

Biological Assessment of

Hollywood Wastewater Treatment Plant

Broward County

NPDES #FL0026255

Sampled 7 May 1991

September 1991

Biology Section
Division of Technical Services

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger: Hollywood Wastewater Treatment Plant
County: Broward
NPDES Number: FL0026255
State Permit Expiration Date:

Toxics Sampling Inspection (XSI)	
Date Sampled:	7 May 1991
Results:	Aluminum (70 µg/L), Copper (43 µg/L), Iron (291 µg/L), Mercury (< 0.2 µg/L), Zinc (37 µg/L), and tentatively Gamma-BHC (< 0.02 µg/L). The level of copper detected violates Class III standards for marine waters (FAC 17-302-560). Mercury and Gamma-BHC (Lindane) were equivocally present in the effluent, but detection limits were not as low as ambient criteria. No other organic priority pollutants present above detection limits.

Compliance Biomonitoring Inspection (CBI)	
Date Sampled:	7 May 1991
Results:	Not toxic to *Notropis leedsi* or *Pimephales promelas*.

Impact Bioassessment Inspection (IBI)	
Date Sampled:	Not Sampled
Results:	

Water Quality Inspection (WQI)	
Date Sampled:	7 May 1991
Results:	Nutrient content of effluent fairly high. NH_3 (2.22 mg N/L), NO_2NO_3 (1.0 mg N/L), TKN (3.0 mg N/L), and Total P (6.3 mg P/L). Algal growth potential was elevated, 114 mg dry wt/L. Extensive dilution in the Atlantic Ocean may reduce eutrophication potential.

These fifth year inspections provide the necessary information to evaluate the facility's impact on its receiving waters and to provide the basis for specific condition recommendations for permit renewal.

Introduction

The Hollywood Wastewater Treatment Plant, located in Broward County, has a design flow capacity of 38 MGD and an average flow of 31.8 MGD. Treatment consists of screening, grit removal, secondary biological treatment using oxygen activated sludge, secondary clarification, and chlorination. Sludge is treated by pre-thickening, centrifugation, wet-air oxidation, and final de-watering centrifugation, with land disposal of sludge cake. Effluent is discharged to the Atlantic Ocean, approximately 10,000 ft from shore in 90 ft of water (see map in Appendix).

In April, 1987, the Biology Section performed six static acute toxicity bioassays using *Ceriodaphnia dubia, Daphnia pulex,* and *Notropis leedsi* as test organisms. Both the chlorinated and de-chlorinated samples were toxic to *C. dubia*, but no mortality occurred in the *D. pulex* test. The *N. leedsi* bioassays were invalidated due to excessive control mortality (FDER 1987).

Methods

The focus of this investigation was to determine the quality of the discharger's effluent. Acute screening toxicity bioassays, using *Ceriodaphnia dubia, Pimephales promelas*, and *Notropis leedsi* as test organisms, were performed on an effluent sample (Peltier and Weber 1985, FDER 1985). The effluent was analyzed for organic constituents (base neutrals, acid extractables, and pesticide extractables) and metals. Methods used for all chemical analyses are on file at the Tallahassee DER Chemistry Laboratory.

Algal Growth Potential was determined for the effluent using *Dunaliella tertiolecta* as the test organism, following EPA (1974).

The following personnel were involved in this investigation: Tom White (DER Southeast District) and Lyn Burton, Russel Frydenborg, Kathleen Lurding, and Sandy McClure (Tallahassee Biology Laboratory).

Results and Discussion

No mortality occurred in 48 hour toxicity tests performed on *Pimephales promelas* and *Notropis leedsi.* The fish did show some signs of stress, such as gasping at the surface of the water, which could have been due to the sample salinity (about 3.5 ppt) (Appendix). Bioassays of *Ceriodaphnia dubia* were invalidated because of sample salinity.

Metals analysis of the effluent sample yielded the following results: aluminum (70 µg/L), copper (43 µg/L), iron (291 µg/L), mercury (< 0.2 µg/L), and zinc (37 µg/L) (Appendix). The concentration of copper is in excess of Class III standards (15 µg/L) for marine waters, and the iron level is just slightly below the allowed concentration of 300 µg/L. It is possible that mercury levels could have been above ambient standards (0.1 µg/L), but the detection limit (0.2 µg/L) did not allow for sufficient resolution.

Chlorinated pesticide analysis (Appendix) resulted in the possible detection of Gamma-BHC (lindane) at a concentration of < 0.02 µg/L. While the concentration of lindane in this sample was below acutely toxic levels (AQUIRE 1991), the ambient standard for lindane in Class III marine waters is 0.004 µg/l. Further monitoring for Gamma-BHC at lower detection levels appears warranted. No other organic priority pollutants were found above detection limits.

The nutrient content of the effluent was determined; results were NH_3 (2.22 mg N/L), NO_2NO_3 (1.0 mg N/L), TKN (3.0 mg N/L), and Total P (6.3 mg P/L) (Appendix). While these concentrations are not unusual for a sewage treatment plant discharge, the input of nutrients at this level, particularly phosphorus, can cause enrichment problems (e.g., algal blooms) in poorly flushed surface waters. Because of the extensive amount of dilution in this case, the negative consequences of nutrient excess may not be realized. This and other issues are currently being investigated by the Southeast Florida Outfall Experiment (SEFLOE). Algal growth potential was very high in the effluent (114 mg dry wt/L), as would be expected from the nutrient concentrations.

Conclusions

The discharge sample collected from the Hollywood Wastewater

Treatment Plant was not toxic to the fish, *Notropis leedsi* and *Pimephales promelas*. However, these organisms were clearly stressed (gasping at the surface) during the 48 hour test. A complicating factor in these tests was the salinity of the effluent (about 3.5 ppt), which may have caused the observed behavioral response.

Some potentially harmful substances were present or were tentatively measured in the sample. Copper levels violated ambient standards, and the concentration of iron was measured slightly below the legal limit. Mercury was determined at less than the detection limit (0.2 µg/L), but the Class III standard for marine waters is 0.1 µg/L. Similarly, the pesticide lindane (Gamma-BHC) was tentatively identified at < 0.02 µg/L, and the ambient standard is 0.004 µg/L. Further monitoring of these priority pollutants appears warranted.

Literature Cited

Aquatic Toxicity Information Retrieval Data Base (AQUIRE). 1991. U.S. EPA Environmental Research Laboratory, Duluth, Mn.

Environmental Protection Agency. 1974. Marine algal assay procedure: Bottle test. Nat'l Environ. Res. Center, Office of Res. and Dev., U.S. EPA, Corvallis, Oregon. 43 p.

Florida Department of Environmental Regulation. 1985. Quality assurance manual for performing acute toxicity tests. 2nd edition. Fla. Dept. Environmental Regulation, Biology Section, Tallahassee. 53 pp.

_____. 1987. Bioassays of Hollywood sewage treatment plant, Hollywood, Broward County, Florida. Biology Section, Div. Env. Prog. 17 p.

Peltier, W. H. and C. I. Weber. 1985. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 3rd edition. EPA/600/4-85/013. U. S. EPA, Cincinnati, Ohio. 216 pp.

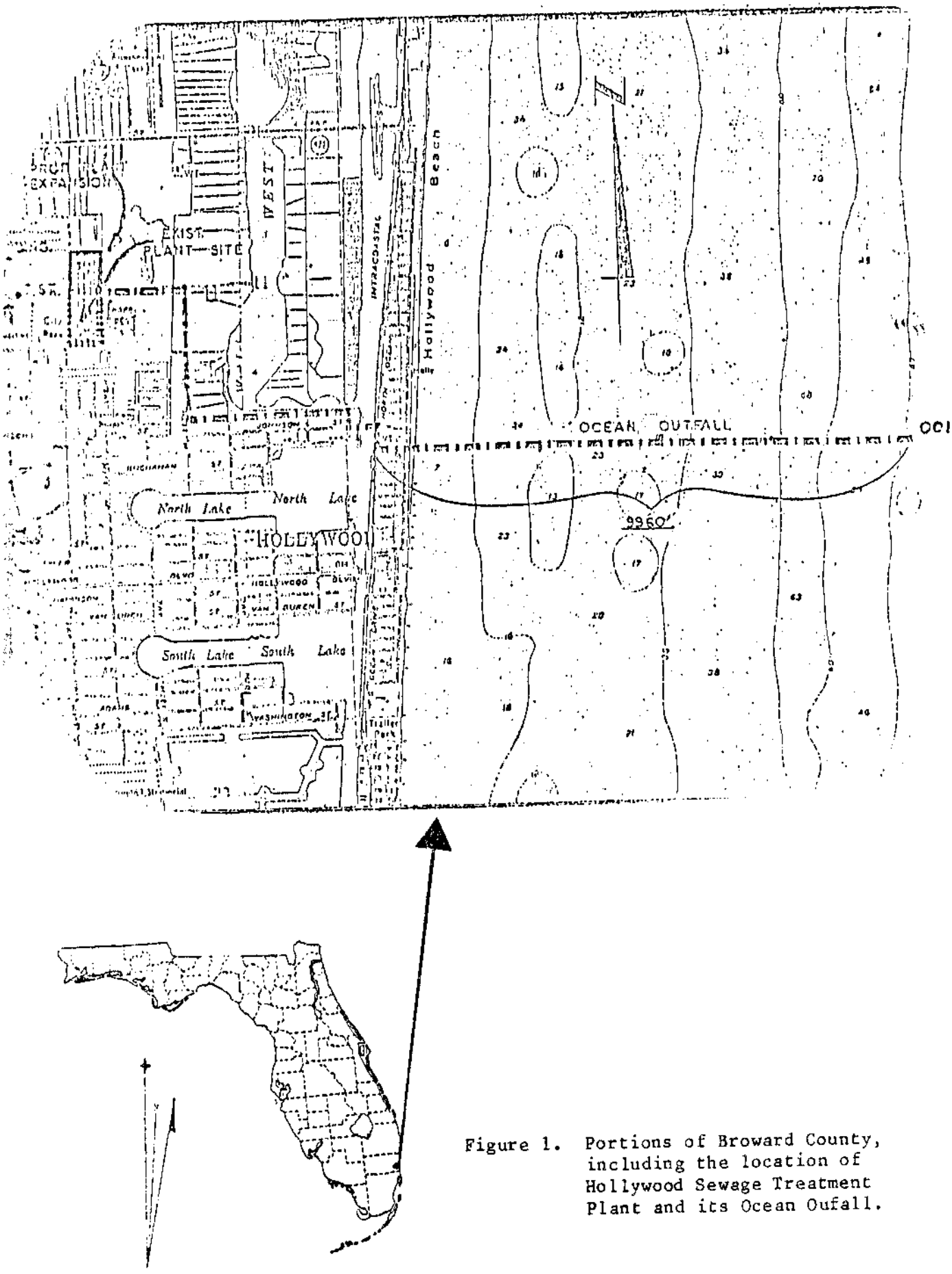


Figure 1. Portions of Broward County, including the location of Hollywood Sewage Treatment Plant and its Ocean Oufall.

DER Biology Section — Acute Bioassay Definitive Data

Sample Source: Hallyard STP
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 5/3/91 Time
Test Beginning: Date 5/8/91 Time 1130
Test Ending: Date 5-9-91 Time 1315
Test Organism: Cyprinodon variegatus
Life Stage/Age: 24 hours

Test Number: 5/6 of 6 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: suspect salinity as cause of death

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.7-9.9	8.8 @ 22°C	1390 @ 46	22 @ 24.5
24 hr	7.7-9.9	8.8 @ 22°	1393 @ 42	21.8 @ 22/5
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control		5	5		8.4	8.4		8.0	8.3		21.3	21.2		192	200	
Control		5	5													
Control		5	5													
Control		5	5					8.0								
10%		5	0		7.6	8.2		8.1	8.4		20.2	21.1		4940	5240	
10%		5	0													
10%		5	0													
10%		5	0													
10%		5	0		7.4	8.2		8.1	8.4		19.8	21.3		5220	5770	
10%		5	0													
10%		5	0													
10%		5	0													
Measured/Loaded by:		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by		PL	MF	KP	CC	KP	KP	CC	KP	KP	MF	KP	KP	CC	KP	KP

Investigators' Signatures

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:			21/2.0	Hach/Ats	MF
Alkalinity:					
Hardness:					
Total Ammonia:					

Invalidated — salinity to high for test organism

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Hollywood STP
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 5/24/11 Time
Test Begin Date 5/25/11 Time 1000
Test Ending Date 5/27/11 Time 1000
Technician:
Life Stage/Age: 12 days

Test Number: 3/4 of 6 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: declared fish at surface gasping — lots of suspended matter.

In-Moment Calibrations:

	DO	Cond.	Temp.
0 hr	7.2, 9.9	8.8 @ 22°C	1390 @ 24.6	22 @ 24.5°C
24 hr	7.2, 9.9	8.8 @ 22°C	1393 @ 24.2	23.8 @ 24.1°C
48 hr	7.2, 9.9	8.8 @ 22°C	1383 @ 24.2	23.8 @ 25.8°C

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	47	5	5	5	8.4	8.4	8.4	7.8	8.3	8.5		21.2	20.8			
Control	68	5	5	5	8.4	8.4	8.4	7.8	8.3	8.5				242	245	247
100%	18	5	5	5	7.9	7.7	7.8	6.7	7.6	8.1	19.7	21.2	20.8			
dead 100%	47	5	5	5	7.9	7.7	7.8	6.7	7.7	8.1				5520	5644	5650
100%	28	5	5	5	8.0	7.8	7.9	6.7	7.7	8.1	21.7	21.3	20.1			
dead 100%	61	5	5	5	8.0	7.8	7.9	6.7	7.8	8.1				5620	5690	5700
Measured/Loaded by:		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	MF	MF	MF	KP	KP	MF	KP	KP	MF	KP	KP	MF	KP	KP

Investigators' Signatures

Marshall Faircloth

Kim Pearce

Water-quality Parameters

	Well Water	Grand Water	Sample	Method	Measured by
Field Tot. Resid. Cl:					
Lab Tot. Resid. Cl:			0.1	Hach	MF
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Hollywood STP
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 5/7/91 Time
Test Beginning: Date 5/8/91 Time 10:20
Test Ending: Date 5/9/91 Time 9:00
Test Organism: C. dubia
Life Stage/Age: 24 hrs

Test Number: 1 of 2 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: Add-on for Enforcement purposes. Lots of suspended matter in sample

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.7, 7.9	8.8 @ 22°C	1376 @ 24.5°C	22.2 @ 24.7°
24 hr	7.7, 7.9	8.8 @ 22°C	1293 @ 24.2	21.8° @ 24.1°C
48 hr	7.7, 7.7	8.8 @ 22°C	1338 @ 24°C	23.3 @ 25.8°

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	4	5	5	5	8.4	7.2	7.1	7.8	8.1	8.0	21.0	21.3	21.0	2420		
Control	23	5	5	5	8.4	7.2	7.2	7.8	8.1	8.0				2412	2491	2564
DI 12%	6	5	5	5	7.7	6.0	6.4	6.7	7.8	8.1	19.5	21.2	21.0			
DI 12%	21	5	5	5	7.7	6.0	6.4	6.7	7.8	8.1				5545	5690	5700
100%	1	5	5	5	7.8	6.4	6.9	6.7	8.0	8.2	19.4	21.2	20.8			
100%	42	5	5	5	7.8	5.5	6.2	6.7	8.0	8.1				5750	5690	5700

Measured/Loaded by: MF MF MF MF MF MF MF MF MF MF MF MF MF MF MF
Recorded by: MF MF MF MF KP KP MF KP KP MF KP KP KP KP

Investigators' Signatures

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:			0.1/ice	HACH DR-2	MF
Alkalinity:					
Hardness:					
Total Ammonia:					

Ammonia meter slope:

18536/91-MAY-08-05-01 Continued from Page 2

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 7-JUN-1991 By: Kate Brackett
Authorized: 9-JUL-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	70	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	NR	ug/L
01007	Barium	NR	ug/L
01012	Beryllium	NR	ug/L
01027	Cadmium	NR	ug/L
00916	Calcium	NR	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	NR	ug/L
01042	Copper	43	ug/L
01045	Iron	291 A	ug/L
01051	Lead	15 U	ug/L
00927	Magnesium	NR	mg/L
01055	Manganese	NR	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	NR	mg/L
01147	Selenium	NR	ug/L
01077	Silver	NR	ug/L
00929	Sodium	NR	mg/L
01082	Strontium	NR	ug/L
01059	Thallium	NR	ug/L
01087	Vanadium	NR	ug/L
01092	Zinc	37 J	ug/L
Comment	NONE		

Sample ID: 18559/91-MAY-08-11-01 Matrix: W-EFFLUENT
Location: Hollywood WWTP
Field ID: 51-5108
Collected: 7-MAY-1991 13:00 By:
Authorized: 6-JUN-1991 By: Liang T. Lin
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-PEST-CL
Chlorinated pesticide in water and waste
Analyzed: 14-MAY-1991 By: Adrian Niculescu
Authorized: 3-JUN-1991 By: Adrian Niculescu

Storet#	Analyte	Value	Units
39330	Aldrin	0.01 U	ug/L
39337	Alpha-BHC	0.01 U	ug/L
39338	Beta-BHC	0.01 U	ug/L
34259	Delta-BHC	0.01 U	ug/L
39340	Gamma-BHC LINDANE	0.02 TQ	ug/L
39350	Chlordane	0.2 U	ug/L
39460	Chlorobenzilate	N	ug/L
39360	DDD-p,p'	0.02 U	ug/L
39365	DDE-p,p'	0.02 U	ug/L
39370	DDT-p,p'	0.05 U	ug/L
39380	Dieldrin	0.02 U	ug/L
	Endosulfan I	0.01 U	ug/L
	Endosulfan II	0.01 U	ug/L
34351	Endosulfan sulfate	0.05 U	ug/L
39390	Endrin	N	ug/L
34366	Endrin aldehyde	0.01 U	ug/L
39410	Heptachlor	0.01 U	ug/L
39420	Heptachlor epoxide	0.01 U	ug/L
39430	Isodrin	0.01 U	ug/L
39480	Methoxychlor	0.02 U	ug/L
	PCNB	0.05 U	ug/L
39400	Toxaphene	0.5 U	ug/L

Comment (1):
(2):

********** END OF REPORT **********

T = VALUE IS LESS THAN THE PRACTICAL QUANTITATION LIMIT
Q = EVIDENCE THAT ANALYTE WAS PRESENT IN SAMPLE IS EQUIVOCAL

Sample ID: 18558/91-MAY-08-10-01 Matrix: W-EFFLUENT
Location: Hollywood WWTP
Field ID: 51-5108-0
Collected: 7-MAY-1991 00:00 By:
Authorized: 27-MAY-1991 By: Liang T. Lin
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-BNA
base-neutral-acid water analysis
Analyzed: 15-MAY-1991 By: Laura Harrison
Authorized: 24-MAY-1991 By: Laura Harrison

Storet#	Analyte	Value	Units
34205	Acenaphthene	2 U	ug/L
34200	Acenaphthylene	2 U	ug/L
39330	Aldrin	3 U	ug/L
34220	Anthracene	2 U	ug/L
34526	Benzo(a)anthracene	2 U	ug/L
34230	Benzo(b)fluoranthene	2 U	ug/L
34242	Benzo(k)fluoranthene	2 U	ug/L
34247	Benzo(a)pyrene	4 U	ug/L
34521	Benzo(g,h,i)perylene	5 U	ug/L
34292	Benzyl butyl phthalate	2 U	ug/L
	a-BHC	3 U	ug/L
39337	b-BHC	3 U	ug/L
39340	d-BHC	3 U	ug/L
	g-BHC	3 U	ug/L
39120	Benzidine	25 U	ug/L
34273	Bis(2-chloroethyl)ether	2 U	ug/L
34278	Bis(2-chloroethoxy)methane	2 U	ug/L
34283	Bis(2-chloroisopropyl)ether	2 U	ug/L
39100	Bis(2-ethylhexyl)phthalate	2 U	ug/L
34636	4-Bromophenyl phenyl ether	2 U	ug/L
34581	2-Chloronaphthalene	2 U	ug/L
34641	4-Chlorophenyl phenyl ether	2 U	ug/L
34320	Chrysene	2 U	ug/L
39310	4,4'-DDD	3 U	ug/L
39320	4,4'-DDE	3 U	ug/L
39300	4,4'-DDT	3 U	ug/L
34556	Dibenzo(a,h)anthracene	5 U	ug/L
39110	Di-n-butyl phthalate	2 U	ug/L
34536	1,2-Dichlorobenzene	2 U	ug/L
34566	1,3-Dichlorobenzene	2 U	ug/L
34571	1,4-Dichlorobenzene	2 U	ug/L
34631	3,3'-Dichlorobenzidine	5 U	ug/L
39380	Dieldrin	3 U	ug/L
34336	Diethylphthalate	2 U	ug/L
34341	Dimethylphthalate	2 U	ug/L
34611	2,4-Dinitrotoluene	2 U	ug/L
34626	2,6-Dinitrotoluene	2 U	ug/L

Continued on Page 3

18558/91-MAY-08-10-01/W-BNA Continued from Page 2

Storet#	Analyte	Value	Units
34596	Di-n-octyl phthalate	2 U	ug/L
34361	Endosulfan-I	3 U	ug/L
34356	Endosulfan-II	3 U	ug/L
34351	Endosulfan-sulfate	3 U	ug/L
39390	Endrin	3 U	ug/L
34366	Endrin-aldehyde	3 U	ug/L
34376	Fluoranthene	2 U	ug/L
34381	Fluorene	2 U	ug/L
39410	Heptachlor	3 U	ug/L
39420	Heptachlor-epoxide	3 U	ug/L
39700	Hexachlorobenzene	2 U	ug/L
34391	Hexachlorobutadiene	2 U	ug/L
34396	Hexachloroethane	2 U	ug/L
34386	Hexachlorocyclypentadiene	5 U	ug/L
34403	Indeno(1,2,3-cd)pyrene	5 U	ug/L
34408	Isophorone	2 U	ug/L
34696	Naphthalene	2 U	ug/L
34447	Nitrobenzene	2 U	ug/L
34438	N-Nitrosodimethylamine	2 U	ug/L
34428	N-Nitrosodi-n-propylamine	2 U	ug/L
34433	N-Nitrosodiphenylamine	2 U	ug/L
34671	PCB-1016	1.0E+03 U	ug/L
39488	PCB-1221	1.0E+03 U	ug/L
39492	PCB-1232	1.0E+03 U	ug/L
39496	PCB-1242	1.0E+03 U	ug/L
39500	PCB-1248	1.0E+03 U	ug/L
39504	PCB-1254	1.0E+03 U	ug/L
39508	PCB-1260	1.0E+03 U	ug/L
	PCB-1262	1.0E+03 U	ug/L
34461	Phenanthrene	2 U	ug/L
34469	Pyrene	2 U	ug/L
39400	Toxaphene	1.0E+03 U	ug/L
34551	1,2,4-Trichlorobenzene	2 U	ug/L
34462	4-Chloro-3-methyl phenol	2 U	ug/L
34586	2-Chlorophenol	2 U	ug/L
34601	2,4-Dichlorophenol	2 U	ug/L
34606	2,4-Dimethylphenol	2 U	ug/L
34616	2,4-Dinitrophenol	15 U	ug/L
34657	2-Methyl-4,6-dinitrophenol	15 U	ug/L
34591	2-Nitrophenol	2 U	ug/L
34646	4-Nitrophenol	15 U	ug/L
39032	Pentachlorophenol	5 U	ug/L
34694	Phenol	2 U	ug/L
34621	2,4,6-Trichlorophenol	2 U	ug/L

Comments (1) Trace amounts of aliphatics &
(2) phthalates present.
(3)
(4)
(5)
(6)

********** END OF REPORT **********

Sample ID: 18536/91-MAY-08-05-01 Matrix: W-EFFLUENT
Location: Hollywood WWTP
Field ID: 51-5109-M
Collected: 7-MAY-1991 13:00 By:
Authorized: 9-JUL-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: AG-G-W
Silver in water by furnace AA
Analyzed: 5-JUL-1991 By: Kate Brackett
Authorized: 9-JUL-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01077	Silver	0.8 U	ug/L

Analysis ID: CD-G-W
Cadmium by graphite furnace for water samples
Analyzed: 10-JUN-1991 By: Jack Merritt
Authorized: 14-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01027	Cadmium	0.4 U	ug/L

Analysis ID: HG-H-W
Mercury by cold vapor using hydride sys.-water
Analyzed: 31-MAY-1991 By: Laurie Roughton
Authorized: 4-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
71900	Mercury	0.2 K	ug/L

Analysis ID: SE-G-W
Selenium in water by furnace AA
Analyzed: 20-JUN-1991 By: Kate Brackett
Authorized: 24-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01147	Selenium	5 U (HYD.)	ug/L

 Continued on Page 3

Sample ID: 18555/91-MAY-08-08-01 Matrix: W-EFFLUENT
Location: Hollywood WWTP
Field ID: 51-5111-N
Collected: 7-MAY-1991 13:00 By:
Authorized: 19-JUL-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 24-MAY-1991 By: John Montana
Authorized: 6-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	2.22	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 21-MAY-1991 By: Tim Fitzpatrick
Authorized: 19-JUL-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	1.0 A	mg N/L

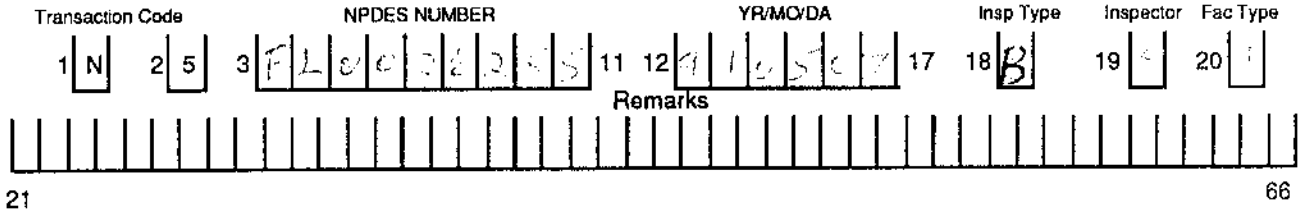
Analysis ID: W-TKN
TKN for water sample
Analyzed: 17-JUL-1991 By: John Montana
Authorized: 17-JUL-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	3.0	mg N/L

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 12-JUN-1991 By: John Montana
Authorized: 20-JUN-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00665	Total-P	6.3	mg P/L

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)



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