

Biological Assessment of

Cytec Industries Inc. – Brewster Gypsum Stack

Polk County

NPDES #FL0132381

Sampled December 1, 2003

June 2004

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection

Fifth Year Inspection Summary

Discharger: Cytec Industries Inc. – Brewster Plant
County: Polk
NPDES Number: FL0132381
Permit Expiration: 8/17/04

Toxics Sampling Inspection **(XSI)**

Date Sampled: December 1, 3, and 5, 2003

Results: No organic pollutants were detected in the effluent. Effluent metals complied with Class III Water Quality Criteria (FAC 62-302). On varying sample dates, aluminum, iron, and cadmium were detected in the effluent at levels above the practical quantitation limits (PQL). Lead and zinc were found in the effluent at levels above the method detection limit (MDL) but below the PQL. It should be noted that calcium, chromium, nickel, nitrate+nitrite, sulfate, and oil and grease were detected in the equipment blank samples collected on 12/1/03. All of these parameters were detected in the blank at levels above the MDL and below the PQL.

Levels of radioactive substances (total alpha and combined radium $^{226 + 228)}$ in the effluent complied with Class III Surface Water Quality Criteria (62-302.530) and facility permit limits.

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: December 1, 3, and 5, 2003

Results: The effluent was not acutely or chronically toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during the 7-day chronic screening bioassays.

Water Quality Inspection **(WQI)**

Date Sampled: December 1, 2003

Results: Nutrient levels at the Test Site were similar to those at the Control Site. Concentrations of total phosphorus and ortho-phosphate at both the Control Site and the Test Site ranked in the 90th percentile of typical values for Florida streams. Levels of nitrate+nitrite ranked in the 20th percentile of typical values for Florida streams for both study sites. The level of total Kjeldahl nitrogen at the Control Site ranked in the 30th percentile as compared to the concentration at the Test Site that ranked in the 60th percentile. Unionized ammonia values calculated for effluent samples from all three sampling dates were <0.02 mg/L.

Impact Bioassessment Inspection **(IBI)**

Date Sampled: December 1, 2003

Results: Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed few differences from the Control Site compared to the Test Site. Both sites were represented by the same groups of macroinvertebrates in relatively the same proportions. The qualitative SCI score of 27 for the Control Site placed it in the "Excellent" category, while the Test Site SCI score of 21 placed it in the "Good" category. All macroinvertebrate samples were dominated by the tolerant Trichopteran, *Cheumatopsyche.*

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

Introduction

The Cytec Industries Brewster Plant is located in Polk County, Florida (Appendix 1). This facility is an inactive phosphogypsum stack system that is currently under closure. Activities include neutralizing process water with lime, allowing it to settle, then recirculating it in a pond system. The process water is again treated with lime to a pH of approximately 9 to help remove the ammonia and then pumped through a spray system to remove any remaining ammonia. The water is then adjusted to a neutral pH and discharged through an internal outfall (Outfall 002). Outfall 002 routes the water through a pipeline to a 300-acre reclaimed phosphate settling or wetland area. The water in the wetland combines with surrounding watershed runoff and discharges into a ditch through a weir where it travels approximately 50 meters before entering the South Prong of the Alafia River, a Class III Fresh Surface Water (see Facility Summary in Appendix 2). The water takes quite some time to flow through the pond and wetland systems before it reaches the South Prong of the Alafia River. The Outfall 001 discharge point is at the beginning of the ditch that runs 50 meters and then meets the South Prong of the Alafia River. The mean flow of the wastewater system during the month previous to this survey was 1.10 million gallons per day (MGD). The flow during this survey was 0.329 MGD (Jackie Champion, FDEP-Phosphate Management).

Pursuant to the provisions of Rule 62.4.244 F.A.C., the facility has been granted a mixing zone for unionized ammonia and specific conductance. The mixing zone extends 680 meters downstream from the point of discharge (Outfall 001). To date, Cytec Industries has not needed the mixing zone. However, as the facility undergoes closure, the effluent is expected to have higher conductivity and unionized ammonia values. Surface Water Quality Criteria and facility permit limits are listed in Table 1. According to the facility's monthly discharge monitoring reports, the plant has not had any excursions of its permit limits from January 2003 through December 2003 (Appendix 2).

Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a control site (located approximately 5 meters upstream from where the ditch discharges into the South Prong of the Alafia River) and a test site (located approximately 5 meters downstream from where the ditch discharges into the South Prong of the Alafia River). The Test Site was inside the mixing zone. Effluent samples were collected on three dates to allow for proper chronic toxicity bioassays (December 1, 3, and 5). In addition to bioassays, effluent samples were collected to analyze for metals and organic constituents. Detailed methods and their relationship to Florida Administrative Code are given in Appendix 3.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see http://www.floridadep.org/labs/qa/2002sops.htm for details) and met FDEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm).

The following were involved in this investigation: Jacki Champion (FDEP-Phosphate Management) and Peggy Morgan (FDEP-Southwest District), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Chuck Ziegmont and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix 4. Effluent metals complied with Class III Water Quality Criteria (FAC 62-302). On varying dates, aluminum, iron and cadmium were detected in effluent samples at levels above the practical quantitation limits (PQL); and lead and zinc were found in the effluent at levels above the method detection limit (MDL) but below the PQL. The aluminum concentration in the effluent sample collected on 12/1/03 was above the MDL but below the PQL, while aluminum concentrations in samples collected on 12/3/03 and 12/5/03 were above the PQL. No organic pollutants were detected in the effluent. It should be noted that calcium, chromium, nickel, nitrate+nitrite, sulfate, and oil and grease were detected in the equipment blank samples collected on 12/1/03 at levels above the MDL and below the PQL. Results of analytes detected in blank samples do not affect effluent results or interpretations in this instance. Levels detected were low and some were analytes not detected in effluent samples.
- Levels of radioactive substances (total alpha and combined radium ^{226} + ^{228}) in the effluent complied with Class III Surface Water Quality Criteria and facility permit limits.
- Effluent conductivity (350 µmhos/cm on 12/2/03; 339 µmhos/cm on 12/3/03; 340 µmhos/cm on 12/5/03) pH and dissolved oxygen complied with Class III Water Quality Criteria

Table 1. Effluent limits, Class III Criteria and chemical, microbiological, and toxicological data.

Cytec Industries, Inc. - Brewster Gypsum Stack	Class III Stds 12/1/03	Effluent Limits	Effluent 12/1/03	Class III Stds 12/3/03	Effluent 12/3/03	Class III Stds 12/5/03	Effluent 12/5/03	Control Site 12/1/03	Test Site 12/1/03
Organic Constituents (µg/L)									
None Detected	-	-	-	-	-	-	-	-	-
Metals (µg/L unless otherwise noted)									
Aluminum	-	-	22 I	-	45	-	35 A	-	-
Arsenic	≤50	-	6 U	≤50	6 U	≤50	6 U	-	-
Cadmium	≤1.6 b	-	0.025 U	≤1.6 b	0.15	≤1.6 b	0.025 U	-	-
Calcium (mg/L)		-	37 A	-	36.1	-	36 A	-	-
Chromium-III	≤125.5 b	-	3 U	≤121.6 b	3 U	≤122 b	3 U	-	-
Copper	≤13.8 b	-	1 U	≤13.4 b	1 U	≤13.4 b	1 U	-	-
Iron	≤1000	-	370 A	≤1000	453	≤1000	369 A	-	-
Lead	≤5.7 b	-	0.057 I	≤5.4 b	0.054 I	≤5.5 b	0.062 I	-	-
Magnesium (mg/L)		-	16 A	-	15.1	-	15.3 A	-	-
Nickel	≤76.9 b	-	3 U	≤74.5 b	3 U	≤74.7 b	3 U	-	-
Selenium	≤5	-	1 U	≤5	1 U	≤5	1 U	-	-
Silver	≤0.07	-	0.02 U	≤0.07	0.02 U	≤0.07	0.02 U	-	-
Zinc	≤176.8 b	-	13 I	≤171.1 b	5.5 I	≤171.7 b	8.1 I	-	-
Nutrients (mg/L)									
Ortho-phosphate	-	report	-	-	-	-	-	0.9	0.85
Total Phosphorus	-	≤5.0 R	1.1 A	-	-	-	-	0.99	0.95 A
Ammonia	-	≤4.5 R	0.032	-	0.042	-	0.035	0.048	0.046 A
Unionized Ammonia	≤0.02	≤0.03 R	< 0.02 c	-	< 0.02 c	-	< 0.02 c	< 0.02 c	< 0.02 c
Nitrate+Nitrite	-	-	0.17	-	-	-	-	0.039	0.043
Total Kjeldahl Nitrogen	-	-	0.31 A	-	-	-	-	0.82	1.1 A
Organic Nitrogen	-	-	0.28 c	-	-	-	-	0.77 c	1.05 c
Total Nitrogen	-	report	0.48 c	-	-	-	-	0.86 c	1.14 c
Radioactive Substances									
Alpha, Total (pCi/L)	≤15	≤15 R	1.3 U	-	-	-	-	-	-
Alpha-Counting Error (pCi/L)	-	-	1	-	-	-	-	-	-
Radium 226 (pCi/L)	-	-	0.2	-	-	-	-	-	-
Radium 226-Counting Error (pCi/L)	-	-	0.1	-	-	-	-	-	-
Radium 228 (pCi/L)	-	-	0.8 U	-	-	-	-	-	-
Radium 228-Counting Error (pCi/L)	-	-	0.5	-	-	-	-	-	-
Combined Radium 226/228 (pCi/L)	≤5 R	≤5 R	0.1	-	-	-	-	-	-
General Physical and Chemical Parameters									
TDS	-	-	207	-	-	-	-	-	-
TSS	-	≤60.0 R	4 U	-	-	-	-	-	-
Habitat Assessment	-	-	-	-	-	-	-	133 *	140*
pH (S.U.)	6.0-8.5	6.0-8.5	8.0 **	-	7.9	-	7.7	7.7 *	7.7 *
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	7.2 **	-	9.0 ^	-	7.3	4.6 *	5.2 *
Color	-	-	20	-	-	-	-	-	-
Conductivity (umhos/cm)	≤1275	≤2800 R	350 **	-	339	-	340	480 *	480 *
Temperature (C)	-	report	24.8 **	-	14.42	-	18.6	24.3 *	24.4 *
Oil and Grease (mg/l)	≤5	report	0.55 U	-	-	-	-	-	-
Flow (MGD)	-	-	0.329	-	-	-	-	-	-
Hardness (mg/L)	-	-	158.3 c	-	152.3 c	-	152.9 c	-	-
Turbidity	-	-	2.6	-	-	-	-	-	-
Fluoride	≤10	≤10	1	-	-	-	-	2.3	2.2
Sulfate	-	report	50	-	-	-	-	76	78
Toxicology Bioassays (96 hr. chronic screening toxicity test, NOEC)									
Fish - NOEC		NOEC ≥100%	-	-	-	-	100%	-	-
Water flea - NOEC		NOEC ≥100%	-	-	-	-	100%	-	-

a - Annual average
b - Value is calculated based on hardness
c - Calculated value
A - Value reported is the mean of two or more determinations
I - Value reported is < the practical quantitation limit, and ≥ the minimum detection limit
R - Daily Maximum
U - Material analyzed for but not detected; value reported is the minimum detection limit
NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit
* - Measured 10/29/03
** - Measured 12/2/03 in the laboratory
^ - Measured 12/4/03 in the laboratory

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	12.8	7.68 ± 1.536	18.24 ± 3.648	0.2	0.44
Control Site	10.3	3.31 ± 0.662	32.64 ± 6.528	0.1	0.87
Test Site	9.17	3.38 ± 0.676	43.43 ± 8.686	0.1	1.2

(62-302 F.A.C.) and facility permit limits.

- Habitat assessment scores were 133 at the Control Site and 140 at the Test Site, placing both sites in the "optimal" range (Table 1, data sheets in Appendix 7). Both sites had optimal water velocity (0.3 – 0.5 m/s), and almost 30% of the stream bottom was composed of habitats favored by macroinvertebrates (available productive habitats).
- The level of dissolved oxygen measured at the Control Site (4.6 mg/L) on October 29, 2003 did not comply with the Class III Fresh Water Quality Criterion (= 5.0 mg/L, 62-302.530(31) F.A.C.). Test Site dissolved oxygen measurements complied with the Class Fresh Water Quality Criterion. Conductivity and pH at the Control and Test Sites complied with Class III Water Quality Criteria (Table 1, 62-302.530 F.A.C.).
- The effluent sample was not chronically toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during 96-hour chronic screening bioassays (See Table 1 for no observed effect concentration and Appendix 6 for bioassay bench sheets).
- Fecal and total coliform samples were not collected for this study.
- Nutrients, other than ammonia, were collected on 12/1/03. The effluent total nitrogen concentration was 0.48 mg/L (Table 1). The total phosphorus concentration in the effluent was 1.1 mg/L. Nutrient levels at the Test Site compared to the Control Site were similar. Concentrations of total phosphorus and ortho-phosphate at both the Control Site and the Test Site ranked in the 90th percentile of typical values for Florida streams (Appendix 5). Levels of nitrate+nitrite ranked in the 20th percentile of typical values for Florida streams for both Sites. The level of total Kjeldahl nitrogen ranked in the 30th percentile at the Control Site as compared to the 60th percentile at the Test Site. Effluent total ammonia concentrations were 0.032 mg/L, 0.042 mg/L, and 0.035 mg/L for the three sample dates (Table 1). Unionized ammonia values calculated for effluent samples from all three sampling dates were <0.02 mg/L.
- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al.* 1978). Raschke and Shultz (1987) found that AGP above 5.0 mg dry wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values at the upstream Control Site (10.3 mg dry wt/L, Table 2), the downstream Test Site (9.17 mg dry wt/L), and the effluent (12.8 mg dry wt/L) were above this threshold. This indicates this portion of the South Prong of the Alafia River is nutrient enriched. However, the enrichment does not appear to be related to the facility's discharge.

Table 3. Phytoplankton composition

Cytec Industries, Inc. - Brewster Gypsum Stack	Effluent	Control Site	Test Site
Number of Taxa	26	37	45
Shannon-Weaver Diversity	2.90	2.71	3.25
Chlorophyll a (µg/L)	0.85 U	78 A	61
Phaeophytin (µg/L)	0.85 U	0.0	0.0
Algal Density (number/mL)	568	3,811	35,511
Percent Dominant Taxon	47.2	45.8	43.1
Dominant Taxon (name)	*Jaaginema*	*Synura*	*Synura*
Number of Algal Units Identified	295	308	313
Percentage Composition			
Blue-green algae	65.5	4.2	6.4
Cryptomonads	12.5	2	0.6
Diatoms	7.6	40.3	32.6
Dinoflagellates	0.4	0.3	0.3
Euglenoids	1.8	0.6	2.2
Green algae	11.6	6.8	14.7
Chrysomonads	0.0	45.8	43.1
Other	0.7	0	0

A - Value reported is the mean of two or more determinations

U - Material analyzed for but not detected; value reported is the minimum detection limit

Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative

Cytec Industries, Inc. - Brewster Gypsum Stack	Control Site	Test Site
Summary Statisics		
Shannon-Weaver Diversity	2.01	2.25
Number of Taxa	28	25
Florida Index	18	19
Number of EPT Taxa	11	8
Percent Dominant Taxon	63.9	53.8
Dominant Taxon (name)	*Cheumatopsyche*	*Cheumatopsyche*
Total Number of Individuals # counted	2,522	1,209
Total Density of Individuals #/m^2	6,672	3,198
Community Composition: Percent of total		
Diptera	19.5	27.5
Coleoptera	5.0	6.5
Ephemeroptera	6.1	7.5
Oligochaeta	0	0
Plecoptera	0	0
Trichoptera	68.4	56.8
Other	0.9	1.6
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0	0
Predators	1.5	1.6
Surface Deposit Feeders	13.6	19.8
Suspension Feeders	70	57.1
Scrapers	6.7	9.3
Shredders	8.1	12.2
Unknown	0	0

There was no evidence of growth inhibition in AGP data (Table 2).

- There was no chlorophyll *a* detected in the effluent sample. Chlorophyll *a* was detected in water samples from the Test (61 µg/L) and Control (78 µg/L) Sites (Table 3) at levels that are higher than the 95th percentile of typical values for Florida streams. These values exceed the 20 µg/L annual average threshold that is one of the criteria for listing under the Impaired Waters Rule. These chlorophyll levels are a cause for concern in this portion of the Alafia River.
- There was little difference between Test and Control Sites in phytoplankton algal community composition (Table 3, Appendix 8). The Test Site algal density was 9 times that at the Control Site. The higher number of total taxa and Shannon-Weaver diversity score at the Test Site is likely due to this increase. The effluent sample was dominated by blue-green algae and the Test Site was dominated by the diatom, *Synura*. Samples to measure periphyton algal community effects were not collected for this survey.
- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed little change from the Control Site compared to the Test Site (Table 4, Appendix 9). The Shannon-Weaver Diversity scores were 2.01 at the Control Site and 2.25 at the Test Site. Samples from both sites had the same groups of macroinvertebrates in approximately the same proportions. The Control Site had twice as many organisms, however both sites were dominated by the Trichopteran, *Cheumatopsyche*, which comprised more than 50% of the total organ-isms collected from each site.
- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 5 and 6 and in Appendix 10. The Control Site SCI score of 27 placed it in the "Excellent" category, while the Test Site SCI score of 21 placed it in the "Good" category. The Control Site score was 6 points higher because it had more Chironomid taxa and total taxa, as well as a lower percentage of the sample that belonged to the dominant taxon. Like the Hester-Dendy samples, *Cheumatopsyche* was the most abundant taxon at both the Control and Test Site. The Stream Condition Index was not designed to detect eutrophication, which is a potentially important environmental effect of facilities with effluents that add nutrients receiving waters.

Summary

Effluent samples collected from the Cytec Industries – Brewster Plant complied with all applicable Class III Surface Water Quality Criteria and facility permit limits. AGP, chlorophyll *a,* and nutrient data collected for this survey indicate that this portion of the South Prong of the Alafia River is nutrient enriched. However these conditions do not appear to be attributable to the facility's effluent. AGP data from both the Control and Test Sites were above the "problem" threshold. Chlorophyll *a* values measured at the Control and Test Sites, if typical of annual levels, were three times the Impaired Waters Rule threshold for listing, and are a cause for concern. At this time, the facility does not appear to require a mixing zone for unionized ammonia or conductivity. Effluent values for conductivity and ammonia were lower than those measured at the Control or Test Sites.

Literature Cited

Barbour, M. T. and J. B. Stribling. 1994. A technique for assessing stream habitat structure. In: Proceedings of Riparian Ecosystems in the Humid United States: Functions and Values. U. S. Dept. Agriculture. 15-18 March 1993, Atlanta, Ga. 22 pp.

Beck, W. M. Jr. 1954. Studies in stream pollution biology 1. A simplified ecological classification of organisms. Quart. J. Fla. Acad. Sci. 17(4): 211-227.

EA Engineering, Science, and Technology and Tetra Tech, Inc. 1994. Bioassessment for the nonpoint source program (draft). Prepared for the Florida Department of Environmental Protection. Unpaginated.

FDEP. 1994. Lake bioassessments for the determination of nonpoint source impairment in Florida. Florida Department of Environmental Protection, Biology Section, Tallahassee, Fla. 73 p.

Magurran, A. E. 1988. Ecological diversity and its measurement. Princeton University Press, Princeton, New Jersey.

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.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U. S. EPA, Office of Water Regulations and Standards, Washington D.C., EPA 440-4-89-001

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.

Table 5. Macroinvertebrate Dipnet Samples - Qualitative

Cytec Industries, Inc. - Brewster Gypsum Stack	**Control Site**	**Test Site**
Stream Condition Index (value)	27	21
Stream Condition Index (word)	Excellent	Good
Stream Condition Index Metrics		
Number of Taxa	19	13
Florida Index	8	8
Number of EPT Taxa	6	4
Number of Chironomid Taxa	5	4
Percent Dominant Taxon	29.4	42.2
Percent Diptera	29.36	36.27
Percent Suspension Feeders and Filterers	38.07	47.06
Total Number of Individuals	109	102
Community Composition: Percent of total		
Dominant Taxon (name)	*Cheumatopsyche*	*Cheumatopsyche*
Amphipoda	4.6	2.0
Coleoptera	16.5	11.8
Diptera	29.4	36.3
Ephemeroptera	2.8	4.9
Gastropoda	5.5	0.0
Pelecypoda	5.5	0.0
Plecoptera	0.0	0.0
Trichoptera	34.9	44.1
Other	0.8	1.0
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0	1
Predators	4.6	2
Surface Deposit Feeders	24.3	24
Suspension Feeders and Filterers	38.1	47.1
Scrapers	18.8	10.3
Shredders	13.3	15.7
Unknown	0	0

Ross, L. T. 1990. Methods for aquatic biology. Florida Department of Environmental Regulation Technical Series 10(1): 1-47.

Sokal, R. R. and F. J. Rohlf. 1995. Biometry, Third edition. W. H. Freeman and Company, New York.

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

Wallace, J. B., J. W. Grubaugh and M. R. Whiles. 1996. Biotic indices and stream ecosystem processes: results from an experimental study. Ecol. Appl. 6(1): 140-151.

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

Table 6. Stream Condition Index Metrics: Peninsula, Winter Index Peninsula

Control Site

Metric:	Value	5	3	1	Score
Total Number of Taxa	19	≥27	26-14	< 14	3
Number of EPT Taxa	6	≥4	3-2	< 2	5
Number of Chironomid Taxa	5	≥9	8-5	< 5	3
Percent Contribution of Dominant Taxon	29.36	≤30	31-65	> 65	5
Percent Diptera	29.36	-	≤52	> 52	3
Florida Index	8	≥10	9-5	< 5	3
Percent Suspension Feeders and Filterers	38.07	≥15	14-8	< 8	5
Total Score		**Excellent**			**27**
Interpretation of Scores		Excellent			27-33
		Good			21-26
		Poor			14-20
		Very Poor			7-13

Test Site

Metric:	Value	5	3	1	Score
Total Number of Taxa	13	≥27	26-14	< 14	1
Number of EPT Taxa	4	≥4	3-2	< 2	5
Number of Chironomid Taxa	4	≥9	8-5	< 5	1
Percent Contribution of Dominant Taxon	42.16	≤30	31-65	> 65	3
Percent Diptera	36.27	-	≤52	> 52	3
Florida Index	8	≥10	9-5	< 5	3
Percent Suspension Feeders and Filterers	47.06	≥15	14-8	< 8	5
Total Score		**Good**			**21**
Interpretation of Scores		Excellent			27-33
		Good			21-26
		Poor			14-20
		Very Poor			7-13

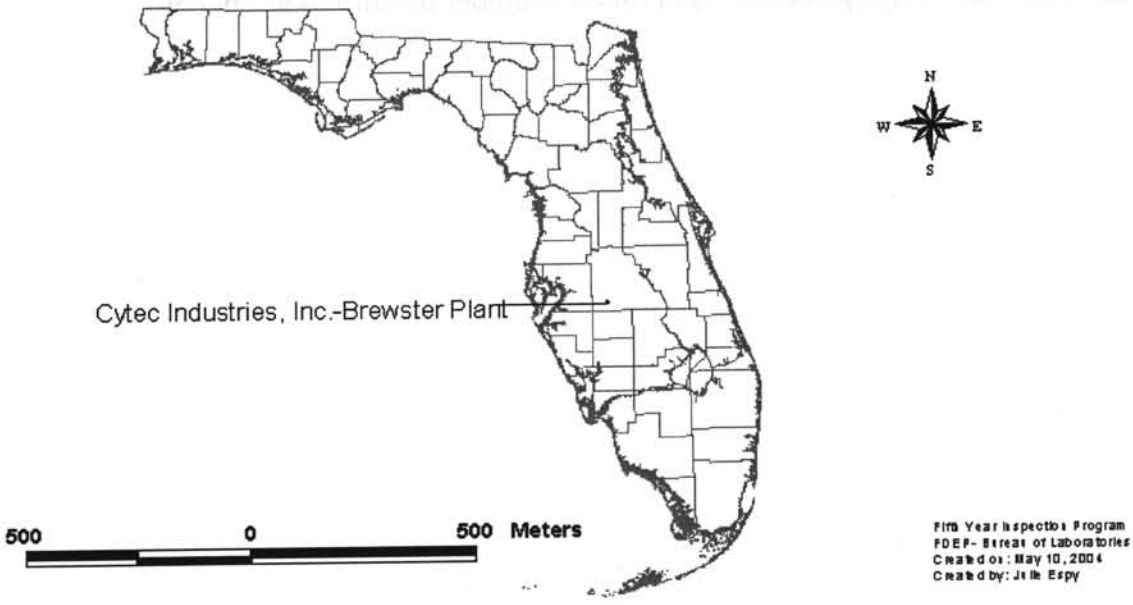
Appendices

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- Appendix 9a. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
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- Appendix 10a. Phytoplankton: Taxa list and density (number of individuals per mL)
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Appendix 1

Cytec Industries, Inc.
Brewster Plant





Appendix 2

State of Florida
Department of Environmental Protection
Facility Summary

Facility Name: Cytec Industries, Inc. - Brewster Gypsum Stack		**Prepared By: G. Sharrock , J. Champion**
Location: Brewster	**County: Polk**	**District: SWD**
Federal Permit No.: FL0132381 Expiration Date:	**State Permit No.: FL0132381 Expiration Date:**	**Facility Type: IW**
Function of Facility: Inactive Phosphogypsum Stack System (Under Closure)		
Description of treatment process: Process water is neutralized with lime and allowed to settle. The neutralized water is then recirculated in the pond system. The neutralized process water is again treated with lime to an over neutralized state. The water is then pumped through a spray system to remove the remaining ammonia. The water is then pH adjusted to neutral and discharged through internal outfall 002 which routes the water via. pipeline to a 300 acre reclaimed phosphate settling area. The water then combines with existing watershed runoff and discharges through Outfall 001 into the South Prong of the Alafia River.		
Receiving Waters: South Prong Alafia River		**Classification: Class III - Fresh**
Design Flow: 001 – N/A I002 – 1.5 MGD	**Mean Flow: 001 – 1.10 MGD I002- .59 MGD**	**Flow During Survey: 0.329 MGD**
Discharge is: Continuous		
Facility Mixing Zone Details: A 680 meter mixing zone is authorized in the receiving stream (S. Prong Alafia River) to maintain compliance for specific conductance and un-ionized ammonia.		
List Effluent Limits: See Attached Table below.		
Description of permitted outfall: Outfall 001 - Fixed sharp crest rectangular wier to drop inlet 48" corrugated metal culvert.		
List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: None		
Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: Facility provides the following as required by the permit: **Benthic Macroinvertibrate Dipnet sampling semi-annually at the following locations: Downstream of the discharge location but not beyond the 680 meter mixing zone and at an upstream location not affected by the discharge.**		

I. Effluent Limitations and Monitoring Requirements

A. Surface Water Discharge, Outfall 001:

1. **During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge treated process wastewater and stormwater from Outfall 001as shown on Attachment A. Such discharge shall be limited and monitored, when discharging, by the permittee as specified below:**

Parameters (units)	Discharge Limitations			Monitoring Requirements	
	Monthly Minimum	Monthly Average	Daily Maximum	Frequency	Sample Type
Flow (MGD) Outfall	**N/A**	**Report**	**Report**	**Continuous**	**Recorder**
pH (standard units)	**6.0**	**Report**	**8.5 See I.A.9**	**1/Week**	**Grab**
Total Ammonia as N (mg/l)	**N/A**	**Report**	**4.5 See I.A.9**	**1/Week**	**Grab**
Ammonia (un-ionized) as NH_3 (mg/l)	**N/A**	**Report**	**0.03 See I.A.2**	**1/Week**	**Calculation**
Specific Conductance (µmhos/centimeter)	**N/A**	**Report**	**2,800 See I.A.2**	**1/Week**	**Grab**
Total Non-filterable Residue, (TSS) (mg/l)	**N/A**	**30.0**	**60.0**	**1/Week**	**Grab**
Total Non-volatile, Non-Filterable Residue, (FS) (mg/l)	**N/A**	**12.0**	**25.0**	**1/Week**	**Grab**
Dissolved Oxygen (mg/l)	**5.0**	**Report**	**N/A**	**1/Week**	**Grab**
Total Fluoride as F (mg/l)	**N/A**	**Report**	**10.0**	**1/Week**	**Grab**
Temperature (°C) Stream	**N/A**	**Report**	**Report See I.A.3**	**1/Week**	**Grab-In-Situ**
Temperature (°C)	**N/A**	**Report**	**Report See IA.9**	**1/Week**	**Grab-In-Situ**
Total Sulfates (mg/l)	**N/A**	**Report**	**Report**	**I/Week**	**Grab**
Ortho-Phosphate as P (mg/l)	**N/A**	**Report**	**Report**	**1/Week**	**Grab**
Total Phosphorus as P (mg/l)	**N/A**	**3.0**	**5.0**	**1/Week**	**Grab**
Total Phosphorus as P (lb/day)	**N/A**	**Report**	**Report**	**1/Week**	**Calculation**
Total Nitrogen as N (mg/l)	**N/A**	**Report**	**Report**	**1/Week**	**Grab**
Total Nitrogen as N (lb/day)	**N/A**	**Report**	**Report**	**1/Week**	**Calculation**
Gross Alpha Particle Activity (pCi/l)	**N/A**	**N/A**	**15.0 See I.A.7**	**1/Month**	**Grab**
Combined Radium 226 & 228 (pCi/l)	**N/A**	**N/A**	**5.0 See I.A.8**	**1/Month**	**Grab**
Toxicity	**See I.A.15. and 16. below**				

B. Treatment System Discharge, Internal Monitoring Station - Outfall 002:

Parameters (units)	Discharge Limitations	Monitoring Requirements

pH (standard units)	6.0	Report	8.5	Continuous	Recorder
Specific Conductance (umhos)	N/A	Report	Report	1/Week	Grab
Total Ammonia as N, (mg/l)	N/A	3.0	5.0	1/Week	Grab
Total Nitrogen as N, (mg/l)	N/A	10.0	Report	1/Week	Grab
Total Nitrogen as N, (lb/day)	N/A	62.6	Report	1/Week	Grab
Total Phosphorus as P, (lb/day)	N/A	18.8	48.0	1/Week	Grab

2. **Pursuant to the provisions of Rule 62-4.244, F.A.C., the permittee has been granted a mixing zone for un-ionized ammonia and specific conductance extending 680 meters downstream from the point of discharge (Outfall 001). Compliance with the daily maximum discharge limitations for unionized ammonia and specific conductance is to be maintained at the end of pipe location at Outfall 001.**

3. **Discharge of treated process water from the treatment system into Area D shall be discontinued when all of the following conditions exist in the river.**
   a. **ambient upstream river flow $\leq$ 2 cfs**
   b. **ambient upstream river pH $\geq$ 7.5**
   c. **ambient upstream river temperature $\geq$ 30°C**

Appendix 3

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.floridadep.org/labs/sop/index.htm and/or http://www.floridadep.org/labs/qa/index.htm.

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix 4. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, Appendix 2). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits.

(4) Bacteriological Testing

The effluent and water from control and test sites were analyzed for the presence and concentration of total and fecal coliform bacteria following FDEP SOPs MB1_0 and MB1_1. High levels of fecal or total coliform bacteria may constitute violation of 62-302.530(6), 62-302.530(7) and/or facility permit limits.

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The effluent and water from control and test sites are autoclaved, filtered (0.45μm), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum,* USEPA 2002*),* and incubated for 14 days (FDEP SOP TA08_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al.* 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N:P) is less than 10:1, nitrogen limitation of algal production is likely. When the N:P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(62) F.A.C..

(7) Algal Phytoplankton and Periphyton Assemblages

Methods: Periphyton were sampled at both control and test sites by incubating glass microscope slides in a standard periphytometer for 28 days (QA Rule SOP FS7210). Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton and phytoplankton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03_1 and AB05).

Chlorophyll *a* Content: Chlorophyll *a* content is measured in both phytoplankton and periphyton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples and number of natural units/cm^2 for periphyton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present with more equitable abundance among taxa (Magurran 1988). Low diversity scores related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al.*, 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(11) F.A.C..

The Florida Index: Some organisms become rare or absent as the intensity or duration of disturbance increases. The Florida Index assigns points to stream-dwelling macroinvertebrates based on their ranked sensitivity to pollution (Beck 1954). A site with a high Florida Index score is considered healthy (Ross 1990). Decreases in Florida Index points related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Ephemeroptera/Plecoptera/Trichoptera (EPT) Taxa: This value is the number of EPT taxa present. More EPT taxa are usually present in unpolluted waters (Plafkin *et al.*, 1989, Wallace *et al.*, 1996). Decreases in the number of EPT taxa related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida. Using data from qualitative dipnet samples, the SCI assigns points to seven parameters, depending on how closely each parameter approaches an expected reference condition (QA Rule SOP LT 7200). Points are summed to yield a final SCI score (range 7-33, depending on region and index period). Included in the calculation of SCI are taxa richness, number of EPT taxa, number of Chironomid taxa, percent contribution of the dominant taxon, the Florida Index, percent contribution of Diptera, and the percent contribution of suspension and filter feeders. Scores are broken into four ordinal groups: Excellent, Good, Poor and Very Poor. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score of "Poor" or "Very Poor" related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(9) Statistical Comparisons

Statistical comparisons of the proportions of taxa, major groups or feeding groups were made using 95% confidence intervals on proportions. A 95% confidence interval is the range of values above and below a given proportion that has a 95% chance of containing the true proportion (Sokal and Rohlf 1995). If the 95% confidence intervals for two proportions do not overlap, then the proportion of X in sample 1 is significantly different from the proportion of X in sample 2 at $p<0.05$. A "$p<0.05$" level of significance means that there is less than a 5% chance that the true proportions in the two samples are the same. All comparisons that are labeled as significant in the text have a probability <0.05 that the proportions are the same.

Appendix 4

Chemical analysis of effluent and receiving water

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/1/2003 15:30	CONTROL SITE (UPSTM)	Bio-AGP/LimNut	Algal Growth Potential	10.3	mg DryWt/L		0.1	0.3
12/1/2003 15:30	CONTROL SITE (UPSTM)	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	78	ug/L	A	1.7	5.1
12/1/2003 15:30	CONTROL SITE (UPSTM)	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L	A	1.7	5.1
12/1/2003 15:30	CONTROL SITE (UPSTM)	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	13	#Taxa			
12/1/2003 15:30	CONTROL SITE (UPSTM)	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa	24	#Taxa			
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	Ammonia-N	0.048	mg N/L		0.01	0.02
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	Fluoride	2.3	mg F/L		0.05	0.1
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	NO2NO3-N	0.039	mg N/L		0.004	0.01
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	N_KJEL_TOT	0.82	mg N/L		0.06	0.2
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	O-Phosphate-P	0.9	mg P/L		0.04	0.1
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	Sulfate	76	mg SO4/L		1	2.5
12/1/2003 15:30	CONTROL SITE (UPSTM)	Nutrients-Liquid	Total-P	0.99	mg P/L		0.02	0.06
12/1/2003 15:30	EQ BLK	BNA-Water	1,2,4,5-Tetrachlorobenzene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	1,3,5-Trinitrobenzene	4.1	ug/L	U	4.1	16
12/1/2003 15:30	EQ BLK	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	1,3-Dinitrobenzene	2	ug/L	U	2	8.2
12/1/2003 15:30	EQ BLK	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	1,4-Naphthoquinone	20	ug/L	U	20	82
12/1/2003 15:30	EQ BLK	BNA-Water	1-Naphthylamine	10	ug/L	U	10	41
12/1/2003 15:30	EQ BLK	BNA-Water	2,3,4,6-Tetrachlorophenol	2	ug/L	UJ	2	8.2
12/1/2003 15:30	EQ BLK	BNA-Water	2,4,5-Trichlorophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2,4-Dichlorophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2,4-Dimethylphenol	51	ug/L	U	51	200
12/1/2003 15:30	EQ BLK	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	61
12/1/2003 15:30	EQ BLK	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2,6-Dichlorophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Acetylaminofluorene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Chlorophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Methyl-4,6-dinitrophenol	3.1	ug/L	U	3.1	12
12/1/2003 15:30	EQ BLK	BNA-Water	2-Methylnaphthalene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Naphthylamine	10	ug/L	U	10	41
12/1/2003 15:30	EQ BLK	BNA-Water	2-Nitroaniline	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Nitrophenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	2-Picoline	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	3,3'-Dichlorobenzidine	41	ug/L	U	41	160
12/1/2003 15:30	EQ BLK	BNA-Water	3,3'-Dimethylbenzidine	20	ug/L	U	20	82
12/1/2003 15:30	EQ BLK	BNA-Water	3-Methylcholanthrene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	3-Nitroaniline	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	4-Aminobiphenyl	4.1	ug/L	U	4.1	16
12/1/2003 15:30	EQ BLK	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	4-Chloroaniline	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8.2
12/1/2003 15:30	EQ BLK	BNA-Water	4-Nitroaniline	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	4-Nitrophenol	15	ug/L	U	15	61
12/1/2003 15:30	EQ BLK	BNA-Water	5-Nitro-o-toluidine	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	7,12-Dimethylbenz(a)anthracene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	Acenaphthene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	Acenaphthylene	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	Acetophenone	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6.1

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL	
12/1/2003 15:30	EQ BLK	BNA-Water	Aniline	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Anthracene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzidine	100	ug/L	U	100	410	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzo(a)anthracene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Benzyl alcohol	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Bis(2-chloroisopropyl)ether	3.1	ug/L	U	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	61	
12/1/2003 15:30	EQ BLK	BNA-Water	Butyl benzyl phthalate	5.1	ug/L	U	5.1	20	
12/1/2003 15:30	EQ BLK	BNA-Water	Chrysene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Di-n-butyl phthalate	5.1	ug/L	U	5.1	20	
12/1/2003 15:30	EQ BLK	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Dibenzofuran	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Diethyl phthalate	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Dimethyl phthalate	51	ug/L	U	51	200	
12/1/2003 15:30	EQ BLK	BNA-Water	Dimethylaminoazobenzene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Dinoseb	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Diphenylamine	3.1	ug/L	U	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Endosulfan I	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Endosulfan II	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	6.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Endrin	1.5	ug/L	U	1.5	6.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Endrin aldehyde	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Ethyl methanesulfonate	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Fluoranthene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Fluorene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Hexachlorobutadiene	3.1	ug/L	U	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Hexachlorocyclopentadiene	3.1	ug/L	UJ	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Hexachloroethane	3.1	ug/L	U	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Hexachloropropene	2	ug/L	UJ	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Isophorone	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Isosafrole	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Methapyrilene	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Methyl methanesulfonate	1	ug/L	UJ	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosodi-n-butylamine	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosodiethylamine	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosodiphenylamine	3.1	ug/L	UJ	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosomethylethylamine	2	ug/L	U	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosomorpholine	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosopiperidine	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	N-Nitrosopyrrolidine	2	ug/L	U	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	Naphthalene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Nitrobenzene	2	ug/L	U	2	8.2	
12/1/2003 15:30	EQ BLK	BNA-Water	Nitroquinoline-1-oxide	20	ug/L	UJ	20	82	
12/1/2003 15:30	EQ BLK	BNA-Water	Pentachlorobenzene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Pentachloroethane	51	ug/L	U	51	200	
12/1/2003 15:30	EQ BLK	BNA-Water	Pentachloronitrobenzene	1	ug/L	UJ	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Pentachlorophenol	3.1	ug/L	UJ	3.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Phenacetin	4.1	ug/L	U	4.1	12	
12/1/2003 15:30	EQ BLK	BNA-Water	Phenanthrene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Phenol	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Pyrene	1	ug/L	U	1	4.1	
12/1/2003 15:30	EQ BLK	BNA-Water	Pyridine	4.1	ug/L	U	4.1	16	
12/1/2003 15:30	EQ BLK	BNA-Water	Safrole	1	ug/L	U	1	4.1	

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/1/2003 15:30	EQ BLK	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6.1
12/1/2003 15:30	EQ BLK	BNA-Water	m,p-Cresols	2	ug/L	U	2	8.2
12/1/2003 15:30	EQ BLK	BNA-Water	o-Cresol	2	ug/L	U	2	8.2
12/1/2003 15:30	EQ BLK	BNA-Water	o-Toluidine	1	ug/L	U	1	4.1
12/1/2003 15:30	EQ BLK	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
12/1/2003 15:30	EQ BLK	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Azinphos Methyl	0.048	ug/L	UJ	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
12/1/2003 15:30	EQ BLK	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
12/1/2003 15:30	EQ BLK	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Diazinon	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Ethion	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
12/1/2003 15:30	EQ BLK	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
12/1/2003 15:30	EQ BLK	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
12/1/2003 15:30	EQ BLK	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
12/1/2003 15:30	EQ BLK	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
12/1/2003 15:30	EQ BLK	GC-Water	Naled	0.76	ug/L	U	0.76	3.04
12/1/2003 15:30	EQ BLK	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
12/1/2003 15:30	EQ BLK	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
12/1/2003 15:30	EQ BLK	GC-Water	Phorate	0.048	ug/L	U	0.048	0.192
12/1/2003 15:30	EQ BLK	GC-Water	Prometryn	0.14	ug/L	UJ	0.14	0.56
12/1/2003 15:30	EQ BLK	GC-Water	Simazine	0.048	ug/L	UJ	0.048	0.192
12/1/2003 15:30	EQ BLK	Metals-Water	Aluminum	7	ug/L	U	7	28
12/1/2003 15:30	EQ BLK	Metals-Water	Arsenic	6	ug/L	U	6	24
12/1/2003 15:30	EQ BLK	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
12/1/2003 15:30	EQ BLK	Metals-Water	Calcium	0.2	mg/L	I	0.05	0.2
12/1/2003 15:30	EQ BLK	Metals-Water	Chromium	7.1	ug/L	I	3	12
12/1/2003 15:30	EQ BLK	Metals-Water	Copper	1	ug/L	U	1	4
12/1/2003 15:30	EQ BLK	Metals-Water	Iron	15	ug/L	U	15	60
12/1/2003 15:30	EQ BLK	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
12/1/2003 15:30	EQ BLK	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
12/1/2003 15:30	EQ BLK	Metals-Water	Nickel	8.4	ug/L	I	3	12
12/1/2003 15:30	EQ BLK	Metals-Water	Selenium	1	ug/L	U	1	4
12/1/2003 15:30	EQ BLK	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
12/1/2003 15:30	EQ BLK	Metals-Water	Zinc	4	ug/L	U	4	16
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	Fluoride	0.05	mg F/L	U	0.05	0.1
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	I	0.004	0.01
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	0.06	0.2
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	Sulfate	0.41	mg SO4/L	I	0.2	0.5
12/1/2003 15:30	EQ BLK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
12/1/2003 15:30	EQ BLK	Overflow	Alpha, Total	0.8	pCi/L	U		
12/1/2003 15:30	EQ BLK	Overflow	Alpha-Counting Error	0.6	pCi/L			
12/1/2003 15:30	EQ BLK	Overflow	Oil and Grease	1.9	mg/l	I		
12/1/2003 15:30	EQ BLK	Overflow	Radium 226	0.1	pCi/L	U		
12/1/2003 15:30	EQ BLK	Overflow	Radium 226-Counting Error	0.1	pCi/L			
12/1/2003 15:30	EQ BLK	Overflow	Radium 228	0.8	pCi/L	U		
12/1/2003 15:30	EQ BLK	Overflow	Radium 228-Counting Error	0.5	pCi/L			
12/1/2003 10:00	OUTFALL 001	Bio-AGP/LimNut	Algal Growth Potential	12.8	mg DryWt/L		0.1	0.3
12/1/2003 10:00	OUTFALL 001	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
12/1/2003 10:00	OUTFALL 001	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
12/1/2003 10:00	OUTFALL 001	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	26	#Taxa			
12/1/2003 10:00	OUTFALL 001	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa		#Taxa			
12/1/2003 10:00	OUTFALL 001	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100	NOEC			
12/1/2003 10:00	OUTFALL 001	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100	NOEC			
12/3/2003 10:15	OUTFALL 001	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC		NOEC			
12/3/2003 10:15	OUTFALL 001	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC		NOEC			

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	76
12/1/2003 10:00	OUTFALL 001	BNA-Water	1-Naphthylamine	9.5	ug/L	U	9.5	38
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	UJ	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4,5-Trichlorophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,6-Dichlorophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Acetylaminofluorene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Methylnaphthalene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Naphthylamine	9.5	ug/L	U	9.5	38
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	2-Picoline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
12/1/2003 10:00	OUTFALL 001	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	76
12/1/2003 10:00	OUTFALL 001	BNA-Water	3-Methylcholanthrene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	3-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Aminobiphenyl	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Chloroaniline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
12/1/2003 10:00	OUTFALL 001	BNA-Water	5-Nitro-o-toluidine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Acetophenone	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Aniline	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzidine	95	ug/L	U	95	380
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Benzyl alcohol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
12/1/2003 10:00	OUTFALL 001	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
12/1/2003 10:00	OUTFALL 001	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
12/1/2003 10:00	OUTFALL 001	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dibenzofuran	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dimethylaminoazobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Dinoseb	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Ethyl methanesulfonate	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Hexachloropropene	1.9	ug/L	UJ	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Isosafrole	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Methyl methanesulfonate	0.95	ug/L	UJ	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosodi-n-butylamine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosodiethylamine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosomorpholine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosopiperidine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	76
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pentachlorobenzene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pentachloronitrobenzene	0.95	ug/L	UJ	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pentachlorophenol	2.9	ug/L	UJ	2.9	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	11
12/1/2003 10:00	OUTFALL 001	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
12/1/2003 10:00	OUTFALL 001	BNA-Water	Safrole	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
12/1/2003 10:00	OUTFALL 001	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.6
12/1/2003 10:00	OUTFALL 001	BNA-Water	o-Toluidine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	76
12/3/2003 10:15	OUTFALL 001	BNA-Water	1-Naphthylamine	9.5	ug/L	U	9.5	38
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	UJ	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4,5-Trichlorophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,6-Dichlorophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Acetylaminofluorene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Methylnaphthalene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Naphthylamine	9.5	ug/L	U	9.5	38
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	2-Picoline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
12/3/2003 10:15	OUTFALL 001	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	76
12/3/2003 10:15	OUTFALL 001	BNA-Water	3-Methylcholanthrene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	3-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Aminobiphenyl	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Chloroaniline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Nitroaniline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
12/3/2003 10:15	OUTFALL 001	BNA-Water	5-Nitro-o-toluidine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Acetophenone	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Aniline	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzidine	95	ug/L	U	95	380
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Benzyl alcohol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
12/3/2003 10:15	OUTFALL 001	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
12/3/2003 10:15	OUTFALL 001	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
12/3/2003 10:15	OUTFALL 001	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dibenzofuran	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dimethylaminoazobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Dinoseb	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Ethyl methanesulfonate	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	11

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/3/2003 10:15	OUTFALL 001	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Hexachloropropene	1.9	ug/L	UJ	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Isosafrole	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Methyl methanesulfonate	0.95	ug/L	UJ	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosodi-n-butylamine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosodiethylamine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosomorpholine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosopiperidine	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	76
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pentachlorobenzene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pentachloronitrobenzene	0.95	ug/L	UJ	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pentachlorophenol	2.9	ug/L	UJ	2.9	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	11
12/3/2003 10:15	OUTFALL 001	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
12/3/2003 10:15	OUTFALL 001	BNA-Water	Safrole	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
12/3/2003 10:15	OUTFALL 001	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.6
12/3/2003 10:15	OUTFALL 001	BNA-Water	o-Toluidine	0.95	ug/L	U	0.95	3.8
12/1/2003 10:00	OUTFALL 001	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
12/1/2003 10:00	OUTFALL 001	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Azinphos Methyl	0.048	ug/L	UJ	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
12/1/2003 10:00	OUTFALL 001	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
12/1/2003 10:00	OUTFALL 001	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Diazinon	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Ethion	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
12/1/2003 10:00	OUTFALL 001	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
12/1/2003 10:00	OUTFALL 001	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
12/1/2003 10:00	OUTFALL 001	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
12/1/2003 10:00	OUTFALL 001	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
12/1/2003 10:00	OUTFALL 001	GC-Water	Naled	0.76	ug/L	U	0.76	3.04
12/1/2003 10:00	OUTFALL 001	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
12/1/2003 10:00	OUTFALL 001	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
12/1/2003 10:00	OUTFALL 001	GC-Water	Phorate	0.048	ug/L	U	0.048	0.192
12/1/2003 10:00	OUTFALL 001	GC-Water	Prometryn	0.14	ug/L	UJ	0.14	0.56
12/1/2003 10:00	OUTFALL 001	GC-Water	Simazine	0.048	ug/L	UJ	0.048	0.192
12/3/2003 10:15	OUTFALL 001	GC-Water	Alachlor	0.71	ug/L	U	0.71	2.84
12/3/2003 10:15	OUTFALL 001	GC-Water	Ametryn	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Atrazine	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Azinphos Methyl	0.06	ug/L	UJ	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Bromacil	0.24	ug/L	U	0.24	0.96
12/3/2003 10:15	OUTFALL 001	GC-Water	Butylate	0.24	ug/L	U	0.24	0.96

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/3/2003 10:15	OUTFALL 001	GC-Water	Chlorpyrifos Ethyl	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Chlorpyrifos Methyl	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Diazinon	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Ethion	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Ethoprop	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Fenamiphos	0.24	ug/L	U	0.24	0.96
12/3/2003 10:15	OUTFALL 001	GC-Water	Fonofos	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Hexazinone	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Malathion	0.18	ug/L	U	0.18	0.72
12/3/2003 10:15	OUTFALL 001	GC-Water	Metalaxyl	0.3	ug/L	U	0.3	1.2
12/3/2003 10:15	OUTFALL 001	GC-Water	Metolachlor	0.6	ug/L	U	0.6	2.4
12/3/2003 10:15	OUTFALL 001	GC-Water	Metribuzin	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Mevinphos	0.24	ug/L	U	0.24	0.96
12/3/2003 10:15	OUTFALL 001	GC-Water	Naled	0.95	ug/L	U	0.95	3.8
12/3/2003 10:15	OUTFALL 001	GC-Water	Norflurazon	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Parathion Ethyl	0.18	ug/L	U	0.18	0.72
12/3/2003 10:15	OUTFALL 001	GC-Water	Parathion Methyl	0.12	ug/L	U	0.12	0.48
12/3/2003 10:15	OUTFALL 001	GC-Water	Phorate	0.06	ug/L	U	0.06	0.24
12/3/2003 10:15	OUTFALL 001	GC-Water	Prometryn	0.18	ug/L	UJ	0.18	0.72
12/3/2003 10:15	OUTFALL 001	GC-Water	Simazine	0.06	ug/L	UJ	0.06	0.24
12/1/2003 10:00	OUTFALL 001	Metals-Water	Aluminum	22	ug/L	I	7	28
12/1/2003 10:00	OUTFALL 001	Metals-Water	Arsenic	6	ug/L	U	6	24
12/1/2003 10:00	OUTFALL 001	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
12/1/2003 10:00	OUTFALL 001	Metals-Water	Calcium	37	mg/L	A	0.05	0.2
12/1/2003 10:00	OUTFALL 001	Metals-Water	Chromium	3	ug/L	U	3	12
12/1/2003 10:00	OUTFALL 001	Metals-Water	Copper	1	ug/L	U	1	4
12/1/2003 10:00	OUTFALL 001	Metals-Water	Iron	370	ug/L	A	15	60
12/1/2003 10:00	OUTFALL 001	Metals-Water	Lead	0.057	ug/L	I	0.05	0.2
12/1/2003 10:00	OUTFALL 001	Metals-Water	Magnesium	16	mg/L	A	0.02	0.08
12/1/2003 10:00	OUTFALL 001	Metals-Water	Nickel	3	ug/L	U	3	12
12/1/2003 10:00	OUTFALL 001	Metals-Water	Selenium	1	ug/L	U	1	4
12/1/2003 10:00	OUTFALL 001	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
12/1/2003 10:00	OUTFALL 001	Metals-Water	Zinc	13	ug/L	I	4	16
12/3/2003 10:15	OUTFALL 001	Metals-Water	Aluminum	45	ug/L		7	28
12/3/2003 10:15	OUTFALL 001	Metals-Water	Arsenic	6	ug/L	U	6	24
12/3/2003 10:15	OUTFALL 001	Metals-Water	Cadmium	0.15	ug/L		0.025	0.1
12/3/2003 10:15	OUTFALL 001	Metals-Water	Calcium	36.1	mg/L		0.05	0.2
12/3/2003 10:15	OUTFALL 001	Metals-Water	Chromium	3	ug/L	U	3	12
12/3/2003 10:15	OUTFALL 001	Metals-Water	Copper	1	ug/L	U	1	4
12/3/2003 10:15	OUTFALL 001	Metals-Water	Iron	453	ug/L		15	60
12/3/2003 10:15	OUTFALL 001	Metals-Water	Lead	0.054	ug/L	I	0.05	0.2
12/3/2003 10:15	OUTFALL 001	Metals-Water	Magnesium	15.1	mg/L		0.02	0.08
12/3/2003 10:15	OUTFALL 001	Metals-Water	Nickel	3	ug/L	U	3	12
12/3/2003 10:15	OUTFALL 001	Metals-Water	Selenium	1	ug/L	U	1	4
12/3/2003 10:15	OUTFALL 001	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
12/3/2003 10:15	OUTFALL 001	Metals-Water	Zinc	5.5	ug/L	I	4	16
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Ammonia-N	0.032	mg N/L		0.01	0.02
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Color	20	PCU		5	5
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Fluoride	1	mg F/L		0.05	0.1
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	NO2NO3-N	0.17	mg N/L		0.004	0.01
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	N_KJEL_TOT	0.31	mg N/L	A	0.06	0.2
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Sulfate	50	mg SO4/L		0.2	0.5
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	TDS	207	mg/L		15	60
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	TSS	4	mg/L	U	4	16
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Total-P	1.1	mg P/L	A	0.04	0.12
12/1/2003 10:00	OUTFALL 001	Nutrients-Liquid	Turbidity	2.6	NTU		0.05	0.05
12/3/2003 10:15	OUTFALL 001	Nutrients-Liquid	Ammonia-N	0.042	mg N/L		0.01	0.02
12/1/2003 10:00	OUTFALL 001	Overflow	Alpha, Total	1.3	pCi/L	U		
12/1/2003 10:00	OUTFALL 001	Overflow	Alpha-Counting Error	1	pCi/L			
12/1/2003 10:00	OUTFALL 001	Overflow	Oil and Grease	0.55	mg/l	U		
12/1/2003 10:00	OUTFALL 001	Overflow	Radium 226	0.2	pCi/L			
12/1/2003 10:00	OUTFALL 001	Overflow	Radium 226-Counting Error	0.1	pCi/L			
12/1/2003 10:00	OUTFALL 001	Overflow	Radium 228	0.8	pCi/L	U		
12/1/2003 10:00	OUTFALL 001	Overflow	Radium 228-Counting Error	0.5	pCi/L			
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Bio-AGP/LimNut	Algal Growth Potential	9.17	mg DryWt/L		0.1	0.3
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	61	ug/L		1.7	5.1
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L		1.7	5.1
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	24	#Taxa			
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa	22	#Taxa			

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	Ammonia-N	0.046	mg N/L	A	0.01	0.02
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	Fluoride	2.2	mg F/L		0.05	0.1
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	NO2NO3-N	0.043	mg N/L		0.004	0.01
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	N_KJEL_TOT	1.1	mg N/L	A	0.06	0.2
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	O-Phosphate-P	0.85	mg P/L		0.04	0.1
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	Sulfate	78	mg SO4/L		1	2.5
12/1/2003 13:30	TEST SITE (DOWN STREAM)	Nutrients-Liquid	Total-P	0.95	mg P/L	A	0.02	0.06

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,2,4-Trichlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,2-Dichlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,3,5-Trinitrobenzene	4	ug/L	UJ	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,3-Dichlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,3-Dinitrobenzene	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,4-Dichlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	1,4-Naphthoquinone	20	ug/L	U	20	79
12/5/2003 9:30	OUTFALL 001	BNA-Water	1-Naphthylamine	9.9	ug/L	UJ	9.9	40
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,3,4,6-Tetrachlorophenol	2	ug/L	UJ	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4,5-Trichlorophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4,6-Trichlorophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4-Dichlorophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4-Dimethylphenol	50	ug/L	U	50	200
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	59
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,4-Dinitrotoluene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,6-Dichlorophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2,6-Dinitrotoluene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Acetylaminofluorene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Chloronaphthalene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Chlorophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Methylnaphthalene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Naphthylamine	9.9	ug/L	UJ	9.9	40
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Nitroaniline	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Nitrophenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	2-Picoline	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	U	40	160
12/5/2003 9:30	OUTFALL 001	BNA-Water	3,3'-Dimethylbenzidine	20	ug/L	UJ	20	79
12/5/2003 9:30	OUTFALL 001	BNA-Water	3-Methylcholanthrene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	3-Nitroaniline	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Aminobiphenyl	4	ug/L	UJ	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Bromophenyl phenyl ether	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Chloro-3-methylphenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Chloroaniline	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Nitroaniline	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	4-Nitrophenol	15	ug/L	U	15	59
12/5/2003 9:30	OUTFALL 001	BNA-Water	5-Nitro-o-toluidine	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Acenaphthene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Acenaphthylene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Acetophenone	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Aldrin	1.5	ug/L	UJ	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Aniline	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Anthracene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzidine	99	ug/L	U	99	400
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzo(a)anthracene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzo(a)pyrene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzo(b)fluoranthene	0.99	ug/L	U	0.99	4

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzo(g,h,i)perylene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzo(k)fluoranthene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Benzyl alcohol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Bis(2-chloroethoxy)methane	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Bis(2-chloroethyl)ether	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Bis(2-ethylhexyl)phthalate	320	ug/L	UJ	320	1.20E+03
12/5/2003 9:30	OUTFALL 001	BNA-Water	Butyl benzyl phthalate	5	ug/L	U	5	20
12/5/2003 9:30	OUTFALL 001	BNA-Water	Chrysene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Di-n-butyl phthalate	5	ug/L	U	5	20
12/5/2003 9:30	OUTFALL 001	BNA-Water	Di-n-octyl phthalate	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dibenzo(a,h)anthracene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dibenzofuran	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Diethyl phthalate	2.2	ug/L	U	2.2	8.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dimethyl phthalate	50	ug/L	U	50	200
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dimethylaminoazobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Dinoseb	4	ug/L	UJ	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Diphenylamine	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Endosulfan I	4	ug/L	U	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Endosulfan II	4	ug/L	U	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Endrin	1.5	ug/L	UJ	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Ethyl methanesulfonate	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Fluoranthene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Fluorene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Hexachlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Hexachlorobutadiene	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	UJ	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Hexachloropropene	2	ug/L	UJ	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Indeno(1,2,3-cd)pyrene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Isophorone	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Isosafrole	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Methapyrilene	4	ug/L	U	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Methyl methanesulfonate	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosodi-n-butylamine	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	UJ	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosodiethylamine	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosodimethylamine	2	ug/L	UJ	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosodiphenylamine	3	ug/L	UJ	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosomethylethylamine	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosomorpholine	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosopiperidine	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	N-Nitrosopyrrolidine	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Naphthalene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Nitrobenzene	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	Nitroquinoline-1-oxide	20	ug/L	UJ	20	79
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pentachlorobenzene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pentachloroethane	50	ug/L	U	50	200
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pentachloronitrobenzene	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pentachlorophenol	3	ug/L	UJ	3	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Phenacetin	4	ug/L	U	4	12
12/5/2003 9:30	OUTFALL 001	BNA-Water	Phenanthrene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Phenol	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pyrene	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	Pyridine	4	ug/L	UJ	4	16
12/5/2003 9:30	OUTFALL 001	BNA-Water	Safrole	0.99	ug/L	U	0.99	4
12/5/2003 9:30	OUTFALL 001	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	5.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	m,p-Cresols	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	o-Cresol	2	ug/L	U	2	7.9
12/5/2003 9:30	OUTFALL 001	BNA-Water	o-Toluidine	0.99	ug/L	UJ	0.99	4
12/5/2003 9:30	OUTFALL 001	GC-Water	Alachlor	0.59	ug/L	U	0.59	2.36
12/5/2003 9:30	OUTFALL 001	GC-Water	Ametryn	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Atrazine	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Azinphos Methyl	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
12/5/2003 9:30	OUTFALL 001	GC-Water	Butylate	0.2	ug/L	UJ	0.2	0.8
12/5/2003 9:30	OUTFALL 001	GC-Water	Chlorpyrifos Ethyl	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Chlorpyrifos Methyl	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Diazinon	0.049	ug/L	UJ	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Ethion	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Ethoprop	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
12/5/2003 9:30	OUTFALL 001	GC-Water	Fonofos	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Hexazinone	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Malathion	0.15	ug/L	U	0.15	0.6
12/5/2003 9:30	OUTFALL 001	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
12/5/2003 9:30	OUTFALL 001	GC-Water	Metolachlor	0.49	ug/L	U	0.49	1.96
12/5/2003 9:30	OUTFALL 001	GC-Water	Metribuzin	0.098	ug/L	UJ	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Mevinphos	0.2	ug/L	UJ	0.2	0.8
12/5/2003 9:30	OUTFALL 001	GC-Water	Naled	0.78	ug/L	U	0.78	3.12
12/5/2003 9:30	OUTFALL 001	GC-Water	Norflurazon	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
12/5/2003 9:30	OUTFALL 001	GC-Water	Parathion Methyl	0.098	ug/L	U	0.098	0.392
12/5/2003 9:30	OUTFALL 001	GC-Water	Phorate	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
12/5/2003 9:30	OUTFALL 001	GC-Water	Simazine	0.049	ug/L	U	0.049	0.196
12/5/2003 9:30	OUTFALL 001	Metals-Water	Aluminum	35	ug/L	A	7	28
12/5/2003 9:30	OUTFALL 001	Metals-Water	Arsenic	6	ug/L	U	6	24
12/5/2003 9:30	OUTFALL 001	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
12/5/2003 9:30	OUTFALL 001	Metals-Water	Calcium	36	mg/L	A	0.05	0.2
12/5/2003 9:30	OUTFALL 001	Metals-Water	Chromium	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	Metals-Water	Copper	1	ug/L	U	1	4
12/5/2003 9:30	OUTFALL 001	Metals-Water	Iron	369	ug/L	A	15	60
12/5/2003 9:30	OUTFALL 001	Metals-Water	Lead	0.062	ug/L	I	0.05	0.2
12/5/2003 9:30	OUTFALL 001	Metals-Water	Magnesium	15.3	mg/L	A	0.02	0.08
12/5/2003 9:30	OUTFALL 001	Metals-Water	Nickel	3	ug/L	U	3	12
12/5/2003 9:30	OUTFALL 001	Metals-Water	Selenium	1	ug/L	U	1	4
12/5/2003 9:30	OUTFALL 001	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
12/5/2003 9:30	OUTFALL 001	Metals-Water	Zinc	8.1	ug/L	I	4	16
12/5/2003 9:30	OUTFALL 001	Nutrients-Liquid	Ammonia-N	0.035	mg N/L		0.01	0.02
12/5/2003 9:30	OUTFALL 001-BIOASSAY	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100	NOEC			
12/5/2003 9:30	OUTFALL 001-BIOASSAY	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100	NOEC			

Appendix 5

Typical Values for Selected Parameters in Florida Waters

Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Phytoplankton Chlorophyll a	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	**48.70**	**78**
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	**ND**
Hester-Dendy Diversity	**0.84**	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**2.01**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	**26**	29	32	**28**
Dipnet Taxa Richness	9	12	**17**	20	22	24.5	26	28	31	37	53	**19**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	**0.73**	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.82**
Total Ammonia	0.02	0.02	0.04	**0.05**	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.048**
Nitrate plus Nitrite	0.01	0.01	**0.03**	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.039**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	**0.74**	1.51	**0.99**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	**0.59**	1.37	**0.9**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**ND**

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Phytoplankton Chlorophyll a	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	**48.70**	**61**
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	**ND**
Hester-Dendy Diversity	0.84	**2.12**	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**2.25**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	**21.5**	26	29	32	**25**
Dipnet Taxa Richness	9	**12**	17	20	22	24.5	26	28	31	37	53	**13**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	1.00	**1.11**	1.26	1.49	1.93	2.80	**1.1**
Total Ammonia	0.02	0.02	0.04	**0.05**	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.046**
Nitrate plus Nitrite	0.01	0.01	**0.03**	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.043**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	**0.74**	1.51	**0.95**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	**0.59**	1.37	**0.85**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**ND**

Phytoplankton chlorophyll-a measured in µg/L. Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data.

ND = No data

Appendix 6

Additional physical, chemical, toxicological and microbiological results

Data recorded during the chronic screening bioassays of a sample of effluent from Cytec Industries, Inc., Old Hwy 37, Bradley, Polk County, Florida, NPDES# FL0132381, performed from 2 to 9 December, 2003.

Facility: **Cytec Industries, Inc. - Brewster Gypsum Stack** **NPDES #: FL0132381** Facility Type: **Industrial Wastewater**
Location: Old Hwy 37, Bradley Contact/District: J. Champion/SW
County: Polk Test type: chronic renewal screen
Sample #1 Collection Date: ####### Time: 0930 # tests: 2 Receiving Water: Class III fresh
Sample #2 Collection Date: ####### Time: 1015 Chlorination Type: nonchlorinated South Prong Alafia River
Sample #3 Collection Date: ####### Time: 0930
Test Beginning Date: ####### Time: 1350
Test Ending Date: ####### Time: 1300 FDEP SOP#: TA07_05

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Analysts: Christa Pierini, Joshua Ayres, Marshall Faircloth

Reviewer: Julie Espy

Organism: ***Ceriodaphnia dubia*** Life stage: <24 hrs [A]Feeding: YCT/Algae
Chamber size: 30mL Food Batch #: #4/#22

	Sample/Diluent	# Young								
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	72 hr	96 hr	120 hr	144 hr	168 hr	Total
Control A	0/20	0	0	0	0	2	8	10	0	20
Control B	0/20	0	0	0	0	0	0	0	0	0
Control C	0/20	0	0	0	0	3	6	0	10	19
Control D	0/20	0	0	0	0	3	8	0	9	20
Control E	0/20	0	0	0	0	2	6	2	7	17
Control F	0/20	0	0	0	0	0	0	10	10	20
Control G	0/20	0	0	0	0	6	0	10	13	29
Control H	0/20	0	0	0	0	3	5	0	12	20
Control I	0/20	0	0	0	0	1	10	0	7	18
Control J	0/20	0	0	0	0	3	9	9	0	21
100% A	20/0	0	0	0	0	1	4	14	0	19
100% B	20/0	0	0	0	0	0	0	0	0	0
100% C	20/0	0	0	0	0	3	5	0	12	20
100% D	20/0	0	0	0	0	0	9	0	13	22
100% E	20/0	0	0	0	0	4	6	11	2	23
100% F	20/0	0	0	0	0	3	4	0	15	22
100% G	20/0	0	0	0	0	0	8	1	14	23
100% H	20/0	0	0	0	0	-	-	-	-	0
100% I	20/0	0	0	0	0	4	3	0	13	20
100% J	20/0	0	0	0	0	3	0	6	0	9

Test Statistics	Method	NOEC
Survival	t test	100%
Reproduction	t test	100%

Test statistics	t value	Probability
Survival	1.0000	p>0.05
Reproduction	0.6999	p>0.05

Adult Mortality	Percent
Control	0.0%
100%	10.0%

Total Young	# Young	Young per Adult
Control	184	18.4
100%	158	15.8

LIMS	
Job number 1:	TLH-2003-12-02-25
sample number 1:	719721
Job number 2:	TLH-2003-12-04-09
sample number 2:	720323
Job number 3:	TLH-2003-12-08-03
sample number 3:	721759

Data Transcription Verification
date: 2/3/04
by: Josh Ayres/Scott Andree

Total Resid. Cl2	mg/L	Method
Control water:	0.00	Hach
Field:	-	-
Lab Sample 1:	0.01	Hach
Lab Sample 2:	0.02	Hach
Lab Sample 3:	0.01	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water :	<0.017	<0.017
100% Sample 1:	<0.017	<0.017
100% Sample 2:	<0.017	<0.017
100% Sample 3:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	81	82
100% Sample 1:	113	158
100% Sample 2:	112	158
100% Sample 3:	111	156

Salinity[E]	ppt
100% sample:	<1
Control:	<1

[E]Salinity based on conductivity and temperature.

Organism:	*Ceriodaphnia dubia*		After Renewal "new sample"				Before Renewal "old sample"	
Concentration	Surrogate	Hour	pH	[B]Temp. (°C)	[C]DO (mg/L)	[D]Conductivity	pH	[C]DO (mg/L)
Control	A	0	8.2	24.7	7.4	170	-	-
100%			8.0	24.8	7.2	350	-	-
Control	B	24	8.1	24.2	7.6	175	8.1	7.7
100%			8.1	24.3	7.7	325	8.3	7.5
Control	C	48	8.3	24.3	7.0	185	8.0	6.7
100%			8.1	24.4	7.3	315	8.3	7.0
Control	D	72	8.2	24.2	7.7	175	8.2	7.5
100%			7.9	24.5	7.5	335	8.4	7.3
Control	E	96	8.0	24.0	8.3	165	8.0	7.8
100%			8.0	24.1	8.0	315	8.2	7.5
Control	F	120	7.9	25.3	6.7	185	7.9	6.9
100%			8.1	25.4	6.5	325	7.9	7.2
Control	G	144	8.3	24.1	7.3	170	8.1	7.4
100%			8.3	24.6	7.6	325	8.2	7.5
Control	H	168	-	-	-	-	7.9	7.3
100%			-	-	-	-	8.1	7.3

[A] Organisms were fed daily.
[B]Temperatures of room and test incubator were continuously recorded on a strip chart record
[C]DO = dissolved oxygen.
[D]Conductivity value is uncorrected umhos/cm.
Room Temperature range for the test period was 24.0 - 26.0°C.
Incubator #3 temperature range for the test period was 23.0 - 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.

Data recorded during the chronic screening bioassays of a sample of effluent from Cytec Industries, Inc., Old Hwy 36, Bradley, Polk County, Florida, NPDES# FL0132381, performed from 2 to 9 December, 2003.

Facility:	**Cytec Industries, Inc. - Brewster Gypsum Stack**		**NPDES #: FL0132381**	Facility Type:	**Industrial Wastewater**	**Analysts:**	Christa Pierini
Location:	Old Hwy 37, Bradley		Contact/District:	J. Champion/SW			Joshua Ayres
County:	Polk		Test type:	chronic renewal screen			James Daniels
Sample #1 Collection Date:	12/1/2003	Time: 0930	#tests:	2	Receiving Water:	Class III freshwater	
Sample #2 Collection Date:	12/3/2003	Time: 1015	Chlorination Type:	nonchlorinated		South Prong Alafia River	
Sample #3 Collection Date:	12/5/2003	Time: 0930					
Test Beginning Date:	12/2/2003	Time: 1430				**Page 2 of 3**	
Test Ending Date:	12/9/2003	Time: 1000	FDEP SOP#:	TA07_09			**Reviewer:** Julie Espy

Organism: ***Pimephales promelas*** Life stage: < 24 hours [A]Feeding: *Artemia*
Chamber size: 1000 mL Food Batch #: 0194025G

	Sample/Diluent	Survival: Number alive							
Concentration	Volume(mL)	0 hr	24 hr	48 hr	72 hr	96 hr	120 hr	144 hr	168 hr
Control A	0/500	10	10	10	10	10	10	10	10
Control B	0/500	10	10	10	10	9	9	9	9
Control C	0/500	10	10	10	10	10	10	10	10
Control D	0/500	10	10	10	10	10	10	10	10
100% A	500/0	10	10	10	9	9	9	9	9
100% B	500/0	10	10	10	10	10	9	9	9
100% C	500/0	10	10	10	10	10	10	10	10
100% D	500/0	10	10	10	10	9	9	9	9

[A] Organisms were fed daily.

Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.0 - 26.0.°C. Light Intensity during the test was 50-100 foot candles.
Incubator #3 temperature range for the test period was 23.0-25.0°C. Photoperiod during the test was 16 hours of light : 8 hours of dark.
Conductivity value is uncorrected umhos/cm. DO = dissolved oxygen.

Test statistic	Method	NOEC
Survival	t test	100%

Test statistic	t test value	Probability
Survival	1.4142	p>0.05

Mortality	Percent
Control	2.5%
100%	7.5%

			Before Renewal				After Renewal			
Concentration	Replicate	Hour	pH	Temp. (°C)	DO (mg/L)	Conductivity	pH	Temp. (°C)	DO (mg/L)	Conductivity
Control	A	0	8.1	24.0	7.6	300	-	-	-	-
100%			8.0	24.3	7.5	370	-	-	-	-
Control	B	24	8.0	24.1	7.5	290	7.9	24.0	7.5	300
100%			8.2	24.0	7.6	355	8.1	24.0	7.7	360
Control	C	48	7.7	24.0	6.6	300	8.1	24.0	7.5	290
100%			8.0	24.1	6.5	375	8.0	24.7	7.6	355
Control	D	72	7.6	24.8	6.3	305	8.0	24.2	7.6	300
100%			7.9	25.0	6.3	360	7.8	24.8	7.4	350
Control	A	96	7.6	25.3	6.5	290	7.8	24.0	7.4	280
100%			7.6	25.0	6.5	335	7.7	24.6	7.6	310
Control	B	120	7.5	24.8	6.2	290	7.5	24.2	7.0	295
100%			7.8	25.7	6.1	330	7.7	24.8	6.7	330
Control	C	144	8.0	24.6	7.2	315	7.9	24.2	7.4	295
100%			8.0	25.2	6.9	345	8.1	24.6	7.4	320
Control	D	168	7.7	24.1	6.8	315	-	-	-	-
100%			8.0	24.0	6.5	340	-	-	-	-

LIMS	
Job number 1:	TLH-2003-12-02-25
sample number 1:	719721
Job number 2:	TLH-2003-12-04-09
sample number 2:	720323
Job number 3:	TLH-2003-12-08-03
sample number 3:	721759

Data Transcription Verification
date: 2/3/04
by: Josh Ayres/Scott Andree

Total Resid. Cl2	mg/L	Method
Control water:	0.00	Hach
Field:	-	-
Lab Sample 1:	0.01	Hach
Lab Sample 2:	0.02	Hach
Lab Sample 3:	0.01	Hach

Ammonia	Total (mg/L)	nionized (mg/L)
Control water :	<0.017	<0.017
100% Sample 1:	<0.017	<0.017
100% Sample 2:	<0.017	<0.017
100% Sample 3:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	ardness (mg/L)
Control water:	73	82
100% Sample 1:	113	158
100% Sample 2:	112	158
100% Sample 3:	111	156

Salinity [C]	ppt
100% sample:	<1
Control:	<1

[C] Salinity based on conductivity and temperature.

Data recorded during the chronic screening bioassays of a sample of effluent from Cytec Industries, Inc., Old Hwy 36, Bradley, Polk County, Florida, NPDES# FL0132381, performed from 2 to 9 December, 2003.

Facility: Cytec Industries, Inc. - Brewster Gypsum Stack
Location: Old Hwy 37, Bradley
County: Polk
Sample #1 Collection Date: 12/1/2003 Time: 0930
Sample #2 Collection Date: 12/3/2003 Time: 1015
Sample #3 Collection Date: 12/5/2003 Time: 0930
Test Beginning Date: 12/2/2003 Time: 1430
Test Ending Date: 12/9/2003 Time: 1000
Tare weighing Date: 12/9/2003
Final weighing Date: 12/11/2003

NPDES #: FL0132381 Facility Type: **Industrial Wastewater**
Contact/District: J. Champion/SW
Test type: Chronic renewal screen
tests: 2 Receiving Water: Class III freshwater
Chlorination Type: nonchlorinated South Prong, Alafia River

Page 3 of 3

FDEP SOP#: TA07_09

Analysts: Christa Pierini, Joshua Ayres, James Daniels

Reviewer: Julie Espy

Test Species		A	B	B-A	C	(B-A)/10^A
Pimepales promelas		Pan weight (g)	Dry weight of pan + larvae (g)	Total dry weight of larvae (g)	Initial number of larve	Mean dry weight/larva (mg)
Concentration	Rep #					
Control A	E1	0.02624	0.03172	0.00548	10	0.548
Control B	E2	0.02329	0.02777	0.00448	10	0.448
Control C	E3	0.02418	0.02812	0.00394	10	0.394
Control D	E4	0.02652	0.03067	0.00415	10	0.415
100% A	E5	0.02429	0.02763	0.00334	10	0.334
100% B	E6	0.02389	0.02756	0.00367	10	0.367
100% C	E7	0.02768	0.03230	0.00462	10	0.462
100% D	E8	0.02349	0.02753	0.00404	10	0.404

Test statistic	Method	NOEC
Biomass	t test	100%

Test statistic	t test value	Probability
Biomass	1.3592	p>0.05

[A] Mean dry weight is determined by dividing the total dry weight per replicate by the number of larve originally loaded in that replicate.

Appendix 7

Habitat Assessment Field Sheets

02/19/2004 14:26 8137446457 PHOS MANGM PAGE 02/04

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)
PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DY): 12/1/05	TIME	RECEIVING BODY OF WATER:
REMARKS: Cytec	COUNTY: Polk	LOCATION: S Prong Alafia upstream Control		FIELD ID/NAME:

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
✓			Cattle upstream			upstream	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: > 50

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☑ no ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

ARTIFICIALLY IMPOUNDED ☐ yes

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT: 8 m wide

0.2 m/s | 0.3 m/s | 0.1 m/s

HIGH WATER MARK: 1.25 + 0.5 = 1.75
(m above present water level) (present depth in m) (m above bed)

0.3 m deep | 0.5 m deep | 0.2 m deep

CANOPY COVER %: OPEN: ☐ LIGHTLY SHADED (11-45%): ☑ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE / SLIGHT / MODERATE / SEVERE

SILT SMOTHERING: NONE / SLIGHT / MODERATE / SEVERE OTHER:

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)		4	20x	SAND		3	20x
LEAF PACKS OF MATS		4		MUD/MUCK/SILT			
AQUATIC VEGETATION n/2 Rep		1		OTHER:			
ROCK OR SHELL RUBBLE		4		OTHER:			
UNDERCUT BANKS/ROOTS		4		DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH								
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☐ GREEN (ALGAE): ☐ CLEAR: ☑ OTHER: ☐

WEATHER CONDITIONS/NOTES: Blue skies – 70's. Lovely

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☑	☐
FISH	☐	☐	☑	☐
AQUATIC MACROPHYTES	☐	☑	☐	☐
IRON/SULFUR BACTERIA	☑	☐	☐	☐

SAMPLING TEAM: Jacki Champion, Peggy Morgan

SIGNATURE: Peggy Morgan

DATE: 12-1-05

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

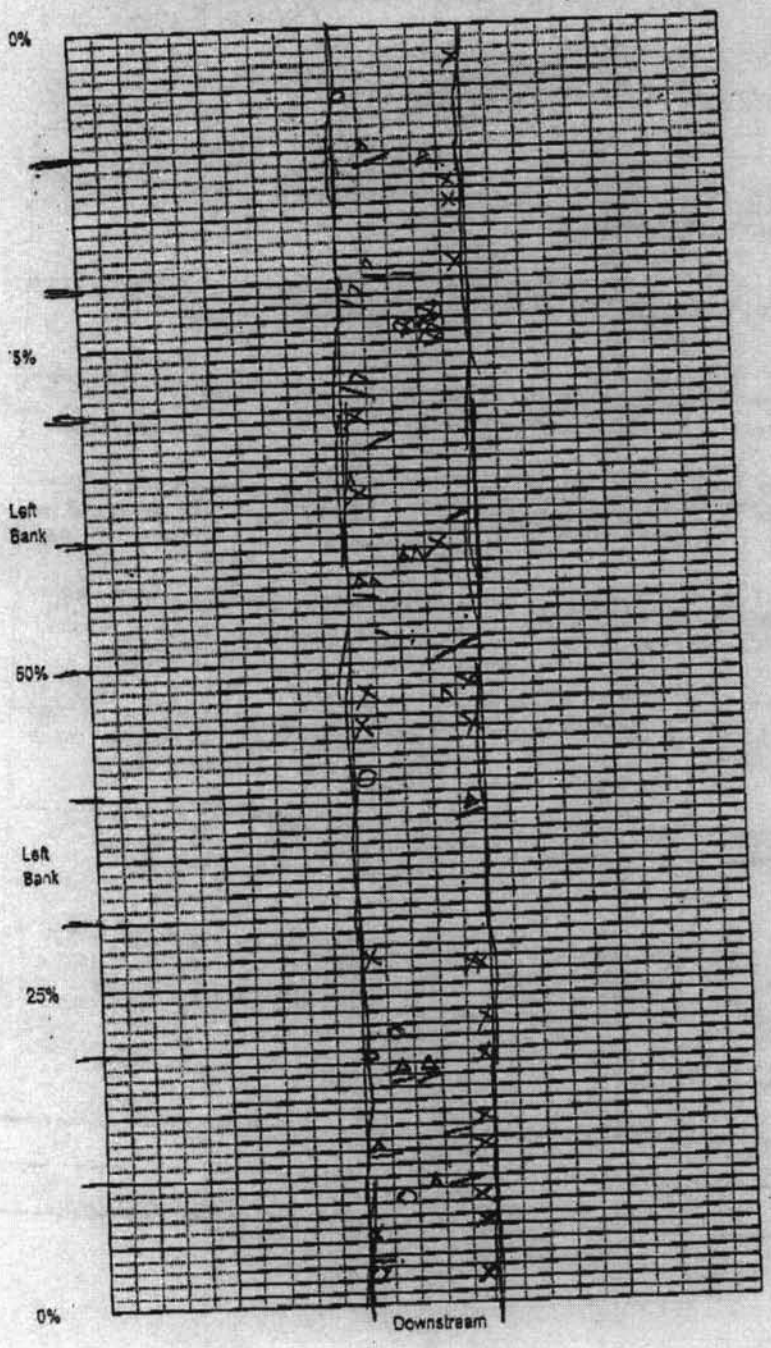
SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE mm/dd/yy: 10/29/03	RECEIVING BODY OF WATER: S. P. Alafia River
REMARKS:	COUNTY: Polk	LOCATION: South Prong of Alafia River (Upstream of outfall)	FIELD ID/NAME: Control Cyter

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 14	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 (14) 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 14	Greater than 30% productive habitat present at site 20 19 18 17 16	15% to 30% productive habitat, by aerial extent 15 (14) 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec (20) 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occuring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 11 Primary Score 59	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20% -50% of habitats affected by sand or silt accumulation 15 14 13 12 (11)	Smothering of 50% -80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 20	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (50% -80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m (10) 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 9 Left Bank 9 Secondary Score 74	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

133 TOTAL SCORE

ANALYSIS DATE: 10/29/03	ANALYST: Jacki Champion	SIGNATURE: Jacquelyn Champion

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats)
- Macrophytes
- Rubble

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

upstream Control
less habitat
periphyton abundant
rocks w/ silt + periphyton
fouling

SB 6002

12-1-03 Objective 1 - Spring sample J Champion

FDEP-SOP-001/01: Form FD 9000-3 (June 1, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 12/1/03	TIME	RECEIVING BODY OF WATER
REMARKS: C-Tec	COUNTY: Polk	LOCATION: S. Prong Alafia downstream test site		FIELD ID/NAME:

RIPARIAN ZONE/STREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

Width of riparian vegetation (m) On least buffered side:

List & map dominant Vegetation on back

Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 8 m wide

Artificially Channelized ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark: 1.5 (m above present water level) + 0.5 (present depth in m) = 2.0 (m above bed)

0.5 m deep; 0.3 m deep; 0.2 m deep

Canopy Cover %: Open: ☐ Lightly Shaded (11-45%): ☑ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☑ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand Smothering: none moderate slight severe Silt smothering: none moderate slight severe Other: ____

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)		4	20 x	Sand		4	20 x
Leaf Packs of Mats		4		Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble		4		Other:			
Undercut banks/Roots		4		*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (umho/cm) Or Salinity (ppt):			Secchi (m):
Top								
Mid-depth								
Bottom								

System Type: Stream: 1st-2nd order ☐ 3rd-4th order ☐ 5th-6th order ☐ 7th order or greater ☐ Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☐ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☑	☐
Fish	☐	☐	☑	☐
Aquatic Macrophytes	☑	☐	☐	☐
Iron/sulfur Bacteria	☑	☐	☐	☐

SAMPLING TEAM: Jada Champion, Peggy Morgan

SIGNATURE:

DATE: 12-4-03

02/19/2004 13:18 8137446457 PHOS MANGM PAGE 05/07

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (mm/dd/yy):	RECEIVING BODY OF WATER:
REMARKS: CYTEC	COUNTY: Polk	LOCATION: S Prong Citrus Central Test	FIELD ID/NAME:

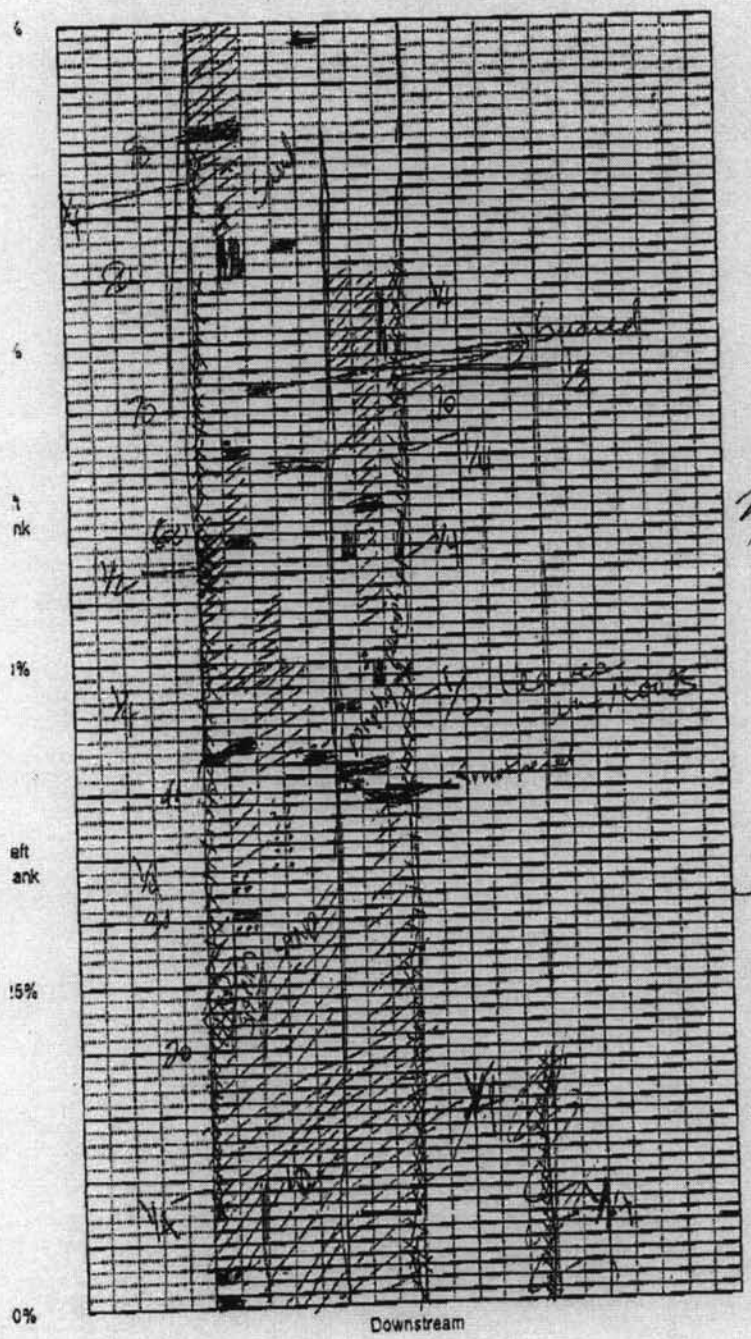
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 18	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 20	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	5% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or eddy occurring > 1 m/sec 5 4 3 2 1
Habitat Smothering 9 Primary Score 67	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20% -50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50% -80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 17	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 8	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60% -80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m. 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 9 Secondary Score 73	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or nonwoody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community gradient 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

140 TOTAL SCORE

ANALYSIS DATE: 12-1-03	ANALYST: Peggy Morgan	SIGNATURE: Peggy Morgan

02/19/2004 13:18 8137446457 PHOS MANGM PAGE 06/07

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately)



Substrates: Code key, draw proportionate habitat abundance.

- Snags 5%
- Roots/undercut banks 7%
- Leaf Packs (or mats) 2%
- Macrophytes
- Cabomba Treubbe 39%

Velocity:
Note where velocity measures were taken

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

does have bends, but not very sinuous - pretty much all one depth
Pools pretty much gone

T = 800

Downstream Cytec test date 12/1/'33

02/19/2004 13:18 8137446457 PHOS MANGM PAGE 07/07

Appendix 8a

Benthic macroinvertebrates collected from Hester-Dendy artificial substrates incubated upstream and downstream of the Cytec Industries-Brewster plant for 28 days (December 1, 2003). Taxa collected and density (average number of individuals/m^2) rounded to the nearest individual (n = 3 samples). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	16	21
Insecta		
Coleoptera		
Dineutus sp.	5	-
Microcylloepus pusillus	13	11
Stenelmis sp.	317	198
Collembola		
Undetermined Collembola	-	3
Diptera		
Corynoneura sp.	-	3
Pentaneura inconspicua	65	33
Polypedilum beckae	6	6
Polypedilum flavum	1,014	738
Polypedilum scalaenum grp.	6	6
Rheotanytarsus exiguus grp.	129	51
Simulium sp.	63	21
Stenochironomus sp.	9	15
Tanytarsus sp. C Epler	3	0
Tanytarsus sp. C Epler	-	6
Thienemanniella xena	-	3
Tribelos fuscicornis	6	-
Ephemeroptera		
Baetis intercalaris	296	161
Caenis sp.	16	29
Stenacron sp.	44	30
Stenonema exiguum	51	20
Megaloptera		
Corydalus cornutus	-	19
Odonata		
Enallagma sp.	16	-
Trichoptera		
Cheumatopsyche sp.	4,266	1,721
Chimarra sp.	3	-
Cyrnellus fraternus	13	-
Hydropsyche sp.	196	25
Leptoceridae	-	3
Neotrichia sp.	48	69
Oecetis persimilis	37	-
Oxyethira sp.	3	-
Mollusca		
Bivalvia		
Veneroida		
Sphaeriidae(mollusca)	-	5
Gastropoda		
Basommatophora		
Ancylidae	3	-
Mesogastropoda		
Amnicola dalli	5	-
Pyrgophorus platyrachis	21	3

Appendix 8b

Benthic macroinvertebrates collected from Hester-Dendy artificial substrates incubated upstream and downstream of the Cytec Industries-Brewster plant for 28 days (December 1, 2003). Taxa collected and total number of individuals counted (n = 3 samples).

	Control Site	Test Site
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	6	8
Insecta		
Coleoptera		
Dineutus sp.	2	-
Microcylloepus pusillus	5	4
Stenelmis sp.	120	75
Collembola		
Undetermined Collembola	-	1
Diptera		
Chironomidae	65	36
Corynoneura sp.	-	1
Pentaneura inconspicua	21	11
Polypedilum beckae	2	2
Polypedilum flavum	330	248
Polypedilum scalaenum grp.	2	2
Rheotanytarsus sp.	1	-
Rheotanytarsus exiguus grp.	41	17
Simulium sp.	24	8
Stenochironomus sp.	3	5
Tanytarsus sp. C epler	1	-
Tanytarsus sp. T epler	-	2
Thienemanniella xena	-	1
Tribelos fuscicornis	2	-
Ephemeroptera		
Baetidae	22	12
Baetis intercalaris	90	49
Caenis sp.	6	11
Heptageniidae	10	9
Stenacron sp.	12	6
Stenonema sp.	4	0
Stenonema exiguum	10	4
Megaloptera		
Corydalus cornutus	-	7
Odonata		
Enallagma sp.	6	-
Trichoptera		
Cheumatopsyche sp.	1543	619
Chimarra sp.	1	-
Cyrnellus fraternus	4	-
Hydropsyche sp.	71	9
Hydropsychidae	66	30
Leptoceridae	0	1
Neotrichia sp.	18	26
Oecetis sp.	13	-
Oecetis persimilis	1	-
Oxyethira sp.	1	-
Polycentropodidae	1	-
Undetermined Trichoptera	7	2

Appendix 8b cont'd

Mollusca		
Bivalvia		
Bivalvia		
Undetermined Bivalvia	-	1
Veneroida		
Sphaeriidae(mollusca)	-	1
Gastropoda		
Basommatophora		
Ancylidae	1	-
Mesogastropoda		
Amnicola dalli	2	-
Hydrobiidae	2	-
Pyrgophorus platyrachis	6	1

Appendix 9a

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of Cytec Industries-Brewster plant (December 1, 2003). Taxa list and number of individuals counted (collapsed). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Haplotaxida		
Allonais paraguayensis	-	1
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	5	2
Decapoda		
Palaemonetes sp.	1	-
Insecta		
Coleoptera		
Dubiraphia vittata	5	2
Microcylloepus pusillus	2	-
Stenelmis sp.	11	10
Diptera		
Parachironomus frequens	1	-
Pentaneura inconspicua	4	2
Polypedilum flavum	23	29
Polypedilum halterale grp.	-	1
Rheotanytarsus exiguus grp.	-	2
Simulium sp.	2	3
Stelechomyia perpulchra	1	-
Tanytarsus sp. T Epler	1	-
Ephemeroptera		
Baetidae	-	2
Caenis sp.	1	3
Heptageniidae	2	-
Trichoptera		
Cheumatopsyche sp.	32	43
Hydropsyche sp.	1	-
Neotrichia sp.	4	2
Oecetis sp.	1	-
Mollusca		
Bivalvia		
Veneroida		
Corbicula fluminea	6	-
Gastropoda		
Mesogastropoda		
Pyrgophorus platyrachis	6	-

Appendix 9b

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of the Cytec Industries-Brewster plant (December 1, 2003). Taxa list and number of individuals counted.

	Control Site	Test Site
Annelida		
Oligochaeta		
Haplotaxida		
Allonais paraguayensis	-	1
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	5	2
Decapoda		
Palaemonetes sp.	1	-
Insecta		
Coleoptera		
Dubiraphia vittata	5	2
Microcylloepus pusillus	2	-
Stenelmis sp.	11	10
Diptera		
Chironomidae	1	1
Parachironomus frequens	1	-
Pentaneura inconspicua	4	2
Polypedilum flavum	22	28
Polypedilum halterale grp.	-	1
Rheotanytarsus exiguus grp.	-	2
Simulium sp.	2	3
Stelechomyia perpulchra	1	-
Tanytarsus sp. T Epler	1	-
Ephemeroptera		
Baetidae	-	2
Caenis sp.	1	3
Heptageniidae	2	-
Trichoptera		
Cheumatopsyche sp.	32	43
Hydropsyche sp.	1	-
Neotrichia sp.	4	2
Oecetis sp.	1	-
Mollusca		
Bivalvia		
Veneroida		
Corbicula fluminea	6	-
Gastropoda		
Mesogastropoda		
Pyrgophorus platyrachis	6	-

Appendix 10a

Taxa list and density (number/mL) for phytoplankton collected upstream and downstream of the Cytec Industries-Brewster plant discharge, December 1, 2003.

Phylum	Control Site	Test Site	Effluent
Bacillariophyta			
Achnanthes sp.	-	113	-
Achnanthes exigua	12	113	-
Achnanthes lanceolata	25	227	-
Cocconeis sp.	12	113	4
Bacillaria paxillifer	12	-	-
Nitzschia sp.	37	340	6
Bacillariophyceae	12	227	21
Cymbellaceae	12	227	-
Encyonema sp.	12	-	-
Encyonema evergladianum	12	-	-
Gomphonema sp.	-	-	2
Gomphonema parvulum	12	-	-
Eunotia sp.	-	113	-
Mastogloia sp.	-	113	-
Mastogloia smithii	-	113	-
Brachysira sp.	-	-	4
Brachysira vitrea	12	-	-
Capartogramma crucicula	12	-	-
Hippodonta sp.	12	-	-
Hippodonta capitata	12	-	-
Navicula sp.	25	227	4
Navicula clementis	-	113	-
Navicula cryptocephala	25	113	-
Navicula minima	-	113	-
Naviculaceae	12	113	-
Pinnularia sp.	-	113	-
Sellaphora sp.	12	-	-
Aulacoseira sp.	12	-	-
Coscinodiscophyceae	-	113	-
Cyclotella sp.	99	567	-
Stephanodiscus sp.	1,101	7,942	-
Pleurosira laevis	-	113	-
Fragilaria sp.	12	113	-
Fragilaria pinnata	12	-	-
Fragilariaceae	12	227	2
Chlorophycota			
Ankistrodesmus sp.	-	113	4
Ankistrodesmus falcatus	-	-	4
Characium sp.	-	-	2
Chlorella sp.	87	794	25
Chlorococcum sp.	-	340	-
Crucigenia tetrapedia	-	340	-
Crucigenia truncata	-	454	-
Scenedesmus sp.	-	340	-
Scenedesmus bijuga	37	-	-
Scenedesmus quadricauda	99	1,588	-
Selenastrum sp.	12	340	4
Tetraedron regulare	-	113	-
Chlorophyceae	-	340	8
Chlamydomonas sp.	25	340	19
Pandorina morum	-	113	-

Appendix 10a cont'd

Chrysophyta			
Mallomonas sp.	-	-	4
Synura sp.	1,744	15,316	-
Chroomonas sp.	-	-	10
Cryptomonas sp.	74	227	61
Cyanophycota			
Aphanocapsa sp.	-	113	-
Cyanobium parvum	37	681	25
Cyanobium plancticum	-	-	71
Microcystis sp.	12	454	2
Rhabdogloea sp.	25	681	-
Synechocystis sp.	-	-	4
Pseudanabaena sp.	-	-	2
Jaaginema sp.	87	340	268
Euglenophycota			
Euglena sp.	25	113	4
Lepocinclis sp.	-	567	-
Phacus sp.	-	113	-
Trachelomonas sp.	-	-	6
Pyrrophycophyta			
Dinophyceae	-	-	2
Glenodinium sp.	12	113	-

Appendix 10b

Taxa list and number of individuals counted for phytoplankton collected upstream and downstream of the Cytec Industries-Brewster plant discharge, December 1, 2003.

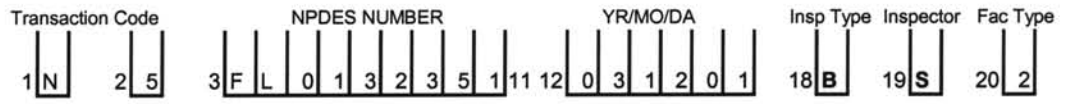
Phylum	Control Site	Test Site	Effluent
Bacillariophyta			
Achnanthes sp.	-	1	-
Achnanthes exigua	1	1	-
Achnanthes lanceolata	2	2	-
Cocconeis sp.	1	1	2
Bacillaria paxillifer	1	-	-
Nitzschia sp.	3	3	3
Bacillariophyceae	1	2	11
Cymbellaceae	1	2	-
Encyonema sp.	1	-	-
Encyonema evergladianum	1	-	-
Gomphonema sp.	-	-	1
Gomphonema parvulum	1	-	-
Eunotia sp.	-	1	-
Mastogloia sp.	-	1	-
Mastogloia smithii	-	1	-
Brachysira sp.	-	-	2
Brachysira vitrea	1	-	-
Capartogramma crucicula	1	-	-
Hippodonta sp.	1	-	-
Hippodonta capitata	1	-	-
Navicula sp.	2	2	2
Navicula clementis	-	1	-
Navicula cryptocephala	2	1	-
Navicula minima	-	1	-
Naviculaceae	1	1	-
Pinnularia sp.	-	1	-
Sellaphora sp.	1	-	-
Aulacoseira	1	-	-
Coscinodiscophyceae	-	1	-
Cyclotella sp.	8	5	-
Stephanodiscus sp.	89	70	-
Pleurosira laevis	-	1	-
Fragilaria sp.	1	1	-
Fragilaria pinnata	1	-	-
Fragilariaceae	1	2	1
Chlorophycota			
Ankistrodesmus sp.	-	1	2
Ankistrodesmus falcatus	-	-	2
Characium sp.	-	-	1
Chlorella sp.	7	7	13
Chlorococcum sp.	-	3	-
Crucigenia tetrapedia	-	3	-
Crucigenia truncata	-	4	-
Scenedesmus sp.	-	3	-
Scenedesmus bijuga	3	-	-
Scenedesmus quadricauda	8	14	-
Selenastrum sp.	1	3	2
Tetraedron regulare	-	1	-
Chlorophyceae	-	3	4
Chlamydomonas sp.	2	3	10
Pandorina morum	-	1	-

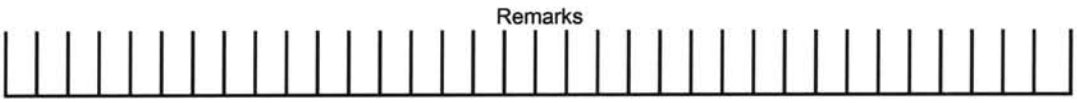
Appendix 10b cont'd

Chrysophyta			
Mallomonas sp.	-	-	2
Synura sp.	141	135	-
Chroomonas sp.	-	-	5
Cryptomonas sp.	6	2	32
Cyanophycota			
Aphanocapsa sp.	-	1	-
Cyanobium parvum	3	6	13
Cyanobium plancticum	-	-	37
Microcystis sp.	1	4	1
Rhabdogloea sp.	2	6	-
Synechocystis sp.	-	-	2
Pseudanabaena sp.	-	-	1
Jaaginema sp.	7	3	140
Euglenophycota			
Euglena sp.	2	1	2
Lepocinclis sp.	-	5	-
Phacus sp.	-	1	-
Trachelomonas sp.	-	-	3
Pyrrophycophyta			
Dinophyceae	-	-	1
Glenodinium sp.	1	1	-

The Bioassay of Cytec Industries-Brewster Plant effluent sampled on December 1, 2003, NPDES #FL0132381.

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





The Priority Pollutants Analysis for Bioassay of Cytec Industries-Brewster Plant effluent sampled on December 1, 2003, NPDES #FL0132381.

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

