LTV Steel Company

LTV

MAJ. #2 - D.R.

EPA Region 5 Records Ctr.
307709

March 18, 1987

Mr. Dan Ray
Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62794-9276

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Re: LTV Steel Company
Chicago Works
Best Management Practice Report
NPDES Permit IL0002593
Special Condition 3

In accordance with Special Condition 3 of NPDES Permit IL0002593, the enclosed Best Management Practice report is hereby submitted. LTV Steel conducted a characterization survey to minimize to the maximum extent practical, the discharge of cokemaking and ironmaking process wastewaters to outfall 004. The survey was followed by a twelve week effluent monitoring program as required by NPDES Permit IL0002593. The twelve week monitoring program was conducted from September, 1985 to December, 1985.

The blast furnace/ironmaking operations were idled at the Chicago Works as of October, 1986. A supplemental three week monitoring program was conducted during November, 1986.

The characterization survey was carried out for six months prior to the twelve week effluent monitoring program. Two potential sources of process wastewater were identified. The first source was in the area of the ammonium sulfate plant. Leakage of process wastewater identified in the ammonia sulfate area was eliminated by process modifications.

The second source of process wastewater identified was found to be originating from a deteriorated concrete flow diversion structure. A concrete plug used to separate process wastewater from non-contact cooling water had deteriorated allowing process wastewater to co-mingle with non-contact cooling water. The concrete plug was repaired with grout to eliminate the co-mingling. A second plug of the inflatable type was also inserted to provide additional flow diversion capabilities.

Raw analytical results of the twelve week effluent monitoring program and the three week supplemental monitoring program are listed in Table I. Average gross concentrations of the effluent and intake are provided in Table II. Individual daily net concentrations of the effluent are listed in Table III. Average net concentrations of the effluent are provided in Table IV.

Individual daily gross and net mass loadings of the effluent are listed in Table V. Average gross and net mass loadings of the effluent are provided in Table VI. Mass loadings are calculated on the basis of a 35 MGD flowrate. Parameters examined in the sampling program were total suspended solids, ammonia, total cyanide and phenols.

The following table summarizes the average net concentrations and average net mass loadings of the entire fifteen weeks of monitoring results at outfall 004.

	BMP Monitoring Program Average Net Results - 15 Wks.	
	Concentration (mg/l)	Loading (lbs/d)
Total Suspended Solids	1.038	303.3
Cyanide-Total	0.026	7.5
Phenol	0.006	1.7
Ammonia-N	0.251	73.2

I trust that this information fulfills the requirements of the BMP provision in the above listed NPDES permit, but please contact me at (216)429-6542 if you have any questions or require any additional information.

Rick Zavoda

R. M. Zavoda
Environmental Management Engineer

RMZ/dh
1254b
Enclosure
cc: Mr. G. Amendola, U.S. EPA
25089 Center Ridge Road
Westlake, Ohio 44145

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TABLE I
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

GROSS CONCENTRATIONS - OUTFALL AND INTAKE
GC = GROSS CONC (MG/L) IN = INTAKE CONC (MG/L)

DATE	TSS GC	CYANIDE GC	PHENOL GC	AMMONIA GC	TSS IN	CYANIDE IN	PHENOL IN	AMMONIA IN
09/19/85	5	0.003	0.014	1.60				
09/19/85	5	0.003	0.002	1.30				
09/21/85	5	0.008	0.015	6.00				
09/24/85	5	0.022	0.018	13.00				
09/25/85	6	0.013	0.012	2.70				
09/26/85	5	0.015	0.010	2.60				
10/01/85	6	0.020	0.014	5.90				
10/02/85	5	0.016	0.008	2.90				
10/03/85	14	0.026	0.006	2.30				
10/10/85	5	0.027	0.003	2.50				
10/11/85	5	0.025	0.008	1.00				
10/12/85	5	0.020	0.109	1.00				
10/14/85	5	0.016	0.021	3.40				
10/15/85	5	0.015	0.024	2.60				
10/16/85	5	0.017	0.013	1.80				
10/22/85	5	0.029	0.013	2.80				
10/23/85	5	0.027	0.005	2.20				
10/24/85	5	0.007	0.257	5.90				
10/31/85	7	0.007	0.045	2.90	22	0.003	0.019	2.00
11/01/85	5	0.005	0.036	1.30	15	0.002	0.034	2.10
11/02/85	6	0.004	0.180	1.70	8	0.003	0.220	3.00
11/04/85	5	0.005	0.012	1.00	5	0.003	0.007	1.00
11/05/85	5	0.004	0.013	1.00	5	0.003	0.008	1.70

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TABLE I
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

GROSS CONCENTRATIONS - OUTFALL AND INTAKE
GC = GROSS CONC (MG/L) IN = INTAKE CONC (MG/L)

DATE	TSS GC	CYANIDE GC	PHENOL GC	AMMONIA GC	TSS IN	CYANIDE IN	PHENOL IN	AMMONIA IN
11/06/85	8	0.006	0.012	3.80	5	0.003	0.007	1.00
11/11/85	9	3.420	0.054	1.00	6	0.842	0.006	1.50
11/12/85	5	0.031	0.006	1.00	5	2.090	0.007	1.00
11/13/85	5	0.090	0.002	1.00	5	0.011	0.009	1.00
11/19/85	5	0.014	0.005	2.60	5	0.010	0.003	1.50
11/20/85	5	0.031	0.003	1.00	5	0.010	0.003	1.70
11/25/85	7	0.014	0.040	1.00	5	0.009	0.002	1.00
11/27/85	5	0.013	0.045	1.00	5	0.012	0.003	1.00
11/28/85	5	0.016	0.007	1.00	5	0.085	0.004	1.00
12/04/85	5	0.126	0.003	1.00	5	0.024	0.002	1.00
11/08/86	17	0.004	0.004	2.00	5	0.006	0.005	1.60
11/09/86	13	0.006	0.006	3.44	5	0.009	0.003	2.45
11/10/86	6	0.003	0.022	4.25	5	0.003	0.006	3.40
11/11/86	9	0.008	0.007	1.62	5	0.005	0.007	1.62
11/12/86	23	0.003	0.004	1.29	5	0.008	0.004	1.30
11/13/86	12	0.003	0.003	1.84	5	0.005	0.003	1.65
11/21/86	5	0.005	0.005	2.70	5	0.004	0.003	2.60
11/22/86	5	0.009	0.006	3.30	5	0.005	0.009	1.20
11/23/86	5	0.007	0.007	2.00	5	0.005	0.005	1.20
11/24/86	5	0.004	0.004	1.30	7	0.005	0.003	1.00
11/26/86	6	0.004	0.007	1.00	8	0.006	0.008	1.00

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TABLE II
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

AVERAGE GROSS CONCENTRATIONS - OUTFALL AND INTAKE
GC = GROSS CONC (MG/L) IN = INTAKE CONC (MG/L)

VARIABLE	LABEL	N	MEAN	STANDARD DEVIATION
TSS	TSS GC	44	6.682	3.709
CN	CYANIDE GC	44	0.094	0.514
PHEN	PHENOL GC	44	0.025	0.048
NH3	AMMONIA GC	44	2.467	2.113
TSSIN	TSS IN	26	6.385	3.806
CNIN	CYANIDE IN	26	0.122	0.434
PHENIN	PHENOL IN	26	0.015	0.042
NH3IN	AMMONIA IN	26	1.558	0.674

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TABLE III
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

NET CONCENTRATIONS
NC = NET CONC (MG/L)

DATE	TSS NC	CYANIDE NC	PHENOL NC	AMMONIA NC
09/19/85				
09/19/85				
09/21/85				
09/24/85				
09/25/85				
09/26/85				
10/01/85				
10/02/85				
10/03/85				
10/10/85				
10/11/85				
10/12/85				
10/14/85				
10/15/85				
10/16/85				
10/22/85				
10/23/85				
10/24/85				
10/31/85	-15	0.004	0.026	0.90
11/01/85	-10	0.003	0.002	-0.80
11/02/85	-2	0.001	-0.040	-1.30
11/04/85	0	0.002	0.005	0.00
11/05/85	0	0.001	0.005	-0.70
11/06/85	3	0.003	0.005	2.80

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TABLE III
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CHICAGO WORKS - OUTFALL 004
BMP RESULTS

NET CONCENTRATIONS
NC = NET CONC (MG/L)

DATE	TSS NC	CYANIDE NC	PHENOL NC	AMMONIA NC
11/11/85	3	2.578	0.048	-0.50
11/12/85	0	-2.059	-0.001	0.00
11/13/85	0	0.079	-0.007	0.00
11/19/85	0	0.004	0.002	1.10
11/20/85	0	0.021	0.000	-0.70
11/25/85	2	0.005	0.038	0.00
11/27/85	0	0.001	0.042	0.00
11/28/85	0	-0.069	0.003	0.00
12/04/85	0	0.102	0.001	0.00
11/08/86	12	-0.002	-0.001	0.40
11/09/86	8	-0.003	0.003	0.99
11/10/86	1	0.000	0.016	0.85
11/11/86	4	0.003	0.000	0.00
11/12/86	18	-0.005	0.000	-0.01
11/13/86	7	-0.002	0.000	0.19
11/21/86	0	0.001	0.002	0.10
11/22/86	0	0.004	-0.003	2.10
11/23/86	0	0.002	0.002	0.80
11/24/86	-2	-0.001	0.001	0.30
11/26/86	-2	-0.002	-0.001	0.00

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TABEL IV
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

AVERAGE NET CONCENTRATIONS
NC = NET CONC (MG/L)

VARIABLE	LABEL	N	MEAN	STANDARD DEVIATION
TSSNC	TSS NC	26	1.038	6.096
CNNC	CYANIDE NC	26	0.026	0.660
PHENNC	PHENOL NC	26	0.006	0.017
NH3NC	AMMONIA NC	26	0.251	0.868

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TABLE V
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

GROSS AND NET LOADS
GL = GROSS LOADS (LBS/D) NL = NET LOADS (LBS/D)

DATE	TSS GL	CYANIDE GL	PHENOL GL	AMMONIA GL	TSS NL	CYANIDE NL	PHENOL NL	AMMONIA NL
)9/19/85	1460	0.88	4.09	467				
)9/19/85	1460	0.88	0.58	380				
)9/21/85	1460	2.34	4.38	1752				
)9/24/85	1460	6.42	5.26	3797				
)9/25/85	1752	3.80	3.50	789				
)9/26/85	1460	4.38	2.92	759				
10/01/85	1752	5.84	4.09	1723				
10/02/85	1460	4.67	2.34	847				
10/03/85	4089	7.59	1.75	672				
10/10/85	1460	7.89	0.88	730				
10/11/85	1460	7.30	2.34	292				
10/12/85	1460	5.84	31.83	292				
10/14/85	1460	4.67	6.13	993				
10/15/85	1460	4.38	7.01	759				
10/16/85	1460	4.96	3.80	526				
10/22/85	1460	8.47	3.80	818				
10/23/85	1460	7.89	1.46	642				
10/24/85	1460	2.04	75.05	1723				
10/31/85	2044	2.04	13.14	847	-4381	1.17	7.59	263
11/01/85	1460	1.46	10.51	380	-2920	0.88	0.58	-234
11/02/85	1752	1.17	52.57	496	-584	0.29	-11.68	-380
11/04/85	1460	1.46	3.50	292	0	0.58	1.46	0
11/05/85	1460	1.17	3.80	292	0	0.29	1.46	-204
·06/85	2336	1.75	3.50	1110	876	0.88	1.46	818

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TABLE V
LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

GROSS AND NET LOADS
GL = GROSS LOADS (LBS/D) NL = NET LOADS (LBS/D)

TSS GL	CYANIDE GL	PHENOL GL	AMMONIA GL	TSS NL	CYANIDE NL	PHENOL NL	AMMONIA NL
2628	998.78	15.77	292	876	752.88	14.02	-146
1460	9.05	1.75	292	0	-601.31	-0.29	0
1460	26.28	0.58	292	0	23.07	-2.04	0
1460	4.09	1.46	759	0	1.17	0.58	321
1460	9.05	0.88	292	0	6.13	0.00	-204
2044	4.09	11.68	292	584	1.46	11.10	0
1460	3.80	13.14	292	0	0.29	12.27	0
1460	4.67	2.04	292	0	-20.15	0.88	0
1460	36.80	0.88	292	0	29.79	0.29	0
4965	1.17	1.17	584	3504	-0.58	-0.29	117
3797	1.75	1.75	1005	2336	-0.88	0.88	289
1752	0.88	6.42	1241	292	0.00	4.67	248
2628	2.34	2.04	473	1168	0.88	0.00	0
6717	0.88	1.17	377	5257	-1.46	0.00	-3
3504	0.88	0.88	537	2044	-0.58	0.00	55
1460	1.46	1.46	789	0	0.29	0.58	29
1460	2.63	1.75	964	0	1.17	-0.88	613
1460	2.04	2.04	584	0	0.58	0.58	234
1460	1.17	1.17	380	-584	-0.29	0.29	88
1752	1.17	2.04	292	-584	-0.58	-0.29	0

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LTV STEEL COMPANY
CHICAGO WORKS - OUTFALL 004
BMP RESULTS

AVERAGE GROSS AND NET LOADS
GL = GROSS LOADS (LBS/D) NL = NET LOADS (LBS/D)

VARIABLE	LABEL	N	MEAN	STANDARD DEVIATION
TSSGL	TSS GL	44	1951.36	1083.18
CNGL	CYANIDE GL	44	27.55	149.96
PHENGL	PHENOL GL	44	7.23	13.89
NH3GL	AMMONIA GL	44	720.41	617.09
TSSNL	TSS NL	26	303.27	1780.21
CNNL	CYANIDE NL	26	7.54	192.75
PHENNL	PHENOL NL	26	1.66	5.02
NH3NL	AMMONIA NL	26	73.23	253.48

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