ORIGINAL

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

WATER QUALITY AMENDMENTS TO	)	
35 Ill. Adm. Code 302.208(e)-(g), 302.504(a),	)	R02-11
302.575(d), 303.444, 309.141(h); and	)	(Rulemaking - Water)
PROPOSED 35 Ill. Adm. Code 301.267,	)	
301.313, 301.413, 304.120, and 309.157	)	

P.C. #21

NOTICE OF FILING

Dorothy Gunn, Clerk
Pollution Control Board
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601

Marie E. Tipsord
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

Mathew Dunn
Illinois Attorney General's Office
Environmental Control Division
James R. Thompson Center
100 West Randolph Street
Chicago, Illinois 60601

Legal Service
Illinois Department of Natural Resources
524 South Second Street
Springfield, Illinois 62701-1787

Attached Service List

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the Illinois Environmental Protection Agency's **COMMENTS**, a copy of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By:_____
Sanjay K Sofat
Assistant Counsel
Division of Legal Counsel

Dated: April 15, 2002
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794-9276
(217) 782-5544

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STATE OF ILLINOIS
Pollution Control Board

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301.313, 301.413, 304.120, and 309.157	)	

AGENCY'S COMEMNTS

THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Agency") respectfully submits its comments in the above-entitled matter to the Illinois Pollution Control Board ("Board"). The Agency appreciates this opportunity to submit comments supplementing the comments it presented during the two public hearings. These comments will address request for additional information made during the March 6, 2002 Board Public Hearing and the Agency's proposal regarding the implementation procedures.

I. ADDITIONAL INFORMATION

Illinois' Section 303(d) list:

Albert Ettinger of the Environmental Law & Policy Center requested a clarification on whether the Mississippi River is listed as impaired for dissolved oxygen in the Illinois' Section 303(d) list. *See* Transcript for March 6, 2002 Hearing ("Tr."), p.38. The Agency's review of the 1998 Section 303(d) list revealed that the Mississippi River is not listed as impaired because of dissolved oxygen problems.

Stream Survey Reports:

Board Member Girard inquired if there are any published models that show a relationship between the ammonia effluent limits and its impact on the oxygen demand from the ammonia in aquatic environment. Tr., pp. 41-42. The Agency witness, Bob Mosher, testified that he is not personally aware of any such models, however, believes that the Agency's stream studies would be helpful to

mistake, the lower value of 9.9 was inserted into the proposed rule and also put into page 20 of the Agency's original Exhibit F. The Agency believes that the appropriate inputs were n = 6 and t = 3 as shown above. Therefore, the chronic standard proposed for the Board adoption is 11 µg/L.

II. IMPLEMENTATION PROCEDURES

At this time, the Agency has respectfully decided to not submit a draft proposal for the application of the dissolved metals water quality standards in permits ("implementation procedures"). This decision will afford the Agency additional time to develop such procedures. Therefore, we will not be complying with the Hearing Officer's request for submission of implementation procedures. The Agency believes that it needs additional time to review the existing Board and Agency rules to identify the areas that are in need of implementation procedures. With the help of a stakeholder work group, the Agency will develop a draft proposal for the Board or proceed to the first notice if such procedures do not require Board rulemaking. If the internal review and the work group concludes that a particular implementation procedure belongs in the Board regulations, the Agency will propose such rules for the Board's adoption.

For the permitting procedures, the Agency intends to follow the procedures outlined in the USEPA publications, *Technical Support Document For Water Quality Based Toxics Control*, EPA/505/2-90-001 (March 1991), and *The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, EPA 823-B-96-007

Respectfully Submitted

ILLINOIS ENVIRONMENTALPROTECTION AGENCY

By:_____

Sanjay K Sofat
Assistant Counsel
Division of Legal Counsel

DATED: April 15, 2002

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544

ILLINOIS EPA - BOW - DWPC - MONITORING AND ASSESSMENT
FACILITY-RELATED STREAM SURVEY (FRSS) REPORT

A. Facility: Anna MWWTP NPDES Permit: 27481 Exp.: 08/31/00 County: Union

[redacted] Population: 4,780 Type of facility: minor municipal BOW Region: 7

Survey date: 9/1/99 Report date: October 30, 2000 Discharge ID: AD 181 03

Treatment level: activated sludge, sand filters DAF: 0.85 mgd or 1.3 cfs DMF: 1.65 mgd or 2.6 cfs

Last major upgrade: 12/1/98 CSO's: 0 Disinfection status: year-round exemption (since 8/28/95)

Operational condition of facility: Agency effluent data after 12/98 indicated good operation, with some inconsistency (in part due to structural problems with sand filters)

Effluent bioassay data available: April 1992

B. Receiving stream: Cache River (AD) Basin/sub-basin: Ohio River (A)/Cache River (AD)

USEPA stream reach: 05140206-030/on Receiving stream BSC: Cache River,RM 0.0 to 52.6, C, 1992

Receiving stream 7Q10: 0 Stream order: Cache River, 2 (at facility outfall) WBID: ILAD 05 WBSEG: AD 05

Approx. discharge rates during survey (09/01/99): (1) Cache River site A-1, 0.1 cfs or 0.06 mgd; (2) MWWTP effluent, 0.8 cfs or 0.5 mgd; (3) Cache River site C-1, 0.9 cfs or 0.6 mgd

Approx. dilution ratio: 0.12:1

Other causes and sources of impairment: urban runoff

Previous Illinois EPA facility-related stream surveys (mo/yr): 04/74, 08/84, 06/92

Findings of previous Illinois EPA surveys downstream from the Anna MWWTP:
The 1984 survey found that aquatic macroinvertebrate communities indicated very poor conditions in Cache River downstream from the Anna MWWTP.

The 1992 survey also found very poor conditions in Cache River downstream from the Anna MWWTP.

C. Biological findings of this survey:
Aquatic macroinvertebrate communities indicated good conditions in Cache River, upstream (site A-1) and downstream (sites C-1, C-2, and C-4) from the Anna MWWTP (Table 2).

Fish were observed at sites A-1, C-1, C-2, and C-4. Schools of minnows (Cyprinidae) were observed at all four of these sites. Topminnows (Fundulus) and mosquitofish (Gambusia) were observed at site C-2. Fish communities were sampled at sites C-2 (AD-11) and C-4 (AD-10). Index of Biotic Integrity (IBI) values at sites AD-11 (44), AD-10 (48), and AD-06 (44) indicated good fish communities at those sites, in July and September 1999. (Table 3)

Biological data from samples collected at sites AD-11, AD-10, AD-06, and AD-05, in 1999, indicated full support of aquatic life use in the 17.2-mile stream reach of Cache River downstream from the city of Anna (Table 13).

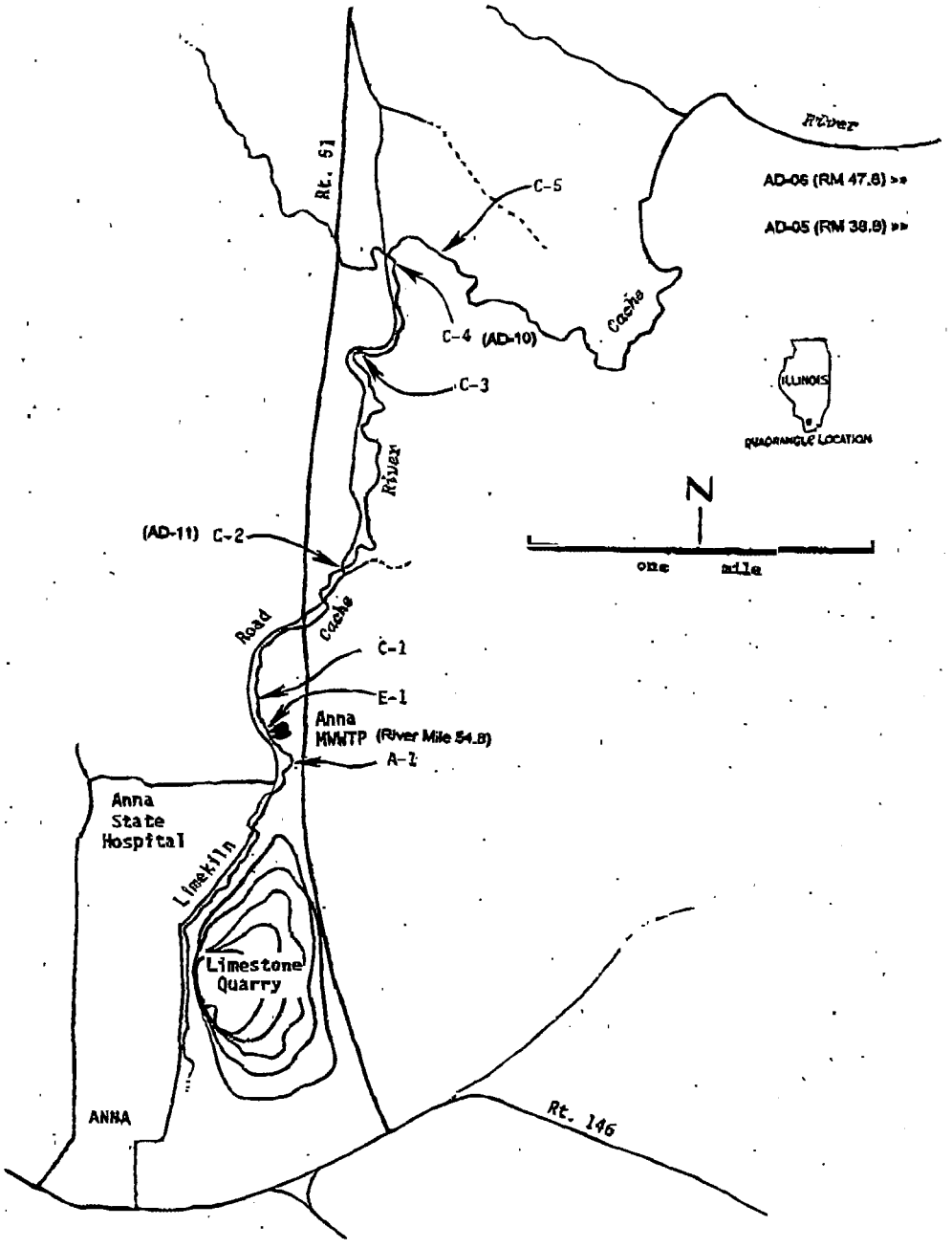

Figure 1. Sampling locations in Cache River, in the vicinity of Anna MWWTP, Union County, Illinois, August 31 and September 1, 1999, and January 19, 2000.

Table 1. Sampling locations in Cache River (stream code AD) and types of samples collected in the vicinity of Anna MWWTP, NPDES permit 27481, Union County, Illinois, August 31 and September 1, 1999, and January 19, 2000

Site Code	LIMS Site Code	Water Body	Dist* (miles)	Upstr or Dnstr	Location	T	R	1/4 Sec	Latitude ° ' "	Longitude ° ' "	Sample Type**	Stream order	Stream mile (RM)	USGS Topo Map
	AD-AN-A1	Cache R	0.12	U	Walk in	12S	1W	NE17	37 28 47	89 14 00	M,D,H,W	2	54.9	280B
	AD-AN-E1	Effluent	0	—	Effluent at final tank	12S	1W	NE17	37 28 54	89 14 06	D,W	—	54.8	280B
	AD-AN-C1	Cache R	0.2	—	Walk in	12S	1W	NE17	37 28 56	89 14 07	M,D,W	2	54.7	280B
AD-11	AD-AN-C2	Cache R	0.7	D	N-S Limekiln Rd	12S	1W	SW09	37 29 18	89 13 50	M,F,D,H,W	2	54.1	280B
	AD-AN-C3	Cache R	1.5	D	Walk in at bend	12S	1W	NW09	37 29 52	89 13 48	W	2	53.3	280B
AD-10	AD-AN-C4	Cache R	1.9	D	Walk in U unn trib	12S	1W	SW04	37 30 05	89 13 40	M,F,D,H,W,S	2	52.9	271C
	AD-AN-C5	Cache R	2.2	D	Walk in D unn trib	12S	1W	SW04	37 30 08	89 13 28	W	2	52.6	271C
AD-06		Cache R	7.0	D	Rd, 0.8 mi SW Saratoga	12S	1W	SW01	37 30 16	89 10 15	M,F,D,H,W	4	47.8	271C
AD-05		Cache R	16.0	D	Rd, 1 mi N of Mt Pleasant	12S	1E	SW14	37 28 00	89 04 37	M,F,D,H,W	4	38.8	260A

* Distance from Anna MWWTP outfall (stream miles)

** Sample type: M – Macroinvertebrates; D – Discharge Measurement; F – Fish Community; W – Water Chemistry; H – Habitat, estimates or transects; S – Sediment Chemistry

Table 3. Fish community sampling results from Cache River sites in the vicinity of the Anna MWWTP, 1999

FISH SPECIES			Site:	Cache River AD-11		AD-10		AD-06		AD-05	
BIOS Code	Scientific Name	Common Name	Date: Method:	6/24/92 BP+SH	9/1/99 ES	6/24/92 BP+SH	9/1/99 ES	6/1/92 ES	7/19/99 ES	6/1/92 ES	8/9/99 *** ES
3008	*Amia calva*	Bowfin							1		
3018	*Esox americanus*	Grass Pickerel								2	4
3020	*Campostoma anomalum*	Central Stoneroller		104	334	120	666	4	42		
3025	*Cyprinus carpio*	Common Carp						1			1
3052	*Notropis lutrensis*	Red Shiner		3	7	20	3	81	78	9	
3058	*Lythrurus umbratilis*	Redfin Shiner		21	9	11	18	51	10	14	
3061	*Cyprinella whipplei*	Steelcolor Shiner			8						
3064	*Pimephales notatus*	Bluntnose Minnow		15	60	9	52	63	30	5	
3069	*Semotilus atromaculatus*	Creek Chub		13	70	19	205		12	2	
3200	*Suckers*	Catostomidae		3							
3073	*Catostomus commersoni*	White Sucker			13	1	22	4	7	2	1
3075	*Erimyzon oblongus*	Creek Chubsucker		7		4		1	2	2	1
3081	*Minytrema melanops*	Spotted Sucker						1	1		2
3089	*Ameiurus natalis*	Yellow Bullhead			11	2	8	1	4	2	
3095	*Noturus gyrinus*	Tadpole Madtom		1	4	3	4	2	3	7	
3100	*Aphredoderus sayanus*	Pirate Perch					2		1	1	1
3105	*Fundulus notatus*	Blackstripe Topminnow							1		
3106	*Fundulus olivaceus*	Blackspotted Topminnow					12	6	2	4	
3114	*Centrarchus macropterus*	Flier									2
3116	*Lepomis cyanellus*	Green Sunfish					4	21	12	1	2
3120	*Lepomis macrochirus*	Bluegill			14	1	14	14	3	7	6
3121	*Lepomis megalotis*	Longear Sunfish			14		60	129	92	49	20
3122	*Lepomis microlophus*	Redear Sunfish									1
3125	*Micropterus punctulatus*	Spotted Bass			6		14		1		
3126	*Micropterus salmoides*	Largemouth Bass			1		5	4	8		1
3127	*Pomoxis annularis*	White Crappie									1
3149	*Percina macolata*	Blackside Darter			2		4		4		
3157	*Cottus carolinae*	Banded Sculpin							8	22	2
	-------	Hybrid sunfish**						1			
		Number of Individuals:		**167**	**553**	**190**	**1093**	**384**	**322**	**129**	**45**
		Number of Taxa:		**8**	**14**	**10**	**16**	**16**	**21**	**15**	**14**
		Index of Biotic Integrity (IBI):		**38**	**44**	**38**	**48**	**36**	**44**	**38**	***

* Method: BE--Boat Electrofishing, BP--Backpack Electrofishing, ES--Electroseine, SH--Seine Haul
** Hybrids not included in number of taxa.
*** Partial sample (no IBI value)

Anna99fish3.wb3 (04/17/00)

Table 5. Field and laboratory water chemistry from Cache River (AD) and an effluent sample, in the vicinity of Anna MWWTP, January 19, 2000.

STORET CODE	Parameter	INTB code: FRSS code: Site:	AD-AN A1	AD-AN E1	AD-AN C1	AD-11 AD-AN C2	AD-AN C3	AD-10 AD-AN C4	AD-AN C5	AD-06 SW Saratoga
	Sample Time		800	830	845	930	1000	1030	1100	1300
	Discharge (cfs)			0.80						
	Discharge (mgd)			0.5						
20	Air Temp (°C)		-1	-1	-1	0	2	3	3	3
10	Water Temp (°C)		6	13.2	7	5.9	5.2	5.2	4.9	3.6
11	Water Temp (°F) *		43	56	45	43	41	41	41	38
400	pH (units)		7.9	6.9	7.6	7.8	7.9	8.1	8.1	8.1
94	Conductivity (µmhos/cm)		565	647	580	560	540	528	522	460
299	Diss Oxygen (mg/l)		11.3	9.0	10.9	11.2	11.0	11.4	11.1	12.3
301	Diss Oxygen Saturation %*		93	88	92	93	89	92	89	95
80082	BOD Carb (mg/l)		1	1	2	1	1 K	1 K	1 K	--
310	BOD Total (mg/l)		2	2	3	5	1	1	1	--
680	T. Organic Carbon (mg/l)		2.0	5.3	2.7	2.4	2.2	2.5	2.4	3.4
530	Susp Solids (mg/l)		20	5	23	24	25	22	30	22
610	NH3+NH4 N (mg/l)		0.14	0.01 K	0.06	0.01 K	0.01 K	0.01 K	0.01 K	0.01 K
612	Un-ion Ammonia N (mg/l) *		0.002	0.001 K	0.001 K	0.001 K	0.001 K	0.001 K	0.001 K	0.001 K
630	NO2+NO3 N (mg/l)		1.7	19	4.6	3.5	3.5	3.8	3.8	3.8
665	Phosphorus Tot (mg/l)		0.09	4.6	0.84	0.58	0.65	0.73	0.76	0.75
900	Hardness (mg/l) *		234	168	222	224	215	212	206	185
916	Calcium Tot (mg/l)		63	37	59	60	58	57	56	55
927	Magnesium Tot (mg/l)		19	18	18	18	17	17	16	12
929	Sodium Tot (mg/l)		21	55	26	24	23	24	23	23
937	Potassium Tot (mg/l)		2.2	11	3.2	2.8	3.0	3.5	3.8	4
1105	Aluminum Tot (µg/l)		400	100 K	470	560	760	650	850	220
1007	Barium Tot (µg/l)		60	15	54	58	60	59	63	64
1012	Beryllium Tot (µg/l)		1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K
1022	Boron Tot (µg/l)		38	280	83	65	67	71	78	65
1027	Cadmium Tot (µg/l)		3 K	3 K	3 K	3 K	3 K	3 K	3 K	3 K
1034	Chromium Tot (µg/l)		5 K	5 K	5 K	5 K	5 K	5 K	5 K	5 K
1037	Cobalt Tot (µg/l)		10 K	10 K	10 K	10 K	10 K	10 K	10 K	10 K
1042	Copper Tot (µg/l)		10 K	18	10 K	10 K	10 K	10 K	10 K	10 K
1045	Iron Tot (µg/l)		450	74	520	630	840	740	930	350
1051	Lead Tot (µg/l)		50 K	50 K	50 K	5 K	50 K	5 K	50 K	5 K
1055	Manganese Tot (µg/l)		38	15 K	35	36	33	30	40	78
1067	Nickel Tot (µg/l)		25 K	25 K	25 K	25 K	25 K	25 K	25 K	25 K
1077	Silver Tot (µg/l)		3 K	3 K	3 K	3 K	3	3 K	3 K	3 K
1082	Strontium Tot (µg/l)		4900	170	4000	4300	3800	3400	3100	880
1087	Vanadium Tot (µg/l)		5 K	5 K	5 K	5 K	5 K	5 K	5 K	5 K
1092	Zinc Tot (µg/l)		100 K	100 K	100 K	100 K	100 K	100 K	100 K	100 K
71900	Mercury (µg/l)		0.10 K	0.10 K	0.10 K	0.01 K	0.10 K	0.01 K	0.10 K	0.01

* Calculated J - Estimated K - Less than stated detection limit

Table 7. Illinois EPA effluent sampling results from Anna municipal wastewater treatment plant, NPDES permit 27481, 1995-1999. (All units are mg/l, except as noted.)

Date	Time	10 Water Temp (°C)	(°F)	403 Lab pH (units)	610 Ammonia as N	612 Un-ionized Ammonia as N	310 Total BOD	80082 Carb BOD	530 T Susp Solids
95/01/31	930	7	45	7.6	1.2	0.007	14		18
95/02/21	830	8	46	7.8	0.61		7		10
95/04/05	845	8	46	7.6	1.4	0.009	15		31
95/05/15	915	18	64	7.7	0.80	0.013	11		25
95/06/13	900	20	68	7.5	0.96	0.012	7		13
95/07/06	830	23	73	7.8	0.35	0.011	19		70
95/08/08	815	25	77	7.6	2.7	0.060	11		17
95/09/20	1330	21	70	7.3	1.6	0.013	12		9
95/10/16	900	13	55	7.3	1.4	0.007	9		9
95/11/08	845	10	50	7.4	4.0	0.019	17		22
95/12/11	103	4	39	7.8	22	0.158	55		72
96/01/23	815	11	52	7.6	3.4	0.027	7		20
96/02/14-15	800	9	48	7.6	14	0.095	28		17
96/04/10	900	10	50	7.7	4.4	0.041	17		8
96/05/01	845	14	57	7.8	0.46	0.008	16		20
96/06/11	900	20	68	7.8	0.40	0.010	12		35
96/07/31	845	22	72	7.7	1.4	0.031	14		12
96/08/20		26	79	7.5	2.1	0.042	18		42
96/09/17	830	20	68	7.6	10	0.155	19		34
96/10/21	1030	17	63	7.6	2.7	0.034	20		25
96/11/18				7.9	4.2		9		42
96/12/03	845	11	52	7.9	2.3	0.036	22		23
97/02/06	815	8	46	7.9	3.6	0.045	24		28
97/03/04	830	11	52	7.7	0.60	0.006	15		33
97/04/01	900	10	50	7.9	1.0	0.015	20		31
97/06/16	830			7.6	2.5		20		34
97/07/09	845	22	72	7.6	2.7	0.051	14		36
97/08/25	900	23	73	7.7	6.6	0.159	20		23
97/10/28		13	55	7.7	8.5	0.105	27		14
97/12/22				7.6	6.7		24		40
98/01/20		5	41	7.9	5.5	0.057	25		4
98/03/30	915	13	55	7.2	0.07	0.001 K	5		11
98/04/21	930	14	57	7.1	0.49	0.002	4		8
98/06/11	800	22	72	7.0	0.26	0.001	6		28
98/07/09	815	24	75	7.3	4.1	0.043	20		19
98/08/19	845	25	77	7.2	0.42	0.004	1		3
98/09/22	(no discharge)								
98/11/05	815	19	66	7.5	0.23	0.003	2		2
98/12/08	800	17	63	7.2	0.18	0.001	2		9
99/01/26		12	54	7.1	0.33	0.001	4		11
99/02/23		12	54	7.3	0.27	0.001	2		2
99/03/02				7.6	0.14		2		5
99/05/18		20	68	7.4	0.97	0.010	4		12
99/06/16				7.4	1.2		3		4
99/07/14		24	75	7.4	0.40	0.006	2		5
99/08/31		29	84	7.3	0.26	0.004	3		5
99/09/01*	1100	25.3	78	6.9 *	0.65	0.003	1	1 K	20
99/09/28		23	73	7.5	6.3	0.102	10		15
99/10/26		17	63	7.2	0.83	0.004	3		2
99/11/16-17				7.3	0.01 K		1 K		10
99/11/23		18	64	7.2	0.25	0.001	5		24
99/12/28		10	50	7.3	0.01 K	0.001 K	2		8
2000/01/19*	830	13.2	56	6.9 *	0.01 K	0.001 K	2	1	5
N:		46	46	52	52	45	52	2	52
Average:		16.2	61.2	7.5	2.6	0.031	12.2		19.7
Minimum:		4	39.2	6.9	0.01 K	0.001 K	1 K		2
Maximum:		29	84	7.9	22.0	0.159	55		72

K – Less than stated detection level * Field pH

NPDES permit limits: (8/28/95-8/31/0)			Apr - Oct	Nov - Mar	
	Ammonia	mean	1.5	4.0	mean CBOD (mg/l) 10

Table 10. Concentrations of metals, nutrients, and organochlorine compounds in sieved (<63 microns) stream sediment samples from Cache River, downstream from Anna, 1992 and 1999.

STORET CODE	Parameter	Site: / River Mile: / Date:	AD-11 54.1 10/1/92	AD-10 52.9 9/1/99	AD-06 47.8 6/1/92	AD-06 47.8 7/19/99
Metals and Nutrients (mg/kg, dry weight)						
339	Chemical Oxygen Demand		37200	--	15400	--
70322	Solids, Volatile (%)		4.2	3.1	2.8	2.9
627	Kjeldahl Nitrogen		1060	1100	721	1618
668	Phosphorus		900	578	443	452
938	Potassium		1000 K	710	1000 K	530
1003	Arsenic		4.7	1 K	5.6	3.5
1008	Barium		113	66	102	64
1028	Cadmium		1	0.3 K	1	0.3 K
1029	Chromium		34	9.6	12	7.0
1043	Copper		21	8.2	9	6.0
1052	Lead		44	17	17	8.9
1053	Manganese		431	36	690	370
1068	Nickel		14	8.2	13	7.2
1078	Silver		2	0.32	1	0.5 K
1093	Zinc		106	42	47	24
1170	Iron		15000	8200	14000	7700
71921	Mercury		0.10	0.10 K	0.10 K	0.10 K
Organochlorine compounds (µg/kg, dry weight)						
39519	Total PCB's		10 K	10 K	[redacted]	10 K
39333	Aldrin		1 K	1 K	1 K	1 K
39383	Dieldrin		[redacted]	[redacted]	1 K	1 K
39301	p,p' DDT		4.4	1 K	10 K	1 K
39311	p,p' DDD		11	1.5	1 K	1 K
39321	p,p' DDE		6.7	1.2	1 K	1 K
39359	Total DDT		[redacted]	10 K	1 K	10 K
39064	Chlordane, cis isomer (alpha)		22	2 K	11	2 K
39067	Chlordane, trans isomer (gamma)		16	2 K	17	2 K
39351	Total alpha & gamma Chlordane		38	5 K	28	5 K
39393	Endrin		1 K	1 K	1 K	1 K
39481	Methoxychlor		5	5 K	5 K	5 K
39076	Alpha BHC		1	1 K	1 K	1 K
39343	Gamma BHC (Lindane)		1	1 K	1 K	1 K
39701	Hexachlorobenzene		1	1 K	1 K	1 K
39413	Heptachlor		1	1 K	1 K	1 K
39423	Heptachlor epoxide		[redacted]	1 K	1 K	1 K
81618	Trifluralin		--	10 K	--	10 K
39631	Atrazine		--	50 K	--	50 K
81407	Alachlor		--	10 K	--	10 K
81409	Metribuzin		--	10 K	--	10 K
38923	Metolachlor		--	25 K	--	25 K
82409	Pendimethalin		--	10 K	--	10 K
49196	Captan		--	10 K	--	10 K
82543	Cyanazine (Bladex)		--	25 K	--	25 K

K -- Less than stated detection level -- Not analyzed for

[Values that are shaded are elevated, and values that are outlined are highly elevated, based on Short, 1997]

Table 12. Illinois EPA habitat data for Cache River sampling sites in the vicinity of Anna, 1999.

Habitat Parameter	INTB code: / FRSS code: / Date:	AD-AN-A1 Aug 31, 99	AD-AN-C1 Sept.1, 99	AD-11 AD-AN-C2 Aug 31, 99	AD-10 AD-AN-C4 Sept.1, 99	AD-06 Jul 19, 99
SAMPLING REACH						
Station Length - Fish (ft)		--	--	425	605	543
T. Transect Reach - Habitat (ft)		200	200	400	600	540
No. Habitat Transects		0	0	11	11	11
Transect Interval (ft)		--	--	40	60	54
Increment Width (ft)		--	--	2	2	2
T. No. Habitat Sample Points		0	0	118	106	117
T. No. Velocity Measurements		1	1	12	8	15
T. No. Channel Width Measurements		--	--	3	3	3
SUBSTRATE (%)						
Silt - Mud (<0.063 mm)		5 J	8 J	3.4	3.8	58.1
Sand (0.063 - 2 mm)		14 J	8 J	2.5	2.8	1.7
Fine Gravel (0.08 - 0.3 inches)		10 J	8 J	10.2	11.3	12.8
Medium Gravel (0.2 - 0.6 inches)		15 J	8 J	18.6	16.1	12.0
Coarse Gravel (0.6 - 2.5 inches)		8 J	15 J	18.6	31.1	4.3
Small Cobble (2.5 - 5 inches)		4 J	20 J	11.0	12.3	1.7
Large Cobble (5 - 10 inches)		2 J	14 J	8.5	7.6	6.8
Boulder (> 10 inches)		1 J	1 J	0.9	1.9	0
Bedrock		10 J	4 J	1.7	6.6	0
Claypan - Compacted Soil		14 J	7 J	11.9	0	0
Plant Detritus		14 J	5 J	3.4	2.8	2.6
Vegetation		3 J	2 J	9.3	2.8	0
Submerged Logs		0 J	0 J	0	0	0
Other		0 J	0 J	0	0.9	0
HYDRAULIC FEATURES						
Stream Order		2	2	2	2	4
Discharge (cfs)		0.1	1.9 J	1.2	0.6	1.8
Mean Channel Width (ft)		--	--	47	50	68
Mean Width of Water (ft)		4	12	22.5	20.2	22.3
Mean Velocity @ Q (discharge)		0.63	0.2 J	0.65	0.75	0.83
Mean Velocity (cfs/w*d)		0.08	0.20 J	0.06	0.07	0.06
Mean Depth (ft)		0.3	0.8 J	0.9	0.4	1.3
Mean Depth at Thalweg (ft)		--	--	1.8	0.9	2.0
Mean Width / Mean Thalweg Depth		--	--	12.5	22.4	11.2
Water Level		Normal	Normal	Normal	Normal	Normal
Water Level Trend		Stable	Stable	Stable	Stable	Stable
Pool		40 J	40 J	51.7	31.6	35.4
Riffle		20 J	20 J	15.2	14.6	7.0
Run		40 J	40 J	31.9	46.8	46.9
Slack		--	--	1.2	7.0	10.8
OTHER						
Shading (%)		50	85	33	45	50
Instream Cover Total (%)		--	--	8.21	8.68	7.1
Boulders		--	--	1.98	3.37	1.26
Under cut bank		--	1 J	2.58	1.47	1.74
Rock / Clay Ledge		--	1 J	0.77	1.16	1.10
Submerged tree roots		1 J	1 J	1.81	1.51	1.01
Brush-debris jams		1 J	1 J	0.00	0.43	0.24
Logs		--	--	0.60	0.66	1.18
Aquatic Vegetation		--	--	0.27	0	0
Submerged Terrestrial Vegetation		--	--	0.18	0.06	0.51
Other (trash)		--	--	0.02	0.02	0.02
Potential Index of Biotic Integrity (PIBI)		39.8	41.0	42.5	42.8	36.3

J – Estimated

ILLINOIS IEPA - BOW - DWPC - MONITORING AND ASSESSMENT FACILITY-RELATED STREAM SURVEY REPORT

A. **Facility:** Urbana-Champaign SD SW **NPDES Permit:** 0031526 **Exp:** 09/30/98
County: Champaign **Location:** Urbana-Champaign
Population: 63,502 (Champaign) **BOW Region:** 4

Survey Date: 08/12/97 **Report Date:** 02/21/98 **Discharge ID:** O 01902

Treatment Level: Sedimentation, activated sludge, and rapid sand filtration with excess flow treatment - nitrification/denitrification and phosphorus removal. Sludge treatment consists of aerobic digestion, belt filtration, floatation thickening and land application.

Disinfection Status: Year-Round **DAF/Max (mgd):** 5.90/12.50

CSO'S: No **Last Major Upgrade (year):** 1982

Operational condition of facility (from DWPC records, operator's comments, and/or observations):

Violations of permit limits over last year (from DRMRs and FOS monitoring): ~~A summary~~ of IEPA effluent monitoring data is included as Table 3.

Effluent bioassay data available? Yes X **No** _ **WBID:** ILO13

B. **Receiving Stream:** Copper Slough **Basin/sub-basin:** Kaskaskia River

USEPA stream Reach: 07140201 **Receiving Stream BSC/year:** C - 1986

BSC Other/year: _ **Receiving Stream 7Q10:** 0 **Stream Order:** 2

Discharge of Receiving Stream downstream from WWTP outfall, during survey:
Discharge at station C1 was measured at 21.10 cfs on the day of the survey.

Discharge of Facility at outfall: 4.52 mgd (daily average for 08/12/97)
(Facility flow meter X **or IEPA measurement** _**)**

Est. dilution ratio, during survey: _

Other Potential Sources of Impairment: Urban runoff / Development

Previous Surveys (years): FRSS (1980, 1983, 1987, 1992)

Findings of previous surveys: Data from the 1992 FRSS survey did not indicate any impact to Copper Slough in the vicinity of Urbana/Champaign SW STP. There were no violations to state general use water quality standards at that time.

C. **Biological Findings of this survey:** Based on calculated MBI scores, overall stream quality was good within Copper Slough and Kaskaskia Ditch in the vicinity of Urbana/Champaign SW STP. No apparent impact was observed within Copper Slough downstream from the outfall during this survey.

D. **Water quality findings of this survey:** There was no indication of major water quality problems and no general use water quality violations were identified during this survey.

E. **Recreational use, actual or potential:**

F. **Conclusions:**

1. Based on MBI scores, overall stream quality was good. No apparent impact was observed to the biological communities within the receiving streams.

2. There were no indication of major water quality problems and no general use water quality violations were identified.

G. **Recommendations:**

H. **Monitoring and assessment staff who worked on this survey.**

Jim Hefley
Mark Joseph
Don Jarrett (intern)

Figure 1. Stations sampled on streams in the vicinity of Urbana/Champaign SW STP, August 12, 1997.

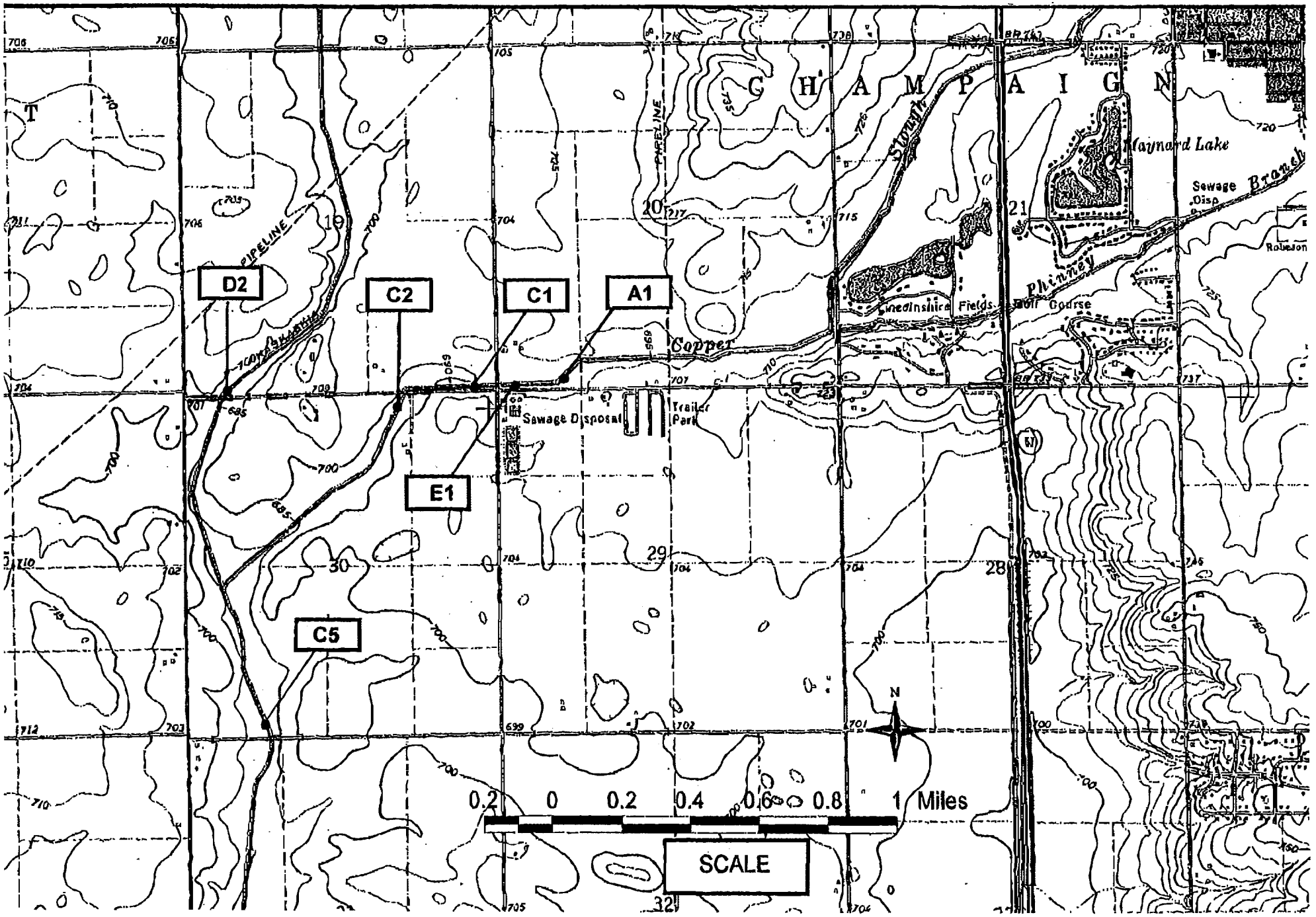

Table 1. Macroinvertebrate data collected during the Urbana/Champaign SW FRSS. August 12, 1997.

TAXON	TOLERANCE RATING	STATION A1	C1	C2	C5	D2
Plecoptera	1.5					
Oligoneuriidae	3.0					
Corydalidae	3.0					
Calopterygidae	3.5	4	11	11	6	
Trichoptera (Non-Hydropsychidae)	3.5			5	4	1
Heptageniidae	3.5			4	3	4
Sialidae	4.0					
Amphipoda	4.0					
Baetidae	4.0	6	21	11	2	14
Potamanthidae	4.0					
Tipulidae	4.0					
Cyrenidae (*Corbicula fluminae*)	4.0	61	51	47	18	21
Anisoptera	4.5	1	1			1
Ephemeridae	5.0					
Cambaridae	5.0				2	
Ceratopogonidae	5.0					
Elmidae or Dryopidae	5.0			1		1
Sphaeriidae	5.0	1			1	
Caenidae or Tricorythidae	5.5			2	4	2
Coenagrionidae	5.5	27	7	9	11	4
Hydropsychidae	5.5					
Asellidae	6.0					
Chironomidae (Non-Chironomus)	6.0	19	24	17	24	
Simuliidae	6.0		10	60	13	
Turbellaria	6.0	12	1	3		1
Other Gastropoda	6.0					
Planorbidae	6.5					
Scirtidae (larvae only)	7.0					
Lymnaeidae	7.0				1	
Ancylidae (*Ferrissia sp.*)	7.0					
Tabanidae	7.0					
Culicidae	8.0					
Hirudinea	8.0		1		2	
Physidae	9.0	7		3	1	1
Oligochaeta	10.0	1	1			
Red Chironomidae (blood midge)	11.0	1	1	3	1	2
TOTAL ABUNDANCE		140	129	176	93	52
TAXA RICHNESS		11	11	13	15	11
MBI		5.1	4.7	5.2	5.2	4.6

Table 2. Water Chemistry results from Copper Slough in the vicinity of the Champaign SW STP, August 12, 1997.

PARAMETER	GENERAL USE STANDARD	A1	E1	C1	C2	C5	D2
Field Water Temp., Deg. C.		21.1	21.0	21.0	22.6	21.5	17.3
Field pH, units	6.5-9.0	7.9	7.5	8.1	8.1	8.3	8.3
Field Dissolved Oxygen, mg/l	5.0 min	5.6	8.1	7.7	7.5	8.8	10.2
Field Conductivity, umhos/cm		302	584	451	431	458	554
Ammonia Nitrogen, mg/l	15.0(a)	0.34	0.17	0.38	0.49	0.47	0.88
** Unionized Ammonia, mg/l	0.33/0.057(a)	0.012	0.002	0.020	0.030	0.040	0.056
Nitrate + Nitrite-N, mg/l		0.82	6.3	3.4	3.4	2.3	0.34
Total Phosphorus, mg/l		0.06	0.59	0.29	0.23	0.15	0.04
BOD, mg/l		3	3	4	4	2	2
BOD carb (Inh.), mg/l		2	1	2	2	1	<1
TOC (carbon, total organic) mg/l		6.2	6.9	7	7.1	5.5	3.6
Total Susp. Solids, mg/l		26	3	16	11	11	6
Fecal Coliform		3900	3700	2700	3500	1500	1100
T. Mercury, ug/l	0.5 ug/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T. Calcium, mg/l		29	31	31	31	40	56
T. Magnesium, mg/l		11	16	14	13	18	28
T. Sodium, mg/l		16	67	43	39	36	33
T. Potassium, mg/l		2.3	9.5	5.9	5.3	4.3	2.1
T. Aluminum, ug/l		440	110	270	190	170	<100
T. Barium, ug/l	5000 ug/l	58	13	34	35	94	210
T. Boron, ug/l	1000 ug/l	180	650	430	380	440	550
T. Beryllium, ug/l		<1	<1	<1	<1	<1	<1
T. Cadmium, ug/l	***	(11.5)<3	<3	(13.6)<3	(13.3)<3	(18.1)<3	(27.8)<3
T. Chromium, ug/l		<5	<5	<5	<5	<5	<5
T. Copper, ug/l	***	(20.4)<10	<10	(23.4)<10	(23.0)<10	(29.7)<10	(42.5)<10
T. Cobalt, ug/l		<10	<10	<10	<10	<10	<10
T. Iron, ug/l		620	53	290	200	200	100
T. Lead, ug/l	***	(98.6)<50	<50	(100)<50	(100)<50	(100)<50	(100)<50
T. Manganese, ug/l	1000 ug/l	39	<15	28	21	23	17
T. Nickel, ug/l	1000 ug/l	<25	<25	<25	<25	<25	<25
T. Silver, ug/l	5.0 ug/l	<3	<3	<3	<3	<3	<3
T. Strontium, ug/l		120	140	140	130	220	400
T. Vanadium, ug/l		<5	<5	<5	<5	<5	<5
T. Zinc, ug/l	1000 ug/l	<100	<100	<100	<100	<100	<100
** Hardness, mg/l		116	143	134	132	173	253

* State Water Quality Standard Violation
** Calculated value
*** Standards are hardness dependent; acute standards are enclosed in parenthesis.
(a) Total ammonia nitrogen shall not exceed 15.0 mg/L; Unionized ammonia shall not exceed 0.33 mg/l (acute). or 0.057 (chronic average) during summer months.
(b) Effluent standards apply to daily maximum concentrations.

Table 3. STORET generated summary of IEPA effluent monitoring data collected between August 20, 1993 and June 19, 1997 for the Urbana/Champaign SW STP.

INITIAL DATE				93/08/20	93/10/08	93/12/01	94/01/21	94/03/25	94/04/27	94/06/17	94/09/02	94/10/21
INITIAL TIME				1100	1100	1134	1030	1040	1415	1115	1030	1040
CP-SPACE OR TIME-STATISTICAL FUNC				CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
DEPTH-FT(SMK)				0	0	0	0	0	0	0	0	0
FINAL DATE(UMK)				93/08/20	93/10/08	93/12/01	94/01/21	94/03/25	94/04/27	94/06/17	94/09/02	94/10/21
FINAL TIME-NUMBER OF SAMPLES				1100 SC	1100 SC	1134 SC	1030 SC	1040 SC	1415 SC	1115 SC	1030 SC	1040 SC
PIPE				1	1	1	1	1	1	1	1	1
00403	PH	LAB	SU	8.2	8.4	8.4	7.7	8.3	8.4	8.2	8.1	8.0
00530	RESIDUE	TOT NFLT	MG/L	1	8	1	2	5	1	1	4	2
00610	NH3+NH4-	N TOTAL	MG/L	.010K	.070	.010K	.1.600	.260	.070	.030	.130	.340
00665	PHOS-TOT		MG/L P	.200	.290	.250	.440	.480	.260	.210	.570	.160
74041	WQF	SAMPLE	UPDATED	950420	950420	950420	950420	950420	950420	950420	950420	950420
80082	BOD 20C	5DAY CAR	MG/L	1.0K	2.0	1.0K	2.0	2.0	1.0K	1.0K	3.0	1.0K

INITIAL DATE				94/11/23	95/01/27	95/03/01	95/05/19	95/07/24	95/11/17	96/01/01	96/04/26	96/06/07
INITIAL TIME				1145	1025	1050	0935	1100	0935	1100	1135	1015
CP-SPACE OR TIME-STATISTICAL FUNC				CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
DEPTH-FT(SMK)				0	0	0	0	0	0	0	0	0
FINAL DATE(UMK)				94/11/23	95/01/27	95/03/01	95/05/19	95/07/24	95/11/17	96/01/01	96/04/26	96/06/07
FINAL TIME-NUMBER OF SAMPLES				1145 SC	1025 SC	1050 SC	0935 SC	1100 SC	0935 SC	1100 SC	1135 SC	1015 SC
PIPE				1	1	1	1	1	1	1	1	1
00403	PH	LAB	SU	8.4	8.3	8.0	8.1	8.1	8.2	8.3	8.3	8.4
00530	RESIDUE	TOT NFLT	MG/L	2	4	12	4	4	11	22	2	2
00610	NH3+NH4-	N TOTAL	MG/L	.070	.140	.420	.070	.240	.030	.160	.010K	.010K
00665	PHOS-TOT		MG/L P	.130	.890	.840	.160	.360	.390	.480	.350	.230
74041	WQF	SAMPLE	UPDATED	950420	950420	960208	960221	960221	960509	960717	960717	961029
80082	BOD 20C	5DAY CAR	MG/L	1.0	1.0	2.0	2.0	2.0	2.0	3.0	1.0	1.0

INITIAL DATE				96/07/26	96/09/06	96/10/18	96/11/08	96/12/18	96/12/18	97/01/31	97/01/31	97/03/24
INITIAL TIME				1015	0935	1015	1015	1500	1500	1100	1100	1045
CP-SPACE OR TIME-STATISTICAL FUNC				CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-	CP-V-
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
DEPTH-FT(SMK)				0	0	0	0	0	3	0	3	3
FINAL DATE(UMK)				96/07/26	96/09/06	96/10/18	96/11/08	96/12/18	96/12/18	97/01/31	97/01/31	97/03/24
FINAL TIME-NUMBER OF SAMPLES				1015 SC	0935 SC	1015 SC	1015 SC	1500 SC	1500 SC	1100 SC	1100 SC	1045 SC
PIPE				1	1	1	1	1	1	1	1	1
00403	PH	LAB	SU	8.3	7.9	8.4	8.4	8.2	8.2	8.3	8.3	8.3
00530	RESIDUE	TOT NFLT	MG/L	2	16	4	2	8	8	9	9	12
00610	NH3+NH4-	N TOTAL	MG/L	.010K	1.300	.040	.010	.340	.340	.040	.040	.130
00665	PHOS-TOT		MG/L P	.157	.270	.470	.380	.360	.360	.550	.550	.980
74041	WQF	SAMPLE	UPDATED	970314	970514	970514	970514	970715	971024	970715	971024	971024
80082	BOD 20C	5DAY CAR	MG/L	1.0	4.0	2.0	3.0	2.0	2.0	2.0	2.0	3.0

INITIAL DATE				97/06/19
INITIAL TIME				1210
CP-SPACE OR TIME-STATISTICAL FUNC				CP-V-
MEDIUM				WATER
DEPTH-FT(SMK)				0
FINAL DATE(UMK)				97/06/19
FINAL TIME-NUMBER OF SAMPLES				1210 SC
PIPE				1
00403	PH	LAB	SU	8.1
00530	RESIDUE	TOT NFLT	MG/L	8
00610	NH3+NH4-	N TOTAL	MG/L	.050
74041	WQF	SAMPLE	UPDATED	971024
80082	BOD 20C	5DAY CAR	MG/L	2.0

1STORET RETRIEVAL DATE 98/03/26

Table 4. Summary of habitat characteristics for streams in the vicinity of the Urbana/Champaign SW STP, August 12, 1997.
All values are field estimates.

Habitat Parameter	A1	C1	C2	C5	D2
Stream Width (ft) @ Q	16	20	20	25	12
Stream Depth (ft) @ Q	1	0.7	0.7	0.9	1.2
Pool (%)	0	0	5	0	0
Riffle (%)	5	0	20	0	0
Run (%)	95	100	75	100	100
Shading (%)	0	0	0	0	0
Silt/Mud (%)	0	0	0	0	0
Sand (%)	0	0	2	2	10
Fine Gravel (%)	20	20	10	25	20
Medium Gravel (%)	25	35	35	55	30
Coarse Gravel (%)	37	35	30	15	10
Small Cobble (%)	0	0	2	0	0
Large Cobble (%)	0	0	3	0	2
Boulder (%)	3	0	5	1	3
Bedrock (%)	0	0	0	0	0
Claypan (%)	0	0	5	0	0
Plant Detritus (%)	0	0	3	2	5
Vegetation (%)	15	10	5	0	20
Submerged Logs (%)	0	0	0	0	0
Other (%)	0	0	0	0	0

Table 5. Location of stations sampled during the Urbana/Champaign SW FRSS, 1997.

Station	Description
OZYA-CH-A1	Copper slough, approximately 100 yards upstream from the point of discharge; Champaign County; T19N, R8E, SW20; 40 05'05" / 88 19'44"
OZYA-CH-E1	Urbana/Champaign SW sewage treatment plant effluent; Champaign County; T19N, R8E, SW20; 40 05'02" / 88 19'57"
OZYA-CH-C1	Copper Slough, approximately 100 yards downstream from the point of discharge; Champaign County; T19N, R8E, SE19; 40 05'02" / 88 20'03"
OZYA-CH-C2	Copper Slough, approximately 0.28 mile downstream from the point of discharge; Champaign County; T19N, R8E, SE19; 40 05'02" / 88 20'16"
OZY-CH-C5	Kaskaskia Ditch, approximately 1.5 miles downstream from the point of discharge; Champaign County; T19N, R8E, SW30; 40 04'12" / 88 20'44"
OZY-CH-D2	Kaskaskia Ditch, aproximately 0.6 mile upstream from the confluence with Copper Slough; Champaign County; T19N, R8E, SW19; 40 05'02" / 88 20'53"

ILLINOIS IEPA - BOW - DWPC - MONITORING AND ASSESSMENT
FACILITY-RELATED STREAM SURVEY REPORT

A. **Facility:** Clinton STP **NPDES Permit:** 0023612 **Exp:** 09/30/00
County: Dewitt **Location:** Clinton, Ill. **Population:** 7,437
BOW Region: 4

Survey Date: 08/18/97 **Report Date:** 04/07/98 **Discharge ID:** EII 03901

Treatment Level: IMHOFF and activated sludge followed by rapid sand filtration

Disinfection Exemption Status: Year-Round **DAF/Max (mgd):** 1.68/4.20

Permitted CSO'S: Yes **Last Major Upgrade (year):** 1988

Operational condition of facility (from DWPC records, operator's comments, and/or observations):

Violations of permit limits over last year (from DRMRs and FOS monitoring): A summary of IEPA effluent monitoring data is included as Table 3.

Effluent bioassay data available? Yes X **No** _ **WBID:** ILEII01

B. **Receiving Stream:** Coon Creek **Basin/sub-basin:** Sangamon River / Salt Creek

USEPA stream Reach: 07130009 **Receiving Stream BSC/year:** C -1982

BSC Other/year: _ **Receiving Stream 7Q10:** 0 **Stream Order:** 3

Discharge of Receiving Stream downstream from WWTP outfall, during survey: 5.93 cfs at C1

Discharge of Facility at outfall: ~~0.89 mgd, as a monthly average for August, 1997.~~
(Facility flow meter X **or IEPA measurement** _**)**

Est. dilution ratio, during survey: _

Other Potential Sources of Impairment: CSO discharges, urban runoff and non-point sources.

Previous Surveys (years): FRSS (1975, 1979, 1981, 1985, 1989)
Data is also available for C3 from a 1997 intensive survey on the Salt Creek basin.

Findings of previous surveys: Macroinvertebrate data from the 1989 survey indicated moderate impairment to Coon Creek upstream from the STP and slight to moderate impairment to background sites on Ten Mile Creek. State general use water quality standards were exceeded for copper, dissolved oxygen, iron, and silver.

Figure 1. Location of stations sampled on Coon Creek in the vicinity of Clinton STP, 1997.

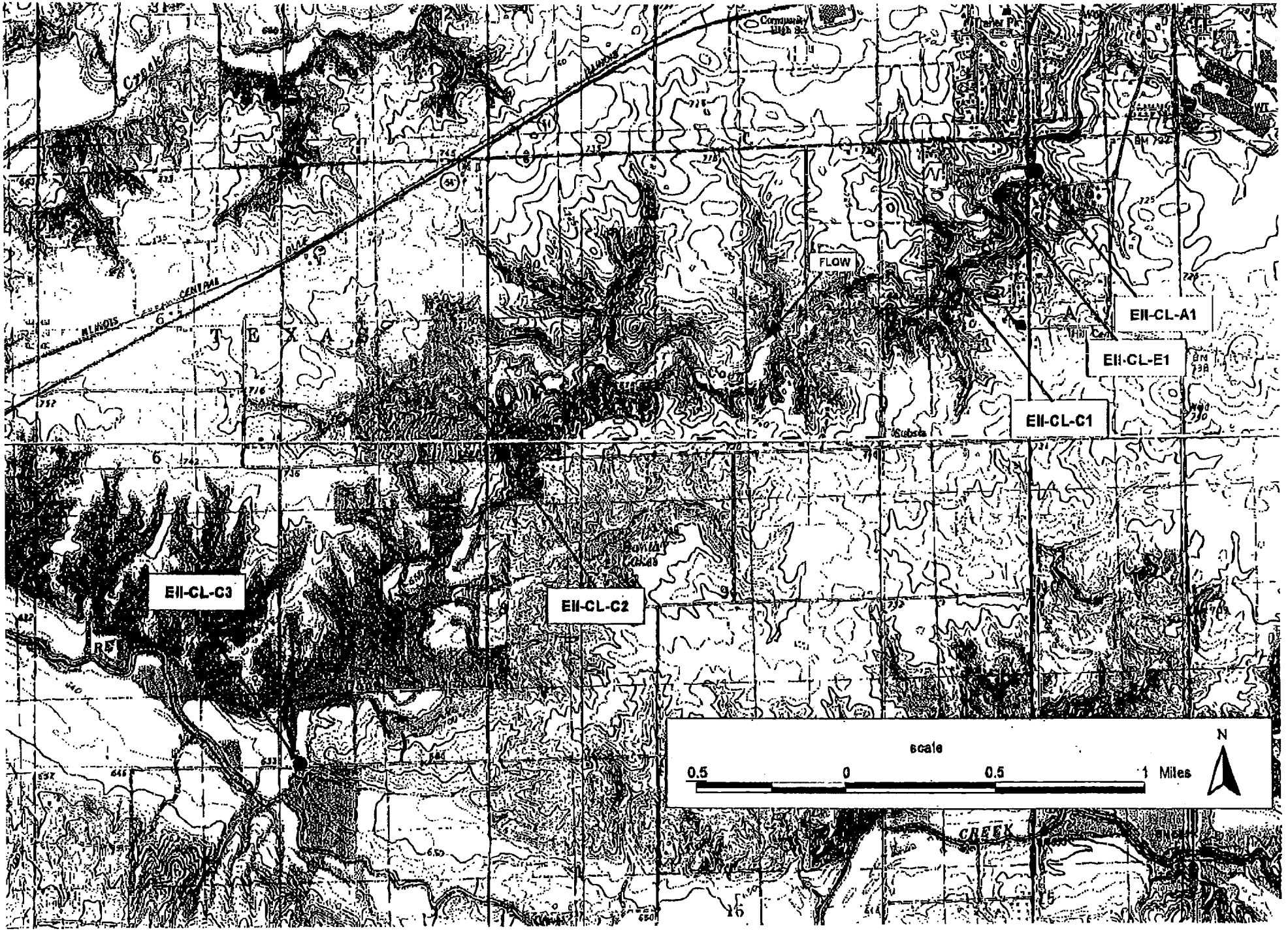

Table 2. Water chemistry results from samples collected during the Clinton FRSS, August 18, 1997.

	PARAMETER	GENERAL USE STANDARD	A1	E1	C1	C2	C3
	Field Water Temp., Deg. C.		20.2	21.3	20.8	20.9	21.3
	Field pH, units	6.5-9.0	7.5	7.3	7.5	7.9	8.0
	Field Dissolved Oxygen, mg/l	5.0 min	4.9 *	6.6	5.4	7.8	7.8
	Field Conductivity, umhos/cm		561	1267	886	770	692
	Ammonia Nitrogen, mg/l	15(a)	0.33	0.14	0.24	0.18	0.12
**	Unionized Ammonia, mg/l	0.33/0.057 (a)	0.004	0.001	0.003	0.006	0.005
	Nitrate + Nitrite, mg/l		2.1	6.5	3.7	3.7	3.3
	Total Phosphorus, mg/l		0.29	0.95	0.56	0.56	0.54
	BOD, mg/l		4	3	3	3	3
	BOD carb (Inh.), mg/l		2	<1	1	1	1
	TOC (carbon, total organic) mg/l		5.3	6.2	6.0	4.9	5.0
	Total Susp. Solids, mg/l		13	6	10	15	16
	Fecal Coliform, col/100ml		6200	8400	9100	6700	7200
	T. Mercury, ug/l	0.5 ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
	T. Calcium, mg/l		59	77	69	58	49
	T. Magnesium, mg/l		22	32	28	23	20
	T. Sodium, mg/l		27	150	81	73	68
	T. Potassium, mg/l		3.6	6.4	4.9	4.4	4.4
	T. Aluminum, ug/l		620	<100	660	840	760
	T. Barium, ug/l	5000 ug/l	120	190	160	120	100
	T. Boron, ug/l	1000 ug/l	150	480	300	270	220
	T. Beryllium, ug/l		<1	<1	<1	<1	<1
	T. Cadmium, ug/l	***	(26.0)<3	<3	(32.0)<3	(25.9)<3	(21.6)<3
	T. Chromium, ug/l		<5	<5	<5	<5	<5
	T. Copper, ug/l	***	(40.3)13	34	(47.9)22	(40.1)17	(34.7)14
	T. Cobalt, ug/l		<10	<10	<10	<10	<10
	T. Iron, ug/l		1300	66	1100	1200	1000
	T. Lead, ug/l	***	(100)<50	<50	(100)<50	(100)<50	(100)<50
	T. Manganese, ug/l	1000 ug/l	140	21	130	110	84
	T. Nickel, ug/l	1000 ug/l	<25	<25	<25	<25	<25
	T. Silver, ug/l	5.0 ug/l	<3	<3	<3	<3	<3
	T. Strontium, ug/l		130	230	190	160	150
	T. Vanadium, ug/l		<5	<5	<5	<5	<5
	T. Zinc, ug/l	1000 ug/l	<100	380	140	<100	<100
**	Hardness, mg/l		239	322	287	238	204

* State Water Quality Standard Violation

** Calculated value

*** Standards are hardness dependent; acute standards are enclosed in parenthesis.

(a) Total ammonia nitrogen shall not exceed 15.0 mg/L; Unionized ammonia shall not exceed 0.33 mg/l (acute) or 0.057 (chronic average) during summer months.

Table 4. Summary of habitat characteristics for stations sampled during the Clinton FRSS, August 18, 1997.

Habitat Parameter	A1	C1	C2	C3
* Stream Width (ft) @ Q	10	14	-	-
* Stream Depth (ft) @ Q	0.79	0.71	-	-
* Mean Velocity (ft/s) @ Q	0.35	0.6	-	-
* Discharge (cfs) @ Q	2.64	5.93	-	-
Pool (%)	0	50	25	5
Riffle (%)	20	25	0	5
Run (%)	80	25	75	80
Shading (%)	80	20	75	30
Silt/Mud (%)	2	2	10	0
Sand (%)	10	30	80	25
Fine Gravel (%)	5	13	5	40
Medium Gravel (%)	4	10	2	20
Coarse Gravel (%)	5	12	0	5
Small Cobble (%)	0	0	0	0
Large Cobble (%)	0	10	0	0
Boulder (%)	0	20	0	0
Bedrock (%)	0	0	0	0
Claypan (%)	0	0	0	3
Plant Detritus (%)	0	0	0	5
Vegetation (%)	1	0	0	2
Submerged Logs (%)	2	3	3	0
Other (%) Cement debris	60	0	0	0

* Denotes measured parameters; all others are estimates.

STATE OF ILLINOIS)
) SS
COUNTY OF SANGAMON)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached **AGENCY'S COMMENTS** upon the person to whom it is directed, by placing a copy in an envelope addressed to:

Dorothy Gunn, Clerk
Pollution Control Board
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601

(FIRST CLASS MAIL)

Marie E. Tipsord
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

(FIRST CLASS MAIL)

Mathew Dunn
Illinois Attorney General's Office
Environmental Control Division
James R. Thompson Center
100 West Randolph Street
Chicago, Illinois 60601

(FIRST CLASS MAIL)

Legal Service
Illinois Department of Natural Resources
524 South Second Street
Springfield, Illinois 62701-1787

(FIRST CLASS MAIL)

Attached Service List
(FIRST CLASS MAIL)

and mailing it from Springfield, Illinois on April 15, 2002, with sufficient postage affixed as indicated above.

Nancy J. Tampert

SUBSCRIBED AND SWORN TO BEFORE ME

this day of April 15, 2002.

OFFICIAL SEAL
BRENDA BOEHNER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11-14-2005

Brenda Boehner
Notary Public

THIS FILING PRINTED ON RECYCLED PAPER

21:DLC:BOW:NL for SS

Mike Callahan
Bloomington Normal Water Reclamation District
Post Office Box 3307
Bloomington, Illinois 61702-3307

21:DLC:BOW:NL for SS

Larry Cox
Downer's Grove Sanitary District
2710 Curtiss Street
Downer's Grove, Illinois 60515

21:DLC:BOW:NL for SS

Dennis Daffield
Department of Public Works City of Joliet
921 East Washington Street
Joliet, Illinois 60433

21:DLC:BOW:NL for SS

Matthew Dunn
Chief, Environmental Bureau
Office of the Attorney General
188 West Randolph Street, 20th Floor
Chicago, Illinois 60601-3218

21:DLC:BOW:NL for SS

Albert Ettinger
Environmental Law and Policy Center
35 East Wacker Drive, Suite 1300
Chicago, Illinois 60601-2110

21:DLC:BOW:NL for SS

Lisa Frede
Chemical Industry Council
9801 West Higgins Road, Suite 515
Rosemont, Illinois 60018

21:DLC:BOW:NL for SS

Dorothy Gunn
Clerk
Illinois Pollution Control Board
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

21:DLC:BOW:NL for SS

James T. Harrington
Ross & Hardies
150 North Michigan, Suite 2500
Chicago, Illinois 60601

21:DLC:BOW:NL for SS

Ron Hill
Metropolitan Water Reclamation District of Chicago
6001 West Pershing Road
Cicero, Illinois 60804-4112

21:DLC:BOW:NL for SS

Katherine Hodge
Hodge, Dwyer and Zeman
3150 Roland Avenue, Post Office Box 5776
Springfield, Illinois 62705-5776

21:DLC:BOW:NL for SS

Margaret Howard
Hedinger and Howard
1225 South Sixth Street
Springfield, Illinois 62703

21:DLC:BOW:NL for SS

Robert Lawley
Chief Legal Counsel
Illinois Department of Natural Resources
524 South Second Street
Springfield, Illinois 62701

21:DLC:BOW:NL for SS

Robert Messina
Illinois Enviornmental Regulatory Group
215 East Adams Street
Springfield, Illinois 62701

21:DLC:BOW:NL for SS

Tom Muth
Fox Metro Water Reclamation District
682 State Route 31
Oswego, Illinois 60543

21:DLC:BOW:NL for SS

Irwin Polls
Metropolitan Water Reclamation District of Chicago
6001 West Pershing Road
Cicero, Illinois 60804-4112

21:DLC:BOW:NL for SS

Marie Tipsord
Hearing Officer
Illinois Pollution Control Board
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601