

Bioassays of

Hastings Wastewater Treatment Facility

St. Johns County

NPDES #FL0042315

Sampled November 3, 2003

April 2004

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

The Town of Hastings Wastewater Treatment Facility, 819 North Main Street, Hastings, St. Johns County, Florida, NPDES #FL0042315. Effluent samples were collected on November 3, 2003.

Introduction
The Town of Hastings Wastewater Treatment Facility (WWTF) has a design flow of 0.120 million gallons per day (MGD) and an average daily flow of 0.0959 MGD (based on data from September 2002 – August 2003). The wastewater treatment system includes a static screen and a flow equalization tank, one pre-anoxic tank, one aeration/nitrification tank, one post-anoxic tank, one re-aeration tank, two clarifiers, an automatic backwash disc-filter, a chlorine contact chamber, and an aerobic sludge digester. Although the facility has liquid-sodium bisulfate dechlorination units, the facility was using detention time in a large polishing pond to provide for dechlorination at the time of the sampling event. Treated wastewater is discharged from Outfall D001 into a polishing pond which empties into an unnamed, man-made canal which connects to a wooded swamp that is bordered on the east by Deep Creek (Class III fresh waters), a tributary of the St. Johns River and on the west by Cracker Branch (Class III fresh waters), a tributary of Deep Creek (facility information provided by Kathleen H. Gerard, FDEP, Jacksonville).

Methods
Samples were collected by Patrick O'Connor following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOP's are available on the web at: http://www.floridadep.org/labs/qa/sops.htm

The toxicity and algal growth potential tests discussed in this report were performed following internal DEP SOP's TA07_01,TA07_02, and TA08_01 through TA08_06. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp

Toxicity Test Results
Tests were performed on November 4-6, 2003.

Ceriodaphnia dubia 48-hr acute screening bioassay – Not Toxic – 0% mortality in 100% sample, LC_{50} >100%

Pimephales promelas 48-hr acute screening bioassay – Not Toxic – 0% mortality in 100% sample, LC_{50} >100%

See Table 1 for bioassay bench sheets.

Algal Growth Potential
The effluent Algal Growth Potential (AGP) was 53.5 mg dry wt/L of *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. This value is reported as an estimated value since the test requires continuous illumination and the lights were out in the test room for 13 hours of the 336-hour test period. Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The effluent sample value was approximately 10 times greater than the "problem" threshold. The total nitrogen to total phosphorus ratio (5.47:1) within the sample suggests that the sample is nitrogen limited. The sample AGP value was approximately 80% (Table 2) less than the predicted AGP values based on the nitrogen and phosphorus content of the sample. Although this can suggest potential inhibition of growth within the sample, actual inhibition cannot be determined without additional testing.

See Table 2 for predicted AGP values.

Chemistry Results
Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected in the bioassay sample at a concentration of 0.04 mg/L. The calculated unionized ammonia concentration was 0.001mg/L.

Atrazine was detected in the effluent (20 µg/L). The metals aluminum, cadmium, copper, iron, lead and zinc were all detected in the effluent at a level above their respective method detection limits, and below the practical quantitation limits.

See Table 3 for chemicals detected in the effluent analytical chemistry samples.
See Appendix 1 for a complete list of chemical analyses performed.

Conclusion

The effluent sample collected from this facility on November 3, 2003, did not show acute toxicity to either test species during the 48-hour bioassay tests. The effluent AGP result was approximately 10 times greater than the "problem" threshold, indicating the presence of nutrients at levels that could impact fresh receiving waters. The AGP result was less than would be predicted based upon the total nitrogen and total phosphorus, indicating the potential for algal growth inhibition. Additional testing would be required to determine if algal growth inhibition is occurring.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Miller et al. 1990. *The Acute and Chronic Toxicity of Ammonia to Marine Fish and Invertebrates*, Archives of Environmental Contamination and Toxicology 19:40-48.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

Weber, C. I. 1993. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 4th edition. EPA/600/4-90/027. U. S. EPA, Cincinnati, Ohio. 216 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

USEPA. 2002. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. 4th Edition. EPA-821-R-02-013

Wolfe, et al. 1995. Protocols for determining Major-Seawater-Ion Toxicity in Membrane-Technology Water-Treatment Concentrate. Florida Department of Environmental Protection, Bureau of Laboratories. 96pp.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Hastings WWTF, 819 North Main Street, Hastings, St. Johns County, Florida, NPDES# FL0042315, performed from 4 to 6 November, 2003.

Facility:	**Hastings Wastewater Treatment Facility**	**NPDES #:**	**FL0042315**	Facility Type:	**Wastewater**	**Analysts:**	Christa Pierini
Location:	819 North Main Street, Hastings	Contact/District:	Patrick O'Connor/Northeast		**Treatment Plant**		James Daniels
County:	St. Johns	Test type:	static acute screen				Marshall Faircloth
Sample Collection Date:	11/3/2003 Time: 1400	# tests:	2	Receiving Water:	unnamed man-made canal to swamp		Josh Ayres
Test Beginning Date:	11/4/2003 Time: 1400	Chlorination Type:	dechlorinated	Class III Fresh	bordered by Deep Creek (East) and Cracker Branch (West)		
Test Ending Date:	11/6/2003 Time: 1340	FDEP SOP#:	TA07_01 / 02		**Page 1 of 1**	**Reviewer:**	Julie Espy

Organism: ***Ceriodaphnia dubia*** (water flea) Life stage: <24 hours [A] Feeding: YCT/Algae
Chamber size: 30 mL Food Batch #: YCT 3/P. sub. 20

	Sample/Diluent	SURVIVAL # Alive			pH			[B] Temperature (°C)			Diss. Oxygen (mg/L)			[C] Conductivity	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	8.1	-	8.3	24.1	-	24.0	8.0	-	8.1	180	240
Control B	0/20	5	5	5	-	-	8.3	-	-	24.0	-	-	8.2	-	240
Control C	0/20	5	5	5	-	-	8.4	-	-	24.0	-	-	8.2	-	220
Control D	0/20	5	5	5	-	-	8.3	-	-	24.0	-	-	8.3	-	225
100% A	20/0	5	5	5	7.9	-	8.3	25.0	-	24.0	7.3	-	8.3	465	585
100% B	20/0	5	5	5	-	-	8.2	-	-	24.0	-	-	8.1	-	550
100% C	20/0	5	5	5	-	-	8.2	-	-	24.2	-	-	8.0	-	525
100% D	20/0	5	5	5	-	-	8.2	-	-	24.2	-	-	8.0	-	560

[A] Organisms fed prior to testing.
[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
[C] Conductivity value is uncorrected µmhos/cm.

Room Temperature range for the test period was 23.5 - 24.0°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS	
Job number:	TLH-2003-11-04-06
sample number:	714209

Data Transcription Verification
date: 12/31/03
Josh Ayres/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	<0.01	field meter
Lab 100% sample:	0.02	Hach
Control water (water flea):	0.01	Hach
Control water: (fish):	0.01	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water: (water flea):	<0.017	<0.017
Control water (fish):	<0.017	<0.017
100% Sample:	0.04	0.001

Organism: ***Pimephales promelas*** (fish) Life stage: 12 days [D] Feeding: *Artemia*
Chamber size: 1000 mL Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			[E] Temperature (°C)			Diss. Oxygen (mg/L)			[F] Conductivity	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/500	5	5	5	7.9	8.1	8.1	24.0	24.0	24.6	8.2	7.9	7.9	280	330
Control B	0/500	5	5	5	8.0	8.1	8.0	24.0	24.0	25.1	8.3	8.0	7.8	290	320
Control C	0/500	5	5	5	8.0	8.1	8.0	24.0	24.1	24.8	8.2	7.9	7.7	295	335
Control D	0/500	5	5	5	8.1	8.1	8.0	24.0	24.2	25.2	8.2	7.8	7.7	300	325
100% A	500/0	5	5	5	7.7	8.0	8.0	24.5	24.0	24.9	8.0	7.8	7.7	480	615
100% B	500/0	5	5	5	7.7	8.0	8.0	24.6	24.0	25.1	8.0	7.8	7.7	490	630
100 % C	500/0	5	5	5	7.7	8.0	8.0	24.7	24.1	25.0	7.9	7.9	7.7	500	640
100% D	500/0	5	5	5	7.7	8.0	8.0	24.7	24.1	25.5	7.9	7.7	7.6	500	630

[D] Organisms fed prior to testing.
[E] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
[F] Conductivity value is uncorrected µmhos/cm.

Room Temperature range for the test period was 23.5 - 24.0°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water: (water flea):	81	89
Control water: (fish)	71	84
100% Sample:	77	105

Mortality	Percent
Control water (water flea):	0%
100% (water flea):	0%
Control water (fish):	0%
100 % (fish):	0%

[G] Salinity	ppt
100% sample:	<1
Control water (water flea):	<1
Control water (fish):	<1

[G] Salinity based on conductivity and temperature.

Table 2. Measured and predicted algal growth potential (AGP) for total soluble nitrogen (TSIN) and total nitrogen (TN) limitation

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	53.5	263.26 ± 52.652	291.08 ± 58.216	4.62	5.47

Table 3. Effluent limits, Class III Criteria and chemical data from samples collected from the Hastings WWTF on November 3, 2003.

Hastings Wastewater Treatment Facility	Class III Stds	Effluent Limits	Effluent Samples
Organic Constituents (µg/L)			
Atrazine	-	-	20
Metals (µg/L unless otherwise noted)			
Aluminum	-	-	19 I
Arsenic	≤ 50	-	7.7 U
Cadmium	≤ 1.4 h	-	0.027 I
Calcium (mg/L)	-	-	36.3
Chromium-III	≤ 103.9 h	-	3 U
Copper	≤ 11.3 h	-	1.6 I
Iron	≤ 1000	-	28 I
Lead	≤ 4.3 h	-	0.086 I
Magnesium (mg/L)	-	-	8.5
Nickel	≤ 63.3 h	-	3 U
Selenium	≤ 5	-	1 U
Silver	≤ 0.07	-	0.02 U
Zinc	≤ 145.4 h	-	32 I
Nutrients (mg/L)			
Ortho-phosphate	-	-	1.5
Total Phosphorus	-	-	1.4 A
Ammonia	-	2.0	0.028 A
Unionized Ammonia	≤ 0.02	-	<0.02 c
Nitrate+Nitrite	-	-	6.9 A
Total Kjeldahl Nitrogen	-	-	0.76 A
Organic Nitrogen	-	-	0.73 c
Total Nitrogen	-	9.0	7.66 c
General Physical and Chemical Parameters			
Dissolved Oxygen (mg/L)	≥ 5	6	9.1
pH (S.U.)	6.0 - 8.5	6.0 - 8.5	7.7
Conductivity (umhos/cm)	≤ 1275	-	501
Temperature (C)	-	-	26.2
Hardness (mg/L)	-	-	125.6 c
AGP (mg DryWt/L)	-	-	53.5 J
Total Residual Chlorine (mg/L) (Field)	≤ 0.01	≤ 0.01	< 0.01
Total Residual Chlorine (mg/L) (Lab)	≤ 0.01	≤ 0.01	< 0.03 p

c - calculated value.
h - Value is based on water hardness as mg/L CaCO3.
p - Material analyzed for and not detected. Value reported (0.03) is the laboratory minimum detection value.
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value.
U - Material was analyzed for but not detected. The value reported is the minimum detection limit.

Appendix 1. Chemical Analyses performed on the effluent from the Town of Hastings Wastewater Treatment Facility sampled on November 3, 2003.

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	76
11/3/2003 16:30	EQUIP BLANK	BNA-Water	1-Naphthylamine	9.5	ug/L	UJ	9.5	38
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	UJ	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4,5-Trichlorophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,6-Dichlorophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Acetylaminofluorene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Methylnaphthalene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Naphthylamine	9.5	ug/L	U	9.5	38
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Nitroaniline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	2-Picoline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
11/3/2003 16:30	EQUIP BLANK	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	76
11/3/2003 16:30	EQUIP BLANK	BNA-Water	3-Methylcholanthrene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	3-Nitroaniline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Aminobiphenyl	3.8	ug/L	UJ	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Chloroaniline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Nitroaniline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
11/3/2003 16:30	EQUIP BLANK	BNA-Water	5-Nitro-o-toluidine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Acetophenone	1.2	ug/L	I	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Aldrin	1.4	ug/L	UJ	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Aniline	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzidine	95	ug/L	U	95	380
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Benzyl alcohol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19

11/3/2003 16:30	EQUIP BLANK	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dibenzofuran	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dimethylaminoazobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Dinoseb	3.8	ug/L	UJ	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Ethyl methanesulfonate	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	UJ	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Hexachloropropene	1.9	ug/L	UJ	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Isosafrole	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Methyl methanesulfonate	0.95	ug/L	UJ	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosodi-n-butylamine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosodiethylamine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosomorpholine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosopiperidine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	76
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pentachlorobenzene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pentachloronitrobenzene	0.95	ug/L	UJ	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pentachlorophenol	2.9	ug/L	UJ	2.9	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	11
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
11/3/2003 16:30	EQUIP BLANK	BNA-Water	Safrole	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
11/3/2003 16:30	EQUIP BLANK	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.6
11/3/2003 16:30	EQUIP BLANK	BNA-Water	o-Toluidine	0.95	ug/L	U	0.95	3.8
11/3/2003 16:30	EQUIP BLANK	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
11/3/2003 16:30	EQUIP BLANK	GC-Water	Ametryn	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Atrazine	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
11/3/2003 16:30	EQUIP BLANK	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76

11/3/2003 16:30	EQUIP BLANK	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Diazinon	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Ethion	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Ethoprop	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
11/3/2003 16:30	EQUIP BLANK	GC-Water	Fonofos	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Hexazinone	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
11/3/2003 16:30	EQUIP BLANK	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
11/3/2003 16:30	EQUIP BLANK	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
11/3/2003 16:30	EQUIP BLANK	GC-Water	Metribuzin	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
11/3/2003 16:30	EQUIP BLANK	GC-Water	Naled	0.76	ug/L	U	0.76	3.04
11/3/2003 16:30	EQUIP BLANK	GC-Water	Norflurazon	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
11/3/2003 16:30	EQUIP BLANK	GC-Water	Parathion Methyl	0.095	ug/L	U	0.1	0.38
11/3/2003 16:30	EQUIP BLANK	GC-Water	Phorate	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
11/3/2003 16:30	EQUIP BLANK	GC-Water	Simazine	0.048	ug/L	U	0.05	0.19
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Aluminum	7	ug/L	U	7	28
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Arsenic	7.7	ug/L	U	7.7	31
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Cadmium	0.025	ug/L	U	0.03	0.1
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Chromium	3	ug/L	U	3	12
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Copper	1	ug/L	U	1	4
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Iron	15	ug/L	U	15	60
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Nickel	3	ug/L	U	3	12
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Selenium	1	ug/L	U	1	4
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
11/3/2003 16:30	EQUIP BLANK	Metals-Water	Zinc	4	ug/L	U	4	16
11/3/2003 16:30	EQUIP BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
11/3/2003 16:30	EQUIP BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0	0.01
11/3/2003 16:30	EQUIP BLANK	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	0.06	0.2
11/3/2003 16:30	EQUIP BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0	0.01
11/3/2003 16:30	EQUIP BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential	53.5	mg DryWt/L	J	0.1	0.3
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L		
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L		
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	77
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	1-Naphthylamine	9.6	ug/L	UJ	9.6	38
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	UJ	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4,5-Trichlorophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	58
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,6-Dichlorophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Acetylaminofluorene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Methylnaphthalene	0.96	ug/L	U	0.96	3.8

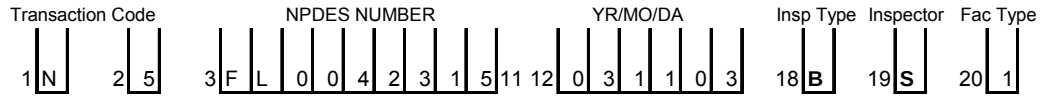
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Naphthylamine	9.6	ug/L	U	9.6	38
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Nitroaniline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Nitrophenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	2-Picoline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	77
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	3-Methylcholanthrene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	3-Nitroaniline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Aminobiphenyl	3.8	ug/L	UJ	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Chloroaniline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Nitroaniline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	5-Nitro-o-toluidine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Acetophenone	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Aldrin	1.4	ug/L	UJ	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Aniline	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzidine	96	ug/L	U	96	380
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Benzyl alcohol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dibenzofuran	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dimethylaminoazobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Dinoseb	3.8	ug/L	UJ	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Ethyl methanesulfonate	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Hexachlorobutadiene	2.9	ug/L	UJ	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Hexachloropropene	1.9	ug/L	UJ	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8

11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Isosafrole	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Methyl methanesulfonate	0.96	ug/L	UJ	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodi-n-butylamine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodiethylamine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosomorpholine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosopiperidine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	77
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pentachlorobenzene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pentachloronitrobenzene	0.96	ug/L	UJ	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pentachlorophenol	2.9	ug/L	UJ	2.9	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	Safrole	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.7
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	BNA-Water	o-Toluidine	0.96	ug/L	U	0.96	3.8
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Alachlor	0.58	ug/L	U	0.58	2.32
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Ametryn	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Atrazine	20	ug/L		0.48	1.92
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Chlorpyrifos Methyl	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Diazinon	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Ethion	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Ethoprop	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Fonofos	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Hexazinone	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Metribuzin	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Naled	0.78	ug/L	U	0.78	3.12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Norflurazon	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Parathion Methyl	0.097	ug/L	U	0.1	0.39
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Phorate	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	GC-Water	Simazine	0.048	ug/L	U	0.05	0.19
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Aluminum	19	ug/L	I	7	28
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Arsenic	7.7	ug/L	U	7.7	31
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Cadmium	0.027	ug/L	I	0.03	0.1
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Calcium	36.3	mg/L		0.05	0.2
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Chromium	3	ug/L	U	3	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Copper	1.6	ug/L	I	1	4
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Iron	28	ug/L	I	15	60

11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Lead	0.086	ug/L	I	0.05	0.2
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Magnesium	8.5	mg/L		0.02	0.08
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Nickel	3	ug/L	U	3	12
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Selenium	1	ug/L	U	1	4
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Metals-Water	Zinc	32	ug/L	I	4	16
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Nutrients-Liquid	Ammonia-N	0.028	mg N/L	A	0.01	0.02
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Nutrients-Liquid	NO2NO3-N	6.9	mg N/L	A	0.2	0.5
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Nutrients-Liquid	N_KJEL_TOT	0.76	mg N/L	A	0.06	0.2
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Nutrients-Liquid	O-Phosphate-P	1.5	mg P/L		0.08	0.2
11/3/2003 14:00	HASTING WWTP FINAL EFFLUENT	Nutrients-Liquid	Total-P	1.4	mg P/L	A	0.2	0.6

The Bioassay of Hastings WWTF effluent sampled on November 3, 2003, NPDES #FL0042315.

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



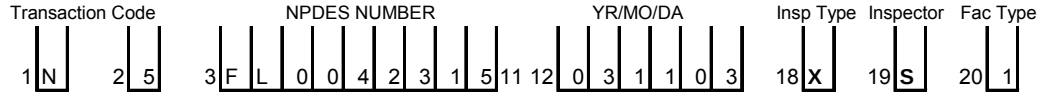
Remarks



66

The Priority Pollutants Analysis for Bioassay of Hastings WWTF effluent sampled on November 3, 2003, NPDES #FL0042315.

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



Remarks



66