0	508.8

Variable	HUC	Q3
Cond. uS	07010206	413.00
	07010206	620.00
	07040001	536.5
	07040003	432.5
	07040006	440.0
	07060001	440.0
	07080101	*
	07080104	*
	07110009	508.0
	07140105	639.3

* NOTE * N missing = 384

Upper Mississippi River Water Quality Data Descriptive Statistics: pH field by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
pH field	07010206	0	155	*	*	*
	07010206	0	320	*	*	*
	07040001	17	70	8.0176	8.0000	8.0433
	07040003	17	33	7.8235	7.8000	7.8233
	07040006	0	20	*	*	*
	07060001	19	0	7.824	7.800	7.832
	07080101	2	0	8.000	8.000	8.000
	07080104	1	0	8.5000	8.5000	8.5000
	07110009	11	0	8.0818	8.1000	8.0889
	07140105	4	1	7.850	7.750	7.850

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH field	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	0.3102	0.0752	7.2500	8.4000	7.8000
	07040003	0.2532	0.0614	7.4000	8.2500	7.7000
	07040006	*	*	*	*	*
	07060001	0.479	0.110	6.700	8.800	7.600
	07080101	0.283	0.200	7.800	8.200	*
	07080104	*	*	8.5000	8.5000	*
	07110009	0.2089	0.0630	7.7000	8.4000	7.9000
	07140105	0.311	0.155	7.600	8.300	7.625

Variable	HUC	Q3
pH field	07010206	*
	07010206	*
	07040001	8.3000
	07040003	8.0000
	07040006	*
	07060001	8.100
	07080101	*
	07080104	*
	07110009	8.2000
	07140105	8.175

* NOTE * N missing = 599

Upper Mississippi River Water Quality Data Descriptive Statistics: pH lab by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
pH lab	07010206	155	0	8.1974	8.2000	8.2128
	07010206	320	0	7.9773	8.0000	7.9823
	07040001	69	18	7.9697	8.0000	7.9770
	07040003	33	17	8.1606	8.2000	8.2069
	07040006	19	1	8.2316	8.2000	8.2176
	07060001	0	19	*	*	*
	07080101	2	0	8.300	8.300	8.300
	07080104	1	0	8.5000	8.5000	8.5000
	07110009	8	3	8.0250	8.0500	8.0250
	07140105	4	1	7.9750	8.0000	7.9750

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH lab	07010206	0.3324	0.0267	6.8000	8.8600	8.0000
	07010206	0.2463	0.0138	7.3000	8.9000	7.8000
	07040001	0.2680	0.0323	7.2000	8.5700	7.7900
	07040003	0.4069	0.0708	6.3000	8.6000	8.0000
	07040006	0.2626	0.0602	7.9000	8.8000	8.0000
	07060001	*	*	*	*	*
	07080101	0.141	0.100	8.200	8.400	*
	07080104	*	*	8.5000	8.5000	*
	07110009	0.2659	0.0940	7.6000	8.4000	7.7750
	07140105	0.1258	0.0629	7.8000	8.1000	7.8500

Variable	HUC	Q3
pH lab	07010206	8.4000
	07010206	8.1200
	07040001	8.1600
	07040003	8.4000
	07040006	8.4000
	07060001	*
	07080101	*
	07080104	*
	07110009	8.2000
	07140105	8.0750

* NOTE * N missing = 59

Upper Mississippi River Water Quality Data Descriptive Statistics: Turb ntu by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Turb ntu	07010206	139	16	7.475	6.900	7.194
	07010206	291	29	17.750	15.000	16.556
	07040001	68	19	15.584	14.000	15.232
	07040003	0	50	*	*	*
	07040006	0	20	*	*	*
	07060001	0	19	*	*	*
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Turb ntu	07010206	3.019	0.256	3.000	27.000	5.500
	07010206	11.422	0.670	1.100	87.000	11.000
	07040001	7.040	0.854	2.400	36.000	11.000
	07040003	*	*	*	*	*
	07040006	*	*	*	*	*
	07060001	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Turb ntu	07010206	8.600
	07010206	21.000
	07040001	18.750
	07040003	*
	07040006	*
	07060001	*
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 172

Upper Mississippi River Water Quality Data Descriptive Statistics: Flow cfs by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Flow cfs	07010206	146	9	8941	6750	8057
	07010206	299	21	16221	12600	14353
	07040001	87	0	22552	17000	20705
	07040003	18	32	32592	26550	30828
	07040006	12	8	33592	34300	32680
	07060001	19	0	37539	35824	35627
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Flow cfs	07010206	7098	587	2490	45000	4690
	07010206	14011	810	3250	70500	7520
	07040001	16670	1787	5360	88200	12200
	07040003	17652	4161	14100	79300	20800
	07040006	17800	5139	10500	65800	17750
	07060001	23298	5345	6580	101000	23855
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Flow cfs	07010206	9880
	07010206	18500
	07040001	27000
	07040003	39783
	07040006	46350
	07060001	42000
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 89

Upper Mississippi River Water Quality Data Descriptive Statistics: TSS mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
TSS mg/L	07010206	83	72	25.90	23.00	24.52
	07010206	175	145	67.28	44.00	57.41
	07040001	52	35	46.38	41.00	44.78
	07040003	50	0	22.80	20.00	21.30
	07040006	20	0	27.65	24.50	27.44
	07060001	19	0	40.58	34.00	38.24
	07080101	1	1	30.000	30.000	30.000
	07080104	0	1	*	*	*
	07110009	1	10	40.000	40.000	40.000
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TSS mg/L	07010206	12.24	1.34	8.00	88.00	20.00
	07010206	63.68	4.81	13.00	440.00	34.00
	07040001	21.21	2.94	15.00	108.00	30.00
	07040003	12.30	1.74	7.00	63.00	15.75
	07040006	10.89	2.43	13.00	46.00	18.00
	07060001	25.02	5.74	12.00	109.00	26.00
	07080101	*	*	30.000	30.000	*
	07080104	*	*	*	*	*
	07110009	*	*	40.000	40.000	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
TSS mg/L	07010206	30.00
	07010206	74.00
	07040001	58.75
	07040003	26.00
	07040006	37.25
	07060001	61.00
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 269

Upper Mississippi River Water Quality Data Descriptive Statistics: NHx mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
NHx mg/L	07010206	152	3	0.09283	0.08000	0.08324
	07010206	320	0	0.3695	0.3050	0.3497
	07040001	87	0	0.2486	0.2200	0.2370
	07040003	50	0	0.0946	0.0800	0.0855
	07040006	20	0	0.1115	0.1000	0.1067
	07060001	19	0	0.0879	0.0600	0.0712
	07080101	1	1	0.16000	0.16000	0.16000
	07080104	0	1	*	*	*
	07110009	8	3	0.0700	0.0800	0.0700
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NHx mg/L	07010206	0.07003	0.00568	0.02000	0.56000	0.05000
	07010206	0.2556	0.0143	0.0400	1.2000	0.1600
	07040001	0.1537	0.0165	0.0400	0.9100	0.1300
	07040003	0.0718	0.0102	0.0200	0.3600	0.0450
	07040006	0.0522	0.0117	0.0400	0.2700	0.0800
	07060001	0.0958	0.0220	0.0200	0.4400	0.0300
	07080101	*	*	0.16000	0.16000	*
	07080104	*	*	*	*	*
	07110009	0.0370	0.0131	0.0100	0.1200	0.0400
	07140105	*	*	*	*	*

Variable	HUC	Q3
NHx mg/L	07010206	0.10000
	07010206	0.5400
	07040001	0.3000
	07040003	0.1200
	07040006	0.1275
	07060001	0.1000
	07080101	*
	07080104	*
	07110009	0.0975
	07140105	*

* NOTE * N missing = 13

Upper Mississippi River Water Quality Data Descriptive Statistics: NOx mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
NOx mg/L	07010206	83	72	0.3870	0.2800	0.3303
	07010206	177	143	2.215	2.050	2.155
	07040001	51	36	1.888	1.610	1.860
	07040003	50	0	1.291	1.200	1.215
	07040006	20	0	1.108	0.960	1.019
	07060001	19	0	1.058	1.000	1.018
	07080101	1	1	1.8000	1.8000	1.8000
	07080104	0	1	*	*	*
	07110009	8	3	2.665	2.600	2.665
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NOx mg/L	07010206	0.4112	0.0451	0.0100	1.9500	0.0600
	07010206	1.397	0.105	0.010	6.100	1.165
	07040001	1.073	0.150	0.340	4.550	0.900
	07040003	0.880	0.124	0.120	4.000	0.508
	07040006	0.931	0.208	0.010	3.800	0.375
	07060001	0.706	0.162	0.200	2.600	0.400
	07080101	*	*	1.8000	1.8000	*
	07080104	*	*	*	*	*
	07110009	1.624	0.574	0.720	5.900	1.225
	07140105	*	*	*	*	*

Variable	HUC	Q3
NOx mg/L	07010206	0.5100
	07010206	3.350
	07040001	2.850
	07040003	1.775
	07040006	1.553
	07060001	1.500
	07080101	*
	07080104	*
	07110009	3.350
	07140105	*

* NOTE * N missing = 261

Upper Mississippi River Water Quality Data Descriptive Statistics: TN mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
TN mg/L	07010206	65	90	1.6032	1.4700	1.5669
	07010206	141	179	3.847	3.410	3.780
	07040001	42	45	3.378	3.120	3.336
	07040003	50	0	2.381	2.220	2.305
	07040006	20	0	2.180	2.015	2.113
	07060001	19	0	2.209	2.100	2.181
	07080101	1	1	2.6650	2.6650	2.6650
	07080104	0	1	*	*	*
	07110009	8	3	4.615	4.750	4.615
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TN mg/L	07010206	0.4718	0.0585	0.9400	3.3800	1.2450
	07010206	1.496	0.126	1.380	8.260	2.730
	07040001	1.085	0.167	1.590	6.030	2.445
	07040003	1.003	0.142	0.600	5.430	1.568
	07040006	1.024	0.229	0.580	4.970	1.515
	07060001	0.869	0.199	1.000	3.900	1.400
	07080101	*	*	2.6650	2.6650	*
	07080104	*	*	*	*	*
	07110009	1.856	0.656	1.920	7.500	2.750
	07140105	*	*	*	*	*

Variable	HUC	Q3
TN mg/L	07010206	1.9000
	07010206	4.920
	07040001	4.295
	07040003	2.925
	07040006	2.428
	07060001	2.800
	07080101	*
	07080104	*
	07110009	5.850
	07140105	*

* NOTE * N missing = 324

Upper Mississippi River Water Quality Data Descriptive Statistics: TP mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
TP mg/L	07010206	83	72	0.14902	0.13000	0.14065
	07010206	176	144	0.26064	0.24000	0.24823
	07040001	52	35	0.21154	0.20000	0.20630
	07040003	49	1	0.18094	0.17800	0.17896
	07040006	20	0	0.19225	0.18650	0.19261
	07060001	19	0	0.2037	0.1900	0.1994
	07080101	2	0	0.1825	0.1825	0.1825
	07080104	1	0	0.17000	0.17000	0.17000
	07110009	11	0	0.3005	0.2400	0.2633
	07140105	4	1	0.363	0.230	0.363

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TP mg/L	07010206	0.06792	0.00745	0.07000	0.47000	0.10700
	07010206	0.11001	0.00829	0.08000	0.96800	0.19250
	07040001	0.04483	0.00622	0.14000	0.36000	0.19000
	07040003	0.04705	0.00672	0.09100	0.32000	0.15350
	07040006	0.03139	0.00702	0.13000	0.24800	0.17300
	07060001	0.0479	0.0110	0.1600	0.3200	0.1600
	07080101	0.0177	0.0125	0.1700	0.1950	*
	07080104	*	*	0.17000	0.17000	*
	07110009	0.2005	0.0604	0.1150	0.8200	0.1600
	07140105	0.293	0.147	0.190	0.800	0.193

Variable	HUC	Q3
TP mg/L	07010206	0.17000
	07010206	0.29950
	07040001	0.22000
	07040003	0.20250
	07040006	0.22475
	07060001	0.2200
	07080101	*
	07080104	*
	07110009	0.3700
	07140105	0.665

* NOTE * N missing = 253

Upper Mississippi River Water Quality Data Descriptive Statistics: SRP mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
SRP mg/L	07010206	40	115	0.0570	0.0400	0.0481
	07010206	80	240	0.11075	0.10500	0.10111
	07040001	38	49	0.09171	0.09500	0.08576
	07040003	18	32	0.07083	0.07650	0.07300
	07040006	0	20	*	*	*
	07060001	19	0	0.0953	0.0940	0.0945
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
SRP mg/L	07010206	0.0648	0.0102	0.0100	0.4000	0.0200
	07010206	0.07480	0.00836	0.03000	0.55000	0.07000
	07040001	0.06082	0.00987	0.01000	0.39000	0.05675
	07040003	0.02227	0.00525	0.00600	0.10100	0.05675
	07040006	*	*	*	*	*
	07060001	0.0522	0.0120	0.0040	0.2000	0.0600
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
SRP mg/L	07010206	0.0700
	07010206	0.12000
	07040001	0.11350
	07040003	0.08375
	07040006	*
	07060001	0.1230
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 475

Upper Mississippi River Water Quality Data Descriptive Statistics: Si mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Si mg/L	07010206	0	155	*	*	*
	07010206	0	320	*	*	*
	07040001	0	87	*	*	*
	07040003	0	50	*	*	*
	07040006	0	20	*	*	*
	07060001	0	19	*	*	*
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Si mg/L	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	*	*	*	*	*
	07040003	*	*	*	*	*
	07040006	*	*	*	*	*
	07060001	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Si mg/L	07010206	*
	07010206	*
	07040001	*
	07040003	*
	07040006	*
	07060001	*
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* ERROR * Column contains all missing data.

Upper Mississippi River Water Quality Data Descriptive Statistics: Cl mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Cl mg/L	07010206	0	155	*	*	*
	07010206	0	320	*	*	*
	07040001	11	76	16.727	17.000	16.667
	07040003	11	39	10.364	10.000	10.222
	07040006	0	20	*	*	*
	07060001	12	7	12.250	12.500	12.200
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cl mg/L	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	1.902	0.574	14.000	20.000	15.000
	07040003	1.804	0.544	8.000	14.000	9.000
	07040006	*	*	*	*	*
	07060001	1.485	0.429	10.000	15.000	11.000
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Cl mg/L	07010206	*
	07010206	*
	07040001	18.000
	07040003	12.000
	07040006	*
	07060001	13.000
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 636

Upper Mississippi River Water Quality Data Descriptive Statistics: Chla ug/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
Chla ug/	07010206	66	89	43.81	43.82	43.22
	07010206	132	188	36.18	33.17	35.36
	07040001	33	54	28.77	25.60	27.78
	07040003	0	50	*	*	*
	07040006	0	20	*	*	*
	07060001	0	19	*	*	*
	07080101	0	2	*	*	*
	07080104	0	1	*	*	*
	07110009	0	11	*	*	*
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Chla ug/	07010206	22.71	2.80	0.71	104.22	25.18
	07010206	17.69	1.54	6.27	86.90	21.88
	07040001	17.43	3.03	0.00	75.44	17.78
	07040003	*	*	*	*	*
	07040006	*	*	*	*	*
	07060001	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Chla ug/	07010206	61.15
	07010206	48.48
	07040001	33.20
	07040003	*
	07040006	*
	07060001	*
	07080101	*
	07080104	*
	07110009	*
	07140105	*

* NOTE * N missing = 439

Upper Mississippi River Water Quality Data Descriptive Statistics: UNH3 mg/L by HUC

Summer Months (June 1st to September 15th) 1980-1984.

Variable	HUC	N	N*	Mean	Median	TrMean
UNH3 mg/	07010206	152	3	0.00749	0.00577	0.00645
	07010206	320	0	0.01785	0.01339	0.01637
	07040001	86	1	0.01213	0.00934	0.01153
	07040003	50	0	0.00605	0.00604	0.00539
	07040006	19	1	0.00933	0.00760	0.00835
	07060001	19	0	0.00241	0.00259	0.00238
	07080101	1	1	0.0082200	0.0082200	0.0082200
	07080104	0	1	*	*	*
	07110009	8	3	0.00507	0.00372	0.00507
	07140105	0	5	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
UNH3 mg/	07010206	0.00788	0.00064	0.00035	0.05940	0.00315
	07010206	0.01483	0.00083	0.00070	0.09348	0.00670
	07040001	0.00871	0.00094	0.00150	0.04389	0.00568
	07040003	0.00552	0.00078	0.00011	0.02249	0.00130
	07040006	0.00701	0.00161	0.00148	0.03377	0.00533
	07060001	0.00151	0.00035	0.00030	0.00492	0.00100
	07080101	*	*	0.0082200	0.0082200	*
	07080104	*	*	*	*	*
	07110009	0.00371	0.00131	0.00151	0.01212	0.00211
	07140105	*	*	*	*	*

Variable	HUC	Q3
UNH3 mg/	07010206	0.00881
	07010206	0.02497
	07040001	0.01802
	07040003	0.00827
	07040006	0.01162
	07060001	0.00380
	07080101	*
	07080104	*
	07110009	0.00813
	07140105	*

* NOTE * N missing = 15

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

DESCRIPTIVE STATISTICS
1985-1989 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch

Upper Mississippi River Water Quality Data Descriptive Statistics: DO mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
DO mg/L	07010206	155	0	8.2863	8.3000	8.2688
	07010206	331	1	7.0647	7.1600	7.0948
	07040001	89	0	7.6462	7.6000	7.6117
	07040003	60	0	8.167	8.050	8.098
	07040006	43	1	8.928	8.700	8.941
	07060001	73	2	9.474	9.700	9.525
	07060005	122	0	8.2525	8.2000	8.2800
	07080101	45	3	7.489	7.800	7.527
	07080104	41	0	7.776	7.900	7.751
	07110004	75	0	7.740	7.800	7.681
	07110009	86	1	7.200	7.250	7.191
	07140105	16	2	6.319	6.400	6.321

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
DO mg/L	07010206	0.9157	0.0735	6.2900	11.1400	7.6000
	07010206	1.1493	0.0632	2.8600	10.8400	6.4000
	07040001	0.7614	0.0807	5.4000	10.8000	7.2250
	07040003	1.500	0.194	5.500	12.200	7.000
	07040006	1.555	0.237	5.500	11.900	7.800
	07060001	2.017	0.236	4.100	13.800	7.950
	07060005	1.0674	0.0966	5.2000	10.4000	7.6750
	07080101	0.962	0.143	4.600	9.100	6.750
	07080104	1.169	0.183	5.500	10.500	7.050
	07110004	1.531	0.177	4.800	15.100	6.800
	07110009	1.505	0.162	4.400	10.200	6.050
	07140105	0.733	0.183	5.200	7.400	5.525

Variable	HUC	Q3
DO mg/L	07010206	8.8000
	07010206	7.8000
	07040001	7.9600
	07040003	9.000
	07040006	10.200
	07060001	11.100
	07060005	9.0000
	07080101	8.150
	07080104	8.400
	07110004	8.600
	07110009	8.300
	07140105	7.050

* NOTE * N missing = 10

Upper Mississippi River Water Quality Data Descriptive Statistics: Temp C by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Temp C	07010206	155	0	23.435	23.500	23.555
	07010206	332	0	23.552	24.000	23.630
	07040001	89	0	23.817	24.000	23.916
	07040003	60	0	23.003	23.000	23.133
	07040006	44	0	23.961	24.000	23.993
	07060001	75	0	24.004	24.400	23.934
	07060005	122	0	24.461	24.650	24.485
	07080101	47	1	24.657	24.500	24.684
	07080104	41	0	25.380	25.000	25.395
	07110004	75	0	25.933	26.000	25.946
	07110009	87	0	26.864	27.300	26.870
	07140105	16	2	26.813	27.500	26.821

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Temp C	07010206	3.071	0.247	15.500	29.200	21.000
	07010206	3.046	0.167	17.000	30.000	21.000
	07040001	3.202	0.339	12.500	30.000	21.250
	07040003	3.679	0.475	13.000	29.000	21.000
	07040006	3.468	0.523	15.000	31.600	21.050
	07060001	3.319	0.383	18.000	32.900	21.500
	07060005	2.796	0.253	18.000	30.100	22.425
	07080101	2.904	0.424	18.000	30.000	22.000
	07080104	2.653	0.414	20.000	30.000	23.000
	07110004	2.448	0.283	21.000	30.300	24.000
	07110009	2.400	0.257	21.700	31.200	25.000
	07140105	2.851	0.713	22.000	31.500	24.250

Variable	HUC	Q3
Temp C	07010206	25.900
	07010206	26.000
	07040001	26.050
	07040003	26.000
	07040006	26.800
	07060001	27.000
	07060005	26.025
	07080101	27.000
	07080104	27.500
	07110004	28.000
	07110009	28.700
	07140105	28.875

* NOTE * N missing = 3

Upper Mississippi River Water Quality Data Descriptive Statistics: Cond. uS/cm by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Cond. uS	07010206	53	102	331.55	330.00	331.09
	07010206	105	227	496.63	481.00	494.91
	07040001	40	49	415.3	425.5	418.4
	07040003	60	0	355.25	365.00	357.24
	07040006	43	1	320.58	330.00	322.85
	07060001	71	4	333.85	339.00	333.92
	07060005	119	3	326.62	318.00	326.85
	07080101	43	5	365.51	370.00	367.95
	07080104	39	2	387.31	387.00	388.46
	07110004	73	2	401.41	378.00	393.08
	07110009	85	2	455.62	462.00	452.14
	07140105	16	2	535.3	535.0	534.3

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cond. uS	07010206	35.70	4.90	249.00	410.00	309.00
	07010206	90.64	8.85	305.00	743.00	428.50
	07040001	77.2	12.2	136.0	570.0	375.8
	07040003	53.84	6.95	174.00	460.00	312.50
	07040006	47.44	7.23	150.00	420.00	291.00
	07060001	47.22	5.60	226.00	440.00	295.00
	07060005	50.31	4.61	210.00	417.00	291.00
	07080101	49.03	7.48	220.00	477.00	342.00
	07080104	42.43	6.79	260.00	473.00	370.00
	07110004	84.04	9.84	250.00	793.00	350.00
	07110009	86.21	9.35	319.00	746.00	380.00
	07140105	83.2	20.8	414.0	670.0	466.3

Variable	HUC	Q3
Cond. uS	07010206	352.00
	07010206	559.00
	07040001	450.0
	07040003	397.50
	07040006	356.00
	07060001	370.00
	07060005	370.00
	07080101	396.00
	07080104	415.00
	07110004	432.50
	07110009	500.00
	07140105	585.3

* NOTE * N missing = 399

Upper Mississippi River Water Quality Data Descriptive Statistics: pH field by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
pH field	07010206	0	155	*	*	*
	07010206	0	332	*	*	*
	07040001	20	69	8.2425	8.2750	8.2333
	07040003	20	40	8.095	8.100	8.106
	07040006	0	44	*	*	*
	07060001	24	51	7.9625	7.9250	7.9318
	07060005	37	85	7.9108	7.9000	7.9273
	07080101	47	1	7.8989	7.9000	7.8988
	07080104	41	0	7.9915	8.0000	7.9986
	07110004	37	38	7.8459	7.8000	7.8455
	07110009	7	80	8.3286	8.3000	8.3286
	07140105	16	2	8.1938	8.2000	8.1929

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH field	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	0.3314	0.0741	7.6500	9.0000	7.9750
	07040003	0.468	0.105	7.100	8.900	7.725
	07040006	*	*	*	*	*
	07060001	0.3876	0.0791	7.5000	9.1000	7.6000
	07060005	0.4314	0.0709	7.1000	8.5000	7.5500
	07080101	0.4357	0.0636	7.1000	8.8000	7.5000
	07080104	0.4234	0.0661	7.0000	8.8000	7.6000
	07110004	0.4775	0.0785	7.0000	8.8000	7.5000
	07110009	0.2563	0.0969	7.9000	8.6000	8.2000
	07140105	0.1237	0.0309	8.0000	8.4000	8.1000

Variable	HUC	Q3
pH field	07010206	*
	07010206	*
	07040001	8.4000
	07040003	8.475
	07040006	*
	07060001	8.1750
	07060005	8.3000
	07080101	8.2000
	07080104	8.3000
	07110004	8.2250
	07110009	8.6000
	07140105	8.3000

* NOTE * N missing = 897

Upper Mississippi River Water Quality Data Descriptive Statistics: pH lab by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
pH lab	07010206	155	0	8.3465	8.3100	8.3460
	07010206	329	3	8.1132	8.1300	8.1168
	07040001	72	17	8.2301	8.2300	8.2344
	07040003	44	16	8.3364	8.3000	8.3275
	07040006	20	24	8.3600	8.4000	8.3611
	07060001	18	57	8.3389	8.3500	8.3625
	07060005	0	122	*	*	*
	07080101	0	48	*	*	*
	07080104	1	40	8.6000	8.6000	8.6000
	07110004	0	75	*	*	*
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH lab	07010206	0.3381	0.0272	7.4700	9.1200	8.1100
	07010206	0.2759	0.0152	6.5500	8.8500	7.9400
	07040001	0.2841	0.0335	7.3000	9.1800	8.1000
	07040003	0.3491	0.0526	7.8000	9.1000	8.0250
	07040006	0.4309	0.0964	7.6000	9.1000	8.0000
	07060001	0.3913	0.0922	7.4000	8.9000	8.2000
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	8.6000	8.6000	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
pH lab	07010206	8.6000
	07010206	8.3000
	07040001	8.4100
	07040003	8.7000
	07040006	8.7500
	07060001	8.6250
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140105	*

* NOTE * N missing = 507

Upper Mississippi River Water Quality Data Descriptive Statistics: Turb ntu by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Turb ntu	07010206	140	15	8.480	7.900	8.228
	07010206	284	48	13.903	11.050	12.809
	07040001	69	20	14.207	10.800	13.910
	07040003	0	60	*	*	*
	07040006	24	20	18.25	18.00	18.23
	07060001	62	13	17.879	18.000	17.841
	07060005	109	13	24.49	22.00	22.97
	07080101	39	9	22.39	18.00	18.85
	07080104	33	8	33.12	23.00	26.34
	07110004	67	8	25.96	19.00	22.20
	07110009	87	0	26.27	19.00	22.16
	07140105	16	2	87.8	52.0	76.5

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Turb ntu	07010206	3.300	0.279	3.300	20.000	5.800
	07010206	9.399	0.558	0.700	65.000	8.000
	07040001	7.663	0.922	2.500	32.000	7.800
	07040003	*	*	*	*	*
	07040006	5.52	1.13	6.00	31.00	14.25
	07060001	5.737	0.729	3.400	33.000	14.000
	07060005	15.59	1.49	11.00	170.00	19.00
	07080101	24.25	3.88	6.20	160.00	12.00
	07080104	36.96	6.43	3.80	190.00	13.50
	07110004	26.16	3.20	10.00	210.00	15.00
	07110009	27.07	2.90	4.30	180.00	15.00
	07140105	92.9	23.2	3.7	330.0	21.0

Variable	HUC	Q3
Turb ntu	07010206	9.825
	07010206	16.875
	07040001	20.000
	07040003	*
	07040006	20.75
	07060001	21.000
	07060005	27.00
	07080101	22.00
	07080104	36.50
	07110004	29.00
	07110009	26.00
	07140105	152.5

* NOTE * N missing = 216

Upper Mississippi River Water Quality Data Descriptive Statistics: Flow cfs by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Flow cfs	07010206	140	15	8983	6565	8747
	07010206	284	48	12549	7460	11768
	07040001	89	0	17368	12700	16738
	07040003	20	40	29310	25850	28539
	07040006	0	44	*	*	*
	07060001	26	49	26220	20575	25182
	07060005	37	85	37154	33400	36191
	07080101	46	2	35922	29150	35095
	07080104	41	0	50568	45700	47400
	07110004	37	38	59024	50000	55873
	07110009	6	81	63533	43300	63533
	07140105	18	0	177667	157500	176163

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Flow cfs	07010206	6378	539	869	24000	3140
	07010206	10583	628	1070	41700	3770
	07040001	12426	1317	1900	48600	6990
	07040003	18489	4134	5600	66900	14300
	07040006	*	*	*	*	*
	07060001	16743	3284	8464	68900	13575
	07060005	19977	3284	12800	85000	19900
	07080101	21339	3146	7200	89700	16550
	07080104	33571	5243	10500	157000	21200
	07110004	38263	6290	11400	176000	27350
	07110009	48748	19901	25300	153000	29950
	07140105	80614	19001	71400	308000	109925

Variable	HUC	Q3
Flow cfs	07010206	14700
	07010206	22300
	07040001	29050
	07040003	44200
	07040006	*
	07060001	36900
	07060005	55300
	07080101	55550
	07080104	72550
	07110004	76250
	07110009	101850
	07140105	239250

* NOTE * N missing = 402

Upper Mississippi River Water Quality Data Descriptive Statistics: TSS mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
TSS mg/L	07010206	86	69	24.22	22.00	23.55
	07010206	182	150	41.20	32.00	38.46
	07040001	55	34	37.16	27.00	36.08
	07040003	60	0	18.833	18.000	18.556
	07040006	20	24	23.25	24.50	23.11
	07060001	26	49	29.04	27.00	28.13
	07060005	36	86	27.75	26.50	27.28
	07080101	44	4	35.45	30.00	30.53
	07080104	38	3	46.58	33.50	38.79
	07110004	37	38	44.22	33.00	37.33
	07110009	3	84	52.0	19.0	52.0
	07140105	10	8	293	112	256

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TSS mg/L	07010206	9.49	1.02	9.00	70.00	18.00
	07010206	26.32	1.95	7.00	163.00	22.00
	07040001	20.04	2.70	10.00	82.00	20.00
	07040003	5.831	0.753	8.000	35.000	15.000
	07040006	5.76	1.29	15.00	34.00	17.25
	07060001	14.59	2.86	10.00	70.00	18.00
	07060005	11.40	1.90	10.00	57.00	19.25
	07080101	33.50	5.05	9.00	231.00	21.25
	07080104	44.99	7.30	14.00	251.00	23.00
	07110004	44.61	7.33	11.00	251.00	19.00
	07110009	57.2	33.0	19.0	118.0	19.0
	07140105	336	106	16	866	66

Variable	HUC	Q3
TSS mg/L	07010206	29.25
	07010206	55.25
	07040001	56.00
	07040003	21.750
	07040006	28.00
	07060001	36.00
	07060005	34.50
	07080101	34.50
	07080104	52.00
	07110004	51.00
	07110009	118.0
	07140105	668

* NOTE * N missing = 549

Upper Mississippi River Water Quality Data Descriptive Statistics: NHx mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
NHx mg/L	07010206	155	0	0.05671	0.04000	0.04604
	07010206	330	2	0.21479	0.16000	0.19753
	07040001	89	0	0.07753	0.06000	0.07531
	07040003	60	0	0.08733	0.07000	0.08093
	07040006	20	24	0.0975	0.0800	0.0917
	07060001	26	49	0.0815	0.0400	0.0742
	07060005	37	85	0.2314	0.1700	0.2203
	07080101	45	3	0.2238	0.1600	0.2132
	07080104	40	1	0.2265	0.1450	0.2067
	07110004	36	39	0.1961	0.1100	0.1731
	07110009	6	81	0.1167	0.1150	0.1167
	07140105	14	4	0.0964	0.1000	0.0925

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NHx mg/L	07010206	0.07334	0.00589	0.02000	0.70000	0.02000
	07010206	0.16381	0.00902	0.02000	1.08000	0.10000
	07040001	0.04618	0.00489	0.02000	0.20000	0.04000
	07040003	0.06454	0.00833	0.02000	0.29000	0.05250
	07040006	0.0453	0.0101	0.0600	0.2400	0.0600
	07060001	0.0853	0.0167	0.0200	0.3200	0.0200
	07060005	0.1702	0.0280	0.0100	0.6500	0.1000
	07080101	0.1715	0.0256	0.0200	0.7400	0.1000
	07080104	0.1928	0.0305	0.0300	0.8000	0.1000
	07110004	0.1704	0.0284	0.0200	0.8000	0.1000
	07110009	0.0524	0.0214	0.0400	0.2000	0.0850
	07140105	0.0531	0.0142	0.0100	0.2300	0.0725

Variable	HUC	Q3
NHx mg/L	07010206	0.06000
	07010206	0.28000
	07040001	0.11000
	07040003	0.09750
	07040006	0.1200
	07060001	0.1175
	07060005	0.3950
	07080101	0.3650
	07080104	0.2750
	07110004	0.2750
	07110009	0.1475
	07140105	0.1025

* NOTE * N missing = 288

Upper Mississippi River Water Quality Data Descriptive Statistics: NOx mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
NOx mg/L	07010206	87	68	0.3056	0.1700	0.2567
	07010206	182	150	1.4621	1.2850	1.3804
	07040001	55	34	1.013	0.790	0.896
	07040003	60	0	0.6080	0.4350	0.5380
	07040006	20	24	0.3895	0.2850	0.3378
	07060001	26	49	0.3004	0.3000	0.2829
	07060005	37	85	0.5632	0.3000	0.5209
	07080101	47	1	0.5955	0.4000	0.5581
	07080104	41	0	0.837	0.600	0.760
	07110004	37	38	1.256	1.100	1.201
	07110009	3	84	0.680	0.640	0.680
	07140105	10	8	2.032	1.450	1.785

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NOx mg/L	07010206	0.3487	0.0374	0.0100	1.7100	0.1100
	07010206	1.0941	0.0811	0.0200	5.4000	0.6175
	07040001	0.837	0.113	0.100	4.180	0.520
	07040003	0.5871	0.0758	0.0100	3.0000	0.2425
	07040006	0.4187	0.0936	0.0100	1.7000	0.0725
	07060001	0.2866	0.0562	0.0200	1.0000	0.0375
	07060005	0.5881	0.0967	0.0500	1.7900	0.1000
	07080101	0.5667	0.0827	0.1000	1.9000	0.1000
	07080104	0.801	0.125	0.100	3.500	0.185
	07110004	1.074	0.177	0.100	3.400	0.300
	07110009	0.501	0.289	0.200	1.200	0.200
	07140105	1.706	0.539	0.340	5.700	0.845

Variable	HUC	Q3
NOx mg/L	07010206	0.4100
	07010206	2.0300
	07040001	1.200
	07040003	0.9000
	07040006	0.6375
	07060001	0.4250
	07060005	1.1000
	07080101	0.9000
	07080104	1.100
	07110004	2.120
	07110009	1.200
	07140105	3.250

* NOTE * N missing = 541

Upper Mississippi River Water Quality Data Descriptive Statistics: TN mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
TN mg/L	07010206	53	102	1.4132	1.2700	1.3462
	07010206	126	206	2.860	2.695	2.778
	07040001	40	49	2.261	2.025	2.143
	07040003	60	0	1.6905	1.5600	1.6320
	07040006	20	24	1.5110	1.4100	1.4772
	07060001	26	49	1.4150	1.4000	1.4163
	07060005	0	122	*	*	*
	07080101	0	48	*	*	*
	07080104	0	41	*	*	*
	07110004	0	75	*	*	*
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TN mg/L	07010206	0.4668	0.0641	0.9100	3.4200	1.1600
	07010206	1.185	0.106	1.160	6.950	1.925
	07040001	0.909	0.144	1.140	5.500	1.723
	07040003	0.5405	0.0698	0.9000	4.0000	1.3125
	07040006	0.3765	0.0842	1.0100	2.6200	1.2625
	07060001	0.3040	0.0596	0.9000	1.9000	1.1275
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
TN mg/L	07010206	1.5850
	07010206	3.433
	07040001	2.473
	07040003	1.8750
	07040006	1.7725
	07060001	1.7000
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140105	*

* NOTE * N missing = 821

Upper Mississippi River Water Quality Data Descriptive Statistics: TP mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
TP mg/L	07010206	87	68	0.12095	0.11000	0.11535
	07010206	182	150	0.26382	0.24000	0.25496
	07040001	54	35	0.2409	0.2200	0.2219
	07040003	60	0	0.20932	0.19300	0.20387
	07040006	20	24	0.2178	0.2055	0.2127
	07060001	26	49	0.2265	0.2150	0.2250
	07060005	8	114	0.2125	0.2000	0.2125
	07080101	18	30	0.2071	0.1950	0.2017
	07080104	13	28	0.2368	0.2000	0.2245
	07110004	8	67	0.1750	0.2000	0.1750
	07110009	7	80	0.357	0.240	0.357
	07140105	17	1	0.3471	0.2800	0.3173

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TP mg/L	07010206	0.05077	0.00544	0.07000	0.46000	0.09000
	07010206	0.11235	0.00833	0.11000	0.67000	0.18425
	07040001	0.1519	0.0207	0.1200	1.2900	0.1900
	07040003	0.07200	0.00929	0.12000	0.44000	0.15225
	07040006	0.0656	0.0147	0.1320	0.3950	0.1758
	07060001	0.0625	0.0123	0.1300	0.3600	0.1775
	07060005	0.1126	0.0398	0.1000	0.4000	0.1000
	07080101	0.0764	0.0180	0.1000	0.4000	0.1475
	07080104	0.0984	0.0273	0.1080	0.5000	0.1900
	07110004	0.0707	0.0250	0.1000	0.3000	0.1000
	07110009	0.281	0.106	0.130	0.870	0.170
	07140105	0.2162	0.0524	0.1400	1.0000	0.2300

Variable	HUC	Q3
TP mg/L	07010206	0.13000
	07010206	0.31000
	07040001	0.2525
	07040003	0.24875
	07040006	0.2608
	07060001	0.2725
	07060005	0.3000
	07080101	0.2475
	07080104	0.2900
	07110004	0.2000
	07110009	0.630
	07140105	0.3600

* NOTE * N missing = 646

Upper Mississippi River Water Quality Data Descriptive Statistics: SRP mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
SRP mg/L	07010206	38	117	0.06463	0.05100	0.05956
	07010206	80	252	0.13911	0.12000	0.13281
	07040001	40	49	0.11773	0.10450	0.11403
	07040003	20	40	0.1134	0.0880	0.1083
	07040006	0	44	*	*	*
	07060001	26	49	0.1195	0.1175	0.1181
	07060005	0	122	*	*	*
	07080101	0	48	*	*	*
	07080104	0	41	*	*	*
	07110004	0	75	*	*	*
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
SRP mg/L	07010206	0.05623	0.00912	0.00500	0.21700	0.01300
	07010206	0.08866	0.00991	0.01200	0.41000	0.07250
	07040001	0.04839	0.00765	0.05600	0.29400	0.08550
	07040003	0.0679	0.0152	0.0300	0.2900	0.0730
	07040006	*	*	*	*	*
	07060001	0.0534	0.0105	0.0130	0.2600	0.0857
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
SRP mg/L	07010206	0.09425
	07010206	0.17300
	07040001	0.14200
	07040003	0.1363
	07040006	*
	07060001	0.1463
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140105	*

* NOTE * N missing = 942

Upper Mississippi River Water Quality Data Descriptive Statistics: Si mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Si mg/L	07010206	0	155	*	*	*
	07010206	0	332	*	*	*
	07040001	0	89	*	*	*
	07040003	0	60	*	*	*
	07040006	0	44	*	*	*
	07060001	15	60	4.65	3.00	4.27
	07060005	0	122	*	*	*
	07080101	0	48	*	*	*
	07080104	0	41	*	*	*
	07110004	0	75	*	*	*
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Si mg/L	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	*	*	*	*	*
	07040003	*	*	*	*	*
	07040006	*	*	*	*	*
	07060001	4.55	1.18	0.20	14.00	1.10
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Si mg/L	07010206	*
	07010206	*
	07040001	*
	07040003	*
	07040006	*
	07060001	6.00
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140105	*

* NOTE * N missing = 1131

Upper Mississippi River Water Quality Data Descriptive Statistics: Cl mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Cl mg/L	07010206	0	155	*	*	*
	07010206	3	329	15.67	16.00	15.67
	07040001	20	69	17.00	15.50	16.56
	07040003	20	40	12.000	11.000	11.778
	07040006	0	44	*	*	*
	07060001	26	49	12.423	12.000	12.375
	07060005	0	122	*	*	*
	07080101	0	48	*	*	*
	07080104	0	41	*	*	*
	07110004	0	75	*	*	*
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cl mg/L	07010206	*	*	*	*	*
	07010206	3.51	2.03	12.00	19.00	12.00
	07040001	5.29	1.18	11.00	31.00	13.00
	07040003	3.728	0.834	6.000	22.000	9.250
	07040006	*	*	*	*	*
	07060001	2.595	0.509	7.000	19.000	10.750
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Cl mg/L	07010206	*
	07010206	19.00
	07040001	19.00
	07040003	14.750
	07040006	*
	07060001	14.000
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140105	*

* NOTE * N missing = 1077

Upper Mississippi River Water Quality Data Descriptive Statistics: Chla ug/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
Chla ug/	07010206	72	83	38.36	33.93	36.90
	07010206	134	198	36.18	31.63	34.54
	07040001	35	54	36.69	33.30	35.24
	07040003	0	60	*	*	*
	07040006	0	44	*	*	*
	07060001	0	75	*	*	*
	07060005	26	96	26.80	26.00	26.00
	07080101	26	22	25.48	24.00	23.73
	07080104	25	16	36.21	22.00	34.79
	07110004	26	49	20.35	14.95	19.03
	07110009	0	87	*	*	*
	07140105	0	18	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Chla ug/	07010206	18.97	2.24	10.08	95.70	23.55
	07010206	19.22	1.66	0.52	140.40	24.60
	07040001	15.92	2.69	14.11	104.40	27.44
	07040003	*	*	*	*	*
	07040006	*	*	*	*	*
	07060001	*	*	*	*	*
	07060005	17.07	3.35	4.00	69.00	13.48
	07080101	18.62	3.65	5.00	88.00	10.75
	07080104	25.96	5.19	7.00	98.00	17.90
	07110004	16.87	3.31	4.30	68.00	9.00
	07110009	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
Chla ug/	07010206	50.79
	07010206	43.34
	07040001	45.00
	07040003	*
	07040006	*
	07060001	*
	07060005	36.75
	07080101	33.00
	07080104	47.50
	07110004	25.25
	07110009	*
	07140105	*

* NOTE * N missing = 802

Upper Mississippi River Water Quality Data Descriptive Statistics: UNH3 mg/L by HUC

Summer Months (June 1st to September 15th) 1985-1989

Variable	HUC	N	N*	Mean	Median	TrMean
UNH3 mg/	07010206	155	0	0.00685	0.00380	0.00537
	07010206	327	5	0.01465	0.00941	0.01252
	07040001	88	1	0.00669	0.00580	0.00622
	07040003	60	0	0.00949	0.00580	0.00877
	07040006	20	24	0.01414	0.00759	0.01208
	07060001	26	49	0.00632	0.00302	0.00566
	07060005	37	85	0.01313	0.00882	0.01186
	07080101	45	3	0.01226	0.00656	0.01022
	07080104	40	1	0.01615	0.00884	0.01301
	07110004	36	39	0.01223	0.00733	0.00948
	07110009	6	81	0.01795	0.01582	0.01795
	07140105	13	5	0.00979	0.00854	0.00942

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
UNH3 mg/	07010206	0.01277	0.00103	0.00066	0.14858	0.00214
	07010206	0.01526	0.00084	0.00022	0.13062	0.00586
	07040001	0.00511	0.00054	0.00045	0.02695	0.00292
	07040003	0.00887	0.00115	0.00036	0.03185	0.00284
	07040006	0.01552	0.00347	0.00208	0.06341	0.00403
	07060001	0.00752	0.00147	0.00028	0.02820	0.00158
	07060005	0.01372	0.00226	0.00007	0.04700	0.00305
	07080101	0.01501	0.00224	0.00066	0.07285	0.00352
	07080104	0.02071	0.00328	0.00036	0.10005	0.00524
	07110004	0.01699	0.00283	0.00021	0.09218	0.00331
	07110009	0.01485	0.00606	0.00388	0.04369	0.00432
	07140105	0.00612	0.00170	0.00100	0.02267	0.00545

Variable	HUC	Q3
UNH3 mg/	07010206	0.00790
	07010206	0.01669
	07040001	0.00910
	07040003	0.01502
	07040006	0.01938
	07060001	0.00733
	07060005	0.01656
	07080101	0.01486
	07080104	0.01892
	07110004	0.01121
	07110009	0.02893
	07140105	0.01368

* NOTE * N missing = 293

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

DESCRIPTIVE STATISTICS
1990-1994 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch

Upper Mississippi River Water Quality Data Descriptive Statistics: DO mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
DO mg/L	07010206	150	2	8.2169	8.1750	8.2209
	07010206	392	5	7.3699	7.1950	7.2909
	07040001	272	6	7.3687	7.2000	7.2545
	07040003	187	0	7.223	7.100	7.156
	07040006	101	3	8.548	8.200	8.390
	07060001	136	0	8.813	8.250	8.659
	07060005	289	1	7.6097	7.4400	7.5625
	07080101	64	1	7.156	7.175	7.082
	07080104	35	2	7.519	7.140	7.423
	07110004	153	2	8.093	7.580	8.012
	07110009	221	6	7.568	7.200	7.482
	07140101	10	0	6.990	6.400	6.825
	07140105	381	9	6.7220	6.5000	6.6481

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
DO mg/L	07010206	0.9943	0.0812	5.4900	10.4400	7.6075
	07010206	1.0613	0.0536	5.0500	12.2100	6.6725
	07040001	1.1073	0.0671	5.5000	13.4000	6.6300
	07040003	1.521	0.111	4.500	14.000	6.100
	07040006	1.980	0.197	5.300	15.500	7.200
	07060001	2.166	0.186	5.000	16.800	7.425
	07060005	1.5335	0.0902	4.2000	12.5000	6.6000
	07080101	1.488	0.186	4.500	12.500	6.200
	07080104	1.690	0.286	5.000	12.100	6.300
	07110004	1.706	0.138	5.400	13.200	6.700
	07110009	1.843	0.124	4.300	14.400	6.300
	07140101	1.304	0.412	5.600	9.700	6.075
	07140105	1.3148	0.0674	3.5000	11.4000	5.7000

Variable	HUC	Q3
DO mg/L	07010206	9.0025
	07010206	7.8275
	07040001	7.9000
	07040003	8.100
	07040006	9.450
	07060001	9.875
	07060005	8.5000
	07080101	8.035
	07080104	8.260
	07110004	9.550
	07110009	8.700
	07140101	8.025
	07140105	7.4000

Upper Mississippi River Water Quality Data Descriptive Statistics: Temp C by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Temp C	07010206	150	2	22.572	22.900	22.690
	07010206	392	5	22.343	22.900	22.464
	07040001	272	6	22.889	23.000	22.966
	07040003	187	0	22.622	22.800	22.736
	07040006	103	1	22.632	22.900	22.723
	07060001	136	0	22.788	22.850	22.935
	07060005	289	1	23.789	24.000	23.851
	07080101	64	1	24.202	24.700	24.319
	07080104	36	1	24.992	25.000	25.003
	07110004	154	1	25.428	25.500	25.444
	07110009	225	2	25.441	25.500	25.527
	07140101	10	0	25.690	26.200	25.963
	07140105	389	1	26.380	26.500	26.477

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Temp C	07010206	2.244	0.183	15.800	28.300	21.375
	07010206	2.295	0.116	15.400	26.600	21.000
	07040001	2.285	0.139	15.900	28.100	21.700
	07040003	2.248	0.164	15.000	27.000	21.100
	07040006	2.145	0.211	15.500	27.000	21.300
	07060001	2.481	0.213	15.000	26.800	21.550
	07060005	2.149	0.126	15.500	29.000	22.800
	07080101	2.640	0.330	16.500	29.200	22.925
	07080104	2.001	0.334	20.700	29.400	23.500
	07110004	2.097	0.169	19.100	31.100	24.500
	07110009	2.194	0.146	18.800	30.000	24.200
	07140101	2.359	0.746	20.700	28.500	24.550
	07140105	1.939	0.098	19.000	31.200	25.200

Variable	HUC	Q3
Temp C	07010206	24.200
	07010206	23.975
	07040001	24.650
	07040003	24.500
	07040006	24.200
	07060001	24.800
	07060005	25.000
	07080101	25.975
	07080104	26.075
	07110004	26.700
	07110009	27.100
	07140101	27.250
	07140105	27.500

* NOTE * N missing = 21

Upper Mississippi River Water Quality Data Descriptive Statistics: Cond. uS/cm by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Cond. uS	07010206	56	96	403.00	392.50	399.82
	07010206	190	207	575.49	589.00	574.72
	07040001	226	52	530.20	530.00	532.19
	07040003	178	9	467.29	481.50	472.68
	07040006	101	3	423.28	433.00	427.33
	07060001	131	5	422.88	443.00	428.82
	07060005	288	2	402.13	405.50	403.48
	07080101	65	0	424.28	427.00	421.68
	07080104	37	0	437.35	446.00	439.18
	07110004	155	0	437.05	436.00	436.57
	07110009	226	1	475.47	456.50	470.87
	07140101	10	0	563.5	544.0	561.5
	07140105	378	12	499.39	500.50	500.16

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cond. uS	07010206	68.76	9.19	280.00	646.00	357.00
	07010206	71.49	5.19	436.00	763.00	502.00
	07040001	56.38	3.75	187.00	667.00	497.00
	07040003	83.69	6.27	109.00	603.00	420.00
	07040006	65.17	6.48	201.00	540.00	388.50
	07060001	61.42	5.37	153.00	507.00	390.00
	07060005	46.92	2.76	252.00	528.00	375.00
	07080101	69.77	8.65	276.00	765.00	388.50
	07080104	33.11	5.44	351.00	485.00	416.50
	07110004	47.82	3.84	272.00	702.00	416.00
	07110009	84.05	5.59	292.00	873.00	422.75
	07140101	80.3	25.4	458.0	685.0	489.3
	07140105	51.89	2.67	340.00	617.00	455.00

Variable	HUC	Q3
Cond. uS	07010206	444.00
	07010206	624.50
	07040001	570.50
	07040003	520.00
	07040006	468.50
	07060001	469.00
	07060005	440.00
	07080101	456.50
	07080104	462.50
	07110004	464.00
	07110009	519.25
	07140101	647.0
	07140105	542.00

* NOTE * N missing = 387

Upper Mississippi River Water Quality Data Descriptive Statistics: pH field by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
pH field	07010206	80	72	8.0447	8.0550	8.0533
	07010206	234	163	7.9284	7.9300	7.9174
	07040001	209	69	8.1409	8.1000	8.1480
	07040003	123	64	8.1179	8.2000	8.1450
	07040006	67	37	8.1701	8.2000	8.1836
	07060001	99	37	8.1025	8.2000	8.1320
	07060005	220	70	8.1805	8.2000	8.1852
	07080101	65	0	7.8802	7.9000	7.8864
	07080104	37	0	7.8989	7.9000	7.9018
	07110004	81	74	8.2362	8.2000	8.2475
	07110009	93	134	8.2638	8.3000	8.2666
	07140101	9	1	8.2333	8.2000	8.2333
	07140105	382	8	7.9516	7.9000	7.9564

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH field	07010206	0.2767	0.0309	7.2700	8.7000	7.8650
	07010206	0.2810	0.0184	7.0000	9.3500	7.7975
	07040001	0.2555	0.0177	7.2000	8.9000	8.0000
	07040003	0.3940	0.0355	6.5000	9.1000	7.9000
	07040006	0.4697	0.0574	6.9000	9.0000	7.9000
	07060001	0.5399	0.0543	6.5000	9.0000	7.7000
	07060005	0.3938	0.0265	6.9000	9.2000	8.0000
	07080101	0.4280	0.0531	6.8000	9.4000	7.6500
	07080104	0.5347	0.0879	6.5000	9.3000	7.6350
	07110004	0.4591	0.0510	6.8000	9.3000	7.9000
	07110009	0.3580	0.0371	7.5000	8.9000	8.0000
	07140101	0.2598	0.0866	8.0000	8.7000	8.0000
	07140105	0.3422	0.0175	6.6000	9.7000	7.8000

Variable	HUC	Q3
pH field	07010206	8.2250
	07010206	8.0700
	07040001	8.3000
	07040003	8.4000
	07040006	8.5000
	07060001	8.5000
	07060005	8.4000
	07080101	8.1000
	07080104	8.3150
	07110004	8.5500
	07110009	8.5000
	07140101	8.4500
	07140105	8.2000

* NOTE * N missing = 729

Upper Mississippi River Water Quality Data Descriptive Statistics: pH lab by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
pH lab	07010206	70	82	8.0804	8.0600	8.0905
	07010206	156	241	8.0193	8.0300	8.0279
	07040001	46	232	8.0974	8.1500	8.1038
	07040003	54	133	8.2352	8.2000	8.2500
	07040006	17	87	8.3059	8.3000	8.2867
	07060001	45	91	8.2822	8.3000	8.2854
	07060005	0	290	*	*	*
	07080101	0	65	*	*	*
	07080104	0	37	*	*	*
	07110004	0	155	*	*	*
	07110009	0	227	*	*	*
	07140101	0	10	*	*	*
	07140105	0	390	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH lab	07010206	0.2854	0.0341	7.3200	8.6700	7.9025
	07010206	0.2804	0.0224	7.3000	8.5300	7.8400
	07040001	0.2582	0.0381	7.5300	8.5000	7.9000
	07040003	0.2947	0.0401	7.3000	8.9000	8.1000
	07040006	0.3030	0.0735	7.8000	9.1000	8.1000
	07060001	0.2956	0.0441	7.6000	9.0000	8.1000
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140101	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
pH lab	07010206	8.3000
	07010206	8.2525
	07040001	8.3000
	07040003	8.4000
	07040006	8.5000
	07060001	8.4000
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140101	*
	07140105	*

* NOTE * N missing = 2040

Upper Mississippi River Water Quality Data Descriptive Statistics: Turb ntu by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Turb ntu	07010206	138	14	9.783	8.500	9.251
	07010206	278	119	24.977	23.000	23.828
	07040001	268	10	30.846	29.000	29.863
	07040003	133	54	12.609	11.000	11.950
	07040006	84	20	20.560	19.000	19.632
	07060001	131	5	21.792	20.000	20.664
	07060005	290	0	41.79	35.00	37.06
	07080101	65	0	40.49	32.00	37.64
	07080104	37	0	40.67	30.40	35.87
	07110004	153	2	74.57	41.00	63.03
	07110009	226	1	86.67	41.00	74.50
	07140101	10	0	181.9	130.0	149.9
	07140105	388	2	143.12	69.00	127.51

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Turb ntu	07010206	4.739	0.403	3.200	36.000	7.200
	07010206	11.796	0.707	6.700	76.000	17.000
	07040001	15.407	0.941	6.000	160.000	20.000
	07040003	6.793	0.589	3.000	43.000	8.000
	07040006	9.036	0.986	8.000	74.000	15.000
	07060001	10.839	0.947	4.900	71.000	15.000
	07060005	30.86	1.81	13.00	284.00	27.00
	07080101	27.35	3.39	2.90	170.00	23.80
	07080104	38.05	6.26	3.90	210.00	18.00
	07110004	80.94	6.54	9.20	550.00	28.00
	07110009	98.88	6.58	0.50	800.00	27.00
	07140101	179.1	56.6	20.0	600.0	45.8
	07140105	149.82	7.61	3.00	670.00	36.00

Variable	HUC	Q3
Turb ntu	07010206	11.000
	07010206	30.250
	07040001	39.000
	07040003	16.000
	07040006	23.750
	07060001	25.000
	07060005	44.00
	07080101	49.50
	07080104	50.00
	07110004	92.00
	07110009	102.00
	07140101	275.0
	07140105	210.00

* NOTE * N missing = 227

Upper Mississippi River Water Quality Data Descriptive Statistics: Flow cfs by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Flow cfs	07010206	138	14	10811	9530	10217
	07010206	276	121	25382	21800	23482
	07040001	86	192	31481	26450	29323
	07040003	20	167	44715	38350	41694
	07040006	0	104	*	*	*
	07060001	45	91	56121	42900	52635
	07060005	26	264	53088	52150	52804
	07080101	35	30	55149	51500	53394
	07080104	36	1	76981	65100	72169
	07110004	26	129	99008	95300	96925
	07110009	2	225	148500	148500	148500
	07140101	0	10	*	*	*
	07140105	7	383	224429	169000	224429

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Flow cfs	07010206	6432	548	2710	33600	5788
	07010206	17544	1056	5480	85200	12500
	07040001	20498	2210	6800	102000	16100
	07040003	27376	6121	14700	129100	24625
	07040006	*	*	*	*	*
	07060001	38904	5799	13500	178400	29225
	07060005	17359	3404	21600	91400	41100
	07080101	21487	3632	24200	116000	41000
	07080104	39613	6602	28300	215000	55125
	07110004	47163	9249	26000	222000	63525
	07110009	26163	18500	130000	167000	*
	07140101	*	*	*	*	*
	07140105	179877	67987	116000	622000	118000

Variable	HUC	Q3
Flow cfs	07010206	13900
	07010206	33300
	07040001	41875
	07040003	57100
	07040006	*
	07060001	77100
	07060005	66025
	07080101	69500
	07080104	89600
	07110004	130000
	07110009	*
	07140101	*
	07140105	225000

* NOTE * N missing = 1731

Upper Mississippi River Water Quality Data Descriptive Statistics: TSS mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
TSS mg/L	07010206	86	66	29.47	26.00	27.83
	07010206	204	193	77.28	64.50	72.96
	07040001	136	142	52.26	52.50	50.37
	07040003	112	75	25.68	24.00	24.05
	07040006	45	59	30.82	26.00	28.71
	07060001	45	91	58.20	51.00	55.44
	07060005	80	210	57.28	52.00	55.97
	07080101	60	5	62.92	51.00	57.65
	07080104	37	0	79.57	60.00	72.12
	07110004	49	106	91.3	61.0	82.2
	07110009	37	190	70.41	48.00	65.64
	07140101	10	0	185.8	134.5	147.6
	07140105	84	306	208.1	141.5	184.9

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TSS mg/L	07010206	15.00	1.62	13.00	133.00	21.75
	07010206	45.83	3.21	24.00	270.00	46.25
	07040001	35.49	3.04	5.00	383.00	37.00
	07040003	15.86	1.50	6.00	130.00	16.00
	07040006	18.00	2.68	9.00	100.00	22.00
	07060001	32.43	4.83	9.00	171.00	36.00
	07060005	18.96	2.12	30.00	130.00	45.00
	07080101	39.60	5.11	27.00	270.00	39.00
	07080104	58.16	9.56	27.00	340.00	41.50
	07110004	84.1	12.0	15.0	480.0	39.0
	07110009	53.69	8.83	18.00	200.00	32.00
	07140101	177.0	56.0	36.0	641.0	69.5
	07140105	211.8	23.1	1.0	1014.0	57.5

Variable	HUC	Q3
TSS mg/L	07010206	33.25
	07010206	96.00
	07040001	63.00
	07040003	31.00
	07040006	36.50
	07060001	71.00
	07060005	70.00
	07080101	70.00
	07080104	99.50
	07110004	129.5
	07110009	91.50
	07140101	226.3
	07140105	254.8

* NOTE * N missing = 1443

Upper Mississippi River Water Quality Data Descriptive Statistics: NHx mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
NHx mg/L	07010206	150	2	0.03540	0.02000	0.02701
	07010206	333	64	0.08631	0.06000	0.07338
	07040001	159	119	0.07419	0.05000	0.05884
	07040003	97	90	0.07519	0.05000	0.06324
	07040006	56	48	0.06537	0.04850	0.05626
	07060001	58	78	0.05076	0.03050	0.04833
	07060005	76	214	0.07216	0.05200	0.06353
	07080101	55	10	0.10418	0.10000	0.09904
	07080104	37	0	0.0911	0.1000	0.0842
	07110004	50	105	0.06672	0.04050	0.05870
	07110009	40	187	0.04077	0.04000	0.03919
	07140101	9	1	0.01766	0.01700	0.01766
	07140105	79	311	0.04073	0.03000	0.03456

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NHx mg/L	07010206	0.04209	0.00344	0.02000	0.25000	0.02000
	07010206	0.08835	0.00484	0.02000	0.59000	0.03000
	07040001	0.10574	0.00839	0.00099	0.85000	0.02200
	07040003	0.08562	0.00869	0.00099	0.52000	0.02000
	07040006	0.06755	0.00903	0.00099	0.36000	0.02000
	07060001	0.03977	0.00522	0.00099	0.14400	0.02000
	07060005	0.07416	0.00851	0.00099	0.52000	0.03000
	07080101	0.06814	0.00919	0.00700	0.29000	0.06000
	07080104	0.0704	0.0116	0.0100	0.3000	0.0400
	07110004	0.06857	0.00970	0.00099	0.30000	0.01000
	07110009	0.03405	0.00538	0.00099	0.11000	0.01000
	07140101	0.01553	0.00518	0.00099	0.04400	0.00400
	07140105	0.04628	0.00521	0.00099	0.27000	0.01100

Variable	HUC	Q3
NHx mg/L	07010206	0.02000
	07010206	0.10000
	07040001	0.08800
	07040003	0.09300
	07040006	0.08900
	07060001	0.08000
	07060005	0.10000
	07080101	0.13000
	07080104	0.1150
	07110004	0.10000
	07110009	0.06000
	07140101	0.03250
	07140105	0.05000

* NOTE * N missing = 1229

Upper Mississippi River Water Quality Data Descriptive Statistics: NOx mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
NOx mg/L	07010206	84	68	0.9500	0.8150	0.8989
	07010206	205	192	3.761	3.700	3.705
	07040001	129	149	2.913	2.700	2.867
	07040003	98	89	2.071	1.900	2.003
	07040006	56	48	1.894	1.725	1.833
	07060001	58	78	1.743	1.750	1.722
	07060005	69	221	1.3298	1.2600	1.3090
	07080101	48	17	1.674	1.260	1.551
	07080104	31	6	2.538	2.000	2.269
	07110004	44	111	2.453	2.200	2.409
	07110009	39	188	2.958	2.910	2.941
	07140101	9	1	1.749	1.720	1.749
	07140105	79	311	2.101	1.760	2.035

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NOx mg/L	07010206	0.6602	0.0720	0.0600	3.1000	0.4495
	07010206	1.605	0.112	0.910	7.670	2.435
	07040001	1.194	0.105	0.010	6.310	2.140
	07040003	1.015	0.102	0.248	5.790	1.290
	07040006	0.861	0.115	0.600	4.800	1.230
	07060001	0.841	0.110	0.300	3.700	1.200
	07060005	0.7329	0.0882	0.1800	2.9500	0.6750
	07080101	1.305	0.188	0.290	7.390	0.742
	07080104	2.002	0.360	0.640	9.600	1.100
	07110004	1.250	0.189	0.600	5.400	1.285
	07110009	1.480	0.237	0.200	5.710	1.750
	07140101	0.931	0.310	0.570	3.170	0.815
	07140105	1.106	0.124	0.090	5.150	1.240

Variable	HUC	Q3
NOx mg/L	07010206	1.2900
	07010206	4.600
	07040001	3.574
	07040003	2.585
	07040006	2.360
	07060001	2.400
	07060005	1.8900
	07080101	2.135
	07080104	3.190
	07110004	3.585
	07110009	3.780
	07140101	2.671
	07140105	2.897

* NOTE * N missing = 1479

Upper Mississippi River Water Quality Data Descriptive Statistics: TN mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
TN mg/L	07010206	54	98	2.297	2.025	2.199
	07010206	145	252	5.325	5.200	5.284
	07040001	133	145	4.028	3.800	3.929
	07040003	112	75	3.197	2.942	3.087
	07040006	60	44	3.277	3.036	3.255
	07060001	58	78	3.061	2.700	3.008
	07060005	57	233	2.871	2.670	2.779
	07080101	30	35	3.268	3.151	3.250
	07080104	0	37	*	*	*
	07110004	21	134	3.977	3.960	3.986
	07110009	36	191	4.558	4.755	4.630
	07140101	10	0	2.459	2.355	2.445
	07140105	73	317	3.651	3.460	3.560

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TN mg/L	07010206	0.997	0.136	1.140	5.880	1.570
	07010206	1.794	0.149	1.660	9.500	3.890
	07040001	1.328	0.115	1.990	8.680	3.160
	07040003	1.239	0.117	1.240	8.250	2.300
	07040006	1.069	0.138	1.360	5.570	2.489
	07060001	1.116	0.147	1.100	6.870	2.400
	07060005	1.013	0.134	1.520	6.780	2.145
	07080101	1.125	0.205	1.400	5.239	2.308
	07080104	*	*	*	*	*
	07110004	1.383	0.302	1.180	6.610	3.045
	07110009	1.598	0.266	0.099	7.070	3.470
	07140101	1.022	0.323	0.710	4.324	1.788
	07140105	1.701	0.199	0.099	10.190	2.375

Variable	HUC	Q3
TN mg/L	07010206	2.695
	07010206	6.280
	07040001	4.618
	07040003	3.797
	07040006	4.025
	07060001	3.750
	07060005	3.275
	07080101	3.993
	07080104	*
	07110004	5.060
	07110009	5.600
	07140101	3.163
	07140105	4.675

* NOTE * N missing = 1639

Upper Mississippi River Water Quality Data Descriptive Statistics: TP mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
TP mg/L	07010206	112	40	0.1898	0.1580	0.1786
	07010206	240	157	0.28307	0.28000	0.27888
	07040001	155	123	0.21219	0.22000	0.21152
	07040003	112	75	0.18097	0.18150	0.18204
	07040006	60	44	0.19137	0.19250	0.19383
	07060001	57	79	0.20747	0.20000	0.20576
	07060005	82	208	0.2442	0.2315	0.2319
	07080101	63	2	0.2507	0.2270	0.2352
	07080104	35	2	0.2679	0.2400	0.2464
	07110004	47	108	0.2579	0.2300	0.2460
	07110009	41	186	0.2304	0.2290	0.2266
	07140101	10	0	0.2327	0.1900	0.2004
	07140105	81	309	0.3327	0.2860	0.3102

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TP mg/L	07010206	0.1137	0.0107	0.0100	0.6400	0.1200
	07010206	0.07867	0.00508	0.01000	0.83000	0.23850
	07040001	0.07372	0.00592	0.02300	0.54000	0.18000
	07040003	0.06135	0.00580	0.02300	0.41300	0.15000
	07040006	0.04303	0.00556	0.06500	0.27100	0.17100
	07060001	0.03949	0.00523	0.13000	0.31000	0.18000
	07060005	0.1368	0.0151	0.0850	1.3600	0.2000
	07080101	0.1482	0.0187	0.0620	1.1820	0.1960
	07080104	0.1540	0.0260	0.1300	1.0500	0.2000
	07110004	0.1181	0.0172	0.0820	0.7500	0.2000
	07110009	0.0807	0.0126	0.1020	0.4320	0.1760
	07140101	0.1364	0.0431	0.1250	0.5990	0.1560
	07140105	0.2240	0.0249	0.0970	1.1150	0.1720

Variable	HUC	Q3
TP mg/L	07010206	0.2175
	07010206	0.31000
	07040001	0.24800
	07040003	0.21550
	07040006	0.21775
	07060001	0.22150
	07060005	0.2665
	07080101	0.2720
	07080104	0.2900
	07110004	0.3000
	07110009	0.2690
	07140101	0.2623
	07140105	0.4000

* NOTE * N missing = 1333

Upper Mississippi River Water Quality Data Descriptive Statistics: SRP mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
SRP mg/L	07010206	85	67	0.1029	0.0700	0.0931
	07010206	191	206	0.13061	0.13800	0.13095
	07040001	141	137	0.09938	0.10300	0.09343
	07040003	65	122	0.07811	0.07400	0.07673
	07040006	39	65	0.08623	0.09200	0.08617
	07060001	57	79	0.08133	0.09000	0.08245
	07060005	49	241	0.06404	0.07400	0.06402
	07080101	20	45	0.05525	0.04450	0.05394
	07080104	0	37	*	*	*
	07110004	23	132	0.08783	0.09700	0.08757
	07110009	35	192	0.09980	0.11200	0.10123
	07140101	9	1	0.0729	0.0790	0.0729
	07140105	74	316	0.08596	0.08250	0.08594

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
SRP mg/L	07010206	0.0983	0.0107	0.0050	0.4640	0.0365
	07010206	0.04282	0.00310	0.00500	0.28800	0.10100
	07040001	0.06582	0.00554	0.00500	0.43700	0.05400
	07040003	0.04370	0.00542	0.01100	0.17700	0.04300
	07040006	0.03589	0.00575	0.00099	0.18700	0.06600
	07060001	0.03164	0.00419	0.00400	0.14300	0.06400
	07060005	0.03551	0.00507	0.00200	0.12500	0.02950
	07080101	0.03872	0.00866	0.00500	0.12900	0.02350
	07080104	*	*	*	*	*
	07110004	0.04433	0.00924	0.00600	0.17500	0.04900
	07110009	0.04686	0.00792	0.00099	0.17700	0.07100
	07140101	0.0635	0.0212	0.0020	0.1710	0.0055
	07140105	0.04560	0.00530	0.00700	0.17900	0.04950

Variable	HUC	Q3
SRP mg/L	07010206	0.1420
	07010206	0.16100
	07040001	0.12650
	07040003	0.11650
	07040006	0.10400
	07060001	0.10050
	07060005	0.08850
	07080101	0.08450
	07080104	*
	07110004	0.11600
	07110009	0.12400
	07140101	0.1260
	07140105	0.12700

* NOTE * N missing = 1640

Upper Mississippi River Water Quality Data Descriptive Statistics: Si mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Si mg/L	07010206	0	152	*	*	*
	07010206	0	397	*	*	*
	07040001	89	189	10.670	8.890	10.692
	07040003	45	142	9.796	8.500	9.865
	07040006	39	65	6.136	6.200	6.120
	07060001	58	78	9.371	10.500	9.510
	07060005	49	241	4.271	4.200	4.292
	07080101	20	45	4.251	4.258	4.276
	07080104	0	37	*	*	*
	07110004	22	133	3.575	3.650	3.599
	07110009	35	192	2.601	2.500	2.596
	07140101	9	1	4.351	4.559	4.351
	07140105	73	317	3.745	3.400	3.629

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Si mg/L	07010206	*	*	*	*	*
	07010206	*	*	*	*	*
	07040001	4.497	0.477	1.700	19.000	7.000
	07040003	4.105	0.612	1.400	16.570	6.700
	07040006	1.975	0.316	1.490	11.000	4.808
	07060001	4.423	0.581	0.200	17.000	6.375
	07060005	1.589	0.227	0.306	7.670	3.600
	07080101	1.687	0.377	0.465	7.583	3.549
	07080104	*	*	*	*	*
	07110004	2.020	0.431	0.300	6.367	1.513
	07110009	1.498	0.253	0.010	5.664	1.377
	07140101	0.954	0.318	3.032	5.690	3.391
	07140105	1.734	0.203	0.174	9.000	2.585

Variable	HUC	Q3
Si mg/L	07010206	*
	07010206	*
	07040001	14.955
	07040003	13.835
	07040006	7.000
	07060001	13.000
	07060005	5.500
	07080101	5.077
	07080104	*
	07110004	5.325
	07110009	3.800
	07140101	5.146
	07140105	4.874

* NOTE * N missing = 1989

Upper Mississippi River Water Quality Data Descriptive Statistics: Cl mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Cl mg/L	07010206	22	130	12.418	12.100	12.460
	07010206	37	360	21.15	22.00	21.48
	07040001	110	168	17.577	17.035	17.428
	07040003	64	123	14.74	13.00	13.60
	07040006	39	65	17.96	15.00	15.25
	07060001	57	79	14.596	14.000	14.510
	07060005	49	241	14.66	12.81	13.47
	07080101	20	45	13.616	13.350	13.627
	07080104	0	37	*	*	*
	07110004	22	133	21.07	16.00	16.79
	07110009	35	192	26.89	26.00	26.89
	07140101	9	1	21.78	17.40	21.78
	07140105	74	316	22.43	19.26	19.77

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cl mg/L	07010206	3.033	0.647	7.000	17.000	10.000
	07010206	6.14	1.01	3.00	32.00	17.00
	07040001	4.887	0.466	4.000	33.000	14.300
	07040003	11.15	1.39	3.41	95.00	10.53
	07040006	15.07	2.41	6.90	88.00	12.00
	07060001	3.005	0.398	6.000	28.000	13.000
	07060005	9.06	1.29	8.90	75.15	12.00
	07080101	1.449	0.324	11.000	16.020	12.550
	07080104	*	*	*	*	*
	07110004	21.32	4.55	11.60	116.00	15.28
	07110009	8.23	1.39	11.90	42.00	21.47
	07140101	13.05	4.35	13.90	55.40	14.70
	07140105	17.00	1.98	7.20	133.00	16.63

Variable	HUC	Q3
Cl mg/L	07010206	15.250
	07010206	27.00
	07040001	20.000
	07040003	16.00
	07040006	17.00
	07060001	16.000
	07060005	15.00
	07080101	14.575
	07080104	*
	07110004	17.63
	07110009	31.00
	07140101	22.28
	07140105	22.25

* NOTE * N missing = 1890

Upper Mississippi River Water Quality Data Descriptive Statistics: Chla ug/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
Chla ug/	07010206	98	54	38.82	30.74	36.45
	07010206	211	186	33.16	26.18	29.98
	07040001	140	138	25.85	24.00	24.39
	07040003	55	132	16.60	14.00	16.16
	07040006	28	76	29.39	29.00	28.31
	07060001	38	98	46.33	30.75	43.80
	07060005	80	210	35.74	31.50	33.92
	07080101	54	11	26.80	19.50	22.73
	07080104	27	10	40.21	31.00	39.42
	07110004	49	106	34.07	24.00	30.96
	07110009	23	204	39.26	25.00	35.86
	07140101	9	1	20.33	13.00	20.33
	07140105	72	318	27.55	18.50	25.34

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Chla ug/	07010206	26.71	2.70	3.39	139.50	18.42
	07010206	25.98	1.79	0.00	156.60	15.95
	07040001	16.04	1.36	1.00	99.30	15.34
	07040003	10.09	1.36	2.00	40.00	8.00
	07040006	20.37	3.85	2.00	85.00	12.25
	07060001	39.34	6.38	5.56	140.00	16.98
	07060005	23.53	2.63	4.00	115.00	18.25
	07080101	27.46	3.74	2.00	166.00	11.30
	07080104	28.28	5.44	6.00	94.00	20.60
	07110004	29.68	4.24	0.20	156.00	17.00
	07110009	33.83	7.05	5.00	145.00	17.00
	07140101	13.38	4.46	5.00	41.00	9.00
	07140105	23.39	2.76	0.90	124.00	10.25

Variable	HUC	Q3
Chla ug/	07010206	53.52
	07010206	40.50
	07040001	32.89
	07040003	24.00
	07040006	42.00
	07060001	74.38
	07060005	43.00
	07080101	33.53
	07080104	61.00
	07110004	46.00
	07110009	58.00
	07140101	33.00
	07140105	46.50

* NOTE * N missing = 1544

Upper Mississippi River Water Quality Data Descriptive Statistics: UNH3 mg/L by HUC

Summer Months (June 1st to September 15th) 1990-1994

Variable	HUC	N	N*	Mean	Median	TrMean
UNH3 mg/	07010206	148	4	0.00233	0.00118	0.00174
	07010206	328	69	0.00427	0.00243	0.00339
	07040001	152	126	0.00491	0.00304	0.00388
	07040003	97	90	0.00576	0.00338	0.00474
	07040006	53	51	0.00592	0.00330	0.00440
	07060001	57	79	0.00347	0.00232	0.00299
	07060005	75	215	0.00478	0.00324	0.00420
	07080101	55	10	0.00530	0.00404	0.00484
	07080104	37	0	0.00446	0.00263	0.00398
	07110004	42	113	0.00509	0.00257	0.00444
	07110009	26	201	0.00375	0.00298	0.00357
	07140101	8	2	0.00198	0.00130	0.00198
	07140105	78	312	0.00256	0.00124	0.00198

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
UNH3 mg/	07010206	0.00360	0.00030	0.00018	0.02819	0.00073
	07010206	0.00630	0.00035	0.00010	0.06110	0.00116
	07040001	0.00653	0.00053	0.00004	0.04538	0.00116
	07040003	0.00708	0.00072	0.00003	0.04622	0.00118
	07040006	0.00873	0.00120	0.00008	0.05200	0.00133
	07060001	0.00358	0.00047	0.00009	0.01640	0.00135
	07060005	0.00477	0.00055	0.00002	0.02716	0.00140
	07080101	0.00492	0.00066	0.00016	0.02214	0.00130
	07080104	0.00462	0.00076	0.00008	0.01913	0.00113
	07110004	0.00625	0.00096	0.00000	0.02541	0.00052
	07110009	0.00327	0.00064	0.00012	0.01167	0.00096
	07140101	0.00239	0.00084	0.00005	0.00741	0.00025
	07140105	0.00380	0.00043	0.00001	0.02382	0.00034

Variable	HUC	Q3
UNH3 mg/	07010206	0.00204
	07010206	0.00507
	07040001	0.00583
	07040003	0.00735
	07040006	0.00683
	07060001	0.00385
	07060005	0.00693
	07080101	0.00741
	07080104	0.00673
	07110004	0.00814
	07110009	0.00538
	07140101	0.00256
	07140105	0.00293

* NOTE * N missing = 1272

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

DESCRIPTIVE STATISTICS
1995-1999 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch

Upper Mississippi River Water Quality Data Descriptive Statistics: DO mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
DO mg/L	07010206	142	7	8.0805	7.9900	8.0484
	07010206	290	6	7.6792	7.5500	7.5856
	07040001	242	1	7.5583	7.3100	7.4534
	07040003	134	3	7.9112	7.8000	7.8683
	07040006	40	0	8.080	7.800	7.964
	07060001	79	7	7.384	7.000	7.232
	07060003	14	1	6.550	6.350	6.442
	07060005	103	0	6.471	6.440	6.439
	07080101	112	0	6.236	6.090	6.213
	07080104	39	1	6.381	6.400	6.407
	07110004	67	0	7.120	6.980	7.086
	07110009	76	0	7.409	7.200	7.354
	07140101	61	0	6.949	6.800	6.925
	07140105	143	5	6.4678	6.3000	6.4465

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
DO mg/L	07010206	0.9202	0.0772	6.2200	10.6300	7.3875
	07010206	1.1566	0.0679	5.3500	13.2600	6.8875
	07040001	1.2438	0.0800	5.3000	16.0000	6.8000
	07040003	1.1221	0.0969	5.6000	11.1000	7.2000
	07040006	1.498	0.237	5.200	12.800	7.525
	07060001	2.036	0.229	4.000	14.300	6.200
	07060003	1.453	0.388	4.600	9.800	5.375
	07060005	1.215	0.120	3.400	9.800	5.700
	07080101	1.062	0.100	3.800	8.800	5.555
	07080104	1.027	0.164	3.700	8.810	5.760
	07110004	1.175	0.144	4.660	10.500	6.400
	07110009	1.042	0.120	5.700	10.100	6.700
	07140101	0.881	0.113	5.400	9.100	6.200
	07140105	0.8386	0.0701	4.9000	8.6000	5.9000

Variable	HUC	Q3
DO mg/L	07010206	8.6100
	07010206	8.1625
	07040001	8.0000
	07040003	8.6000
	07040006	8.375
	07060001	8.200
	07060003	7.650
	07060005	7.000
	07080101	6.900
	07080104	7.140
	07110004	7.800
	07110009	8.175
	07140101	7.650
	07140105	7.0000

* NOTE * N missing = 31

Upper Mississippi River Water Quality Data Descriptive Statistics: Temp C by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Temp C	07010206	145	4	22.799	23.000	22.853
	07010206	289	7	23.043	23.500	23.162
	07040001	242	1	23.428	23.700	23.533
	07040003	136	1	23.046	23.600	23.209
	07040006	40	0	23.655	24.250	23.689
	07060001	81	5	23.632	24.000	23.790
	07060003	15	0	24.227	23.800	24.108
	07060005	103	0	24.441	24.900	24.481
	07080101	112	0	25.089	25.250	25.204
	07080104	40	0	25.685	26.100	25.809
	07110004	66	1	25.876	26.100	25.972
	07110009	76	0	26.179	26.700	26.384
	07140101	61	0	25.777	26.000	25.875
	07140105	143	5	26.254	26.700	26.337

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Temp C	07010206	2.306	0.191	16.400	28.200	21.250
	07010206	2.444	0.144	15.600	28.400	21.500
	07040001	2.571	0.165	16.700	28.700	21.975
	07040003	2.643	0.227	15.600	26.800	21.225
	07040006	2.478	0.392	18.100	29.900	22.150
	07060001	2.335	0.259	16.200	27.300	22.300
	07060003	2.550	0.658	20.700	29.300	22.000
	07060005	2.279	0.225	17.200	29.600	22.800
	07080101	2.354	0.222	18.000	29.800	23.700
	07080104	2.484	0.393	18.000	29.400	24.250
	07110004	2.605	0.321	18.400	31.300	24.500
	07110009	2.739	0.314	16.700	31.500	25.400
	07140101	2.394	0.306	17.500	29.800	24.700
	07140105	2.093	0.175	21.100	29.900	25.500

Variable	HUC	Q3
Temp C	07010206	24.500
	07010206	24.900
	07040001	25.400
	07040003	25.100
	07040006	25.150
	07060001	25.200
	07060003	26.400
	07060005	26.300
	07080101	26.900
	07080104	27.175
	07110004	27.825
	07110009	27.775
	07140101	27.200
	07140105	27.600

* NOTE * N missing = 24

Upper Mississippi River Water Quality Data Descriptive Statistics: Cond. uS/cm by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Cond. uS	07010206	61	88	353.49	344.00	350.38
	07010206	154	142	533.95	530.00	531.78
	07040001	203	40	499.32	501.00	498.42
	07040003	134	3	426.43	433.00	426.69
	07040006	40	0	414.6	413.5	412.9
	07060001	79	7	415.00	416.00	414.93
	07060003	15	0	407.53	406.00	407.46
	07060005	103	0	416.21	416.00	415.90
	07080101	112	0	430.00	426.00	429.85
	07080104	40	0	436.10	429.50	435.28
	07110004	67	0	454.42	455.00	454.15
	07110009	76	0	449.97	450.50	450.97
	07140101	61	0	557.5	546.0	551.8
	07140105	147	1	542.59	556.00	545.04

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cond. uS	07010206	55.78	7.14	247.00	533.00	308.00
	07010206	79.99	6.45	360.00	726.00	473.75
	07040001	84.12	5.90	309.00	710.00	439.00
	07040003	92.67	8.01	214.00	629.00	360.00
	07040006	64.3	10.2	285.0	561.0	361.3
	07060001	49.13	5.53	320.00	521.00	388.00
	07060003	28.32	7.31	357.00	459.00	393.00
	07060005	55.78	5.50	265.00	540.00	380.00
	07080101	50.89	4.81	274.00	544.00	396.25
	07080104	55.93	8.84	287.00	590.00	403.25
	07110004	44.57	5.44	276.00	570.00	428.00
	07110009	33.66	3.86	360.00	527.00	434.25
	07140101	94.5	12.1	396.0	837.0	489.5
	07140105	75.01	6.19	358.00	674.00	499.00

Variable	HUC	Q3
Cond. uS	07010206	387.00
	07010206	583.00
	07040001	555.00
	07040003	489.75
	07040006	453.3
	07060001	458.00
	07060003	428.00
	07060005	448.00
	07080101	460.00
	07080104	450.00
	07110004	478.00
	07110009	470.50
	07140101	604.5
	07140105	611.00

* NOTE * N missing = 281

Upper Mississippi River Water Quality Data Descriptive Statistics: pH field by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
pH field	07010206	141	8	7.9161	7.9600	7.9223
	07010206	277	19	7.8112	7.8600	7.8336
	07040001	242	1	8.0218	8.1000	8.0226
	07040003	127	10	8.1199	8.1000	8.1237
	07040006	37	3	8.2162	8.2000	8.2121
	07060001	81	5	8.0333	8.0000	8.0164
	07060003	15	0	8.067	7.900	8.046
	07060005	103	0	7.9216	7.9000	7.9256
	07080101	111	1	7.8396	7.8000	7.8530
	07080104	40	0	7.8563	7.8550	7.8603
	07110004	67	0	7.9385	7.9000	7.9466
	07110009	75	1	7.9027	7.9000	7.8896
	07140101	61	0	7.8230	7.8000	7.8218
	07140105	147	1	7.7032	7.6000	7.6983

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH field	07010206	0.2398	0.0202	7.3100	8.4400	7.7600
	07010206	0.2477	0.0149	6.5300	8.3800	7.7200
	07040001	0.2206	0.0142	7.3400	8.8000	7.9000
	07040003	0.2349	0.0208	7.5000	8.6000	8.0000
	07040006	0.3042	0.0500	7.6000	8.9000	8.0000
	07060001	0.3571	0.0397	7.3000	9.2000	7.8000
	07060003	0.511	0.132	7.300	9.100	7.800
	07060005	0.2894	0.0285	7.1200	8.6000	7.7000
	07080101	0.2708	0.0257	6.5000	8.4600	7.7000
	07080104	0.3147	0.0498	7.2000	8.4700	7.6800
	07110004	0.2593	0.0317	7.1900	8.4300	7.8000
	07110009	0.2785	0.0322	7.3000	9.1000	7.7000
	07140101	0.1944	0.0249	7.4000	8.3000	7.7000
	07140105	0.2411	0.0199	7.3000	8.2000	7.5000

Variable	HUC	Q3
pH field	07010206	8.1000
	07010206	7.9700
	07040001	8.1000
	07040003	8.3000
	07040006	8.4000
	07060001	8.2500
	07060003	8.500
	07060005	8.1000
	07080101	8.0000
	07080104	8.1000
	07110004	8.1000
	07110009	8.1000
	07140101	8.0000
	07140105	7.9000

* NOTE * N missing = 49

Upper Mississippi River Water Quality Data Descriptive Statistics: pH lab by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
pH lab	07010206	4	145	8.2750	8.3000	8.2750
	07010206	12	284	8.3833	8.4000	8.3800
	07040001	16	227	8.3875	8.4000	8.3786
	07040003	22	115	8.3636	8.3500	8.3600
	07040006	3	37	8.467	8.400	8.467
	07060001	34	52	8.3944	8.4000	8.3763
	07060003	0	15	*	*	*
	07060005	0	103	*	*	*
	07080101	0	112	*	*	*
	07080104	0	40	*	*	*
	07110004	0	67	*	*	*
	07110009	0	76	*	*	*
	07140101	0	61	*	*	*
	07140105	0	148	*	*	*

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
pH lab	07010206	0.1258	0.0629	8.1000	8.4000	8.1500
	07010206	0.0718	0.0207	8.3000	8.5000	8.3000
	07040001	0.1455	0.0364	8.2000	8.7000	8.2250
	07040003	0.2128	0.0454	8.0000	8.8000	8.2000
	07040006	0.208	0.120	8.300	8.700	8.300
	07060001	0.2854	0.0490	7.9000	9.2000	8.2000
	07060003	*	*	*	*	*
	07060005	*	*	*	*	*
	07080101	*	*	*	*	*
	07080104	*	*	*	*	*
	07110004	*	*	*	*	*
	07110009	*	*	*	*	*
	07140101	*	*	*	*	*
	07140105	*	*	*	*	*

Variable	HUC	Q3
pH lab	07010206	8.3750
	07010206	8.4000
	07040001	8.4750
	07040003	8.5250
	07040006	8.700
	07060001	8.5250
	07060003	*
	07060005	*
	07080101	*
	07080104	*
	07110004	*
	07110009	*
	07140101	*
	07140105	*

* NOTE * N missing = 1482

Upper Mississippi River Water Quality Data Descriptive Statistics: Turb ntu by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Turb ntu	07010206	149	0	8.289	6.900	7.917
	07010206	296	0	21.107	18.000	19.860
	07040001	242	1	27.42	24.00	25.75
	07040003	119	18	14.11	11.00	12.05
	07040006	40	0	12.380	12.000	12.250
	07060001	85	1	15.187	14.000	14.425
	07060003	15	0	19.27	16.00	18.23
	07060005	103	0	22.93	20.90	21.50
	07080101	111	1	25.75	23.00	24.58
	07080104	40	0	18.23	14.95	16.91
	07110004	66	1	44.84	32.75	41.70
	07110009	76	0	58.76	41.00	54.56
	07140101	61	0	199.6	128.0	173.6
	07140105	147	1	163.5	115.0	131.8

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Turb ntu	07010206	4.067	0.333	2.700	25.000	5.450
	07010206	12.182	0.708	2.400	110.000	13.000
	07040001	17.74	1.14	4.00	132.00	16.00
	07040003	19.96	1.83	5.00	224.00	9.00
	07040006	3.277	0.518	6.000	23.000	10.250
	07060001	8.390	0.910	2.500	49.000	8.950
	07060003	9.66	2.49	9.00	43.00	11.00
	07060005	15.77	1.55	2.50	150.00	16.00
	07080101	15.86	1.51	1.90	99.00	15.00
	07080104	13.81	2.18	4.30	56.00	6.45
	07110004	36.33	4.47	2.70	175.00	18.45
	07110009	43.60	5.00	19.00	199.00	24.25
	07140101	213.2	27.3	21.0	950.0	64.5
	07140105	215.0	17.7	4.2	2000.0	56.0

Variable	HUC	Q3
Turb ntu	07010206	9.900
	07010206	26.000
	07040001	36.00
	07040003	15.00
	07040006	14.000
	07060001	18.800
	07060003	25.00
	07060005	27.00
	07080101	32.00
	07080104	23.65
	07110004	63.25
	07110009	77.25
	07140101	241.5
	07140105	200.0

* NOTE * N missing = 23

Upper Mississippi River Water Quality Data Descriptive Statistics: Flow cfs by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Flow cfs	07010206	145	4	10339	9910	10181
	07010206	284	12	19452	17300	19235
	07040001	90	153	24307	23500	24201
	07040003	16	121	37923	36531	37919
	07040006	0	40	*	*	*
	07060001	34	52	46808	42500	46119
	07060003	0	15	*	*	*
	07060005	28	75	61043	59500	60581
	07080101	34	78	63326	57950	61683
	07080104	34	6	84479	77150	81320
	07110004	29	38	113300	103000	109889
	07110009	0	76	*	*	*
	07140101	0	61	*	*	*
	07140105	2	146	206500	206500	206500

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Flow cfs	07010206	4353	361	2580	20900	7600
	07010206	9200	546	4850	39700	13000
	07040001	8924	941	7840	46500	18075
	07040003	14997	3749	14500	61400	27250
	07040006	*	*	*	*	*
	07060001	19913	3415	19000	98000	32000
	07060003	*	*	*	*	*
	07060005	18517	3499	28100	106000	47500
	07080101	20501	3516	30300	135000	50800
	07080104	35755	6132	33100	205000	62000
	07110004	47797	8876	56700	262000	82400
	07110009	*	*	*	*	*
	07140101	*	*	*	*	*
	07140105	62933	44500	162000	251000	*

Variable	HUC	Q3
Flow cfs	07010206	12300
	07010206	26700
	07040001	31125
	07040003	52850
	07040006	*
	07060001	66825
	07060003	*
	07060005	70625
	07080101	70950
	07080104	93825
	07110004	127500
	07110009	*
	07140101	*
	07140105	*

* NOTE * N missing = 877

Upper Mississippi River Water Quality Data Descriptive Statistics: TSS mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
TSS mg/L	07010206	81	68	25.42	21.00	24.11
	07010206	171	125	70.32	55.00	64.48
	07040001	209	34	46.06	45.00	44.26
	07040003	128	9	17.99	16.00	16.31
	07040006	37	3	16.595	16.000	16.394
	07060001	86	0	27.49	23.00	26.12
	07060003	15	0	21.93	17.00	20.85
	07060005	103	0	33.79	28.00	31.89
	07080101	109	3	38.26	32.00	36.40
	07080104	40	0	53.45	43.00	49.00
	07110004	65	2	77.55	61.00	73.53
	07110009	72	4	85.28	62.50	78.31
	07140101	59	2	288.5	198.0	257.7
	07140105	144	4	216.0	170.5	191.8

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TSS mg/L	07010206	13.28	1.48	12.00	81.00	16.50
	07010206	49.81	3.81	13.00	284.00	37.00
	07040001	28.09	1.94	3.00	194.00	32.00
	07040003	16.41	1.45	5.00	181.00	11.00
	07040006	4.265	0.701	8.000	28.000	14.000
	07060001	17.46	1.88	2.00	88.00	16.00
	07060003	12.58	3.25	8.00	50.00	12.00
	07060005	18.25	1.80	5.00	143.00	23.00
	07080101	21.42	2.05	5.00	119.00	25.00
	07080104	39.63	6.27	12.00	235.00	27.50
	07110004	56.94	7.06	7.00	260.00	33.00
	07110009	64.11	7.55	21.00	295.00	34.00
	07140101	282.3	36.7	30.0	1232.0	92.0
	07140105	194.0	16.2	24.0	1259.0	87.0

Variable	HUC	Q3
TSS mg/L	07010206	31.00
	07010206	88.00
	07040001	61.00
	07040003	21.75
	07040006	18.500
	07060001	34.25
	07060003	31.00
	07060005	39.00
	07080101	48.00
	07080104	64.75
	07110004	110.50
	07110009	114.50
	07140101	352.0
	07140105	290.3

* NOTE * N missing = 254

Upper Mississippi River Water Quality Data Descriptive Statistics: NHx mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
NHx mg/L	07010206	146	3	0.02507	0.02000	0.02242
	07010206	291	5	0.05856	0.04000	0.05192
	07040001	237	6	0.06987	0.05900	0.06370
	07040003	132	5	0.06879	0.06300	0.06450
	07040006	39	1	0.05438	0.05000	0.05114
	07060001	86	0	0.10028	0.08950	0.09556
	07060003	15	0	0.1062	0.1070	0.1052
	07060005	98	5	0.1453	0.1090	0.1251
	07080101	105	7	0.1448	0.1130	0.1330
	07080104	35	5	0.1873	0.1100	0.1634
	07110004	60	7	0.1017	0.0530	0.0771
	07110009	74	2	0.04542	0.04200	0.04230
	07140101	60	1	0.04267	0.04050	0.04141
	07140105	148	0	0.05470	0.04550	0.05081

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NHx mg/L	07010206	0.01555	0.00129	0.01000	0.13000	0.02000
	07010206	0.05112	0.00300	0.00000	0.35000	0.02000
	07040001	0.05386	0.00350	0.01300	0.38500	0.03100
	07040003	0.04890	0.00426	0.00099	0.26800	0.03275
	07040006	0.03269	0.00523	0.00900	0.17500	0.03000
	07060001	0.07228	0.00779	0.00099	0.33300	0.03575
	07060003	0.0437	0.0113	0.0290	0.1970	0.0780
	07060005	0.1281	0.0129	0.0340	0.8800	0.0798
	07080101	0.1045	0.0102	0.0300	0.8800	0.0915
	07080104	0.1922	0.0325	0.0100	0.8800	0.0600
	07110004	0.1517	0.0196	0.0010	0.8800	0.0278
	07110009	0.03060	0.00356	0.00099	0.21500	0.02800
	07140101	0.02234	0.00288	0.00099	0.15000	0.02700
	07140105	0.04102	0.00337	0.00099	0.26900	0.03025

Variable	HUC	Q3
NHx mg/L	07010206	0.02000
	07010206	0.08000
	07040001	0.08100
	07040003	0.09375
	07040006	0.06400
	07060001	0.14175
	07060003	0.1350
	07060005	0.1543
	07080101	0.1685
	07080104	0.2800
	07110004	0.1000
	07110009	0.05400
	07140101	0.05500
	07140105	0.06900

* NOTE * N missing = 47

Upper Mississippi River Water Quality Data Descriptive Statistics: NOx mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
NOx mg/L	07010206	84	65	0.5950	0.4100	0.5301
	07010206	180	116	2.399	2.100	2.241
	07040001	208	35	2.1430	1.9650	2.0683
	07040003	131	6	1.5984	1.3050	1.4948
	07040006	39	1	1.401	1.248	1.361
	07060001	86	0	1.2912	1.1140	1.2642
	07060003	15	0	1.661	1.807	1.657
	07060005	103	0	1.4672	1.4230	1.4554
	07080101	112	0	1.8748	1.7000	1.7905
	07080104	40	0	2.280	1.970	2.175
	07110004	66	1	3.161	2.968	3.095
	07110009	74	2	3.170	3.294	3.159
	07140101	60	1	2.456	1.959	2.385
	07140105	148	0	2.4478	2.4435	2.4277

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
NOx mg/L	07010206	0.5544	0.0605	0.0800	2.8100	0.2425
	07010206	1.649	0.123	0.150	9.650	1.113
	07040001	1.2859	0.0892	0.3600	7.0300	1.0205
	07040003	1.1042	0.0965	0.2200	6.1020	0.7830
	07040006	0.854	0.137	0.010	3.868	0.810
	07060001	0.7989	0.0862	0.0099	3.8280	0.6600
	07060003	0.784	0.202	0.314	3.053	1.069
	07060005	0.7641	0.0753	0.0099	3.1000	0.8990
	07080101	1.0449	0.0987	0.1900	5.5900	1.0535
	07080104	1.288	0.204	0.660	5.760	1.213
	07110004	1.544	0.190	0.890	7.400	1.783
	07110009	1.353	0.157	0.730	5.715	2.130
	07140101	1.478	0.191	0.575	5.780	1.312
	07140105	1.0638	0.0874	0.0830	4.7540	1.6025

Variable	HUC	Q3
NOx mg/L	07010206	0.7150
	07010206	3.000
	07040001	3.0275
	07040003	2.1420
	07040006	1.995
	07060001	1.8133
	07060003	2.126
	07060005	2.0000
	07080101	2.4133
	07080104	3.075
	07110004	4.447
	07110009	3.907
	07140101	3.122
	07140105	3.2448

* NOTE * N missing = 227

Upper Mississippi River Water Quality Data Descriptive Statistics: TN mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
TN mg/L	07010206	65	84	1.4706	1.3700	1.4156
	07010206	137	159	3.454	2.930	3.284
	07040001	193	50	3.0630	2.7760	2.9606
	07040003	119	18	2.2941	2.1380	2.2226
	07040006	36	4	2.205	2.216	2.160
	07060001	86	0	2.1358	2.0465	2.1189
	07060003	15	0	2.372	2.291	2.330
	07060005	72	31	2.2962	2.2730	2.2928
	07080101	77	35	2.747	2.417	2.678
	07080104	2	38	3.185	3.185	3.185
	07110004	36	31	3.653	3.553	3.652
	07110009	72	4	3.754	3.635	3.723
	07140101	59	2	3.085	2.775	3.049
	07140105	134	14	3.0476	3.0310	3.0337

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TN mg/L	07010206	0.6194	0.0768	0.6600	3.5700	1.0500
	07010206	1.718	0.147	1.130	10.360	2.300
	07040001	1.3813	0.0994	1.1000	8.8100	1.9665
	07040003	0.9889	0.0907	0.7100	5.2500	1.5380
	07040006	0.785	0.131	0.919	4.393	1.643
	07060001	0.7872	0.0849	0.3700	4.2390	1.5550
	07060003	0.819	0.212	1.214	4.072	1.649
	07060005	0.7678	0.0905	0.7000	3.8480	1.6723
	07080101	1.170	0.133	0.950	6.380	1.821
	07080104	1.365	0.965	2.220	4.150	*
	07110004	1.252	0.209	1.720	5.570	2.564
	07110009	1.375	0.162	1.460	6.479	2.580
	07140101	1.459	0.190	0.099	6.270	1.910
	07140105	1.1537	0.0997	0.7240	5.2550	2.0850

Variable	HUC	Q3
TN mg/L	07010206	1.7000
	07010206	4.155
	07040001	3.9340
	07040003	2.7670
	07040006	2.571
	07060001	2.8050
	07060003	3.020
	07060005	2.8513
	07080101	3.305
	07080104	*
	07110004	4.871
	07110009	4.683
	07140101	4.017
	07140105	4.0225

* NOTE * N missing = 470

Upper Mississippi River Water Quality Data Descriptive Statistics: TP mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
TP mg/L	07010206	79	70	0.11886	0.10000	0.11239
	07010206	158	138	0.20594	0.21000	0.20544
	07040001	171	72	0.2150	0.1840	0.1889
	07040003	124	13	0.1836	0.1580	0.1578
	07040006	37	3	0.15668	0.14900	0.15242
	07060001	86	0	0.1942	0.1760	0.1724
	07060003	15	0	0.16167	0.15300	0.15885
	07060005	102	1	0.2158	0.1775	0.1888
	07080101	112	0	0.2196	0.1900	0.1918
	07080104	40	0	0.3032	0.2150	0.2557
	07110004	65	2	0.3014	0.2220	0.2515
	07110009	72	4	0.21942	0.20100	0.21311
	07140101	59	2	0.3832	0.2770	0.3512
	07140105	145	3	0.3840	0.2780	0.3236

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
TP mg/L	07010206	0.06333	0.00712	0.03000	0.45000	0.08000
	07010206	0.07777	0.00619	0.02000	0.41000	0.16000
	07040001	0.1669	0.0128	0.0640	1.4520	0.1480
	07040003	0.1648	0.0148	0.0640	1.2570	0.1258
	07040006	0.05911	0.00972	0.04700	0.42500	0.13050
	07060001	0.2023	0.0218	0.0100	1.9830	0.1508
	07060003	0.03230	0.00834	0.13100	0.22900	0.13200
	07060005	0.1687	0.0167	0.0500	1.2000	0.1478
	07080101	0.1830	0.0173	0.0120	1.5000	0.1593
	07080104	0.2861	0.0452	0.0500	1.4000	0.1700
	07110004	0.3155	0.0391	0.1000	2.3840	0.1910
	07110009	0.07535	0.00888	0.07600	0.54000	0.17575
	07140101	0.3027	0.0394	0.0550	1.3560	0.1950
	07140105	0.3864	0.0321	0.0320	2.8870	0.2165

Variable	HUC	Q3
TP mg/L	07010206	0.14000
	07010206	0.25000
	07040001	0.2170
	07040003	0.1850
	07040006	0.18200
	07060001	0.2003
	07060003	0.17700
	07060005	0.2100
	07080101	0.2248
	07080104	0.3225
	07110004	0.2780
	07110009	0.25000
	07140101	0.4330
	07140105	0.4000

* NOTE * N missing = 308

Upper Mississippi River Water Quality Data Descriptive Statistics: SRP mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
SRP mg/L	07010206	83	66	0.04769	0.03600	0.04392
	07010206	172	124	0.10602	0.10950	0.10555
	07040001	205	38	0.05711	0.04600	0.05499
	07040003	120	17	0.05209	0.04900	0.05015
	07040006	35	5	0.06829	0.06200	0.06829
	07060001	86	0	0.07595	0.07900	0.07500
	07060003	15	0	0.05020	0.04100	0.04869
	07060005	68	35	0.05321	0.05700	0.05294
	07080101	70	42	0.06207	0.06100	0.06223
	07080104	0	40	*	*	*
	07110004	34	33	0.05244	0.04900	0.05077
	07110009	68	8	0.04991	0.04850	0.04881
	07140101	57	4	0.06163	0.05700	0.06065
	07140105	136	12	0.06039	0.05800	0.05934

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
SRP mg/L	07010206	0.03943	0.00433	0.00300	0.25200	0.02250
	07010206	0.04504	0.00343	0.00500	0.23200	0.07800
	07040001	0.03998	0.00279	0.00099	0.17000	0.02300
	07040003	0.03487	0.00318	0.00099	0.15000	0.02600
	07040006	0.02879	0.00487	0.00099	0.12400	0.04500
	07060001	0.04503	0.00486	0.00099	0.19100	0.04150
	07060003	0.02375	0.00613	0.01900	0.10100	0.03100
	07060005	0.02293	0.00278	0.00099	0.12400	0.03700
	07080101	0.02762	0.00330	0.00099	0.12000	0.04425
	07080104	*	*	*	*	*
	07110004	0.02625	0.00450	0.00200	0.12400	0.03825
	07110009	0.02526	0.00306	0.00099	0.12200	0.03400
	07140101	0.02516	0.00333	0.02100	0.12200	0.04550
	07140105	0.02475	0.00212	0.00099	0.14100	0.04500

Variable	HUC	Q3
SRP mg/L	07010206	0.06000
	07010206	0.13350
	07040001	0.08900
	07040003	0.07475
	07040006	0.09600
	07060001	0.10700
	07060003	0.06900
	07060005	0.06700
	07080101	0.08000
	07080104	*
	07110004	0.06650
	07110009	0.06275
	07140101	0.07600
	07140105	0.07275

* NOTE * N missing = 424

Upper Mississippi River Water Quality Data Descriptive Statistics: Si mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Si mg/L	07010206	27	122	12.343	12.290	12.238
	07010206	100	196	15.757	15.290	15.608
	07040001	185	58	9.436	7.662	9.148
	07040003	104	33	7.034	6.391	6.675
	07040006	33	7	5.726	6.122	5.825
	07060001	85	1	7.052	6.190	6.975
	07060003	14	1	5.302	5.324	5.357
	07060005	67	36	4.705	5.285	4.780
	07080101	70	42	4.478	4.942	4.560
	07080104	0	40	*	*	*
	07110004	34	33	4.302	4.595	4.359
	07110009	68	8	4.112	4.389	4.158
	07140101	57	4	4.566	4.645	4.549
	07140105	136	12	4.2564	4.4025	4.2755

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Si mg/L	07010206	2.948	0.567	7.050	20.270	10.900
	07010206	3.588	0.359	8.400	25.250	13.408
	07040001	5.040	0.371	1.036	23.090	5.860
	07040003	4.012	0.393	0.010	20.900	4.782
	07040006	2.054	0.358	0.866	8.864	4.248
	07060001	4.081	0.443	0.008	16.000	4.242
	07060003	1.190	0.318	2.699	7.245	4.933
	07060005	1.827	0.223	0.198	7.614	3.810
	07080101	1.675	0.200	0.241	8.531	3.798
	07080104	*	*	*	*	*
	07110004	1.325	0.227	1.200	6.770	3.818
	07110009	1.399	0.170	0.110	7.025	3.121
	07140101	0.910	0.121	2.760	6.546	3.800
	07140105	0.9272	0.0795	1.2810	6.4600	3.7300

Variable	HUC	Q3
Si mg/L	07010206	14.800
	07010206	17.982
	07040001	13.500
	07040003	7.630
	07040006	7.194
	07060001	10.000
	07060003	6.108
	07060005	6.068
	07080101	5.722
	07080104	*
	07110004	5.124
	07110009	5.044
	07140101	5.260
	07140105	4.8535

* NOTE * N missing = 593

Upper Mississippi River Water Quality Data Descriptive Statistics: Cl mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Cl mg/L	07010206	17	132	9.824	10.000	9.533
	07010206	20	276	17.50	16.50	17.44
	07040001	178	65	17.037	16.685	17.019
	07040003	117	20	14.544	14.600	14.296
	07040006	33	7	14.127	13.500	13.952
	07060001	85	1	14.932	14.600	14.777
	07060003	15	0	14.619	13.870	14.634
	07060005	68	35	13.875	13.730	13.888
	07080101	70	42	16.071	15.725	15.973
	07080104	0	40	*	*	*
	07110004	33	34	17.468	17.890	17.451
	07110009	66	10	17.476	17.395	17.466
	07140101	57	4	19.033	18.400	18.914
	07140105	136	12	19.689	19.905	19.921

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Cl mg/L	07010206	2.628	0.637	7.000	17.000	8.000
	07010206	5.65	1.26	9.00	27.00	14.00
	07040001	4.378	0.328	1.000	28.680	14.710
	07040003	4.548	0.420	6.100	37.600	11.285
	07040006	2.437	0.424	10.230	21.210	12.775
	07060001	2.618	0.284	10.700	26.450	13.000
	07060003	2.263	0.584	11.160	17.880	12.890
	07060005	1.905	0.231	9.600	17.570	12.728
	07080101	2.513	0.300	11.400	22.800	14.698
	07080104	*	*	*	*	*
	07110004	1.875	0.326	13.630	21.050	15.810
	07110009	3.014	0.371	10.800	24.860	15.480
	07140101	4.481	0.594	11.020	28.790	16.005
	07140105	4.140	0.355	0.990	27.970	17.925

Variable	HUC	Q3
Cl mg/L	07010206	10.000
	07010206	23.50
	07040001	19.083
	07040003	16.715
	07040006	15.140
	07060001	16.190
	07060003	16.590
	07060005	15.155
	07080101	17.605
	07080104	*
	07110004	18.785
	07110009	19.198
	07140101	22.465
	07140105	22.483

* NOTE * N missing = 678

Upper Mississippi River Water Quality Data Descriptive Statistics: Chla ug/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
Chla ug/	07010206	81	68	29.00	25.56	28.03
	07010206	172	124	26.520	25.980	26.035
	07040001	167	76	23.440	22.000	22.688
	07040003	82	55	20.83	21.00	20.58
	07040006	28	12	26.36	21.00	24.35
	07060001	76	10	24.12	13.75	22.07
	07060003	8	7	21.25	12.50	21.25
	07060005	83	20	16.89	11.00	15.18
	07080101	85	27	12.35	9.00	11.33
	07080104	29	11	19.83	18.40	18.73
	07110004	58	9	14.03	12.00	13.03
	07110009	55	21	15.14	14.00	14.00
	07140101	49	12	15.81	12.00	14.11
	07140105	116	32	12.552	11.000	12.240

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
Chla ug/	07010206	13.00	1.44	5.99	78.20	21.17
	07010206	10.771	0.821	1.536	57.400	19.350
	07040001	12.575	0.973	1.000	76.000	15.000
	07040003	10.18	1.12	2.00	53.00	15.00
	07040006	21.98	4.15	4.00	101.00	12.25
	07060001	24.40	2.80	1.00	87.40	5.00
	07060003	20.70	7.32	3.00	58.00	7.00
	07060005	15.35	1.68	0.90	70.00	8.00
	07080101	10.44	1.13	1.00	46.00	5.00
	07080104	16.91	3.14	1.00	68.40	5.05
	07110004	10.68	1.40	1.00	57.00	6.75
	07110009	10.52	1.42	0.90	57.00	8.00
	07140101	14.94	2.13	0.90	104.00	8.00
	07140105	6.433	0.597	2.000	32.000	7.000

Variable	HUC	Q3
Chla ug/	07010206	35.55
	07010206	31.015
	07040001	30.000
	07040003	26.25
	07040006	29.50
	07060001	45.00
	07060003	41.50
	07060005	21.00
	07080101	16.00
	07080104	28.95
	07110004	19.92
	07110009	18.00
	07140101	20.00
	07140105	17.000

* NOTE * N missing = 484

Upper Mississippi River Water Quality Data Descriptive Statistics: UNH3 mg/L by HUC
Summer Months (June 1st to September 15th) 1995-1999

Variable	HUC	N	N*	Mean	Median	TrMean
UNH3 mg/	07010206	142	7	0.00110	0.00098	0.00100
	07010206	283	13	0.00212	0.00134	0.00180
	07040001	237	6	0.00403	0.00283	0.00363
	07040003	131	6	0.00438	0.00368	0.00407
	07040006	39	1	0.00434	0.00422	0.00431
	07060001	81	5	0.00610	0.00420	0.00515
	07060003	15	0	0.00735	0.00393	0.00641
	07060005	98	5	0.00574	0.00520	0.00545
	07080101	104	8	0.00590	0.00542	0.00546
	07080104	35	5	0.00734	0.00536	0.00659
	07110004	60	7	0.00459	0.00239	0.00358
	07110009	73	3	0.00261	0.00172	0.00197
	07140101	60	1	0.00165	0.00157	0.00161
	07140105	147	1	0.00206	0.00115	0.00179

Variable	HUC	StDev	SE Mean	Minimum	Maximum	Q1
UNH3 mg/	07010206	0.00080	0.00007	0.00001	0.00611	0.00060
	07010206	0.00235	0.00014	0.00000	0.02182	0.00079
	07040001	0.00356	0.00023	0.00023	0.02105	0.00174
	07040003	0.00311	0.00027	0.00007	0.01754	0.00226
	07040006	0.00204	0.00033	0.00024	0.00872	0.00273
	07060001	0.00654	0.00073	0.00026	0.04689	0.00301
	07060003	0.00676	0.00174	0.00231	0.02466	0.00290
	07060005	0.00328	0.00033	0.00134	0.01718	0.00349
	07080101	0.00423	0.00041	0.00015	0.03577	0.00343
	07080104	0.00703	0.00119	0.00031	0.02760	0.00227
	07110004	0.00663	0.00086	0.00006	0.04260	0.00135
	07110009	0.00416	0.00049	0.00003	0.03347	0.00107
	07140101	0.00086	0.00011	0.00006	0.00464	0.00103
	07140105	0.00235	0.00019	0.00001	0.01248	0.00059

Variable	HUC	Q3
UNH3 mg/	07010206	0.00138
	07010206	0.00269
	07040001	0.00514
	07040003	0.00583
	07040006	0.00547
	07060001	0.00717
	07060003	0.01280
	07060005	0.00734
	07080101	0.00718
	07080104	0.01016
	07110004	0.00487
	07110009	0.00267
	07140101	0.00224
	07140105	0.00222

* NOTE * N missing = 68

UPPER MISSISSIPPI RIVER WATER QUALITY DATA

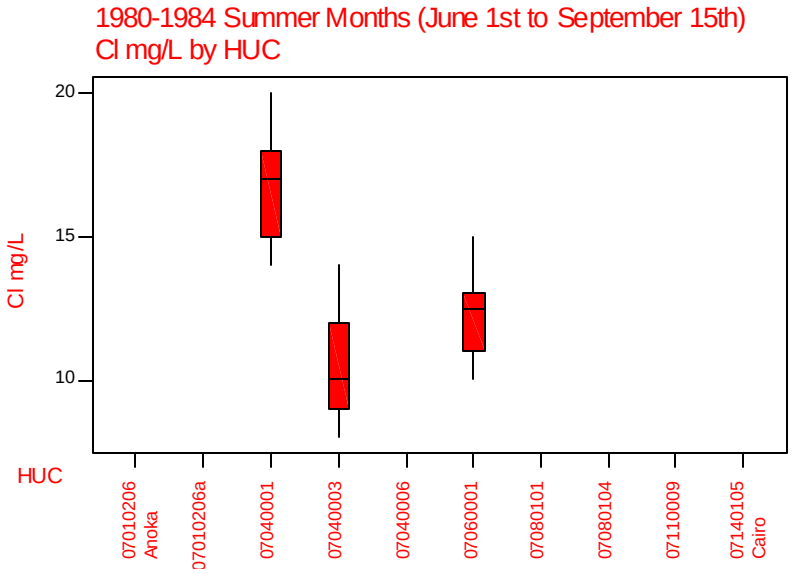
DESCRIPTIVE STATISTICS:

Additional Parameters

1980-1999 Summer Months

SIMON MANOYAN

United States Environmental Protection Agency/Region 5
Water Division: Water Quality Branch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Cl mg/L by HUC
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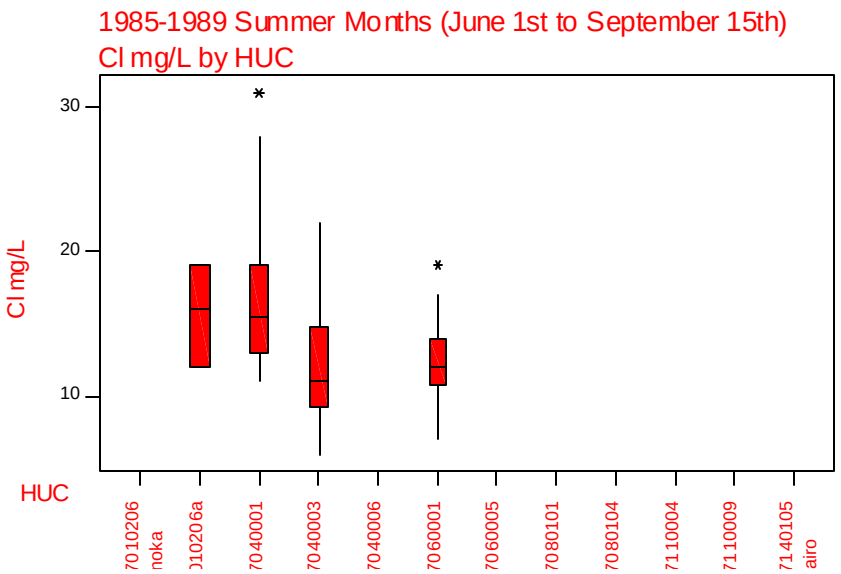
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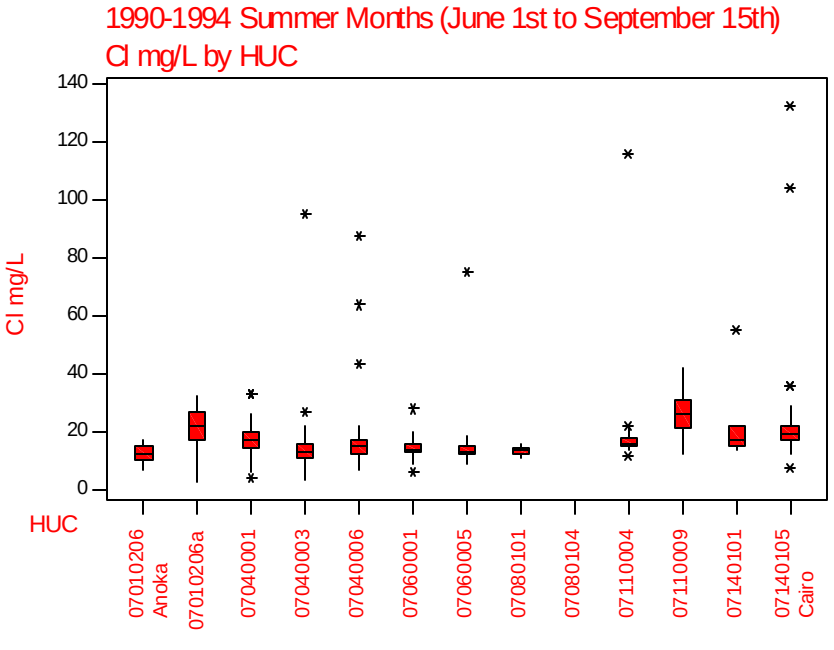
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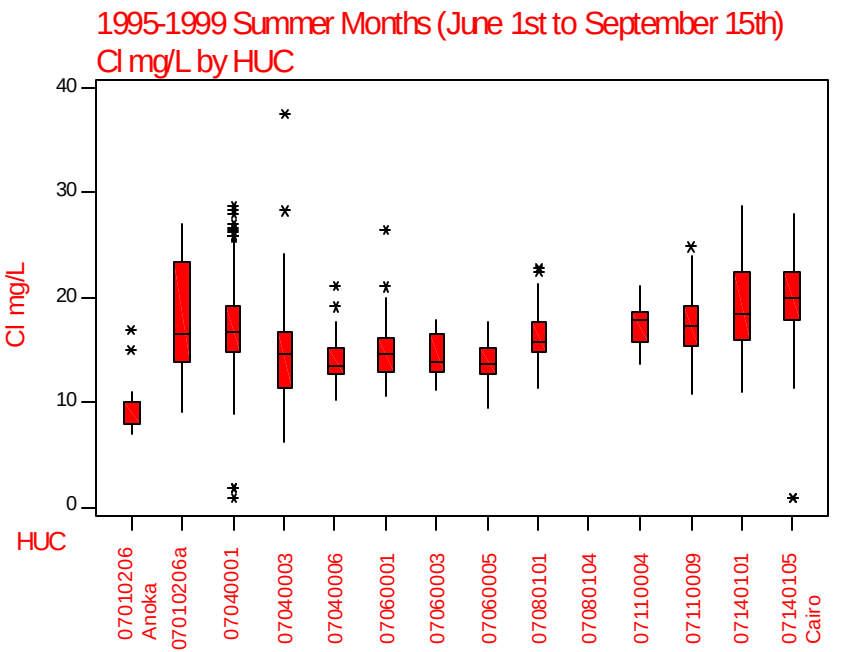
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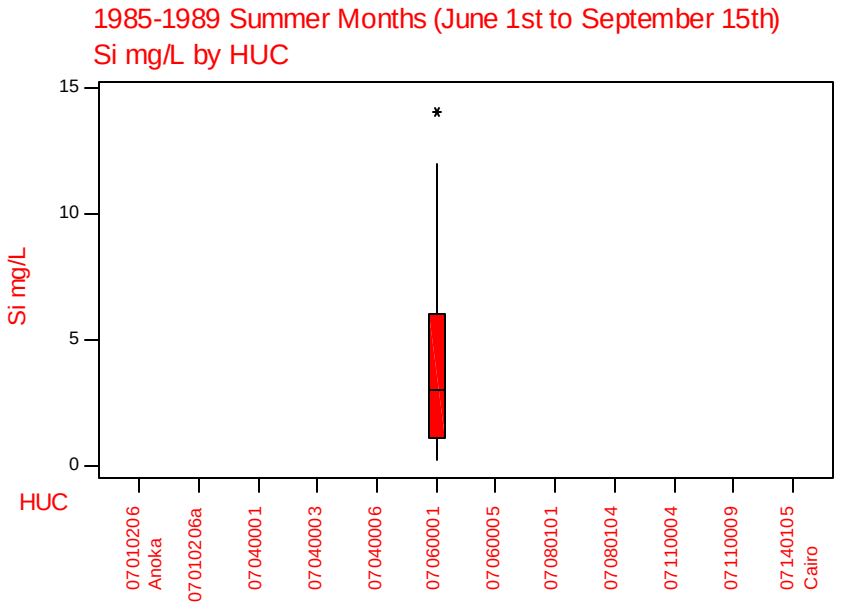
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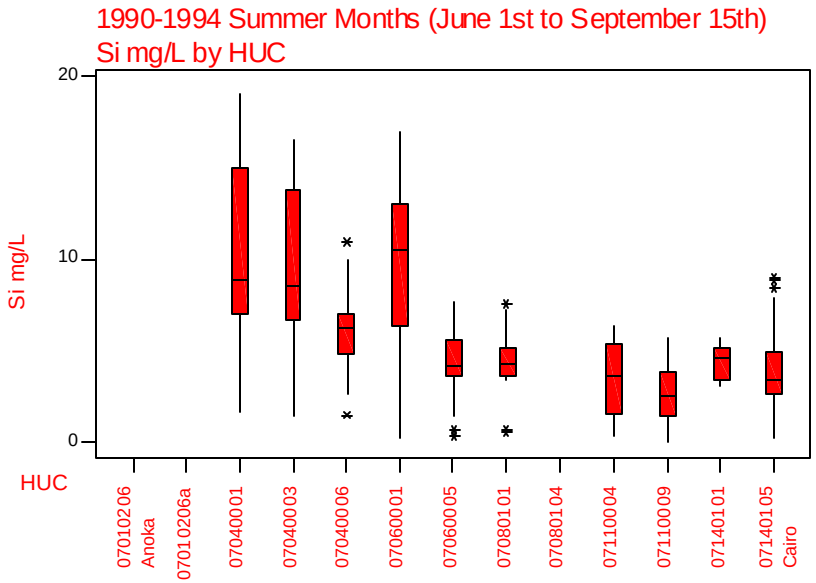
1990-1994 Summer Months (June 1st to September 15th)
Si mg/L by HUC
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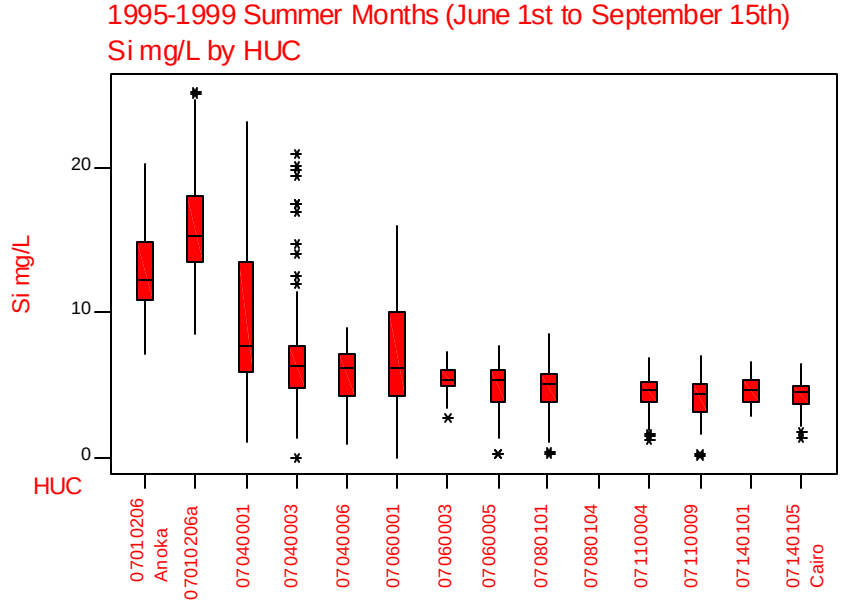
1995-1999 Summer Months (June 1st to September 15th)
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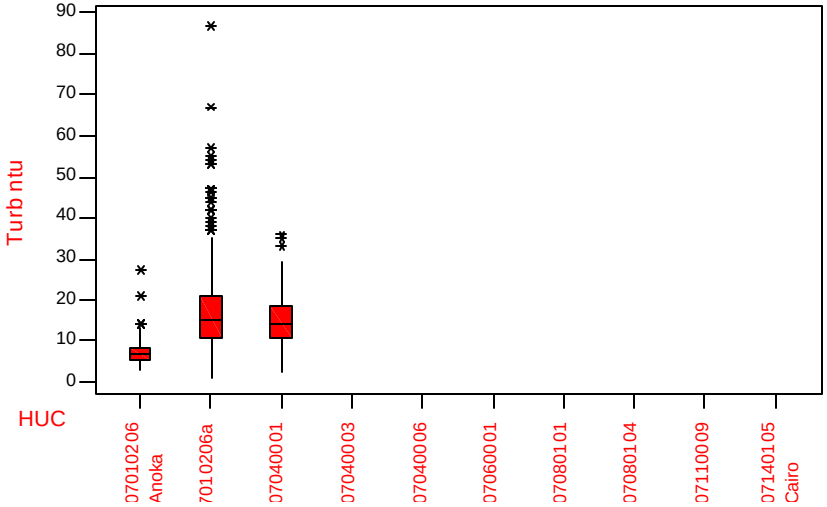
1980-1984 Summer Months (June 1st to September 15th)
Turb ntu by HUC



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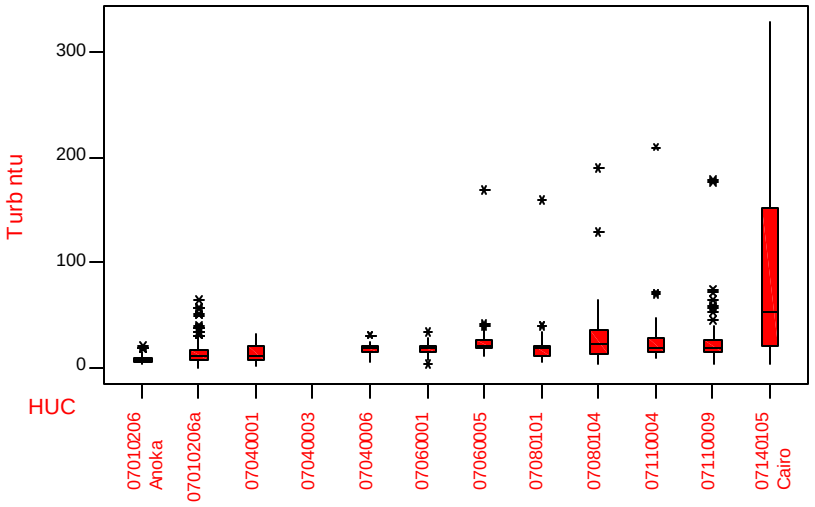

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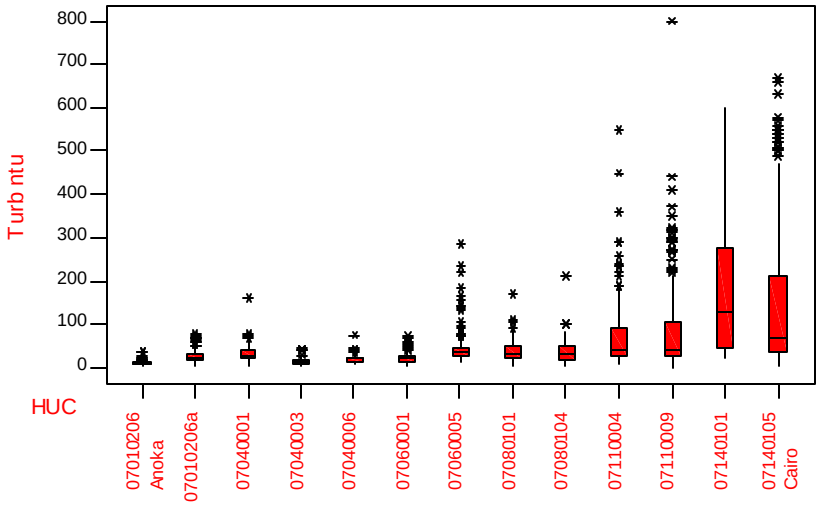

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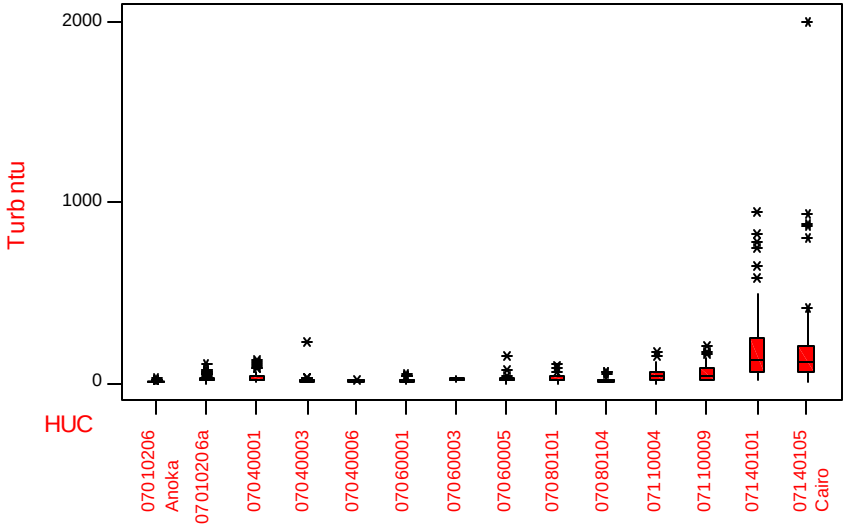
Turb ntu by HUC



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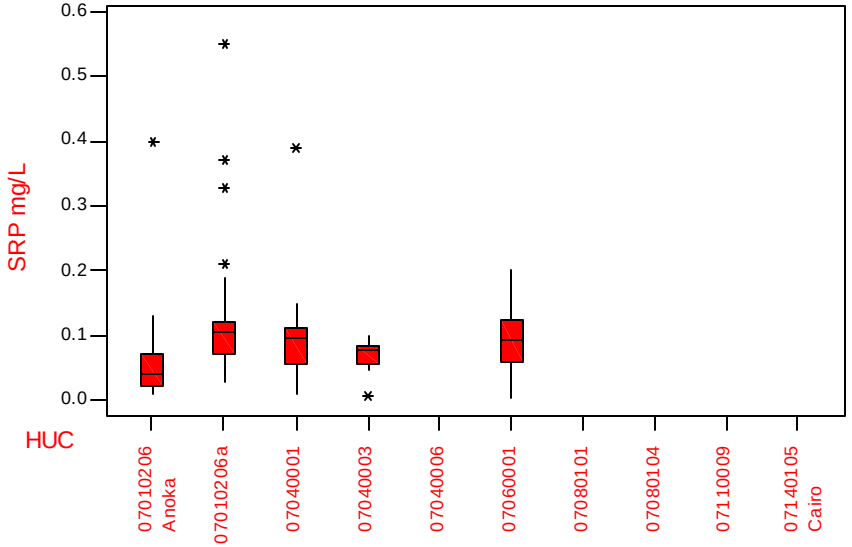
SRP mg/L by HUC



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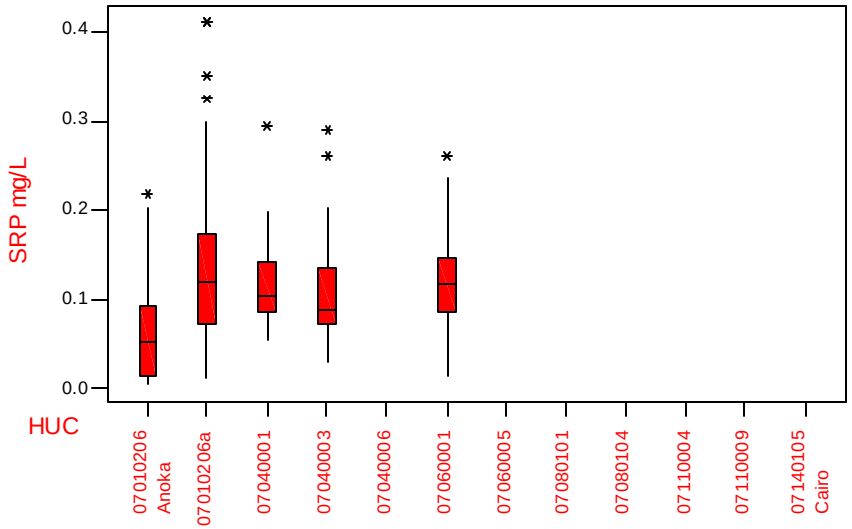
SRP mg/L by HUC



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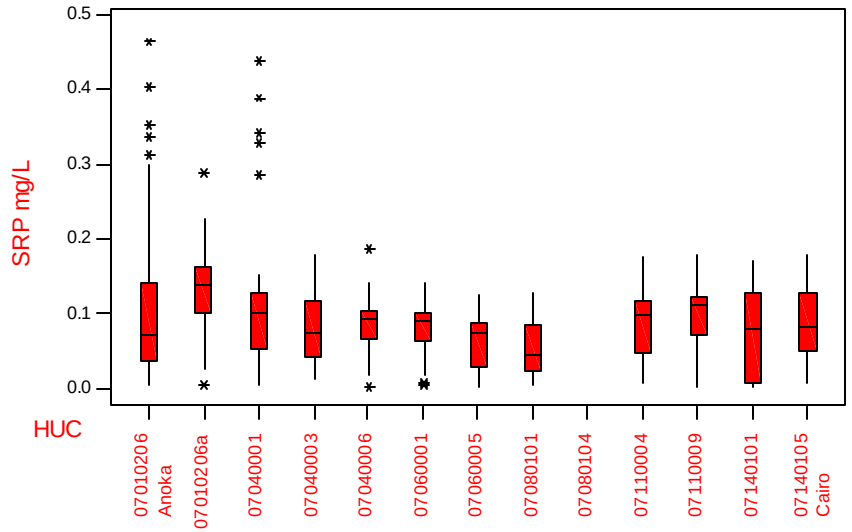
SRP mg/L by HUC



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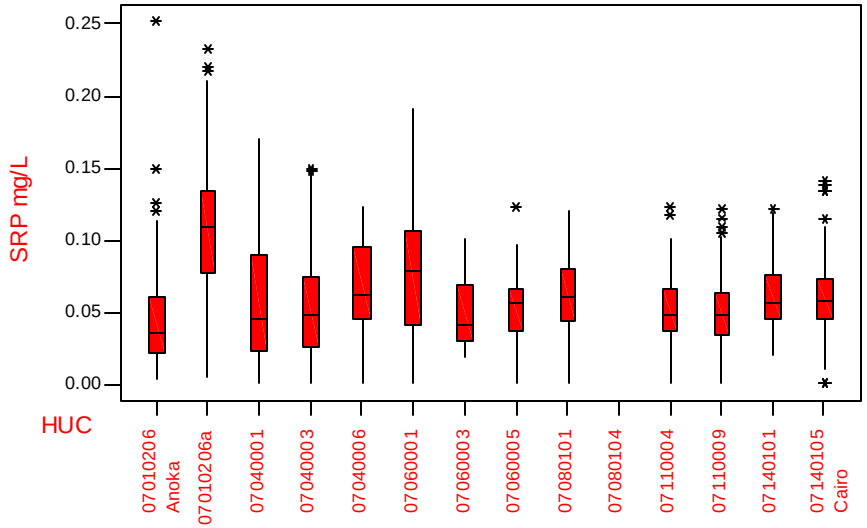
SRP mg/L by HUC



Appendix E

Abstracts of Other UMR

Longitudinal Water Quality Studies

Appendix E: Abstracts of other Longitudinal Water Quality Assessments Conducted on the Upper Mississippi River

Bailey, A.B. and R.G. Rada. 1984. Distribution and Enrichment of Trace Metals (Cd, Cr, Cu, Ni, Pb, Zn) in Bottom Sediments of Navigation Pools 4 (Lake Pepin), 5, and 9 of the Upper Mississippi River. p 119-138. In: In: J.G. Wiener, R.V. Anderson and D.R. McConville Eds., Contaminants in the Upper Mississippi River. Proceedings of the 15th Annual Meeting of the Mississippi River Research Consortium. Butterworth Publishers, Stoneham, Ma.

Surface sediment samples were collected from Pools 4 (Lake Pepin), 5 and 9 of the Upper Mississippi River in 1979 and 1980. Sediments were analyzed for select trace metals, particle size and organic matter. Sediment metal concentrations were positively correlated with clay and organic matter content. Highest clay content was found in samples collected from Lake Pepin. Clay-adjusted concentrations of Cd, Pb, Cr, and Cu were significantly greater in Lake Pepin sediments in comparison to sediments obtained from Pools 5 and 9. Lake Pepin sediments were also enriched with Cd and Pb based on comparisons to Minnesota soils and deep sediment strata from the Great Lakes and Wisconsin lakes. Fine-grained sediments in Lake Pepin are believed to have high trace metal adsorptive capacity and likely influences the availability of these metals to downstream transport.

Beauvais, S.L., J.G. Wiener, G.J., Atchison. 1995. Cadmium and Mercury in Sediment and Burrowing Mayfly Numphs (*Hexagenia*) in the Upper Mississippi River. Arch. Environ. Contam. Toxicol. 28:178-183.

Sediment and mayfly nymphs were collected from 12 sites extending from below the Twin Cities Metropolitan Area to below the Quad Cities Area (navigation Pools 2-16) in 1989. Highest mercury and cadmium concentrations in both matrices were reported for samples collected in Pools 2 to 4. Cadmium concentrations in sediment ranged from 1.19 to 3.23 ug/g dry weight and mercury concentrations ranged from 0.038 to 0.165 ug/g dry weight. Concentrations of cadmium in surficial sediment exhibited greater enrichment than mercury based on a comparison to sediment strata form deep cores. Cadmium concentrations in mayfly nymphs varied widely (0.13 to 2.35 ug/g dry weight) in comparison mercury concentrations (0.041 to 0.134 ug/g dry weight). Sediment-associated cadmium appeared to be more bioavailable in Pools 2 to 4 than sites further down river. Sediment trapping by Lake Pepin reduces metal exposure to the river's ecosystem below this natural riverine lake.

Dukerschein, J.T., J.G. Wiener, R.G. Rada, and M.T. Steingraeber. 1992. Cadmium and Mercury in Emergent Mayflies (*Hexagenia bilineata*) from the Upper Mississippi River. Arch. Envrion. Contam. Toxicol., 23:109-116.

Cadmium and mercury content of emergent male and female mayflies were

determined in samples collected in 1988 at 34 sites extending from Little Falls, Minnesota to St. Louis, Missouri. Most samples were collected from navigation Pools 2-27. Cadmium concentrations ranged from <7 to 265 ng/g dry weight. Highest concentrations were reported in samples collected below the Twin Cities (Pools 2 and 3), below the Quad Cities (Pool 15), and near St. Louis (Pool 27). The mercury content of mayflies was less variable and ranged from 44 to 177 ng/g dry weight. Highest mercury concentrations were found in Pools 2, 20, 22, 25, and 27. Mean cadmium and mercury concentrations were greater in males than females, 15% and 31%, respectively. Females exhibited greater burdens of both metals because they have a larger body mass. Future mayfly monitoring programs involving metal analyses should consider separate analysis of males and females.

Ellis, G.S., J.N. Huckins, C.E. Rostad, C.J. Schmitt, J.D. Petty, and P. MacCarthy. 1995. Evaluation of Lipid-Containing Semipermeable Membrane Devices for Monitoring Organochlorine Contaminants in the Upper Mississippi River. Environ. Tox. Chem., 14: 1875-884.

Semipermeable membrane devices (SPMDs) were utilized to assess their ability to sequester organochlorine contaminants from 10 sites in the Upper Mississippi River extending from Minneapolis to Winfield, Missouri. Additional SPMDs were deployed in the lower Minnesota, Illinois and Missouri Rivers. The SMPD results were compared to concentrations found in ultrafilter permeates and caged and feral fish at select sites. SPMD-derived water concentrations were similar to values obtained from ultrafilter permeates. There was poor agreement between the detected contaminants in SPMDs versus those measured in fish. This difference was attributed to the metabolism and depuration of these compounds by fish. SPMDs yielded a larger number of detectable contaminants as compared to contaminant analysis of fish. These devices offer an effective tool to estimate the dissolved or bioavailable fraction of nonpolar organic contaminants in river water.

HydroQual, Inc.1999. Advanced Eutrophication Model of the Upper Mississippi River: Summary Report. Prepared by HydroQual, Inc. Mahwah, NJ, for Metropolitan Council Environmental Services, St. Paul, MN, 50 p.

An advanced eutrophication model was developed to evaluated the effectiveness of point and nonpoint source nutrient controls for achieving water quality objectives in the Mississippi River from the Twin Cities to Lake Pepin (Pools 2-4). Key aspects of this model included fate and transport of phosphorus and the exchange of phosphorus between the water column and sediments. The modeling framework utilized a three-dimensional, time variable model that incorporated hydrodynamic, sediment transport and eutrophication components. The model was calibrated with data collected over a 12-year period (1985-1996). Multi-year simulations were made considering various point and nonpoint source phosphorus control strategies. Despite substantial simulated reductions in total and dissolved organic phosphorus, ambient river phosphorus levels remained high in most years

and failed to produce significant nutrient limitation of algal growth. Maximum decreases in chlorophyll *a* in Lake Pepin were as much as 26% but were only achieved in low flow years.

Larson, C.E., D.K. Johnson, R.J. Flood, M.L. Meyer, T.J. O'Dea, and S.M. Schellhaass. 2002. Lake Pepin Phosphorus Study, 1994-1998: Effects of Phosphorus Loadings on the Water Quality of the Upper Mississippi River, Lock and Dam No. 1 through Lake Pepin. Metropolitan Council Environmental Services, St. Paul, MN, 117 p.

A comprehensive evaluation of the effects of phosphorus loading on the Pool 1 to Lake Pepin reach was conducted in response to nuisance algae blooms experienced during the 1988 summer drought. Specific aspects of the study included an evaluation of historic changes in phosphorus and sediment inputs using sediment cores, phosphorus source identification, chlorophyll and sediment loading, sediment phosphorus flux, and phytoplankton dynamics. The study documented distinct changes in the algae community of Lake Pepin in response to nutrient enrichment over the past 200 years. Phosphorus loadings have increased five-fold and sediment loadings have increased ten-fold during this period and reflect cultural impacts. The greatest changes in phosphorus, algae, and sediment in Lake Pepin have occurred since 1940. Point sources contribute a majority of the phosphorus during low river flows and nonpoint sources are important during high flow conditions. Lake Pepin was found to be a significant source of dissolved phosphorus as a result of sediment flux, especially during summer conditions with low river flow. Eutrophication modeling indicted small reductions in summer peak chlorophyll levels with local point source phosphorus control. Basin-wide phosphorus reductions from point and nonpoint sources will be needed to achieve long-term improvements in water quality.

McHenry, J.R., J.C. Ritchie, C.M. Cooper, J. Verdon. 1984. Recent Rates of Sedimentation in the Mississippi River. p 99-138. In: J.G. Wiener, R.V. Anderson and D.R. McConville Eds., Contaminants in the Upper Mississippi River. Proceedings of the 15th Annual Meeting of the Mississippi River Research Consortium. Butterworth Publishers, Stoneham, Ma.

Sedimentation rates were determined using cesium-137 analysis of 47 cores collected in the mid 1970s to early 1980s from the Upper Mississippi River at select sites extending from Pool 4 (Lake Pepin) to Pool 14. Additional sedimentation estimates were made in Pools 8 and 9 based on fathometer surveys conducted in 1937 versus 1976 and 1977.
Mean cesium-based sedimentation rates of fine sediments varied from 3.0 to 4.3 cm/yr during 1954-64 and from 0.89 to 3.3 cm/yr during 1965-75. Sedimentation rates measured using cesium-137 analysis were biased since sites were in depositional areas. Cesium-based sedimentation measurements were believed to represent maximal rates since sampling sites were selected in depositional areas. Fathometer-based sedimentation measurements in Pools 8 and 9 were noticeably lower than sedimentation estimates made using cesium-137 analysis.

Sedimentation in backwater areas poses a serious threat to these aquatic habitats. Although rates of sedimentation have decreased in recent years, present rates are sufficient to turn some protected backwater areas into marshes within 50 to 100 years. Conservation of upland solids through the use of best management practices is necessary to prolong the life of the riverine pools and backwaters.

Meade R.H., 1995. Contaminants in the Mississippi River, 1987-92. U.S. Geological Survey Circular 1133, Denver, CO, 140 p.

This comprehensive evaluation of the water quality of the Mississippi River covers the reach from Minneapolis, MN to the Gulf of Mexico. The study period ran from 1987 to 1992 with the first three years devoted to the reach below Winfield, MO. In 1991, the study reach was extended to Minneapolis to focus greater attention on the Upper Mississippi River. Sampling was conducted on contaminants dissolved in water, suspended sediment and bed sediment. Sampling was mainly confined to the mainstem, but also included sampling of major tributaries or backwaters when obtaining sediment composites from the navigation pools. The assessment included an analysis of nutrients, heavy metals, chlorinated hydrocarbons, pesticides, surfactants, volatile organic compounds, EDTA, caffeine, fecal coliform bacteria and other industrial chemicals. The Mississippi River was found to carry contaminants dissolved in water and bound to suspended particulate material. Bed sediments from some the Upper Mississippi River navigation pools contained elevated concentrations, particularly those below the Twin Cities Metropolitan Area (Pools 2-4). In general, contaminants originate from a variety of municipal, agricultural, and industrial sources.

Moody, J.A., J.F. Sullivan, and H.E. Taylor. 1999. Effects of the Flood of 1993 on the Chemical Characteristics of Bed Sediments in the Upper Mississippi River. Water, Air, and Soil Pollution 00: 1-23.

Composite bed sediment samples were collected from the lower one-third of the Upper Mississippi River navigation pools prior to and after the summer flood of 1993. Samples were analyzed for particle size, total organic carbon, nitrogen, trace metals and organic compounds. Bed sediment contaminant concentrations exhibited a general decrease following the flood of 1993. Decreases in pollutant levels were attributed to an increase in the portion of coarser sediment and low inputs or remobilization of contaminated sediments during or immediately following the flood. Bed sediment elevations in the sampling areas were found to increase significantly in the middle (Pools 5-13) and lower (Pools 14-26) reaches and were likely a result of an increase deposition of coarser sediment.

Stark, J.R., Hansen, P.E., Goldstein, R.M., Fallon, J.D., Fong, A.L., Lee, K.E., Kroening, S.E., and Andrews, W.J., 2000. Water Quality in the Upper Mississippi River Basin, MN, WI, SD, IA, and ND, 1995-98. U.S. Geological Survey Circular 1211, Denver, CO, 35 p.

This report summarizes major findings about water quality in that portion of the upper Mississippi River Basin extending from Lake Pepin to the headwaters, as a result of an assessment conducted 1995-98 by the USGS National Water Quality Assessment (NAWQA) Program. Water quality is discussed in terms of local and regional issues, and findings are explained in the context of selected national benchmarks. For the three major rivers in this study unit (Mississippi, St. Croix, and Minnesota) and some tributaries, information is included on the status of aquatic communities and condition of in-stream habitat as elements of the water quality assessment. Samples from most streams met Federal and State drinking water standards, and aquatic life guidelines. Invertebrate and fish communities were most degraded in urban streams.

Steingraeber, M.T., T.R. Schwartz, J.G. Wiener, and J.A.Lebo. 1994. Polychlorinated Biphenyl Congeners in Emergent Mayflies from the Upper Mississippi River. Environ. Sci. Technol. 28: 707-714.

Polychlorinated biphenyl (PCB) congeners were determined in emergent mayflies (*Hexagenia bilineata*) collected primarily from the Upper Mississippi River (UMR) navigation pools extending from Minneapolis, Minnesota to the St. Louis, Missouri. Additional samples were obtained from the UMR headwater region in northern Minnesota. Total PCB concentrations (congener sum) ranged from 0.2 to 4.1 ug/g dry weight. Highest concentrations were found below the Twin Cities and near the Quad Cities metropolitan areas. Congener composition was relatively similar in many samples below the Twin Cities and was attributed to longitudinal transport of sediment-associated PCBs. Samples from two locations exhibited a greater abundance of lower molecular weight congeners and suggested recent influxes of PCBs from nearby sources. Emergent mayflies were found to be a useful organism to assess PCB contamination in the river.

Sullivan, J.F. 1989. Water Quality Characteristics and Trends in the Main Channel of the Upper Mississippi River: A Review of Wisconsin's Ambient Water Quality Monitoring Program (1977-1987). Western Boundary Rivers Unit, Wisconsin Department of Natural Resources, La Crosse, WI, 61p.

An assessment of the water quality of the Mississippi River from Fridley, Minnesota to Lynxville, Wisconsin was conducted using information available from STORET, an U.S. EPA database. Primary sources included the Wisconsin Department of Natural Resources and the Minnesota Pollution Control Agency. Water quality impairments were attributed to both point and nonpoint source pollution. Trend analysis of Wisconsin's STORET data for the Mississippi River indicated significant water quality improvements at Lock and Dams 2, 3 and 4. These improvements were attributed to point source pollution abatement activities in the Twin Cities Metropolitan Area.

Sullivan, J.F. 1995. Contaminants in Mississippi River Suspended Sediment Collected with Cylindrical Sediment Traps. Mississippi River Work Unit, Wisconsin

Department of Natural Resources, La Crosse, WI, 65 p.

Glass sediment traps were deployed at 13 sites on the Mississippi River extending from Champlin, Minnesota to Dubuque, IA. Polychlorinated biphenyls and cadmium concentrations in trapped sediment exhibited a distinct longitudinal profile with highest concentrations observed in the Pool 2 to 4 reach. Spatial trends reflect point and nonpoint source pollutant contributions from the Twin Cities Metropolitan Area, resuspension of contaminated bed sediments, and dilution by less contaminated sediment input from downstream tributaries. Sedimentation rates varied seasonal and were influenced by river flow. Accurate estimates of whole-water particulate phase trace element concentrations were possible using trap contaminant data and ambient total suspended solids levels and provided a means to assess temporal changes in mass transport.

Upper Mississippi River Basin Association, 1989. How Clean is the River? An Examination of the Water Quality of the Upper Mississippi River. Upper Mississippi River Basin Association, St. Paul, MN. 69 p. plus appendices.

This report provides a summary of water quality and sediment contaminant monitoring collected on the Mississippi River by federal and state agencies during the 1970s and 1980s. It also provides a summary of the states' water quality standards, attainment of selected standards and fish contaminant advisories. The study reach extended from Lock and Dam 1 in Minneapolis to the confluence with the Ohio River. The report also describes problems encountered in describing water quality of the river due to differences in monitoring, water quality standards or procedures for issuing fish consumption advisories. Water quality criteria not meeting state standards included fecal coliform bacteria, dissolved oxygen, pH, and some trace elements. Fish consumption advisories for PCBs, chlordane, or dieldrin were widespread and provided an indication of a degraded fishery resource. Efforts to address point source pollution have resulted in improved water quality in the 1980s over the 1970s. Future water quality improvements will require and increased focus on nonpont source pollution and greater cooperation by the states, the private sector and citizens that live along the river.

U.S. Geological Survey. 1999. Ecological Status and Trends of The Upper Mississippi River System, 1998: A Report of the Long Term Resource Monitoring Program. Chapter 7 Water and Sediment Quality. U. S. Geological Survey, La Crosse, WI, 236 p.

A summary of water quality data collected by the federal Long Term Resource Monitoring Program in Pools 4, 8, 13, 26, Open River (below St. Louis Missouri) and the La Grange Pool (Illinois River) are provided. Additional water quality data are summarized for major tributaries to the Upper Mississippi River. The report also describes other recent federal water quality studies conducted in the Upper Mississippi River. Water quality has shown improvements in recent decades. However, the river continues to receive contaminant inputs from

agricultural, industrial, municipal, and residential sources. The impacts from these contaminants are largely unknown. Sediment inputs from human activities remain a serious problem and continues to degrade habitat quality. River managers need better information to describe resource problems and better tools to predict whether remedial or regulatory actions can result in future improvements.

Wiener, J.G., G.A. Jackson, T.W. May, and B.P. Cole. 1984. Longitudinal Distribution of Trace Elements (As, Cd, Cr, Hg, Pb, and Se) in Fishes and Sediments in the Upper Mississippi River. p.139-170. In: J.G. Wiener, R.V. Anderson and D.R. McConville Eds., Contaminants in the Upper Mississippi River. Proceedings of the 15th Annual Meeting of the Mississippi River Research Consortium. Butterworth Publishers, Stoneham, Ma.

Concentrations of selected trace elements were determined in sediments, carp and bluegill from samples collected from the Upper Mississippi River extending from Sartell, Minnesota (above the Twin Cities) to Guttenberg, Iowa (Pool 11). Trace element concentrations in whole carp and carp livers were highest in samples collected near the Twin Cities Metropolitan Area. Chromium concentrations in whole bluegills and Hg and Pb concentrations in whole carp from the Upper Mississippi River were high in comparison to samples determined nationally for uncontaminated surface waters. Bed sediment trace element concentrations, particle size and organic content were highly variable between sampling sites. Highest concentrations of Cd, Hg, and Pb in bed sediments were generally greater in samples collected in Pools 1, 2 and 4 (Lake Pepin) as compared to other sites. Spearman correlation analysis of trace elements in fish samples versus bed sediment samples, paired by sampling site, did not reveal significant correlations.