

Bioassays of

Continental Turpentine & Rosin Corporation

Shamrock, Dixie County, Florida

No NPDES Number

Sampled 12/14/98

March 1999

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

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Introduction

Continental Turpentine and Rosin Corporation, Shamrock, Dixie County, Florida, no NPDES #, tests performed on 15 to 17 December, 1998, and 28 to 30 January, 1999.

The Continental Turpentine and Rosin Corporation is an abandoned chemical processing facility located on approximately sixty acres of land near County Road 351A in Shamrock, Florida. The property contains an office building, a water supply well and water tower, a tank farm, several process buildings, numerous unlined ponds that were used for waste disposal, and a percolation pond. The site is adjacent to a marshy wetland that covers much of Dixie County, Florida. The site overlays the Floridan Aquifer which comes to within two to four feet of the land surface at the site. The surface drainage at the site is in a westward direction toward an unnamed creek that is located about 400 feet from the property. The facility was operational from 1958 –1984. Until 1981, the facility primarily distilled turpentine and other navel stores from pine-tree stumps. From 1981-1984 the facility was used as a rosin refinery that produced solid and liquid products from raw rosin. The facility stopped production and operating in December, 1984.

During the 1980's, the Florida Department of Environmental Regulation (now FDEP) performed several site assessments of the facility. These assessments resulted in the site being assigned a low priority for inspection. In 1993, a site inspection performed by ABB Environmental Services, Inc., noted that the concentrations of several contaminants exceeded both Federal and State maximum contaminant levels for drinking water and resulted in the site being recommended for medium priority status. A site inspection in 1996 noted dilapidated structures; rusty, punctured, metal drums scattered over the area; and solidified rosin in numerous places on the ground and floating on the water in the percolation pond. (The facility summary information was obtained from personal communication with and documentation provided by Tony Murray, Bureau of Waste Cleanup, Site Investigation Section, FDEP, Tallahassee. The primary document, dated June 28, 1996, was titled *Letter Report, Continental Turpentine and Rosin Corporation, Shamrock, Dixie County, Florida*, prepared by PRC Environmental Management, Inc., Region Four Superfund Technical Assessment and Response Team, 1750 Corporate Drive, Suite 735, Norcross Georgia).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

Results and Discussion

As a result of pending litigation concerning this site, the FDEP Biology Section was asked to perform toxicity tests on samples collected from this site. The FDEP Biology Section performed a 48-hour static acute definitive toxicity test on a water sample that was collected from the percolation pond on December 15, 1998.

Because the percolation pond did not contain surface water at the time of sampling, a hole was dug in the bottom of the percolation pond and the sample was collected from the groundwater that seeped into the hole. This sample was extremely dark in color and had a strong turpentine odor. The sample was filtered through a 1.2µm Gelman® GFC glass-fiber filter in the laboratory to remove the particulates prior to being used in the toxicity test. The freshwater test species, the waterflea, *Ceriodaphnia dubia*, was used for this test. Results showed that the sample was highly toxic to the test organisms (48-hour LC_{50} of 15.06%, 95% Confidence Interval (C.I.) = 13.22%–17.17%) (Table 1).

The FDEP Biology Section performed four 48-hour static acute definitive toxicity tests on two separate water samples that were collected from this facility on January 27, 1999. The sample designated as "C-1" was collected from a monitoring well. The sample designated as "C-2" was collected from the percolation pond, which contained surface water at the time of sampling. The freshwater test species, the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*, were used for these tests. Results showed that both samples were toxic to the test organisms. Sample C-1 produced 48-hour LC_{50}'s of 70.71% (95% C. I. = 61.10%–81.84%) in the *Ceriodaphnia dubia* test and 46.65 % (95% C.I. = 40.08%–54.30%) in the *Cyprinella leedsi* test (Table 2). Sample C-2 also showed toxicity to both test species, producing 48-hour LC_{50}'s of 8.84% (95% C.I. = 7.86%–9.93%) and 70.71% (no 95% C.I. due to the absence of partial mortality in any test concentration), respectively, in the *Ceriodaphnia dubia* test and the *Cyprinella leedsi* test (Table 3).

Total residual chlorine was not measured in the samples in the field and was <0.03 mg/L in each of the samples in the laboratory. The total ammonia and unionized ammonia concentrations in the percolation pond sample collected on December 15,1998, were 0.951 mg/L and 0.045 mg/L, respectively. The total ammonia and unionized ammonia concentrations in sample C-1 (monitoring well) that was collected on January 27, 1999, were 0.546 mg/L and 0.015 mg/L, respectively. Total ammonia was not detected in sample C-2 (percolation pond) that was collected on January 27, 1999.

Samples for chemical analyses were not collected during the sampling event of December 15, 1998. Samples for chemical analyses were collected from the monitoring well (C-1) but were not collected from the surface water of the percolation pond (C-2) during the January 27, 1999, sampling event. Several metals, the volatile organic compound, toluene, and total recoverable petroleum hydrocarbons were detected in the sample from the monitoring well (Table 4). The concentrations of metals, VOC's, and petroleum hydrocarbons detected do not fully explain the level of toxicity observed in this sample. The lack of chemical analyses on a surface-water sample from the percolation pond precluded the possible correlation of constituents in the sample to the mortality in the bioassay tests. Some unidentified constituents are probably contributing to the toxicity of the sample.

Conclusion

The water sample collected from the percolation pond of this facility on December 15, 1998, showed toxicity to the *Ceriodaphnia dubia* test organisms. The water samples collected from the monitoring well and the percolation pond on January 27, 1999, showed toxicity to both the *Ceriodaphnia dubia* and the *Cyprinella leedsi* test organisms. The cause(s) of toxicity in these samples was not determined. Toxicity data suggests that the chemicals that were identified in the sample from the monitoring well were present in insufficient concentrations to have caused the noted toxic effects. We attribute the toxic effects observed in these samples, in part, to unknown constituents of the samples.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of seepage from the Continental Turpentine and Rosin Corporation percolation pond, Shamrock, Dixie County, Florida, No NPDES#, performed on 15 to 17 December, 1998.

Facility:	Continental Turpentine and Rosin Corporation			NPDES #	No Permit	Facility Type:	Chemical Processing
Location:	Shamrock			Contact/District:	Anthony Murray/Site Investigation		abandoned
County:	Dixie			Test type:	static acute definitive		
Sample Collection Date:	12/15/98	Time:	1330	# tests:	1	Receiving Water:	Overflow to unnamed creek
Test Beginning Date:	12/15/98	Time:	1630	Chlorination Type:	not chlorinated		and groundwater
Test Ending Date:	12/17/98	Time:	1500				Page 1 of 1

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (20% DMW)		
(cladocerans):	<0.017	<0.017
100% Sample:	0.951	0.015

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (20% DMW)		
(cladocerans):	71	89
100% Sample:	465	*

*End-point color change could not be detected.

Salinity	(ppt)
Control Water (20% DMW)	
(cladocerans):	0
100% Sample:	0

Organism: *Ceriodaphnia dubia* Life stage: < 24 hours old

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	4	7.6	-	8.0	23.2	-	23.2	7.8	-	7.5	245	270
Control B	0/20	5	5	5	-	-	8.1	-	-	23.1	-	-	7.7	-	295
Control C	0/20	5	5	5	-	-	8.2	-	-	23.1	-	-	7.8	-	250
Control D	0/20	5	5	5	-	-	8.2	-	-	23.2	-	-	7.9	-	290
6.25% A	1.25/18.75	5	5	5	7.6	-	8.2	23.8	-	23.1	7.4	-	7.8	270	350
6.25% B	1.25/18.75	5	5	5	-	-	8.2	-	-	23.0	-	-	7.7	-	345
6.25% C	1.25/18.75	5	5	5	-	-	8.3	-	-	23.0	-	-	7.8	-	380
6.25% D	1.25/18.75	5	5	5	-	-	8.3	-	-	23.2	-	-	7.8	-	340
12.5% A	2.5/17.5	5	5	4	7.6	-	8.3	23.9	-	23.1	7.7	-	7.7	355	240
12.5% B	2.5/17.5	5	5	3	-	-	8.3	-	-	23.1	-	-	7.6	-	280
12.5% C	2.5/17.5	5	5	5	-	-	8.4	-	-	23.0	-	-	7.7	-	290
12.5% D	2.5/17.5	5	5	3	-	-	8.3	-	-	23.0	-	-	7.7	-	195
25% A	5/15	5	5	0	7.5	-	8.3	23.9	-	23.0	7.8	-	6.6	455	290
25% B	5/15	5	5	0	-	-	8.4	-	-	23.0	-	-	6.7	-	365
25% C	5/15	5	5	0	-	-	8.0	-	-	23.0	-	-	3.3	-	245
25% D	5/15	5	5	0	-	-	8.1	-	-	23.0	-	-	3.8	-	350
50% A	10/10	5	1	0	7.5	-	8.6	24.0	-	22.9	7.5	-	6.3	755	610
50% B	10/10	5	0	-	-	8.3	-	-	22.9	-	-	6.7	-	-	800[B]
50% C	10/10	5	2	0	-	-	8.5	-	-	22.9	-	-	6.3	-	640
50% D	10/10	5	2	0	-	-	8.5	-	-	23.0	-	-	6.3	-	550
100% A	20/0	5	0	-	7.4	8.3	-	23.9	23.0	-	7.0	6.0	-	1015	1290[B]
100% B	20/0	5	0	-	-	8.3	-	-	23.1	-	-	6.1	-	-	1150[B]
100% C	20/0	5	0	-	-	8.3	-	-	23.0	-	-	6.0	-	-	1390[B]
100% D	20/0	5	0	-	-	8.3	-	-	22.9	-	-	6.0	-	-	1340[B]

[A] Temperature of test incubator#2 and test room were continuously recorded on strip chart recorders.
Incubator #2 temperature range for the test period was 25.5-27.0°C.
Test room temperature range for the test period was 23.5-25.0°C.

[B] Measurements recorded at twenty-four hours.

Table 2. Data recorded during the 48-hour acute screening bioassays of a sample of water from the Continental Turpentine and Rosin Corporation monitoring well, Shamrock, Dixie County, Florida, No NPDES#, performed on 28 to 30 January, 1999.

Sample C1

Facility:	**Continental Turpentine and Rosin Corporation**	**NPDES #**	**No Permit**	Facility Type:	Chemical Processing
Location:	Shamrock	Contact/District:	Anthony Murray/Site Investigation		**abandoned**
County:	Dixie	Test type:	static acute definitive		
Sample Collection Date:	1/27/99 Time: 1120	# tests:	1	Receiving Water:	Groundwater
Test Beginning Date:	1/28/99 Time: 1330	Chlorination Type:	not chlorinated		
Test Ending Date:	1/30/99 Time: 1400				Page 1 of 1

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (20% DMW)		
(cladocerans):	<0.017	<0.017
100% Sample:	0.546	0.042

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (20% DMW)		
(cladocerans):	80	83
100% Sample:	342	88

Salinity	(ppt)
Control Water (20% DMW)	
(cladocerans):	0
100% Sample:	0

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours old

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	8.2	-	8.1	24.4	-	24.0	7.5	-	8.2	170	170
Control B	0/20	5	5	5	-	-	8.1	-	-	24.2	-	-	8.1	-	180
Control C	0/20	5	5	5	-	-	8.1	-	-	24.2	-	-	7.8	-	195
Control D	0/20	5	5	5	-	-	8.2	-	-	24.4	-	-	7.9	-	195
6.25% A	1.25/18.75	5	5	5	8.2	-	8.2	24.4	-	24.2	7.7	-	8.0	200	225
6.25% B	1.25/18.75	5	5	5	-	-	8.3	-	-	24.0	-	-	8.0	-	230
6.25% C	1.25/18.75	5	5	5	-	-	8.3	-	-	24.0	-	-	7.9	-	230
6.25% D	1.25/18.75	5	3	3	-	-	8.3	-	-	24.1	-	-	8.0	-	220
12.5% A	2.5/17.5	5	5	4	8.2	-	8.3	24.4	-	24.0	7.8	-	7.7	240	250
12.5% B	2.5/17.5	5	5	5	-	-	8.4	-	-	24.3	-	-	8.0	-	250
12.5% C	2.5/17.5	5	5	5	-	-	8.4	-	-	24.1	-	-	7.9	-	260
12.5% D	2.5/17.5	5	5	5	-	-	8.4	-	-	24.0	-	-	7.9	-	250
25% A	5/15	5	4	3	8.3	-	8.3	24.5	-	24.1	7.9	-	8.1	295	260
25% B	5/15	5	5	5	-	-	8.3	-	-	24.1	-	-	8.1	-	240
25% C	5/15	5	4	3	-	-	8.3	-	-	24.0	-	-	8.1	-	260
25% D	5/15	5	4	3	-	-	8.2	-	-	24.2	-	-	8.0	-	260
50% A	10/10	5	5	5	8.3	-	8.2	24.5	-	24.0	7.8	-	8.0	405	280
50% B	10/10	5	5	5	-	-	8.2	-	-	24.0	-	-	8.0	-	280
50% C	10/10	5	5	3	-	-	8.2	-	-	24.0	-	-	8.1	-	290
50% D	10/10	5	5	5	-	-	8.2	-	-	24.0	-	-	8.1	-	290
100% A	20/0	5	0	-	8.1	8.0	-	24.6	23.8	-	7.8	8.2	-	620	425[B]
100% B	20/0	5	4	2	-	-	8.2	-	-	24.2	-	-	7.9	-	330
100% C	20/0	5	2	0	-	-	8.2	-	-	24.2	-	-	7.9	-	350
100% D	20/0	5	4	2	-	-	8.2	-	-	24.1	-	-	7.9	-	335

[A] Temperature of test incubator#2 and test room were continuously recorded on strip chart recorders.
Incubator #2 temperature range for the test period was 26.0-27.2°C.
Test room temperature range for the test period was 24.2-24.5°C.

[B] Measurements recorded at twenty-four hours.

continued

Table 2. Concluded. Data recorded during the 48-hour acute screening bioassays of a sample of water from the Continental Turpentine and Rosin Corporation monitoring well, Shamrock, Dixie County, Florida, No NPDES#, performed on 28 to 30 January, 1999.

Sample C1

Facility:	Continental Turpentine and Rosin Corporation	NPDES #	No Permit	Facility Type:	Chemical Processing
Location:	Shamrock	Contact/District:	Anthony Murray/Site Investigation		abandoned
County:	Dixie	Test type:	static acute definitive		
Sample Collection Date:	1/27/99 Time: 1120	# tests:	1	Receiving Water:	Groundwater
Test Beginning Date:	1/28/99 Time: 1330	Chlorination Type:	not chlorinated		
Test Ending Date:	1/30/99 Time: 1400				Page 2 of 2

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	<0.017	<0.017
100% Sample:	0.546	0.042

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	130	135
100% Sample:	342	88

Salinity	(ppt)
Control Water (fish):	0
100% Sample:	0

Organism: *Cyprinella leedsi* Life stage: 11-14 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/500	5	5	5	8.3	8.3	8.1	24.1	24.6	24.8	7.6	7.5	7.9	240	270
Control B	0/500	5	5	5	-	8.3	8.1	-	25.3	24.8	-	7.6	7.9	-	260
Control C	0/500	5	5	5	-	8.3	8.1	-	24.9	24.9	-	7.4	8.0	-	260
Control D	0/500	5	5	5	-	8.3	8.1	-	24.8	26.0	-	7.5	8.0	-	280
6.25% A	31.25/468.75	5	5	5	8.3	8.3	8.2	24.1	24.8	25.5	7.7	7.5	7.8	270	290
6.25% B	31.25/468.75	5	5	5	-	8.3	8.2	-	25.1	26.0	-	7.5	7.8	-	300
6.25% C	31.25/468.75	5	5	5	-	8.3	8.2	-	25.1	25.4	-	7.5	7.8	-	295
6.25% D	31.25/468.75	5	5	5	-	8.4	8.2	-	26.8	25.4	-	7.6	7.8	-	300
12.5% A	62.5/437.5	5	5	5	8.3	8.4	8.2	24.2	26.1	25.4	7.7	7.3	7.9	300	320
12.5% B	62.5/437.5	5	5	5	-	8.4	8.3	-	25.5	25.1	-	7.3	7.9	-	325
12.5% C	62.5/437.5	5	5	5	-	8.4	8.2	-	25.1	25.1	-	7.5	8.0	-	315
12.5% D	62.5/437.5	5	5	5	-	8.4	8.3	-	26.0	25.8	-	7.5	7.9	-	330
25% A	125/375	5	5	5	8.2	8.4	8.2	24.4	25.0	26.2	7.8	7.7	7.7	350	365
25% B	125/375	5	5	5	-	8.4	8.1	-	25.6	25.4	-	7.7	7.8	-	350
25% C	125/375	5	5	5	-	8.4	8.1	-	25.1	26.6	-	7.7	7.7	-	360
25% D	125/375	5	5	5	-	8.4	8.1	-	24.9	27.1	-	7.7	7.6	-	370
50% A	250/250	5	1	1	8.2	8.2	8.0	24.4	24.5	25.7	7.8	7.6	7.6	450	400
50% B	250/250	5	2	2	-	8.2	8.0	-	24.8	25.5	-	7.7	7.6	-	400
50% C	250/250	5	3	3	-	8.2	8.0	-	24.7	25.6	-	7.7	7.6	-	395
50% D	250/250	5	1	1	-	8.2	8.0	-	25.2	25.9	-	7.7	7.5	-	400
100% A	500/0	5	0	-	8.1	-	-	24.4	-	-	7.8	-	-	625	-
100% B	500/0	5	0	-	-	-	-	-	-	-	-	-	-	-	-
100% C	500/0	5	0	-	-	-	-	-	-	-	-	-	-	-	-
100% D	500/0	5	0	-	-	-	-	-	-	-	-	-	-	-	-

[A] Temperature of test incubator #3 and test room were continuously recorded on strip chart recorders.
Incubator #3 temperature range for the test period was 25.5-26.5°C.
Test room temperature range for the test period was 24.2-24.5°C.

Table 3. Data recorded during the 48-hour acute screening bioassays of a sample of water from the Continental Turpentine and Rosin Corporation percolation pond, Shamrock, Dixie County, Florida, No NPDES#, performed on 28 to 30 January, 1999.

Sample C2

Facility:	Continental Turpentine and Rosin Corporation			NPDES #	No Permit	Facility Type:	Chemical Processing
Location:	Shamrock			Contact/District:	Anthony Murray/Site Investigation		abandoned
County:	Dixie			Test type:	static acute definitive		
Sample Collection Date:	1/27/99	Time:	1150	# tests:	1	Receiving Water:	Groundwater
Test Beginning Date:	1/28/99	Time:	1300	Chlorination Type:	not chlorinated		
Test Ending Date:	1/30/99	Time:	1400				Page 1 of 2

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (20% DMW)		
(cladocerans):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (20% DMW)		
(cladocerans):	80	83
100% Sample:	60	48

Salinity	(ppt)
Control Water (20% DMW)	
(cladocerans):	0
100% Sample:	0

Organism: *Ceriodaphnia dubia* Life stage: < 24 hours old

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	4	4	8.1	-	7.8	24.1	-	24.8	7.7	-	7.6	150	175
Control B	0/20	5	5	5	-	-	7.9	-	-	24.7	-	-	7.7	-	190
Control C	0/20	5	5	5	-	-	8.0	-	-	24.5	-	-	7.7	-	190
Control D	0/20	5	5	5	-	-	8.0	-	-	24.2	-	-	7.7	-	200
6.25% A	1.25/18.75	5	4	4	8.1	-	8.1	24.1	-	24.3	7.7	-	7.9	160	180
6.25% B	1.25/18.75	5	4	3	-	-	8.1	-	-	24.5	-	-	7.9	-	180
6.25% C	1.25/18.75	5	5	4	-	-	8.1	-	-	24.4	-	-	7.8	-	180
6.25% D	1.25/18.75	5	5	5	-	-	8.1	-	-	24.1	-	-	7.9	-	185
12.5% A	2.5/17.5	5	0	-	8.1	8.1	-	24.3	23.9	-	7.7	8.2	-	160	170[B]
12.5% B	2.5/17.5	5	1	1	-	-	8.1	-	-	24.1	-	-	7.9	-	180
12.5% C	2.5/17.5	5	2	2	-	-	8.1	-	-	24.1	-	-	7.7	-	180
12.5% D	2.5/17.5	5	1	0	-	-	8.1	-	-	24.0	-	-	7.8	-	165
25% A	5/15	5	1	1	8.0	-	8.2	24.4	-	24.2	7.8	-	8.0	155	175
25% B	5/15	5	0	-	-	8.1	-	-	23.5	-	-	8.2	-	-	155[B]
25% C	5/15	5	1	0	-	-	8.2	-	-	24.1	-	-	7.9	-	170
25% D	5/15	5	1	1	-	-	8.1	-	-	24.0	-	-	8.0	-	165
50% A	10/10	5	0	-	7.8	8.0	-	24.4	24.0	-	7.8	8.0	-	140	145[B]
50% B	10/10	5	0	-	-	8.0	-	-	23.7	-	-	8.0	-	-	145[B]
50% C	10/10	5	1	1	-	-	8.1	-	-	24.0	-	-	8.0	-	155
50% D	10/10	5	0	-	-	8.0	-	-	23.4	-	-	8.1	-	-	140[B]
100% A	20/0	5	0	-	7.4	8.0	-	24.4	24.0	-	7.7	7.9	-	110	105[B]
100% B	20/0	5	0	-	-	7.9	-	-	24.0	-	-	7.9	-	-	100[B]
100% C	20/0	5	0	-	-	7.9	-	-	23.7	-	-	8.0	-	-	105[B]
100% D	20/0	5	1	0	-	-	8.1	-	-	24.1	-	-	8.0	-	120

[A] Temperature of test incubator #2 and test room were continuously recorded on strip chart recorders.
Incubator #2 temperature range for the test period was 26.0-27.2°C.
Test room temperature range for the test period was 24.2-24.5°C.

[B] Measurements recorded at twenty-four hours.

continued

Table 3. Concluded. Data recorded during the 48-hour acute screening bioassays of a sample of water from the Continental Turpentine and Rosin Corporation percolation pond, Shamrock, Dixie County, Florida, No NPDES#, performed on 28 to 30 January, 1999.

Sample C2

Facility:	Continental Turpentine and Rosin Corporation		NPDES #	No Permit	Facility Type:	Chemical Processing	
Location:	Shamrock		Contact/District:	Anthony Murray/Site Investigation		abandoned	
County:	Dixie		Test type:	static acute definitive			
Sample Collection Date:	1/27/99	Time: 1150	# tests:	1	Receiving Water:	overflow to unnamed	
Test Beginning Date:	1/28/99	Time: 1300	Chlorination Type:	not chlorinated		creek and groundwater	
Test Ending Date:	1/30/99	Time: 1325				Page 2 of 2	

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	130	135
100% Sample:	60	48

Salinity	(ppt)
Control Water (fish):	0
100% Sample:	0

Organism: *Cyprinella leedsi* Life stage: 11-14 days

		SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Sample/Diluent Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	500/0	5	5	5	8.0	8.3	8.2	24.3	24.8	26.2	7.4	7.8	7.6	240	275
Control B	500/0	5	5	5	-	8.3	8.2	-	24.7	24.8	-	7.7	7.8	-	265
Control C	500/0	5	5	5	-	8.3	8.2	-	25.1	24.9	-	7.7	8.0	-	270
Control D	500/0	5	5	5	-	8.3	8.2	-	24.7	25.1	-	7.7	8.0	-	270
6.25% A	31.25/468.75	5	5	5	8.0	8.2	8.1	24.2	24.5	24.9	7.7	7.8	8.0	240	255
6.25% B	31.25/468.75	5	5	5	-	8.2	8.2	-	25.1	25.0	-	7.8	7.8	-	260
6.25% C	31.25/468.75	5	5	5	-	8.2	8.2	-	24.7	25.7	-	7.6	7.9	-	260
6.25% D	31.25/468.75	5	5	5	-	8.2	8.2	-	24.6	24.8	-	7.6	7.8	-	260
12.5% A	62.5/437.5	5	5	5	7.9	8.2	8.2	24.3	24.6	25.1	7.7	7.7	7.8	230	255
12.5% B	62.5/437.5	5	5	5	-	8.2	8.2	-	24.8	25.3	-	7.6	7.8	-	245
12.5% C	62.5/437.5	5	5	5	-	8.2	8.2	-	24.8	24.9	-	7.5	7.8	-	250
12.5% D	62.5/437.5	5	5	5	-	8.2	8.2	-	24.6	24.8	-	7.5	7.8	-	245
25% A	125/375	5	5	5	7.9	8.1	8.2	24.4	25.0	24.7	7.7	7.2	7.8	210	230
25% B	125/375	5	5	5	-	8.0	8.2	-	24.6	25.5	-	7.2	7.8	-	235
25% C	125/375	5	5	5	-	8.0	8.2	-	24.4	25.5	-	7.2	7.7	-	230
25% D	125/375	5	5	5	-	8.0	8.2	-	24.9	24.5	-	7.2	7.7	-	235
50% A	250/250	5	5	5	7.7	7.8	8.0	24.4	24.8	24.8	7.7	6.5	7.7	185	190
50% B	250/250	5	5	5	-	7.8	8.0	-	24.7	25.8	-	6.5	7.4	-	190
50% C	250/250	5	5	5	-	7.7	8.0	-	24.9	25.2	-	6.4	7.4	-	190
50% D	250/250	5	5	5	-	7.7	8.0	-	25.1	24.8	-	6.4	7.3	-	190
100% A	500/0	5	0[B]	-	7.1	7.6	-	24.4	25.5	-	7.6	6.5	-	110	-
100% B	500/0	5	0[B]	-	-	7.6	-	-	25.0	-	-	6.5	-	-	-
100% C	500/0	5	0[B]	-	-	7.6	-	-	25.1	-	-	6.5	-	-	-
100% D	500/0	5	0[B]	-	-	7.5	-	-	25.4	-	-	6.5	-	-	-

[B]Test organisms dead within 2 hours of test initiation.

[A] Temperature of test incubator #3 and test room were continuously recorded on strip chart recorders.
Incubator #3 temperature range for the test period was 25.5-26.5°C.
Test room temperature range for the test period was 24.2-24.5°C.

Table 4. Results of chemical analyses on a sample from a monitoring well (bioassay sample field identifier–C1; chemistry sample field identifier–C3) at the Continental Turpentine and Rosin Corporation sampled on January 27, 1999.

Metals		
Arsenic	5	µg/L[I]
Barium	18.5	µg/L
Base, Neutral, & Acid Extractable Organics		
TRPH (Total Recoverable Petroleum Hydrocarbons)	2.7	mg/L
Pesticides		
None Detected		
Volatile Organic Compounds		
Toluene	34	µg/L[I]

I Value reported is less than the minimum quantitation limit and greater than or equal to the minimum detection limit.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Continental Turpentine Pork Pond Seepage
County: Dixie County
Contact / District: Tony Murray / Tallahassee TI
NPDES Permit #: FL00
LIMS Sample #: 361513 LIMS Job #: TLH-1998-12-17-46
sample log ow
Test Type: Screening (Definitive)
(Static) | Static Renewal | Flow-through
Test Number: 1 of 1

Sample Collection: Date 12/15/98 Time 13:30
Test Beginning: Date 12/15/98 Time 1630
Test Ending: Date 12/17/98 Time 1500
Organism Batch #: 94 Diluent Batch #: 1
Organism Age: < 24 hours SRT toxicant batch #: NA
Test organism: Ceriodaphnia dubia

Remarks: Extremely dark sample. Strong turpentine smell. Filtered aliquot through GFC Glass filter prior to using in tox. test. Only 5 mL used / replicate cup so organisms could still be seen on light table. DW 12/15/98

Temperature Ranges
Incubator #2 25.5°C - 27.0°C
Room 23.5-25.0°C

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Ctr	A	5	5	4 1M	7.6		8.0	23.2		23.2	7.8		7.5	245		270
Ctr	B	5	5	5			8.1			23.1			7.7			295
Ctr	C	5	5	5			8.2			23.1			7.8			250
Ctr	D	5	5	5			8.2			23.2			7.9			290
6.25	A	5	5	5	7.6		8.2	23.8		23.1	7.4		7.8	270		350
6.25	B	5	5	5			8.2			23.0			7.7			345
6.25	C	5	5	5			8.3			23.0			7.8			380
6.25	D	5	5	5			8.3			23.2			7.8			340
12.5	A	5	5	4 1D	7.6		8.3	23.9		23.1	7.7		7.7	355		240
12.5	B	5	5	3 2D			8.3			23.1			7.6			280
12.5	C	5	5	5			8.4			23.0			7.7			280
12.5	D	5	5	3 2D			8.3			23.0			7.7			195
25	A	5	5	0 5D	7.5		8.3	23.9		23.0	7.8		6.6	455		210
25	B	5	5	0 5D			8.4			23.0			6.7			365
25	C	5	5	0 5D			8.0			23.0			3.3			245
25	D	5	5	0 5D			8.1			23.0			3.8			350
50	A	5	1 4D	0 1D	7.5		8.6	24.0		22.9	7.5		6.3	755		610
50	B	5	0 5D	—		8.3	—		22.4	—		6.7	—		400	—
50	C	5	2 3D	0 2D			8.5			22.9			6.3			640
50	D	5	2 3D	0 2D			8.5			23.0			6.3			550
100	A	5	0 5D	—	7.4	8.3	—	23.9	23.0	—	7.0	6.0	—	1015	1290	—
100	B	5	0 5D	—		8.3	—		23.1	—		6.1	—		1150	—
100	C	5	0 5D	—		8.3	—		23.0	—		6.0	—		1390	—
100	D	5	0 5D	—		8.3	—		22.9	—		6.0	—		1340	—
measured by:		DW	FW	DW	CH	FW	CH	CH	FW	CH	CH	FW	CH	CH	FW	CH
recorded by:		FW	FW	DW	DW	FW	DW	DW	FW	DW	DW	FW	DW	DW	FW	DW

Investigators' Signatures
David A. Wright (DAW)
Courtney Hall
Dan Hall (DW)
Marshall Faircloth
Tom Mumford
reviewer

form updated 5/22/98

TSK 48hr-LC50 15.06%
95% CI (13.22-17.17)

Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):		not measured			MF
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	DR-100	CH	MF
Alkalinity (mg/L as $CaCO_3$):	71	465	Hach	CH	MF
Hardness (mg/L as $CaCO_3$):	89	unable to measure *	Hach	CH	MF
Total ammonia (mg/L as N):	<0.017	0.951	Orion	FW	MF
Salinity:	0	0	YCT	CH	MF

Total Ammonia @ 48 hours = 0.347 mg/L MF
* endpoint color change could not be detected in sample

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: C-1 (Continental Turpentine)
County: Dixie
Contact / District: ~~Pat O'Connor~~ / Tony Murray SES NW
NPDES Permit #: FL00 NONE
LIMS Sample #: ~~366466~~ LIMS Job #: TLH-1999-01-~~26-03~~ 27-37
sample log 1/28/99 367244
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 1 of 2

Sample Collection: Date 1/27/99 Time 11:20
Test Beginning: Date 1/28/99 Time ~~11:30~~ 13:30
Test Ending: Date 1/30/99 Time 14:00
Organism Batch #: 5 Diluent Batch #: 2
Organism Age: <24hr SRT toxicant batch #: —
Test organism: Ceriodaphnia dubia

Remarks: 24-h Temps taken after vials set out for mortality counts so temps lower than actual in incubator. D.O. ppm

Culture Room Temperature range = 24.2 – 24.5°C.
Incubator #2 Temperature Range = 26.0 – 27.2°C.

48 hr LC_{50} = 70.71%
95% CI (61.10 – 81.84)

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Ctl	A	5	5	5	8.2		8.1	24.4		24.0	7.5		8.2	170		170
Ctl	B	5	5	5			8.1			24.2			8.1			180
Ctl	C	5	5	5			8.1			24.2			7.8			195
Ctl	D	5	5	5			8.2			24.4			7.9			195
6.25%	A	5	5	5	8.2		8.2	24.4		24.2	7.7		8.0	200		225
6.25%	B	5	5	5			8.3			24.0			8.0			230
6.25%	C	5	5	5			8.3			24.0			7.9			230
6.25%	D	5	3 2D	3			8.3			24.1			8.0			220
12.50%	A	5	5	4 1D	8.2		8.3	24.4		24.0	7.8		7.7	240		250
12.50%	B	5	5	5			8.4			24.3			8.0			250
12.50%	C	5	5	5			8.4			24.1			7.9			260
12.50%	D	5	5	5			8.4			24.0			7.9			250
25.00%	A	5	4 1D	3 1D	8.3		8.3	24.5		24.1	7.9		8.1	295		260
25.00%	B	5	5	5			8.3			24.1			8.1			240
25.00%	C	5	4 1D	3 1D			8.3			24.0			8.1			260
25.00%	D	5	4 1D	3 1D			8.2			24.2			8.0			260
50.00%	A	5	5	5	8.3		8.2	24.5		24.0	7.8		8.0	405		280
50.00%	B	5	5	5			8.2			24.0			8.0			280
50.00%	C	5	5	3 2D			8.2			24.0			8.1			290
50.00%	D	5	5	5			8.2			24.0			8.1			290
100.00%	A	5	0 5D	—	8.1	8.0	—	24.6	23.8	—	7.8	8.2	—	620	425	—
100.00%	B	5	4 1D	2 2D			8.2			24.2			7.9			330
100.00%	C	5	2 3D	0 2D			8.2			24.2			7.9			350
100.00%	D	5	4 1D	2 2D			8.2			24.1			7.9			335
measured by:		MF	MF	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH
recorded by:		FW	MF	CH	FW	OW	CH	FW	OW	CH	FW	OW	CH	FW	OW	CH

Investigators' Signatures

Tom Warfield
Marshall Faircloth
Dan Clark
Counting Head

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			FW
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR-100	CH	OW
Alkalinity (mg/L as $CaCO_3$):		80	342	Hach	CH	OW
Hardness (mg/L as $CaCO_3$):		83	88	Hach	CH	OW
Total ammonia (mg/L as N):		<0.017	0.546	Orion	FW	OW
Salinity:			—			

reviewer

form updated 5/22/98

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: C-1 (Continental Turpentine) | Sample Collection: Date 1/27/99 Time 11:20
County: Dixie | Test Beginning: Date 1/28/99 Time 12:30
Contact / District: Tony Munnay / Northwest SIS | Test Ending: Date 1/30/99 Time 13:00
NPDES Permit #: FL00 none | Organism Batch #: 4,5 Diluent Batch #: Well
LIMS Sample #: ~~366448~~ LIMS Job #: ~~TLH-1559-01-26003~~ 27-37 | Organism Age: 11-14 days SRT toxicant batch #: —
sample log 1/28/99 DW 367244 | Test organism: Cyprinella leedsi

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

Remarks: One Hundred percent mortality in Top Concentration (100%) 2:10 CH
Culture Room Temperature Range = 24.2 - 24.5°C.
Incubator #3 Temperature Range = 25.5 - 26.5°C.

TSN 48-hr LC50 = 46.65%
95% LCI (40.05 - 54.30)

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Ctl A	A1	5	5	5	8.3	8.3	8.1	24.1	24.6	24.8	7.6	7.5	7.9	240	265	270
Ctl B	A2	5	5	5		8.3	8.1		25.3	24.8		7.6	7.9		265	260
Ctl C	A3	5	5	5		8.3	8.1		24.9	24.9		7.4	8.0		255	260
Ctl D	A4	5	5	5		8.3	8.1		24.8	26.0		7.5	8.0		260	280
6.25% A	A5	5	5	5	8.3	8.3	8.2	24.1	24.8	25.5	7.7	7.5	7.8	270	280	290
6.25% B	A6	5	5	5		8.3	8.2		25.1	26.0		7.5	7.8		280	300
6.25% C	A7	5	5	5		8.3	8.2		25.1	25.4		7.5	7.8		285	295
6.25% D	A8	5	5	5		8.4	8.2		26.8	25.4		7.6	7.8		325	300
12.50% A	A9	5	5	5	8.3	8.4	8.2	24.2	26.1	25.4	7.7	7.3	7.9	300	315	320
12.50% B	A10	5	5	5		8.4	8.3		25.5	25.1		7.3	7.9		315	325
12.50% C	A11	5	5	5		8.4	8.2		25.1	25.1		7.5	8.0		305	315
12.50% D	A12	5	5	5		8.4	8.3		26.0	25.8		7.5	7.9		300	330
25.00% A	A13	5	5	5	8.2	8.4	8.2	24.4	25.0	26.2	7.8	7.7	7.7	350	355	365
25.00% B	A14	5	5	5		8.4	8.1		25.6	25.4		7.7	7.8		365	350
25.00% C	A15	5	5	5		8.4	8.1		25.1	26.6		7.7	7.7		365	360
25.00% D	A16	5	5	5		8.4	8.1		24.9	27.1		7.7	7.6		360	370
50.00% A	A17	5	1 40	1	8.2	8.2	8.0	24.4	24.5	25.7	7.8	7.6	7.6	450	440	400
50.00% B	A18	5	2 30	~~0~~ 2		8.2	8.0		24.8	25.5		7.7	7.6		445	400
50.00% C	A19	5	3 20	3		8.2	8.0		24.7	25.6		7.7	7.6		440	395
50.00% D	A20	5	1 40	1		8.2	8.0		25.2	25.9		7.7	7.5		445	400
100% A	A21	5	0		8.1	—	—	24.4	—	—	7.8	—	—	625	—	—
100% B	A22	5	0			—	—		—	—		—	—		—	—
100% C	A23	5	0			—	—		—	—		—	—		—	—
100% D	A24	5	0			—	—		—	—		—	—		—	—
measured by:		DW	DW	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH
recorded by:		CH	DW	CH	FW	DW	CH	FW	DW	CH	FW	DW	CH	FW	DW	CH

Investigators' Signatures

Courtney Hood
Frank Wenker
Marshall Fairbanks
Dan Mack

	Salt Water (Well Water)	20% Min Water	Water Quality Parameters Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			FW
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	CH	DW
Alkalinity (mg/L as $CaCO_3$):	130		342	Hach	CH	DW
Hardness (mg/L as $CaCO_3$):	135		88	Hach	CH	DW
Total ammonia (mg/L as N):	<0.017		0.546	Orion	FW	DW
Salinity:	—		—			

reviewer form updated 5/22/98

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: A-2 (Continental Turpentine)
Sample Collection: Date 1/27/99 Time 11:50
County: Dixie
Test Beginning: Date 1/28/99 Time 13:00
Contact / District: Tony Murray / Northwest SIS.
Test Ending: Date 1/30/99 Time 14:00
NPDES Permit #: FL00 none
Organism Batch #: 5 Diluent Batch #: 2
LIMS Sample #: 367245 LIMS Job #: TLH-1999-01-27-37
Organism Age: <24 hr SRT toxicant batch #: —
sample log 1/28/99 DW
Test organism: Ceriodaphnia dubia
Test Type: Screening (Definitive)
(Static) | Static Renewal | Flow-through
Remarks: 24-hr temps: taken after mortality counts taken & temps recorded are lower than actual in incubator - DW 1/29/99
Test Number: 1 of 2
Culture Room temperature range = 24.2 - 24.5 °C. Incubator #2 Temperature Range = 26.0 - 27.2°C.
-SK 48-hr LC50 = 8.84% ZCI (7.86 - 9.93)

Conc.	Chamber #	Number Live 0 hr	24 hr	48 hr	pH 0 hr	24 hr	48 hr	Temperature (°C) 0 hr	24 hr	48 hr	D.O. (mg/L) 0 hr	24 hr	48 hr	UNCORRECTED Cond. (mmhos/cm) (Cond. (µmhos/cm)) 0 hr	24 hr	48 hr
Ctl	A	5	4 1D	4	8.1 (A)		7.8	24.1		24.8	7.7		7.6	150		175
Ctl	B	5	5	5	~~8.1~~		7.9			24.7			7.7			190
Ctl	C	5	5	5	~~8.1~~		8.0			24.5			7.7			190
Ctl	D	5	5	5	~~8.0~~		8.0			24.2			7.7			200
6.25%	A	5	4 1D	4	8.1		8.1	24.1		24.3	7.7		7.9	160		180
6.25%	B	5	4 1D	3 1D			8.1			24.5			7.9			180
6.25%	C	5	5	4 1D			8.1			24.4			7.8			180
6.25%	D	5	5	5			8.1			24.1			7.9			185
12.50%	A	5	0 SD	—	8.1	8.1	—	24.3	23.9	—	7.7	8.2	—	160	170	—
12.50%	B	5	1 4D	1			8.1			24.1			7.9			180
12.50%	C	5	2 2D	2	(FW)(B)		8.1	(FW)(B)		24.1	(FW)(B)		7.7			190
12.50%	D	5	1 4D	0 1D	~~8.1~~ (B)		8.1	~~24.9~~		24.0	~~7.8~~		7.8			165
25.00%	A	5	1 4D	1	8.0		8.2	24.4		24.2	7.8		8.0	155		175
25.00%	B	5	0 SD	—	—	8.1	—	—	23.5	—	—	8.2	—	—	155	—
25.00%	C	5	1 4D	0 1D			8.2			24.1			7.9			170
25.00%	D	5	1 4D	0 1D			8.1			24.0			8.0			165
50.00%	A	5	0 SD	—	7.8	8.0	—	24.4	24.0	—	7.8	8.0	—	140	145	—
50.00%	B	5	0 SD	—		8.0	—		23.7	—		8.0	—	—	145	—
50.00%	C	5	1 4D	1			8.1			24.0			8.0			155
50.00%	D	5	0 SD	—	—	8.0	—	24.4	23.4	—	—	8.1	—	—	140	—
100.00%	A	5	0 SD	—	7.4	8.0	—	(B) ~~23.7~~ (A)	24.0	—	7.7	7.9	—	110	105	—
100.00%	B	5	0 SD	—	—	7.9	—	—	24.0	—	—	7.9	—	—	100	—
100.00%	C	5	0 SD	—	—	7.9	—	—	23.7	—	—	8.0	—	—	105	—
100.00%	D	5	1 4D	0 1D			8.1			24.1			8.0			120
measured by:		MF	MF	CH	NH	MF	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH
recorded by:		FW	MF	CH	FW	DW	CH	FW	DW	CH	FW	DW	CH	FW	DW	CH

(A) pH written in wrong spaces. FW 1/28/99
(B) Values written in wrong spaces. FW 1/28/99

Investigators' Signatures

Marshall Faircloth

reviewer

form updated 5/22/98

Water Quality Parameters	Salt Water: Well Water	Salt Water: 20% Mon Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			not measured			mr
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR 100	CH	DW
Alkalinity (mg/L as $CaCO_3$):		88	60	Hach	CH	DW
Hardness (mg/L as $CaCO_3$):		83	48	Hach	CH	DW
Total ammonia (mg/L as N):		<0.017	~~0.516~~	Orion	FW	DW
Salinity:		—				

C<0.017 2/1/99 DW

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: C-2 (Continental Turpentine)
County: Dixie
Contact / District: Tony Murray / Northwest S.I.S.
NPDES Permit #: FL00 none
LIMS Sample #: 367245 LIMS Job #: ILH-M99-01-27-37
sample log 4/5/99 OW
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 2
TSK 48 hr LC_{50} = 70.71%
No 95% CI

Sample Collection: Date 1/27/99 Time 11:50
Test Beginning: Date 1/28/99 Time 13:00
Test Ending: Date 1/30/99 Time 13:25
Organism Batch #: 4,5 Diluent Batch #: W41
Organism Age: 11-14 days SRT toxicant batch #: —
Test organism: Cyprinella leedsi

Remarks: Culture Room temperature = 24.2-24.5°C.
Incubator #3 Temperature = 25.5-26.5°C.

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Ctl A	B1	5	5	5	8.0	8.3	8.2	24.3	24.8	26.2	7.4	7.8	7.6	240	250	275
Ctl B	B2	5	5	5		8.3	8.2		24.7	24.8		7.7	7.8		255	265
Ctl C	B3	5	5	5		8.3	8.2		25.1	24.9		7.7	8.0		260	270
Ctl D	B4	5	5	5		8.3	8.2		24.7	25.1		7.7	8.0		255	270
6.25% A	B5	5	5	5	8.0	8.2	8.1	24.2	24.5	24.9	7.7	7.8	8.0	240	245	255
6.25% B	B6	5	5	5		8.2	8.2		25.1	25.0		7.8	7.8		245	260
6.25% C	B7	5	5	5		8.2	8.2		24.7	25.7		7.6	7.9		245	260
6.25% D	B8	5	5	5		8.2	8.2		24.6	24.8		7.6	7.8		250	260
12.50% A	B9	5	5	5	7.9	8.2	8.2	24.3	24.6	25.1	7.7	7.7	7.8	230	240	255
12.50% B	B10	5	5	5		8.2	8.2		24.8	25.3		7.6	7.8		235	245
12.50% C	B11	5	5	5		8.2	8.2		24.8	24.9		7.5	7.8		235	250
12.50% D	B12	5	5	5		8.2	8.2		24.6	24.8		7.5	7.8		235	245
25.00% A	B13	5	5	5	7.9	8.1	8.2	24.4	25.0	24.7	7.7	7.2	7.8	210	220	230
25.00% B	B14	5	5	5		8.0	8.2		24.6	25.5		7.2	7.8		215	235
25.00% C	B15	5	5	5		7.0	8.2		24.4	25.5		7.2	7.7		220	230
25.00% D	B16	5	5	5		8.0	8.2		24.9	24.5		7.2	7.7		225	235
50.00% A	B17	5	5	5	7.7	7.8	8.0	24.4	24.8	24.8	7.7	6.5	7.7	185	180	190
50.00% B	B18	5	5	5		7.8	8.0		24.7	25.8		6.5	7.4		180	190
50.00% C	B19	5	5	5		7.7	8.0		24.9	25.2		6.4	7.4		170	190
50.00% D	B20	5	5	5		7.7	8.0		25.1	24.8		6.4	7.3		175	190
100.00% A	B21	5	0 SD	—	7.1	7.6	—	24.4	25.5	—	7.6	6.5	—	110	120	—
100.00% B	B22	5	0 SD	—		7.6	—		25.0	—		6.5	—		105	—
100.00% C	B23	5	0 SD	—		7.6	—		25.1	—		6.5	—		105	—
100.00% D	B24	5	0 SD	—		7.5	—		25.4	—		6.5	—		110	—
measured by:		DW	OW	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH	CH	MF	CH
recorded by:		CH	OW	CH	FW	OW	CH	FW	OW	CH	FW	OW	CH	FW	OW	CH

Investigators' Signatures

Tony Murray
Counting Head
Marshall Faircloth
[illegible]

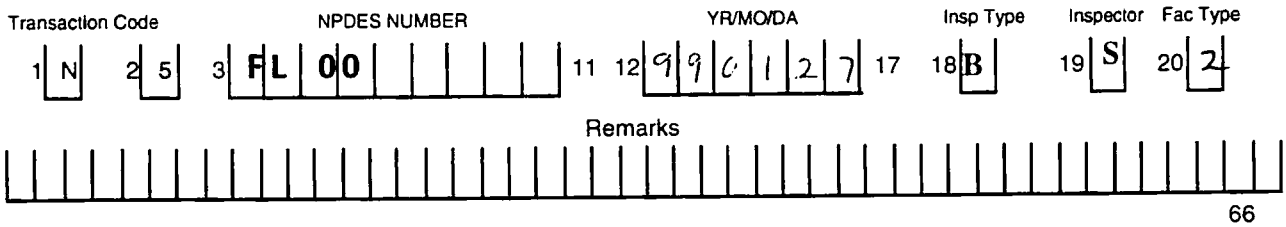
[illegible]
reviewer

form updated 5/22/98

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			MF
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	CH	OW
Alkalinity (mg/L as $CaCO_3$):	130		40	Hach	CH	OW
Hardness (mg/L as $CaCO_3$):	135		48	Hach	CH	OW
Total ammonia (mg/L as N):	<0.017		<0.017	Orion	FW	OW
Salinity:	—					

The Bioassays of the Continental Turpentine and Rosin Corporation percolation pond sampled on December 15, 1998, and the percolation pond and monitoring well sampled on January 27, 1999, no NPDES #.

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



The Priority Pollutants Analysis for the Bioassay of the Continental Turpentine and Rosin Corporation percolation pond and monitoring well sampled on January 27, 1999, no NPDES #.

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

