June 13, 2012

Deborah Oder
Rayonier Performance Fibers
4470 Savannah Highway
Jesup, GA 31598

Dear Ms. Oder:

Re: Chronic Toxicity Testing of Effluent Samples conducted May 31-June 7, 2012
Rayonier-Jesup Performance Fibers, Jesup, Georgia
AMEC Project Number: 6067120062

AMEC Environment & Infrastructure, Inc. (AMEC) Biology Toxicology Laboratory has completed multi-concentration chronic toxicity testing using the water flea (*Ceriodaphnia dubia*) and Fathead Minnow (*Pimephales promelas*), on effluent samples collected by Rayonier personnel during the week of May 31-June 7, 2012.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the Fathead Minnow survival or growth at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 2 samples tested.

Chronic toxicity was not exhibited to the Fathead Minnow survival or growth at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 2 samples tested.

Correspondence:
AMEC
404 SW 140th Terrace
Newberry, Florida
USA 32669-3000
Tel + 1 352 332 3318
Fax + 1 352 333 6622

CHRONIC TOXICITY TESTING REPORT

Rayonier-Jesup Performance Fibers
4470 Savannah Highway
Jesup, Georgia 31598

Test Period: May 31-June 7, 2012

Prepared for:
Rayonier Performance Fibers
4470 Savannah Highway
Jesup, GA 31598

Prepared by:
AMEC Environment & Infrastructure, Inc.
AMEC Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318
NELAC# E82998

Project Number 6067120062

June 13, 2012

Results are summarized in the accompanying report. All test results contained herein comply with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC). The results discussed in this report relate only to the samples tested during the period May 31-June 7, 2012; samples as identified on the Chain-of-Custody form (Appendix A). A summary of USEPA protocol test conditions for each test method is located in the Additional Tables section of this report. Test Organism data is located in Appendix B; chemical and physical data in Appendix C; and Laboratory Test Data (bench sheets), and Statistical Analyses is located in Appendix D.

We appreciate the opportunity to provide these environmental services to Rayonier-Jesup Performance Fibers, Jesup, Georgia and we look forward to working with you again in the future. Should you have any questions or need further assistance, please contact Dave Dickens or Bill Tucker at (352) 332-3318.

Sincerely,
AMEC Environment & Infrastructure, Inc.

R. Dave Dickens
Biology-Toxicology Laboratory Director
Direct Tel: + 1 352 333 6603
Direct Fax: + 1 352 333 6622
E-mail: Dave.Dickens@amec.com

For Judith L. Dudley, Ph.D.
Principal Scientist
Direct Tel: + 1 352 333 2623
Direct Fax: + 1 352 333 6622
E-mail: Judith.Dudley@amec.com
with permission

Attachment: Data Report

TEST SUMMARY

Executive Summary
Rayonier-Jesup Toxicity Test Conducted during May 31-June 7, 2012.

Outfall 1
C. dubia (water flea)
Survival NOEC = 4.64% effluent
Reproduction NOEC = 4.64% effluent

P. promelas (Fathead Minnow)
Survival NOEC = 4.64% effluent
Growth NOEC = 4.64% effluent

Outfall 2
C. dubia (water flea)
Survival NOEC = 28.28% effluent
Reproduction NOEC = 28.28% effluent

P. promelas (Fathead Minnow)
Survival NOEC = 28.28% effluent
Growth NOEC = 28.28% effluent

I. Client

Facility Tested:	Rayonier-Jesup 4470 Savannah Highway Jesup, GA 31598
NPDES Permit #:	GA0003620
Samples Tested:	Rayonier-Jesup Effluent AMEC Unique Identification Numbers: W12-MAY- RAY1-053012 W12-MAY- RAY1-060112 W12-MAY- RAY1-060412 W12-MAY- RAY2-053012 W12-MAY- RAY2-060112 W12-MAY- RAY2-060412

Sample Chain-of-Custody and sample tracking information can be found in Appendix A. Water quality parameters measured upon sample receipt can be found in Table 5 and 6 of the Additional Tables section at the end of this report.

II. Laboratory Accreditation

Laboratory:	Biology Toxicology Laboratory AMEC Environmental & Infrastructure, Inc. 404 SW 140 Terrace Newberry, Florida 32669
Accreditor:	State of Florida, Department of Health Bureau of Laboratories
Accreditation ID:	Lab ID. E82998
Category:	Non-Potable Water – Whole Effluent Toxicity
Effective:	July 1, 2011 through June 30, 2012

III. Tests Conducted

Test:	**Water Flea**, *Ceriodaphnia dubia* Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, Test Method 1002.0 (EPA, 2002). Chronic Definitive Survival and Reproduction Test **Fathead Minnow**, *Pimephales promelas* Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, Test Method 1000.0 (EPA, 2002). Chronic Definitive Survival and Growth Test

Test conditions and test acceptability criteria can be found in the Additional Tables section at the end of this report.

Test Dates (Times):	**Outfall #1** **Water Flea**: May 31 (1120) – June 6 (1300), 2012 **Fathead Minnow**: May 31 (1530) – June 7 (0910), 2012 **Outfall #2** **Water Flea**: May 31 (1500) – June 6 (1320), 2012 **Fathead Minnow**: May 31 (1540) – June 7 (0915), 2012
Source/Age of Organisms:	**Water Flea**: In house culture CD20120521/< 24 hours **Fathead Minnow**: Hydrosphere, ID# 2012-45 / <48 hours

Source organism information can be found in Appendix B of this report.

Test Concentrations:	Outfall 1: Control, 0.29%, 0.58%, 1.16%, 2.32%, and 4.64% effluent Outfall 2: Control, 1.39%, 2.79%, 5.57%, 11.14%, and 28.28% effluent
Control Water:	**Water Flea**: DMW, Diluted Mineral Water, 20-percent Perrier. **Fathead Minnow**: MHSFW, Moderately Hard Synthetic Fresh Water
Deviation from Test Method:	None.
Statistical Analyses:	NOEC determined using Comprehensive Environmental Toxicity Information System (CETIS) (Tidepool, 2008)

IV. Results

Chemical and physical data associated with the test sample material can be found in Appendix C. The results of the chronic toxicity tests conducted with the water flea and the Fathead Minnow are reflected in Tables 1 through 4 below. The water quality parameters of the dilution water, and each site sample received is reflected in Table 5 and 6 in the Additional Tables section of this report. Tables 7 and 8 in the Additional Tables section of this report reflect the Summary of Test Conditions for Test Methods 1002.0 and 1000.0, *C. dubia* and *P. promelas*, respectively.

Results of Toxicity Test Conducted with *C. dubia* for Outfall 1.
The results at the conclusion of the chronic toxicity test conducted with the water flea for Outfall 1 during the test period May 31-June 7, 2012 did not reflect chronic toxicity to the water flea survival or reproduction (Table 1). The results of the Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) ≥ an average of 15 neonates per surviving female; and (3) ≥ 60% of surviving females produced three broods.

Table 1. Survival and Reproduction Data for Water Flea Exposed for Six Days[a] to Rayonier-Jesup Outfall 1 Effluent, May 31- June 6, 2012.

Test Exposures (% Total Effluent)	Survival of All Organisms per Test Exposure (%)	Reproduction (Mean # of neonates per surviving female)
0, Control[(b)]	100	29.4
0.29	100	27.3
0.58	100	31.7
1.16	100	30.4
2.32	100	35.7
4.64	100	29.6
NOEC [(c)] (% Effluent)	**4.64**	**4.64**

Source: AMEC 2012 Prepared by: PSB PSB Checked by: RDD RDD
[(a)] The three brood *Ceriodaphnia dubia* test typically lasts 6 to 8 days.
[(b)] Laboratory Water Control; Diluted Mineral Water Batch #PD2012-8
[(c)] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *P. promelas* for Outfall 1.
The results at the conclusion of the chronic toxicity test conducted with the Fathead Minnow for Outfall 1 during the test period May 17-24, 2012, did not reflect chronic toxicity to the Fathead Minnow survival or growth (Table 2). Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) average dry weight per surviving organism ≥ 0.25 milligrams.

Table 2. Survival and Growth Data for Fathead Minnow Exposed for Seven Days to Rayonier-Jesup Outfall 1 Effluent, May 31- June 7, 2012.

Test Exposures % Total Effluent	Survival of All Organisms per Test Exposure (%)	Growth[(a)] (mg)
0, Control[(b)]	97.5	0.6450
0.29	100	0.8150
0.58	100	0.7800
1.16	97.5	0.8700
2.32	90	0.7900
4.64	100	0.9025
NOEC[(c)] (% Effluent)	**4.64**	**4.64**

Source: AMEC, 2012 Prepared by: PSB PSB Checked by: RDD RDD
[(a)] Mean dry weight per original number of fish at test initiation, excluding those that were accidentally killed or missing.
[(b)] Laboratory Water Control, Moderately Hard Synthetic Freshwater Batch #MHW20120524
[(c)] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *C. dubia* for Outfall 2.

The results at the conclusion of the chronic toxicity test conducted with the water flea for Outfall 2 during the test period May 31-June 7, 2012 did not reflect chronic toxicity to the water flea survival or reproduction (Table 3). The results of the Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) ≥ an average of 15 neonates per surviving female; and (3) ≥ 60% of surviving females produced three broods.

Table 3. Survival and Reproduction Data for Water Flea Exposed for Six Days[a] to Rayonier-Jesup Outfall 2 Effluent, May 31-June 6, 2012.

Test Exposures (% Total Effluent)	Survival of All Organisms per Test Exposure (%)	Reproduction (Mean # of neonates per surviving female)
0, Control[(b)]	100	26.0
1.39	100	30.8
2.79	100	32.1
5.57	90	30.9
11.14	90	36.6
28.28	100	25.4
NOEC [(c)] (% Effluent)	**28.28**	**28.28**

Source: AMEC 2012 Prepared by: PSB PSB Checked by: RDD
[(a)] The three brood *Ceriodaphnia dubia* test typically lasts 6 to 8 days.
[(b)] Laboratory Water Control; Diluted Mineral Water Batch #PD2012-8
[(c)] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *P. promelas*

The results at the conclusion of the chronic toxicity test conducted with the Fathead Minnow for Outfall 2 during the test period May 31-June 7, 2012, did not reflect chronic toxicity to the Fathead Minnow survival or growth (Table 4). Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) average dry weight per surviving organism ≥ 0.25 milligrams.

Table 4. Survival and Growth Data for Fathead Minnow Exposed for Seven Days to Rayonier-Jesup Outfall 2 Effluent, May 17-24, 2012.

Test Exposures % Total Effluent	Survival of All Organisms per Test Exposure (%)	Growth[(a)] (mg)
0, Control[(b)]	97.5	0.7200
1.39	97.5	0.6375
2.79	95	0.8125
5.57	97.5	0.6000
11.14	97.5	0.7300
28.28	92.5	0.6900
NOEC	**28.28**	**28.28**

Source: AMEC, 2012 Prepared by: PSB PSB Checked by: RDD
[(a)] Mean dry weight per original number of fish at test initiation, excluding those that were accidentally killed or missing.
[(b)] Laboratory Water Control, Moderately Hard Synthetic Freshwater Batch #MHW20120524
[(c)] NOEC = No Observed Effect Concentration

V. Summary

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the Fathead minnow survival or growth at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 2 samples tested.

Chronic toxicity was not exhibited to the Fathead minnow survival or growth at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 2 samples tested.

VI. Quality Assurance

Ceriodaphnia dubia, NaCl Reference Toxicant, RT7DCD20120517, 05/17/12
Reproduction: 7-day IC25 = 841.2 mg NaCl/L
7-day IC25 Lower and Upper Limits = 302 to 2078 mg NaCl/L

Pimephales promelas, NaCl Reference Toxicant, RT7DPP20120531, 05/31/2012
Growth: 7-day IC25 = 1897 mg NaCl/L
7-day IC25 Lower and Upper Limits = 986 to 3704 mg NaCl/L

GLOSSARY AND ABBREVIATIONS

Acute	Involving a stimulus severe enough to rapidly induce a response; in toxicity tests, a response observed in 96 hours or less typically is considered acute.
Algae Suspension	Cultures of the green alga, *Selenastrum capricornutum* are purchased as food for the *Ceriodaphnia dubia* test organisms. This algal species is variably referred to as "*Selenastrum*" and "SC" on project data sheets.
Chronic	Involving a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. A chronic effect can be lethality, growth, reduced reproduction, etc.
Chronic Value	A numeric value representing the geometric mean of the numeric values of concentrations analyzed as the NOEC (No Observed Effect Concentration) and the LOEC (Lowest Observed Effect Concentration) by chronic toxicity testing. The chronic value is an estimate of the toxicant concentration that will be the actual no effect concentration based on the chronic effect tested.
Critical Value	Minimum numeric value for a toxicity test endpoint (i.e., survival, growth, or reproduction) below which a given test result will be statistically significantly different from the control value.
DMW	Diluted Mineral Water
EC	Effective concentration, a point estimate of the toxicant concentration that would cause an adverse response such as death, immobilization, or serious incapacitation.
Ft-c	Foot candles - a measure of light intensity
Graphical Method	Log concentration versus percent mortality method. Toxicity test data are plotted on 2-cycle semi-log graph paper. The logarithmic axis (y axis) is used for percent effluent concentration, and the linear axis (x axis) is used for percent mortality. The graph provides a reasonably accurate estimate of the LC_{50}, but does not provide a confidence interval.
IC	Inhibition Concentration, a point estimate of the toxicant concentration that would cause a given percent reduction in a biological measurement such as fecundity or growth.
LC	Lethal Concentration, identical to EC when the observed response is death.
LC_{50}	The toxicant concentration that is lethal to 50 percent of exposed organisms at a specific time of observation.
IWC	Instream Waste Concentration
LCL	Lower 95% Confidence Limit
LOEC	Lowest-Observed-Effect-Concentration, the lowest concentration of toxicant to which organisms are exposed that causes adverse effects.

LWC	Lab Water Control, moderately hard synthetic freshwater prepared from MILLIPORE MILLI-Q[R] water and reagent grade chemicals.
NOEC	No-Observed-Effect-Concentration, the highest concentration of toxicant to which organisms are exposed that causes no observable adverse effects.
NOEL	No-Observed-Effect-Level, the highest concentration of toxicant to which organisms are exposed that causes no observable adverse effects.
MHSFW	Moderately Hard Synthetic Fresh Water
PMSD	Percent Minimum Significant Difference
RWC	Receiving Water Control
UCL	Upper 95% Confidence Limit
$\mu E/m^2/s$	Microeinsteins per square meter per second - a measure of light intensity
USEPA	U.S. Environmental Protection Agency
WPCP	Water Pollution Control Plant
YTC	Yeast and Trout Chow Mixture

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC – Jesup Mill

Location/Address (including county): 4470 Savannah Hwy. Jesup, GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 001

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O. mg/L	
No. 1 outfall	Composite	6/3/12 6/4/12	0616 0804	2.6	7.3	2.5	
Total Number of Samples:	2 gallons						

SAMPLE INFORMATION

Sampler(s): C. D.

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 7.4 Diss. Oxygen: 2.9 ~~Salinity~~/Cond.: 2470 Chlorine (TRC): ∅

Water Quality Measured by: M.W. / D.O. Date: 6/4/12 Time: 0845

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
Deborah M. Oder		6/4/12	0900
	Pamel Billat	6/4/12	1410

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC - Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	5/29/12 5/30/12	8:04 7:55	2.0	8.0	4.5	
Total Number of Samples:	2 gallons						

SAMPLE INFORMATION

Sampler(s): C.D / DO

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 8.0 Diss. Oxygen: 4.5 Salinity/Cond.: 3950 Chlorine (TRC):

Water Quality Measured by: Brian Herrin Date: 5/30/12 Time: 0850

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[signature]	[signature]	5/30/12	0900
		5-30-12	1315

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC – Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	5/31/12 6/1/12	7:50 7:47	34	8.0	4.1	

Total Number of Samples: 2 gallons

SAMPLE INFORMATION

Sampler(s): C. Drury / B. Herrin

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 7.9 Diss. Oxygen: 4.5 ~~Salinity~~/Cond.: 3690 Chlorine (TRC):

Water Quality Measured by: B. Herrin Date: 6/1/12 Time: 0820

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[signature]	[signature]	6/1/12	0830
	[signature]	6/1/12	1400

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC - Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup, GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	6/3/12 6/4/12	0610 0758	25	8.1	4.9	

Total Number of Samples: 2 gallons

SAMPLE INFORMATION

Sampler(s): C.D.

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 8.1 Diss. Oxygen: 5.0 Salinity/Cond.: 3570 Chlorine (TRC): Ø

Water Quality Measured by: M.W. / D.O. Date: 6/4/12 Time: 0842

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[illegible signature]	[illegible signature]	6/14/12	0900
	Pamul Billat	6/4/12	1330

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

APPENDIX B

Test Organism Documents

AMEC Environment & Infrastructure, Inc.
Biology Toxicology Laboratory

***Ceriodaphnia dubia* Culture Source Document**

Brood Board ID No.	Source	Brood Date	Age of Test Organisms	Water Type/Temp. (°C)	Food Type
CD20120521	In House Culture	05/31/12	< 24 hrs	DMW / 25.0	YCT & *Selenastrum*

AMEC Environment & Infrastructure, Inc.
Biology Toxicology Laboratory

***Pimephales promelas* Culture Source Document**

Larvae Batch ID No.	Source	Hatch Date	Age of Test Organisms	Water Type/Temp. (°C)	Food Type
2012-45	Hydrosphere	05/29/12	<48hrs	MHW / 25.0	*Artemia*

APPENDIX C

Chemical and Physical Data

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 60607120062

Sponsor: Rayonier - Jesup Receipt Date: 5/30/12

Type and Number of Containers: 4-1 gallon jugs (2-Outfall 1 + 2-Outfall 2)

Mode of Transport (check one): ___ Mail ✓ Hand ___ Courier: ☐FedEx ☐UPS ☐Other:_____

Shipping tracking number:_____

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab:_____

Information: _____

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	Outfall 1	Outfall 2
AMEC Unique ID:	W12-MAY-RAY1-053012	W12-MAY-RAY2-053012
Temperature (°C):	2.9	2.6
Conductivity (umhos/cm;):/Salinity (ppt):	2240	3820
pH (standard units):	7.4	8.0
Dissolved Oxygen (mg/L):	4.1	4.5
Color:	brown	brown
Total Residual Chlorine (mg/L): Zero: _____	unable to determine b/c color	
Ammonia (mg/L as N): Zero: _____	unable to determine b/c color	
Alkalinity (mg/L of CaCO3):	286.2	7500
Hardness (mg/L of CaCO3):	unable to determine b/c color	

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☒1 ☐2 4°±2°C

Date/Time Recorded: 5-30-12 1350 Sample Custodian: [signature]

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: _____ By: _____

Reviewed By: _____ Date: _____

amec

Toxicology Laboratory
Newberry, Florida

AMEC QA Form Number: 011A
Revised: March 22, 2011

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 60671200062

Sponsor: Rayonier - Jesup Receipt Date: 6/1/12

Type and Number of Containers: 4 1gal jugs - 2 for Outfall 1 / 2 for outfall 2

Mode of Transport (check one): ___ Mail ✓ Hand ___ Courier: ☐FedEx ☐UPS ☐Other: _____

Shipping tracking number: —

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab: _____

Information: _____

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	No. 1 Outfall	No. 2 Outfall
AMEC Unique ID:	W12-JUN-RAY1-060112	W12-JUN-RAY2-060112
Temperature (°C):	3.0	3.4
Conductivity (umhos/cm;):/Salinity (ppt):	2340	3790
pH (standard units):	7.4	8.0
Dissolved Oxygen (mg/L):	3.9	4.1
Color:	brown	brown
Total Residual Chlorine (mg/L): Zero: _____	unable to determine b/c color	
Ammonia (mg/L as N): Zero: _____	unable to determine b/c color	
Alkalinity (mg/L of CaCO3):	281	>500
Hardness (mg/L of CaCO3):	unable to determine b/c color	

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☑1 ☐2 4°±2°C

Date/Time Recorded: 6/1/12 1430 Sample Custodian: Pamul Bellab

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: _____ By: _____

Reviewed By: _____ Date: _____

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 6067120062

Sponsor: Rayonier - Jesup Receipt Date: 6-4-12

Type and Number of Containers: 4-1gal jugs - (2-outfall 1 + 2-outfall 2)

Mode of Transport (check one): ___ Mail ✓ Hand ___ Courier: ☐FedEx ☐UPS ☐Other:

Shipping tracking number:

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab:

Information:

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	No. 1 Outfall	No. 2 Outfall
AMEC Unique ID:	W12-JUN-RAY1-060412	W12-JUN-RAY2-060412
Temperature (°C):	2.6	2.5
Conductivity (umhos/cm;):/Salinity (ppt):	2280	3470
pH (standard units):	7.3	8.1
Dissolved Oxygen (mg/L):	2.5	4.9
Color:	Brown	Brown
Total Residual Chlorine (mg/L): Zero:	unable to determine b/c color	
Ammonia (mg/L as N): Zero:	unable to determine b/c color	
Alkalinity (mg/L of CaCO3):	242.4	7500
Hardness (mg/L of CaCO3):	unable to determine b/c color	

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☐1 ☑2 4°±2°C

Date/Time Recorded: 6-4-12 1410 Sample Custodian:

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: By:

Reviewed By: Date:

APPENDIX D

Laboratory Test Data Sheets and Statistical Analyses

Project Number: 6067120062 Client: Rayonier Jesup Outfall 1 Test: 7 day Chronic *P. promelas* and *C. dubia*

DAILY LOG

5/31/12 - Received sample, warmed sample, checked-in sample, made dilutions, loaded tests, monitored orgs fed orgs, WQ NM, PB, JH

6/1/12 Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, fed orgs, WQ NM, DW, PB

6/2/12 warmed sample, fed orgs, made dilutions, renewed test, monitored orgs + WQs, fed orgs JH JM

6-3-12 - Warmed sample, fed orgs, made dilutions, renewed test, monitored + WQs fed RJM DW

6-4-12 Warmed sample Am fed orgs, made dilutions, renewed test, monitored orgs WQs RJM JH

6/5/12 - Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, WQ, fed orgs JH, PB, NM, DW

6/6/12 Warmed sample, made dilutions, renewed test, monitored orgs, fed orgs, WQ NM, JH, DW, SW

6/7/12 monitored orgs + WQs, took down test JH JM

Project Number: 6067120062 Client: Rayonier Jesup Outfall 2 Test: 7 day Chronic *P. promelas* and *C. dubia*

DAILY LOG

5/31/12 - Received sample, warmed sample, checked-in sample, made dilutions, loaded test, monitored orgs, fed orgs, WQ NM, PB, JH

6/1/12 Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, WQ, fed orgs NM, DW, PB

6-2-12 Warmed samples, made dilutions, renewed test, monitored orgs, WQs, fed Am + Pm RJM, JH

6-3-12 Warmed samples, made dilutions, renewed + monitored orgs, WQs, fed Am + Pm RJM DW

6-4-12 Warmed samples, made dilutions, renewed, + monitored orgs, WQ's, fed Am + Pm RJM, JH

6/5/12 Warmed sample, fed orgs, made dilution, renewed test, monitored orgs, fed orgs, WQ NM, DW, JH, PB

6/6/12 Warmed sample, made dilutions, renewed test, monitored orgs, fed orgs, WQ NM, DW, JH, PB

6/7/12 - monitored orgs + WQS, took down test

Outfall 1
Water Flea
Effluent Test

SUBJECT: Ceriodaphnia dubia CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Ceriodaphnia dubia

ANIMAL HISTORY

LOT NUMBER: CD2012-0521

Date Neonates Collected: 5/31/12

See Page No.: 15 of Cladoceran Logbook

Age of Neonates: < 24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Dilution Water: 20%Perrier/80%MilliQ

Solution Volume: 15 mL

Test Container: 30 mL plastic cup

Organisms per rep: 1

Replicates per Concentration: 10

Feeding: Daily (see Daily Feeding Log) below

Test Temperature: 25± 1 °C

WaterBath /Incubator (Circle One)

Dilution Water Batch Number: DMW PD2012-9

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	0.29	0.58	1.16	2.32	4.64	
Volume of Dilution Water (ml)	200	199.42	198.84	197.68	195.36	190.72	
Volume of Effluent / Stock (ml)	0	0.58	1.16	2.32	4.64	9.28	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
In Holding	5/31/12	~~1030~~	NM	YTC/SC	0.1 mL of each
After Loading	5/31/12	~~1130~~	NM	YTC/SC	0.1 mL of each
1	6/1/12	~~1050~~	DW	YTC/SC	0.1 mL of each
2	6/2/12	~~1000~~	JH	YTC/SC	0.1 mL of each
3	6/3/12	~~0945~~	RJM	YTC/SC	0.1 mL of each
4	6/4/12	~~1045~~	RJM	YTC/SC	0.1 mL of each
5	6/5/12	~~1015~~	JH	YTC/SC	0.1 mL of each
6	6/6/12	~~1310~~	DW	YTC/SC	0.1 mL of each

TEST DATA RECORDED BY: PB

DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: DUBIA CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 1 — Project Number: 6067120062

Test Substance: WWTP Effluent — Test Species: Ceriodaphnia dubia

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.7		25.1		25.7		25.1		24.9		24.8		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0		
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	7.9	7.9	8.2	8.3	
	Alkalinity (mg of CaCO3)	75													
	Hardness (mg of CaCO3)	80													
	Conductivity (µmhos/cm)	175													
0.29	Temp (°C)	23.7	24.7		24.0		25.5		25.0		24.7		24.6		
	pH (su)	8.1	8.1		8.1		7.9		8.0		7.5		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.6	7.7	7.7	7.8	7.9	7.7	5.9	7.8	8.2	8.4	
0.58	Temp (°C)	23.5	24.7		24.0		25.6		25.0		24.8		24.6		
	pH (su)	8.1	8.1		8.1		7.9		8.1		7.6		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.6	7.8	7.7	7.8	7.9	7.7	6.1	7.7	8.2	8.4	
1.16	Temp (°C)	23.5	24.6		24.1		25.7		25.1		24.8		24.5		
	pH (su)	8.1	8.1		8.1		8.0		8.1		7.6		8.2		
	DO (mg/L)	8.1	7.9	7.9	7.6	7.8	7.6	7.8	7.9	7.7	6.2	7.7	8.1	8.3	
2.32	Temp (°C)	23.6	24.6		24.2		25.8		25.2		24.9		24.4		
	pH (su)	8.1	8.2		8.1		8.0		8.1		7.6		8.2		
	DO (mg/L)	7.8	8.0	7.9	7.8	7.5	7.6	7.6	7.8	7.7	6.1	7.7	8.0	8.3	
4.64	Temp (°C)	23.7	24.5		24.2		25.8		25.2		25.1		24.4		
	pH (su)	8.1	8.2		8.2		8.0		8.09		7.6		8.1		
	DO (mg/L)	7.5	7.9	7.8	7.7	7.5	7.5	7.7	7.7	7.6	6.2	7.6	7.8	8.0	
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	~~287~~ 286	~~2500~~ 2.6 5/31/12			~~7500~~	261			~~7500~~	2.92				
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	2340				~~3790~~	2710			~~3470~~	2220				
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS 15		FS15		
pH Meter		PH2	PH2		PH2		PH2		PH 2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4			SCT-4				SCT.4						
INITIALS:		NM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1640	1140		1315		1120		1250		1030		1235		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent
Project Number: 6067120062
Test Species: Ceriodaphnia dubia

Test Conc %	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	3	1	4	1	4	1	0	1	4	1	4	1	0	1	0	1	0
	4	1	6	1	0	1	1	1	1	1	6	1	10	1	10	1	5	1	6	1	7
	5	1	12	1	12	1	1	1	1	1	11	1	0	1	13	1	13	1	11	1	10
	6	1	15	1	14	1	13	1	15	1	12	1	14	1	0	1	10	1	16	1	18
	✓		33		29		25		27		29		28		27		28		33		35
0.29	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	0	1	5	1	5	1	0	1	6	1	1	1	0	1	0	1	0
	4	1	5	1	2	1	4	1	10	1	5	1	10	1	7	1	6	1	4	1	5
	5	1	13	1	11	1	3	1	0	1	8	1	17	1	1	1	0	1	16	1	12
	6	1	16	1	14	1	16	1	15	1	14	1	0	1	16	1	13	1	15	1	18
	✓		34		27		28		30		27		33		25		19		35		35
0.58	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	2	1	0	1	6	1	3	1	4	1	3	1	4	1	2	1	0	1	0
	4	1	0	1	4	1	9	1	10	1	11	1	12	1	9	1	10	1	4	1	6
	5	1	12	1	12	1	2	1	0	1	0	1	1	1	0	1	1	1	14	1	13
	6	1	20	1	14	1	17	1	16	1	16	1	18	1	18	1	15	1	14	1	15
	✓		34		30		34		29		31		34		~~32~~ 31		28		32		34

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7
INITIALS	NM	DW	JH	RJM	RJM	JH	DW	
DATE	5/31/12	6/1/12	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12	
TIME	1120	1045	1010	0940	1040	1010	1300	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
1.16	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	0	1	5	1	5	1	5	1	6	1	5	1	0	1	0	1	0
	4	1	2	1	6	1	10	1	10	1	10	1	8	1	7	1	3	1	6	1	4
	5	1	12	1	9	1	0	1	0	1	0	1	0	1	0	1	5	1	11	1	9
	6	1	16	1	17	1	15	1	17	1	15	1	22	1	18	1	10	1	16	1	15
	✓		35		32		30		32		30		36		30		18		33		28
2.32	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	8	1	4	1	6	1	7	1	3	1	4	1	5	1	0	1	0	1	0
	4	1	1	1	1	1	10	1	0	1	10	1	9	1	8	1	7	1	6	1	6
	5	1	17	1	11	1	0	1	14	1	0	1	0	1	0	1	13	1	12	1	14
	6	1	20	1	17	1	14	1	21	1	19	1	17	1	19	1	18	1	18	1	18
	✓		46		33		30		42		32		30		32		~~51~~ 38		36		38
4.64	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	5	1	7	1	5	1	6	1	5	1	0	1	0	1	0
	4	1	4	1	1	1	10	1	0	1	6	1	9	1	9	1	6	1	4	1	7
	5	1	10	1	9	1	0	1	6	1	0	1	0	1	0	1	14	1	12	1	10
	6	1	15	1	19	10	0	1	19	1	18	1	17	1	17	1	16	1	11	1	15
	✓		29		33	X	15		32		29		32		31		36		27		32

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JH JM	DW	RJM	DW	SW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4	6/5/12	6/6/12			
TIME	1100	1035	1010	0940	1040	1010	1200			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

CETIS Summary Report

Report Date: 06 Jun-12 14:26 (p 1 of 1)
Test Code: 03-0447-1329/W12-MAY-RAY1-CD

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Dilute Mineral Water
Ending Date:	06 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample ID:	08-0111-7024	**Code:**	2FC01360	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-4081-5485	7d Survival Rate	4.64	>4.64	N/A	N/A	21.55	Fisher Exact/Bonferroni-Holm Test
21-2510-4991	Reproduction	4.64	>4.64	N/A	15.58%	21.55	Steel Many-One Rank Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
12-4081-5485	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Result Within Limits
21-2510-4991	Reproduction	Control Resp	29.4	15 - NL	Yes	Result Within Limits
21-2510-4991	Reproduction	PMSD	0.1558	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	1	1	1	1	1	0	0	0.0%	0.0%
0.29		10	1	1	1	1	1	0	0	0.0%	0.0%
0.58		10	1	1	1	1	1	0	0	0.0%	0.0%
1.16		10	1	1	1	1	1	0	0	0.0%	0.0%
2.32		10	1	1	1	1	1	0	0	0.0%	0.0%
4.64		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	29.4	28.2	30.6	25	35	0.585	3.204	10.9%	0.0%
0.29		10	27.3	25.68	28.92	19	34	0.7937	4.347	15.92%	7.14%
0.58		10	31.7	30.85	32.55	28	34	0.4132	2.263	7.14%	-7.82%
1.16		10	30.4	28.54	32.26	18	36	0.9117	4.993	16.43%	-3.4%
2.32		10	35.7	33.71	37.69	30	46	0.9739	5.334	14.94%	-21.43%
4.64		10	29.6	27.47	31.73	15	36	1.041	5.7	19.26%	-0.68%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
0.29		1	1	1	1	1	1	1	1	1	1
0.58		1	1	1	1	1	1	1	1	1	1
1.16		1	1	1	1	1	1	1	1	1	1
2.32		1	1	1	1	1	1	1	1	1	1
4.64		1	1	0	1	1	1	1	1	1	1

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	29	25	27	29	28	27	28	33	35
0.29		34	27	28	30	27	33	25	19	25	25
0.58		34	30	34	29	31	34	31	28	32	34
1.16		35	32	30	32	30	36	30	18	33	28
2.32		46	33	30	42	32	30	32	38	36	38
4.64		29	33	15	32	29	32	31	36	27	32

Analyst: DS QA: PB

Outfall 1
Fathead Minnow
Effluent Test

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 051
Revised: March 2012

SUBJECT: FATHEAD MINNOW CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Pimephales promelas

ANIMAL HISTORY

LOT NUMBER: 2012-45

Date of Hatch: 5/29/12

See Page No. NA of Fish Holding Log for Larvae History

Source of Larvae: Hydrosphere

See Page No.: 12 of Animal Receipt Log

Condition of Larvae: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 Method 1000.0

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Dilution Water: synthetic mod-hard water

Solution Volume: 250 mL

Test Container: 600 mL beaker

Organisms per rep: 10

Replicates per Concentration: 4

Feeding: Daily (see Daily Feeding Log)

Test Temperature: 25 ± 1 °C

WaterBath/Incubator (Circle One)

Dilution Water Batch Number: MHW20120524

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	0.29	0.58	1.16	2.32	4.64	
Volume of Dilution Water (ml)	1000	997.1	994.2	988.4	976.8	953.6	
Volume of Effluent / Stock (ml)	0	2.9	5.8	11.6	23.2	46.4	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
0	5/31/12	1200	JH	BS	2.0 mL
		1630	JH		
1	6/1/12	0800	PB	BS	0.2 mL
		1630	PB		
2	6/2/12	0845	RJM	BS	0.2 mL
		1500	JH		
3	6-3-12	0800	RJM	BS	0.2 mL
		1215	RJM		
4	6/4/12	~~PB~~0745	~~07~~0745 PB	BS	0.2 mL
		1650	PB		
5	6/5/12	0720	OD	BS	0.2 mL
		1540	RJM		
6	6/6/12	0630	NM	BS	0.2 mL
		1530	PB		

PB 5/4/12

TEST DATA RECORDED BY: PB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 1 — **Project Number: 6067120062**

Test Substance: WWTP Effluent — **Test Species: Pimephales promelas**

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	25.0	24.1		24.9		25.6		25.3		25.0		24.3		24.5
	pH (su)	7.8	7.9		7.9	7.8	7.7		7.5		7.5		8.2		8.0
	DO (mg/L)	8.2	6.6	8.1	7.0	8.1	5.4	7.8	6.1	7.7	7.2	7.8	8.3	7.9	8.1
	Alkalinity (mg of CaCO3)	63.6													
	Hardness (mg of CaCO3)	79.8													
	Conductivity (µmhos/cm)	269													
0.29	Temp (°C)	24.0	24.3		24.7		25.6		25.0		25.1		24.4		24.4
	pH (su)	8.2	7.8		7.8	7.7	7.6		7.5		7.6		8.1		8.0
	DO (mg/L)	8.0	6.5	8.0	7.0	~~8.0~~	5.5	7.8	5.9	7.7	7.0	7.6	8.2	7.9	8.1
0.58	Temp (°C)	23.9	24.3		24.6		25.7		25.0		25.1		24.4		24.3
	pH (su)	8.1	7.8		7.8		7.5		7.5		7.6		8.1		8.0
	DO (mg/L)	8.1	6.8	8.1	7.1	7.8	5.5	7.8	5.9	7.7	7.5	7.4	8.2	7.9	8.1
1.16	Temp (°C)	23.7	24.2		24.6		25.5		25.0		24.9		24.4		24.2
	pH (su)	8.1	7.9		7.9		7.6		7.5		7.6		8.1		7.9
	DO (mg/L)	8.0	7.1	8.0	7.5	7.7	5.7	7.8	5.9	7.6	6.6	7.5	8.1	7.9	7.9
2.32	Temp (°C)	23.7	24.2		24.6		25.5		25.0		24.8		24.4		24.3
	pH (su)	8.1	7.9		7.9		7.6		7.6		7.5		8.1		7.9
	DO (mg/L)	7.8	7.0	7.9	7.1	7.7	5.5	7.8	6.0	7.6	6.9	7.5	8.0	8.0	7.8
4.64	Temp (°C)	23.7	24.1		24.6		25.7		25.1		24.8		24.6		24.4
	pH (su)	8.0	7.9		8.0		7.6		7.6		7.6		8.1		8.0
	DO (mg/L)	7.8	7.2	7.7	7.5	7.8	5.7	7.7	6.1	7.5	6.4	7.3	7.9	7.8	8.1
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	281				281				242					
	Hardness (mg of CaCO3)	N/A				NA				NA					
	Conductivity (µmhos/cm)	234				2340				2280					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		FS-15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
Conductivity Meter					SCT-4				SCT-4						
INITIALS:		MM	DW		RJM		DW		RJM		PB		SW		SW
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1635	1150		1325		1135		1255		1030		1250		1115

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 1 | Project Number: 6067120062 | Test Substance: WWTP Effluent

		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6-3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10 loaded		10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1390	1.1463
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1385	1.1451
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1384	1.1450
	D			10	N	10	N	10	N	10	N	9	10	9	N	9	N	1.1567	1.1620
	E																		
	F																		
0.29	A			10	N	10	N	9	10	10	N	10	N	10	N	10	N	1.1330	1.1419
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1282	1.1363
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1472	1.1551
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1420	1.1497
	E																		
	F																		
0.58	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1481	1.1565
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1360	1.1425
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1332	1.1419
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1389	1.1465
	E																		
	F																		
1.16	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1527	1.1603
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1485	1.1575
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1447	1.1538
	D			9	Lb	9	N	9	N	9	N	9	N	9	N	9	N	1.1522	1.1613
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1530	DW	1050	JH	1300	RJM	1050	JM	1130	NM	0925	NM	1130	JH	0910	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead Obs. = Observation

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 1						Project Number: 6067120062								Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
2.32	A	10	loaded	8	2D	8	N	8	N	8	N	8	N	8	N	7	1D	1.1434	1.1490
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1597	1.1694
	C			10	N	10	N	10	N	9	1D	9	N	9	N	9	N	1.1617	1.1690
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1447	1.1537
	E																		
	F																		
2.64	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1428	1.1520
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1419	1.1501
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1438	1.1540
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1450	1.1535
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1530	DW	1100	JH	1215	DW	1115	JH	1125	MM	0925	JH	1130	JH	0920	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

Comments:

CETIS Summary Report

Report Date: 12 Jun-12 07:45 (p 1 of 1)
Test Code: 18-3045-9568/W12-MAY-RAY1-PP

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	08-0111-7024	**Code:**	2FC01360	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
09-3847-9977	7d Survival Rate	4.64	>4.64	N/A	10.11%	21.55	Steel Many-One Rank Test
17-5128-6991	Mean Dry Biomass-mg	4.64	>4.64	N/A	27.75%	21.55	Dunnett's Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
09-3847-9977	7d Survival Rate	Control Resp	0.975	0.8 - NL	Yes	Result Within Limits
17-5128-6991	Mean Dry Biomass-mg	Control Resp	0.645	0.25 - NL	Yes	Result Within Limits
17-5128-6991	Mean Dry Biomass-mg	PMSD	0.2775	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
0.29		4	1	1	1	1	1	0	0	0.0%	-2.56%
0.58		4	1	1	1	1	1	0	0	0.0%	-2.56%
1.16		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
2.32		4	0.9	0.8472	0.9528	0.7	1	0.02582	0.1414	15.71%	7.69%
4.64		4	1	1	1	1	1	0	0	0.0%	-2.56%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.645	0.6138	0.6762	0.53	0.73	0.01524	0.08347	12.94%	0.0%
0.29		4	0.815	0.7954	0.8346	0.77	0.89	0.009604	0.0526	6.45%	-26.36%
0.58		4	0.78	0.7433	0.8167	0.65	0.87	0.01795	0.09832	12.61%	-20.93%
1.16		4	0.87	0.8426	0.8974	0.76	0.91	0.01342	0.07348	8.45%	-34.88%
2.32		4	0.79	0.7215	0.8585	0.56	0.97	0.0335	0.1835	23.23%	-22.48%
4.64		4	0.9025	0.8693	0.9357	0.82	1.02	0.01622	0.08883	9.84%	-39.92%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	0.9
0.29		1	1	1	1
0.58		1	1	1	1
1.16		1	1	1	0.9
2.32		0.7	1	0.9	1
4.64		1	1	1	1

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.73	0.66	0.66	0.53
0.29		0.89	0.81	0.79	0.77
0.58		0.84	0.65	0.87	0.76
1.16		0.76	0.9	0.91	0.91
2.32		0.56	0.97	0.73	0.9
4.64		0.92	0.82	1.02	0.85

Analyst: QA: PB

Outfall 2
Water Flea
Effluent Test

SUBJECT: Ceriodaphnia dubia CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Ceriodaphnia dubia

ANIMAL HISTORY

LOT NUMBER: CA20120521

Date Neonates Collected: 5/31/12

See Page No.: 15 of Cladoceran Logbook

Age of Neonates: < 24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Type Lighting: Fluorescent
Dilution Water: 20%Perrier/80%MilliQ
Test Container: 30 mL plastic cup
Replicates per Concentration: 10
Test Temperature: 25 ± 1 °C
Dilution Water Batch Number: PD2012-9

Photoperiod: 16 light/8 dark
Solution Volume: 15 mL
Organisms per rep: 1
Feeding: Daily (see Daily Feeding Log) below
WaterBath/Incubator (Circle One)

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	1.39	2.79	5.57	11.14	28.28	
Volume of Dilution Water (ml)	200	197.22	194.42	188.86	177.72	143.44	
Volume of Effluent / Stock (ml)	0	2.78	5.58	11.14	22.28	56.56	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
In Holding	5/31/12	~~1045~~	JH	YTC/SC	0.1 mL of each
After Loading	5/31/12	~~1230~~	NM	YTC/SC	0.1 mL of each
1	6/1/12	~~1030~~	DW	YTC/SC	0.1 mL of each
2	6/2	~~1025~~	JH	YTC/SC	0.1 mL of each
3	6/3	~~1010~~	RJM	YTC/SC	0.1 mL of each
4	6/4	~~1100~~	RJM	YTC/SC	0.1 mL of each
5	6/5	~~0955~~	JH	YTC/SC	0.1 mL of each
6	6/6	~~1330~~	DW	YTC/SC	0.1 mL of each

TEST DATA RECORDED BY: PB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT:DUBIA CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 2 — **Project Number: 6067120062**

Test Substance: WWTP Effluent — **Test Species: Ceriodaphnia dubia**

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.7		25.1		25.7		25.1		24.6		24.8		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0		
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	8.0	7.8	8.2	8.3	
	Alkalinity (mg of CaCO3)	75													
	Hardness (mg of CaCO3)	80													
	Conductivity (µmhos/cm)	175													
1.39	Temp (°C)	23.8	24.2		24		25.9		25.1		24.6		24.2		
	pH (su)	8.1	8.2		8.2		8.1		8.1		8.0		8.2		
	DO (mg/L)	8.0	7.9	7.9	7.9	7.8	7.7	7.8	7.7	7.7	8.0	7.8	8.1	8.3	
2.79	Temp (°C)	23.4	24.4		24.2		25.9		25.2		24.6		24.2		
	pH (su)	8.2	8.2		8.2		8.1		8.1		8.0		8.3		
	DO (mg/L)	8.2	7.9	7.9	7.9	7.8	7.7	7.8	7.8	7.8	7.9	7.7	8.2	8.5	
5.57	Temp (°C)	23.2	24.4		24.3		26.1		25.2		24.6		24.1		
	pH (su)	8.2	8.3		8.3		8.2		8.2		8.0		8.3		
	DO (mg/L)	8.2	7.9	7.9	7.9	7.8	7.7	7.8	7.8	7.8	7.8	7.8	8.2	8.3	
11.14	Temp (°C)	23.2	24.5		24.3		26.1		25.3		24.8		24.2		
	pH (su)	8.3	8.4		8.4		8.3		8.3		8.1		8.4		
	DO (mg/L)	8.1	7.9	7.7	7.9	7.8	7.6	7.7	7.8	7.8	7.8	7.7	8.1	8.3	
28.28	Temp (°C)	23.4	24.5		24.3		26.1		25.3		24.9		24.4		
	pH (su)	8.4	8.6		8.6		8.5		8.5		8.2		8.5		
	DO (mg/L)	7.6	7.7	7.3	7.8	7.6	7.5	7.5	7.7	7.4	7.8	7.6	7.9	8.2	
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	7500				7500				7500					
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	3790				3790				3790					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS 15		FS15		
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4			SCT4				SCT4						
INITIALS:		MM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1625	1145		1315		1225		1250		1035		1240		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent
Project Number: 6067120062 Test Species: Ceriodaphnia dubia

Test Conc %	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	3	1	4	1	4	1	3	1	6	1	6	1	0	1	3
	4	1	0	1	3	1	1	1	9	1	7	1	10	1	6	1	0	1	3	1	2
	5	1	9	1	9	1	3	1	0	1	1	1	7	1	9	1	9	1	10	1	8
	6	1	13	1	15	1	11	1	18	1	13	1	4	1	11	1	14	1	15	1	13
	/		22		31		18		31		25		24		26		29		28		26
1.39	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	4	1	3	1	3	1	2	1	5	1	4	1	3	1	0	1	3	1	3
	4	1	0	1	1	1	8	1	14	1	9	1	6	1	3	1	6	1	1	1	0
	5	1	13	1	13	1	0	1	0	1	4	1	0	1	12	1	13	1	12	1	8
	6	1	20	1	18	1	17	1	16	1	19	1	21	1	15	1	17	1	16	1	15
	/		37		35		28		32		18		31		33		36		32		26
2.79	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	0	1	3	1	2	1	4	1	6	1	0	1	0	1	0	1	0
	4	1	16	1	6	1	12	1	10	1	6	1	7	1	5	1	4	1	4	1	0
	5	1	0	1	8	1	1	1	0	1	0	1	1	1	10	1	12	1	11	1	13
	6	1	21	1	19	1	19	1	15	1	17	1	13	1	16	1	17	1	16	1	16
	/		42		33		35		27		27		27		31		33		31		35

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	DW	JH	RJM	RJM	JH	DW			
DATE	5/31/12	~~10-28-12~~	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12			
TIME	1500	1025	1020	1005	1055	0950	1320			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

DW
6/1

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
5.57	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	6	1	5	1	5	1	6	1	5	1	0	1	0	1	0	1	4
	4	1	4	1	9	1	11	1	13	1	4	1	11	1	6	1	6	1	5	1	0
	5	1	10	1	0	1	0	1	0	1	4	1	1	1	10	1	11	1	10	10	12
	6	1	16	1	19	1	21	1	17	1	14	1	18	1	20	1	23	1	16		
	/		17		34		37		~~34~~ 35		28		35		36		40		31		16
11.14	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	10	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	6	1	5		DW 6/3	1	2 ~~6~~	1	6 ~~0~~	1	0	1	0	1	0	1	0
	4	1	0	1	12	1	6			1	0	1	8	1	6	1	0	1	6	1	6
	5	1	8	1	0	1	0			1	6	1	0	1	6	1	9	1	11	1	13
	6	1	15	1	16	1	18			1	10	1	18	1	15	1	17	1	22	1	14
	/		28		34		29				18		32		27		26		39		33
28.28	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	6	1	4	1	3	1	5	1	0	1	2	1	0	1	3
	4	1	0	1	7	1	7	1	9	1	0	1	9	1	5	1	1	1	3	1	0
	5	1	0	1	2	1	0	1	0	1	7	1	0	1	8	1	10	1	11	1	9
	6	1	5	1	18	1	16	1	14	1	15	1	18	1	13	1	12	1	12	1	16
	/		5		31		29		27		25		32		26		25		26		28

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JM	DW	JH	DW	SW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4/12	6/5/12	6/6/12			
TIME	1500	1035	1015	1005	1055	1055	1320			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

CETIS Summary Report

Report Date: 06 Jun-12 14:28 (p 1 of 1)
Test Code: 15-3642-3444/W12-MAY-RAY2-CD

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Dilute Mineral Water
Ending Date:	06 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample ID:	00-8374-6737	**Code:**	4FDDFB1	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-8724-3623	7d Survival Rate	28.28	>28.28	N/A	N/A	3.536	Fisher Exact/Bonferroni-Holm Test
12-3263-0826	Reproduction	28.28	>28.28	N/A	28.49%	3.536	Steel Many-One Rank Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-8724-3623	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Result Within Limits
12-3263-0826	Reproduction	Control Resp	26	15 - NL	Yes	Result Within Limits
12-3263-0826	Reproduction	PMSD	0.2849	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	1	1	1	1	1	0	0	0.0%	0.0%
1.39		10	1	1	1	1	1	0	0	0.0%	0.0%
2.79		10	1	1	1	1	1	0	0	0.0%	0.0%
5.57		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%
11.14		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%
28.28		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	26	24.49	27.51	18	31	0.7404	4.055	15.6%	0.0%
1.39		10	30.8	28.7	32.9	18	37	1.028	5.633	18.29%	-18.46%
2.79		10	32.1	30.35	33.85	27	42	0.854	4.677	14.57%	-23.46%
5.57		10	30.9	27.82	33.98	16	40	1.507	8.252	26.71%	-18.85%
11.14		10	26.6	22.53	30.67	0	39	1.989	10.9	40.96%	-2.31%
28.28		10	25.4	22.58	28.22	5	32	1.38	7.56	29.76%	2.31%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
1.39		1	1	1	1	1	1	1	1	1	1
2.79		1	1	1	1	1	1	1	1	1	1
5.57		1	1	1	1	1	1	1	1	1	0
11.14		1	1	1	0	1	1	1	1	1	1
28.28		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	22	31	18	31	25	24	26	29	28	26
1.39		37	35	28	32	18	31	33	36	32	26
2.79		42	33	35	27	27	27	31	33	31	35
5.57		17	34	37	35	28	35	36	40	31	16
11.14		28	34	29	0	18	32	27	26	39	33
28.28		5	31	29	27	25	32	26	25	26	28

Analyst: [illegible] QA: PB

Outfall 2
Fathead Minnow
Effluent Test

SUBJECT: FATHEAD MINNOW CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Pimephales promelas

ANIMAL HISTORY

LOT NUMBER: 2012-45

Date of Hatch: 5/30/12

See Page No.: 12 of Fish Holding Log for Larvae History

Source of Larvae: Hydrosphere

See Page No.: NA of Animal Receipt Log

Condition of Larvae: Good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 Method 1000.0

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Dilution Water: synthetic mod-hard water

Solution Volume: 250 mL

Test Container: 600 mL beaker

Organisms per rep: 10

Replicates per Concentration: 4

Feeding: Daily (see Daily Feeding Log)

Test Temperature: 25± 1 °C

WaterBath /Incubator (Circle One)

Dilution Water Batch Number: MHW20120524

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	1.39	2.79	5.57	11.14	28.28	
Volume of Dilution Water (ml)	1000	986.1	972.1	944.3	888.6	717.2	
Volume of Effluent / Stock (ml)	0	13.9	27.9	55.7	111.4	282.8	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
0	5/31/12	1200	JH	BS	2.0 mL
		1645	JH		
1	6/1/12	0800	PB	BS	0.2 mL
		1630	PB		
2	6-2-12	0845	RJM	BS	0.2 mL
		1460	JH		
3	6-3-12	0800	RJM	BS	0.2 mL
		1215	RJM		
4	6-4-12	0745	RB	BS	0.2 mL
		1650	RB		
5	6-5-12	0680	DD	BS	0.2 mL
		1540	RJM		
6	6/6/12	0630	DD	BS	0.2 mL
		1530	RB		

TEST DATA RECORDED BY: PB DATE: 6/8/12

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 2 — **Project Number: 6067120062**

Test Substance: WWTP Effluent — **Test Species: Pimephales promelas**

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.1		~~25.1~~	~~24.9~~	25.6		25.3		24.5		24.3		24.5
	pH (su)	7.8	7.9		~~8.1~~	~~7.7~~	7.7		7.5		7.8		8.2		8.0
	DO (mg/L)	8.2	6.6	8.1	~~7.8~~	~~7.8~~	5.4	7.8	6.1	7.7	7.2	7.9	8.3	7.9	8.1
	Alkalinity (mg of CaCO3)	62.6													
	Hardness (mg of CaCO3)	79.8													
	Conductivity (µmhos/cm)	269													
1.39	Temp (°C)	23.9	23.9		~~24.0~~	~~24.7~~ 8.0	25.4		25.0		24.2		24.6		24.3
	pH (su)	8.3	8.1		~~8.3~~	~~7.57~~	7.6		7.7		7.6		8.2		8.1
	DO (mg/L)	8.0	7.3	7.7	~~7.8~~	~~7.8~~	6.0	7.6	6.7	7.6	6.3	7.7	8.1	7.1	8.3
2.79	Temp (°C)	23.9	23.7		~~24.2~~	~~24.6~~ 8.0	25.4		25.0		24.4		24.5		24.3
	pH (su)	8.2	8.1		~~8.2~~	~~7.527~~	7.6		7.7		7.6		8.2		8.1
	DO (mg/L)	8.2	7.2	7.8	~~7.9~~	~~7.8~~	5.8	7.8	6.4	7.7	6.3	7.7	8.1	7.7	8.1
5.57	Temp (°C)	22.7	23.8		~~24.3~~	~~24.6~~ 8.1	25.3		25.0		24.5		24.4		24.2
	pH (su)	8.2	8.1		~~8.3~~	~~7.772~~	7.7		7.8		7.6		8.2		8.1
	DO (mg/L)	8.1	7.3	7.8	~~7.9~~	~~7.8~~	5.9	7.7	6.2	7.7	6.4	7.7	8.1	7.6	8.2
11.14	Temp (°C)	23.6	23.8		~~24.7~~	~~8.5~~	25.3		25.0		24.6		24.4		24.3
	pH (su)	8.3	8.3		~~8.4~~	~~7.577~~	7.9		7.9		7.7		8.3		8.3
	DO (mg/L)	7.9	7.3	7.5	~~7.9~~	~~7.8~~	5.8	7.7	6.2	7.6	6.3	7.7	8.1	7.9	8.3
28.28	Temp (°C)	23.7	24.0		~~24.3~~	~~24.7~~	25.5		25.1		24.8		24.5		24.4
	pH (su)	8.5	8.5		8.6	~~7.674~~	8.2		8.2		7.7		8.4		8.5
	DO (mg/L)	7.4	6.9	7.3	~~7.8~~	~~7.6~~	5.8	7.2	6.2	7.3	6.1	7.6	7.9	7.8	8.1
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	7500				7500				7500					
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	3790				3790				3790					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS 15		FS-15		FS15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
Conductivity Meter		SCT4			SCT-4				SCT-4						
INITIALS:		NM	DW		RJM		DW		RJM		PB		SW		SW
DATE:		5/31/12 ~~1525~~	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1525	1200		1315		1355		1255		1035		1255		1120

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

RJM 12 ... no [illegible]

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 2 | Project Number: 6067120062 | Test Substance: WWTP Effluent

		Test Day 0	Date 5/31	Test Day 1	Date 6/1	Test Day 2	Date 6/2	Test Day 3	Date 6-3	Test Day 4	Date 6/4	Test Day 5	Date 6/5	Test Day 6	Date 6/6	Test Day 7	Date 6-7	Date 6/4/12	Date 6/8/12
Treatment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10	loaded	10	N	10	N	~~9~~ 10	~~10~~ N	10	N	10	N	10	N	10	N	1.1504	1.1578
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1473	1.1543
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1347	1.1412
	D			10	N	10	N	9	10	9	N	9	N	~~10~~ 9	N	9	N	1.1060	1.1139
	E																		
	F																		
39	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1395	1.1473
	B			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1476	1.1526
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1401	1.1466
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1312	1.1374
	E																		
	F																		
2.79	A			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1436	1.1514
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1444	1.1525
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1465	1.1553
	D			10	N	10	N	9	10	9	N	9	N	9	N	9	N	1.1454	1.1532
	E																		
	F																		
5.57	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1439	1.1491
	B			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 10	~~10~~ N	1.1732	1.1788
	C			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1958	~~1.1~~ 1.2018
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1369	1.1441
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1540	DW	1100	JH	1245	DW	1100	JH	1145	PB	0830	MM	1115	RJM	0915	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead Obs.= Observation

RJM
6-7-12
Entered wrong

AMEC
Newberry, FL

QA Form Number 105C
August 2008

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 2						Project Number: 6067120062								Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6-7	6/4/12	6/8/12
Treatment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
11.14	A	10	loaded	10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1470	1.1541
	B			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	10	1.1552	1.1609
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1379	1.1451
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1293	1.1385
	E																		
	F																		
28.28	A			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1730	1.1792
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1705	1.1778
	C			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1476	1.1543
	D			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1751	1.1825
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		gt	1500	DW	1100	JM	1230	DW	1100	gt	1115	PB	0830	NM	1115	RM	0915	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

Comments:

RJM 6-7-12
entered wrong
1#

CETIS Summary Report

Report Date: 12 Jun-12 07:50 (p 1 of 1)
Test Code: 05-9031-8924/W12-MAY-RaY2-PP

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	00-8374-6737	**Code:**	4FDDFB1	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-1080-1287	7d Survival Rate	28.28	>28.28	N/A	8.97%	3.536	Steel Many-One Rank Test
02-0874-0521	Mean Dry Biomass-mg	28.28	>28.28	N/A	21.65%	3.536	Dunnett's Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
16-1080-1287	7d Survival Rate	Control Resp	0.975	0.8 - NL	Yes	Result Within Limits
02-0874-0521	Mean Dry Biomass-mg	Control Resp	0.72	0.25 - NL	Yes	Result Within Limits
02-0874-0521	Mean Dry Biomass-mg	PMSD	0.2165	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
1.39		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
2.79		4	0.95	0.9284	0.9716	0.9	1	0.01054	0.05774	6.08%	2.56%
5.57		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
11.14		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
28.28		4	0.925	0.9063	0.9437	0.9	1	0.009129	0.05	5.41%	5.13%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.72	0.6978	0.7422	0.65	0.79	0.01085	0.05944	8.26%	0.0%
1.39		4	0.6375	0.5946	0.6804	0.5	0.78	0.021	0.115	18.04%	11.46%
2.79		4	0.8125	0.7949	0.8301	0.78	0.88	0.008613	0.04717	5.81%	-12.85%
5.57		4	0.6	0.5677	0.6323	0.52	0.72	0.01578	0.08641	14.4%	16.67%
11.14		4	0.73	0.6762	0.7838	0.57	0.92	0.02629	0.144	19.72%	-1.39%
28.28		4	0.69	0.6691	0.7109	0.62	0.74	0.01022	0.05598	8.11%	4.17%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	0.9
1.39		1	0.9	1	1
2.79		0.9	1	1	0.9
5.57		1	1	0.9	1
11.14		1	0.9	1	1
28.28		0.9	1	0.9	0.9

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.74	0.7	0.65	0.79
1.39		0.78	0.5	0.65	0.62
2.79		0.78	0.81	0.88	0.78
5.57		0.52	0.56	0.6	0.72
11.14		0.71	0.57	0.72	0.92
28.28		0.62	0.73	0.67	0.74

Analyst: QA: PB

Water Flea
Reference Toxicant Test

SUBJECT: CERIODAPHNIA CHRONIC TEST - COVER

Sponsor: REFERENCE TOXICANT TEST

Test Substance: NaCL

Test Species: *Ceriodaphnia dubia*

ANIMAL HISTORY

LOT NUMBER: CD20120521

Date Neonates Collected: 5/31/12

See Page 15 of Cladoceran Neonate History Log

Age of Neonates (hours): <24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Dilution Water: 20%Perrier/80%MilliQ

Dilution Water Batch Number:

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Test Container: 30 mL Plastic Beaker

Solution Volume: 15 mL

Replicates per Concentration: 10

Organisms per rep: 1

Test Temperature: 25 ± 1 °C

WaterBath/ Incubator (circle one)

TEST SOLUTION PREPARATION 10 g NaCl /L of dilution water Reftox Batch # ~~PD~~ NACL 2012-24

PB 5/31/12

TEST CONCENTRATION % g/L	Control	0.125	0.25	0.50	1	2	4
Volume of dilution Water Added (ml)	1400.00	1382.50	1365.00	1330.00	1260.00	1120.00	420.00
Volume of Effluent / Stock Added (ml)	---	17.50	35.00	70.00	140.00	280.00	280.00

TEST VALIDITY CRITERIA

Percent of Surviving Female Adults with 3 Broods in Control: 80%

Percent Survival of Control Adults: 90 %

Mean Number of Neonates per Adult Female in Control: 21.5

TEST SUMMARY

Test Concentration (g/L)	Number of Neonates	Number of Broods	Adult C. dubia No. Alive	Adult C. dubia No. Dead	Number of Males	Neonates Per Adult	Brood per Adult
CONTROL	215		9	1		21.5	
0.125	270		10	0		27	
0.25	250		10	0		25	
0.5	251		9	1		25.1	
1	160		9	1		16	
2	15		5	5		1.5	
4	0		0	10		0	

Additional Comments:

TEST DATA RECORDED BY: PB DATE: 6/8/12

TEST SUMMARY RECORDED BY: PB DATE: 6/8/12

SUBJECT:REFERENCE TOXICANT TEST - WATER QUALITY

REFERENCE TOXICANT TEST

Test Substance: NaCl

Test Species: Ceriodaphnia dubia

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
CTRL (0)	Temp (°C)	24.9	24.7		25.1		23.7		25.1		24.9		24.3		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0	8.4	
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	7.9	7.9	~~8.4~~	~~8.2~~	
	Alkalinity												~~8.6~~ 6/6		
	Hardness												8.7	SW	
	Conductivity														
0.125	Temp (°C)	24.2	24.2		24.1		25.2		24.5		24.2		26.0		
	pH (su)	8.1	8.0		8.0		8.0		8.0		8.0		7.8		
	DO (mg/L)	8.0	7.8	7.9	7.8	8.0	7.7	7.8	8.0	8.0	8.0	8.0	8.4	8.4	
0.25	Temp (°C)	24.1	24.2		23.9		25.5		24.4		24.1		25.8		
	pH (su)	8.2	8.1		8.1		8.1		8.1		8.1		8.2		
	DO (mg/L)	8.1	7.8	8.0	7.8	8.0	7.8	7.7	8.0	8.0	8.0	8.0	8.4	8.3	
0.5	Temp (°C)	24.1	24.3		23.6		25.6		24.5		24.3		25.7		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.1		8.2		
	DO (mg/L)	8.1	7.8	8.1	7.8	8.1	7.7	7.9	8.0	8.0	8.0	8.0	8.4	8.3	
1	Temp (°C)	24.2	24.3		23.6		25.7		24.5		24.3		25.5		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.0		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.7	8.1	7.6	7.9	8.0	8.0	8.0	8.1	8.4	8.4	
2	Temp (°C)	24.2	24.3		23.7		25.8		24.6		24.2		25.5		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.0		8.0		
	DO (mg/L)	8.1	7.8	8.1	7.7	8.1	7.5	7.9	8.0	8.1	8.0	8.0	8.2	8.4	
4	Temp (°C)														
	pH (su)														
	DO (mg/L)		7.7												
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4													
INITIALS:		NM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1540	1205		1335		1140		1305		1050		1355		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos cm

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc (mg/L)	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1A	0
	3	1	2	1	5	1	2	1	3	1	0	1	5	1	4	1	4	1	0		
	4	1	1	1	0	1	3	1	0	1	4	1	8	1	6	1	10	1	3		
	5	1	8	1	10	1	10	1	12	1	5	1	0	1	1	1	12	1	0		
	6	1	15	1	12	1	10	1	13	1	13	1	12	1	14	1	0	1	8		
	/		27		27		25		28		22		25		25		26		11		
			20																		
0.125	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	4	1	0	1	0	1	0	1	2	1	3	1	0	1	4	1	3
	4	1	0	1	0	1	4	1	5	1	7	1	9	1	11	1	8	1	1	1	0
	5	1	9	1	10	1	11	1	12	1	11	1	0	1	0	1	0	1	7	1	10
	6	1	15	1	14	1	16	1	14	1	16	1	11	1	16	1	11	1	11	1	12
	/		27		28		31		31		34		22		30		19		23		25
0.25	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	2	1	2	1	0	1	0	1	0	1	0	1	4	1	3	1	0	1	2
	4	1	0	1	0	1	4	1	3	1	5	1	3	1	4	1	0	1	1	1	1
	5	1	6	1	7	1	11	1	12	1	10	1	11	1	12	1	1	1	11	1	10
	6	1	11	1	13	1	15	1	12	1	11	1	13	1	14	1	12	1	10	1	14
	/		19		22		30		27		26		27		34		16		22		27

TEST DAY	0	1	2	3	4	5	6	7
INITIALS	NM	DW	JH	RJM	RJM	JH	DW	
DATE	5/31/12	~~1015~~ 6/1/12	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12	
TIME	1400	1015	1025	1030	1015	1025	1300	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

DW 6/1/12

PB 6/6/12

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
0.5	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	3	1	6	1	0	1	0	1	0	1	2	1	5	1	3	1	3
	4	1	0	1	1	1	1	1	6	1	5	1	5	1	6	1	7	1	6	1	0
	5	1	8	1	10	1	12	1	11	1	10	1	8	1	0	1	0	1	0	1	11
	6	1	14	1	13	1D	0	1	15	1	17	1	8	1	12	1	15	1	13	1	12
	/		25		27		19		32		32		21		29		27		22		26
1	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	0	1	7	1	0	1	0	1	0	1	4	1	0	1	0	1	0
	4	1	3	1	2	1	0	1	2	1	5	1	5	1	4	1	9	1	0	1	0
	5	1	6	1	6	1	12	1	7	1	7	1	6	1	0	1	0	1	9	1	1
	6	1	2	1	6	1D	0	1	12	1	10	1	5	1	9	1	12	1	7	1	2
	/		11		14	X	19		21		22		16		17		21		16		3
2	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1D	0
	2	1	0	1	0	1D	0	1	0	1	0	1	0	1	0	1	0	1D	0		
	3	1	0	1D	0			1D	0	1D	0	1D	0	1	0	1	0				
	4	1	0											1	0	1	0				
	5	1	0											1	0	1	0				
	6	1	7											1	3	1	5				
	/		7												3		5				

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JM	DW	JH	DW	DW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4/12	6/5/12	6/6/12			
TIME	1400	1020	1030	1035	1025	1025	1300			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
4	1	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
	1																				
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
	1																				
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS		DW								
DATE		6/1/12								
TIME		1015								

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Dilute Mineral Water
Ending Date:	06 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample ID:	20-0329-5174	**Code:**	7767DBC6	**Client:**	ADMIN
Sample Date:	31 May-12	**Material:**	Sodium chloride	**Project:**	ADMIN
Receive Date:	31 May-12	**Source:**	Reference Toxicant		
Sample Age:	N/A	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-9438-1314	7d Survival Rate	2	4	2.828	N/A		Fisher Exact/Bonferroni-Holm Test
06-2544-5949	Reproduction	0.5	1	0.7071	26.9%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	gm/L	95% LCL	95% UCL	TU	Method
02-3871-9291	7d Survival Rate	LC5	0.4266	0.3083	1.179		Linear Interpolation (ICPIN)
		LC10	1.062	0.3693	1.483		
		LC15	1.165	0.4332	2.039		
		LC20	1.274	0.7321	2.129		
		LC25	1.388	0.9064	2.222		
		LC40	1.766	1.289	2.518		
		LC50	2.052	1.481	2.73		
01-8108-4939	Reproduction	IC5	0.5628	0.1921	0.5932		Linear Interpolation (ICPIN)
		IC10	0.6282	0.4033	0.6923		
		IC15	0.6963	0.5462	0.8048		
		IC20	0.7673	0.6207	0.9403		
		IC25	0.8412	0.6855	1.03		
		IC40	1.069	0.8769	1.207		
		IC50	1.216	0.9894	1.343		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-3871-9291	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Result Within Limits
12-9438-1314	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Result Within Limits
01-8108-4939	Reproduction	Control Resp	21.5	15 - NL	Yes	Result Within Limits
06-2544-5949	Reproduction	Control Resp	21.5	15 - NL	Yes	Result Within Limits
06-2544-5949	Reproduction	PMSD	0.269	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
0.125		10	1	1	1	1	1	0	0	0.0%	-11.11%
0.25		10	1	1	1	1	1	0	0	0.0%	-11.11%
0.5		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
1		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
2		10	0.5	0.3032	0.6968	0	1	0.09623	0.527	105.4%	44.44%
4		10	0	0	0	0	0	0	0		100.0%

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Reproduction Summary

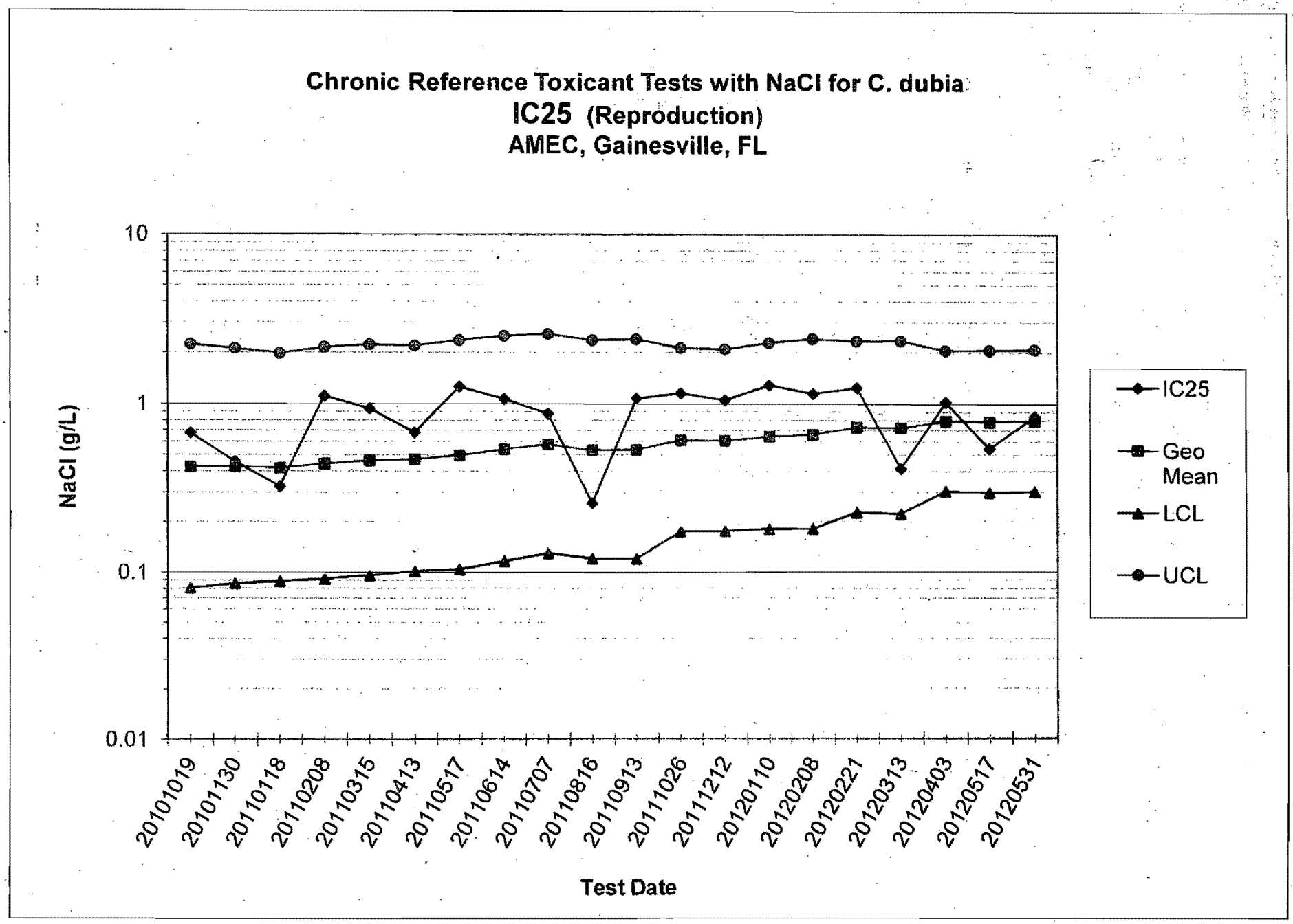
Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	21.5	18.15	24.85	0	28	1.636	8.96	41.67%	0.0%
0.125		10	27	25.24	28.76	19	34	0.8607	4.714	17.46%	-25.58%
0.25		10	25	23.02	26.98	16	34	0.9699	5.312	21.25%	-16.28%
0.5		10	25.1	23.37	26.83	19	32	0.8452	4.63	18.44%	-16.74%
1		10	16	13.87	18.13	3	22	1.043	5.715	35.72%	25.58%
2		10	1.5	0.5319	2.468	0	7	0.4734	2.593	172.8%	93.02%
4		10	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	0
0.125		1	1	1	1	1	1	1	1	1	1
0.25		1	1	1	1	1	1	1	1	1	1
0.5		1	1	0	1	1	1	1	1	1	1
1		1	1	0	1	1	1	1	1	1	1
2		1	0	0	0	0	0	1	1	1	1
4		0	0	0	0	0	0	0	0	0	0

Reproduction Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	27	25	28	22	25	25	26	11	0
0.125		27	28	31	31	34	22	30	19	23	25
0.25		19	22	30	27	26	27	34	16	22	27
0.5		25	27	19	32	32	21	20	27	22	26
1		11	14	19	21	22	16	17	21	16	3
2		7	0	0	0	0	0	3	5	0	0
4		0	0	0	0	0	0	0	0	0	0


Chronic Reference Toxicant Tests with NaCl for C. dubia
IC25 (Reproduction)
AMEC, Gainesville, FL
NaCl (g/L)
10
1
0.1
0.01
20101019
20101130
20110118
20110208
20110315
20110413
20110517
20110614
20110707
20110816
20110913
20111026
20111212
20120110
20120208
20120221
20120313
20120403
20120517
20120531
Test Date
IC25
Geo Mean
LCL
UCL

Fathead Minnow
Reference Toxicant Test

SUBJECT: PROMELAS CHRONIC TEST - COVER

Reference Toxicant

Test Substance: NaCl

Test Species: *Pimephales promelas*

ANIMAL HISTORY

LOT NUMBER: 2012-45

Date received: 5/31/12

See Page 12 of Organism Receipt Log

Age of Organisms: <48 hrs

Condition of Organisms: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1000.0

Dulution water Type: Chemically Prepared Mod Hard Water

Dilution Water Batch number: MHW20120524

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Test Container: 600ml Glass Beaker

Solution Volume: 250 mL

Replicates per Concentration: 2

Organisms per rep: 10

Test Temperature: 25 ± 1 °C

WaterBath / Incubator (circle one)

TEST SOLUTION PREPARATION

15g NaCl /L or 30g NaCl/2L of dilution water

Reftox Batch # NACL 2012-25

TEST CONCENTRATION % mg/L	Control	0.75	1.5	3	6	12	-
Volume of dilution Water Added (ml)	3500	3325	3150	2800	2100	200	-
Volume of Effluent / Stock Added (ml)	---	175	350	700	1400	800	-

TEST VALIDITY CRITERIA

80% survial in controls; average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg

Percent Survival of Control Adults: 92.5 %

Average dry weight of survival in the Control: 0.825

TEST SUMMARY

Test Concentration ( )	Number of Surviving organisms	Percent Survival	Comments
CONTROL	37	92.5	
0.75	39	97.5	
1.5	36	90	
3	21	52.5	
6	0	0	
12	0	0	
-			

Additional Comments:

TEST DATA RECORDED BY: PB DATE: 6/8/12

TEST SUMMARY RECORDED BY: PB DATE: 6/8/12

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

REFERENCE TOXICANT TEST

Test Substance: NaCl **Test Species:** Pimephales promelas

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
CTRL (0)	Temp (°C)	25.0	24.1		24.9		25.6		25.3				24.4		24.5
	pH (su)	7.8	7.9		7.9		7.7		7.5				8.0		8.0
	DO (mg/L)	8.2	6.6	8.1	7.0	7.8	5.4	7.8	6.1	7.7			8.4	8.4	8.1
0.75	Temp (°C)	24.3	24.5		24.5		25.4		24.7		24.0		24.9		25.6
	pH (su)	8.5	7.9		7.7		7.7		7.5		8.0		8.0		7.6
	DO (mg/L)	8.2	6.9	7.9	7.1	7.8	6.2	7.6	6.6	7.8	6.4	8.0	8.1	8.3	7.2
1.5	Temp (°C)	24.1	24.3		24.3		25.6		24.7		24.2		24.8		25.4
	pH (su)	8.3	7.8		7.7		7.6		7.5		7.9		8.0		7.7
	DO (mg/L)	8.2	7.0	8.0	7.3	7.9	5.9	7.8	6.7	7.9	7.1	8.0	8.1	8.3	7.4
3	Temp (°C)	24.1	24.7		24.3		25.6		24.8		24.1		24.8		25.4
	pH (su)	8.2	7.8		7.7		7.5		7.5		7.7		8.0		7.7
	DO (mg/L)	8.1	6.9	8.0	7.5	8.0	6.2	7.9	6.8	7.9	6.7	8.1	8.1	8.2	7.5
6	Temp (°C)	24.2	24.7		24.3		25.7		24.9		24.1		25.0		25.3
	pH (su)	8.2	7.7		7.7		7.5		7.4		7.6		8.0		7.7
	DO (mg/L)	8.1	7.1	8.0	7.5	8.1	6.1	7.8	6.8	8.0	7.0	8.2	8.1	8.3	7.5
12	Temp (°C)	24.2													
	pH (su)	8.2													
	DO (mg/L)	8.0													
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		FS15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
INITIALS:		NM	DW	RM			DW		RM		PB		SW		SW
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1535	1205		1340		1145		1360		1000		1350		1210

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Reftox														Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: %	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10	loaded	10	N	10	N	10	N	9	N	10	N	10	N	10	N	1.1434	1.1531
	B			10	N	10	N	10	N	9	10	9	N	9	N	9	N	1.1308	1.1379
	C			10	N	10	N	10	N	9	N	10	N	10	N	9	10	1.1436	1.1513
	D			10	N	10	N	10	N	9	10	9	N	9	N	9	N	1.1404	1.1489
	E																		
	F																		
0.75	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1473	1.1570
	B			10	N	10	N	10	N	10	N	9	10	9	N	9	N	1.1449	1.1552
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1472	1.1579
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1512	1.1622
	E																		
	F																		
1.5	A			9	10	9	N	9	N	9	N	9	N	8	10	8	N	1.1439	1.1525
	B			10	N	10	N	8	10	8	N	8	N	8	N	8	N	1.1373	1.1466
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1943	1.2034
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1602	1.1693
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1500	NM	1130	JH	1300	NM	1145	JM	1200	NM	0955	NM	1145	RM/JH	1040	PB	PB

N = Normal Leth = Err = Swimming A = NF = Not D = Dead Obs.= Observation

PB 6/8/12

3	A	10	loaded	10	N	10	N	10	N	8	2D	4	4D	3	1D	3	N	1.1699	1.1710
	B			10	N	10	N	8	2D	6	2D	6	N	5	1D	4	1D	1.1289	1.1302
	C			10	N	9	1D	8	1D	7	1D	6	1D	6	N	6	N	1.1327	1.1355
	D			10	N	10	N	10	N	9	1D	9	N	9	N	8	1D	1.1326	1.1377
	E																		
	F																		
6	A			10	N	5	5D	1	4D	1	N	1	N	1	N	0	1D	1.1434	
	B			9	1D	3	6D	0	3D	—	—	—	—	—	—	—	—	1.1378	
	C			10	N	6	4D	3	3D	2	1D	2	N	1	1D	0	1D	1.1476	
	D			10	N	5	5D	2	3D	1	1D	1D	1D	\	\	—	—	1.1480	
	E																		
	F																		
12	A			0	10D	\		\		\		\		\		\			
	B			0	10D	\		\		\		\		\		\			
	C			0	10D	\		\		\		\		\		\			
	D			0	10D	\		\		\		\		\		\			
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1500	NM	1140	JH	1300	RM	1145	JH	1150	NM	0955	DW	1145	JH	1040	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

CETIS Summary Report

Report Date: 12 Jun-12 08:03 (p 1 of 2)
Test Code: 19-8072-8244/RT7DPP20120531

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	20-0329-5174	**Code:**	7767DBC6	**Client:**	ADMIN
Sample Date:	31 May-12	**Material:**	Sodium chloride	**Project:**	ADMIN
Receive Date:	31 May-12	**Source:**	Reference Toxicant		
Sample Age:	N/A	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-4183-1673	7d Survival Rate	1.5	3	2.121	19.98%		Dunnett's Multiple Comparison Test
15-6055-8276	Mean Dry Biomass-mg	1.5	3	2.121	22.09%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	gm/L	95% LCL	95% UCL	TU	Method
00-4902-9424	7d Survival Rate	LC5	1.456	0.6385	1.836		Linear Interpolation (ICPIN)
		LC10	1.645	0.9226	2.055		
		LC15	1.807	1.245	2.316		
		LC20	1.98	1.471	2.771		
		LC25	2.162	1.631	3.257		
		LC40	2.781	1.919	3.833		
		LC50	3.219	2.129	4.13		
07-2312-8026	Mean Dry Biomass-mg	IC5	1.528	0.8522	1.632		Linear Interpolation (ICPIN)
		IC10	1.616	1.439	1.734		
		IC15	1.706	1.513	1.839		
		IC20	1.8	1.61	1.967		
		IC25	1.897	1.694	2.113		
		IC40	2.208	1.914	2.59		
		IC50	2.434	2.087	3.001		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-4902-9424	7d Survival Rate	Control Resp	0.925	0.8 - NL	Yes	Result Within Limits
21-4183-1673	7d Survival Rate	Control Resp	0.925	0.8 - NL	Yes	Result Within Limits
07-2312-8026	Mean Dry Biomass-mg	Control Resp	0.825	0.25 - NL	Yes	Result Within Limits
15-6055-8276	Mean Dry Biomass-mg	Control Resp	0.825	0.25 - NL	Yes	Result Within Limits
15-6055-8276	Mean Dry Biomass-mg	PMSD	0.2209	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.925	0.9063	0.9437	0.9	1	0.009129	0.05	5.41%	0.0%
0.75		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	-5.41%
1.5		4	0.9	0.8569	0.9431	0.8	1	0.02108	0.1155	12.83%	2.7%
3		4	0.525	0.4422	0.6078	0.3	0.8	0.04048	0.2217	42.24%	43.24%
6		4	0	0	0	0	0	0	0		100.0%
12		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.825	0.783	0.867	0.71	0.97	0.02052	0.1124	13.62%	0.0%
0.75		4	1.042	1.022	1.063	0.97	1.1	0.01026	0.0562	5.39%	-26.36%
1.5		4	0.9025	0.8913	0.9136	0.86	0.93	0.005452	0.02986	3.31%	-9.39%
3		4	0.2575	0.1886	0.3264	0.11	0.51	0.03371	0.1846	71.71%	68.79%
6		4	0	0	0	0	0	0	0		100.0%
12		4	0	0	0	0	0	0	0		100.0%

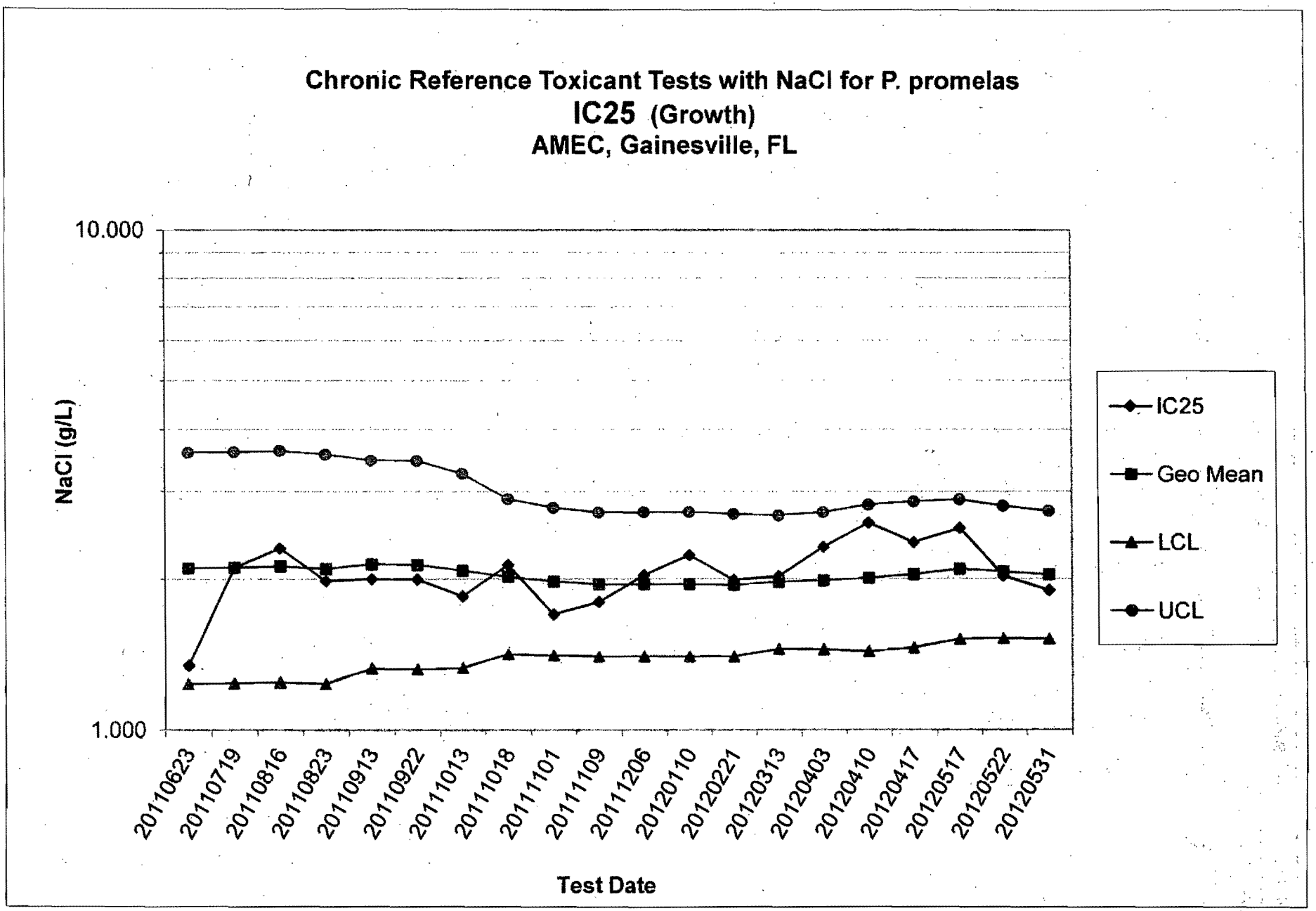
Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

7d Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	0.9	0.9	0.9
0.75		1	0.9	1	1
1.5		0.8	0.8	1	1
3		0.3	0.4	0.6	0.8
6		0	0	0	0
12		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.97	0.71	0.77	0.85
0.75		0.97	1.03	1.07	1.1
1.5		0.86	0.93	0.91	0.91
3		0.11	0.13	0.28	0.51
6		0	0	0	0
12		0	0	0	0


Chronic Reference Toxicant Tests with NaCl for P. promelas
IC25 (Growth)
AMEC, Gainesville, FL
10.000
1.000
NaCl (g/L)
20110623
20110719
20110816
20110823
20110913
20110922
20111013
20111018
20111101
20111109
20111206
20120110
20120221
20120313
20120403
20120410
20120417
20120517
20120522
20120531
Test Date
IC25
Geo Mean
LCL
UCL

Rayonier

Jesup Mill

[illegible]

NOV 16 2013

RECEIVED

November 18, 2013

Ms. Audra Dickson
Industrial Permit Manager
Watershed Protection Branch
Georgia Environmental Protection Division
4220 International Parkway
Atlanta, GA 30354

Subject: Additional Information Requested For Renewal of NPDES Permit No. GA0003620

Dear Ms. Dickson:

Please find enclosed a report on applicability of the antidegradation policy, as you requested. Also enclosed is our proposed Altamaha river study plan.

Please contact Debra Lane with any questions you may have.

Sincerely,

Fred J. Perrett
General Manager

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

Rayonier – Jesup Mill
Cellulose Specialties Expansion Project
Antidegradation Policy Applicability

Introduction

The antidegradation review process is triggered when a new or expanded point source is proposed for discharge to surface waters. Applicants requesting new or expanded point source discharges into any surface water must perform an antidegradation analysis to demonstrate that either (1) the discharge will not result in a significant lowering of water quality or (2) the discharge is necessary to accommodate important social or economic development. Rayonier has previously notified the Environmental Protection Division (EPD) that there have been no changes that constitute a new or expanded discharge since the previous permit was issued. This report is being provided to answer questions posed by EPD.

Background

The Rayonier Jesup mill recently completed the projects necessary to reconfigure the C mill to be capable of producing Cellulose Specialties dissolving pulp products, similar to the operation of the A and B mills. Previously, the C mill was designed to produce various pulp products but primarily absorbent materials (AM). This project is referred to as the Cellulose Specialties Expansion (CSE) project because it increased the mill's ability to produce high value, differentiated products and begin the eventual exit from the AM market. As discussed below, this project was not an expansion of the overall production capacity of the facility. In fact, equipment modifications necessary to enable production of the CS products actually *reduced* the mill's overall production capacity. In conjunction with the CSE project, several projects for effluent color reduction were also completed, including the innovative use of dissolved air flotation (DAF) systems in the B and C mills.

The Environmental Protection Division was notified of the planned project on July 1, 2011, as required by the mill's NPDES permit. In that notification we stated that this project would not materially change the characteristics or components of the mill's effluent. The project was also discussed in our updated permit renewal application submitted on July 13, 2012, in which we noted that the DAF systems would require use of one new chemical, alum, which is commonly used in drinking water purification processes. Based on engineering judgment, we projected that the alum would largely be captured in the solids removed from the DAF and only de minimis amounts would enter the wastewater treatment system. On a worst-case basis, the amount of aluminum discharged to the sewer would be much lower than the bioabsorption capacity of the treatment system. The Mill's effluent prior to the CSE project contained minimal levels of aluminum, and no change in the final effluent aluminum concentration would be expected.

ALUM

In subsequent discussions, the EPD asked the mill to review our records and determine whether an antidegradation analysis should be conducted prior to renewal of the NPDES permit. We submitted our response on January 17, 2013, concluding that an antidegradation analysis is not required because there have been no changes at the mill that constitute a new or expanded discharge since the previous permit was issued, and the CSE project itself also did not result in a new or expanded discharge. The EPD has requested a more detailed review of how Rayonier reached this conclusion. That review is presented in question and answer format below.

Determination of Antidegradation Policy Applicability

Did the CSE project cause the mill's production to increase?

No. The "expansion" is an expansion of our Cellulose Specialties (CS) dissolving pulp product lines, but production of CS pulp displaces production of other products in the C mill, and modifications to the production equipment necessary to enable production of the CS products actually reduced the mill's overall production capacity.

Did the project cause an increase in the volume of wastewater discharged?

No. Although CS dissolving pulp production generally requires more water than other pulp products, water conservation was an integral part of the engineering design for the CSE project, so the volume of water discharged did not increase.

Does the production of CS pulp in C mill require the use of any new chemicals?

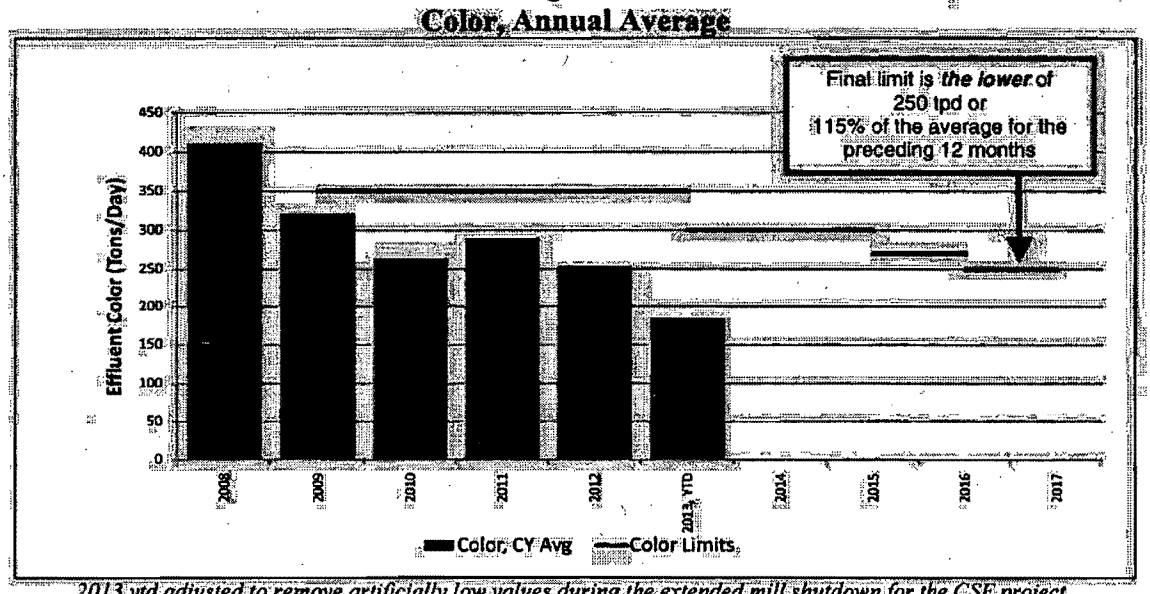
No. The same chemicals are used for making CS dissolving pulp and other pulp products using the kraft pulping process. These are also the same chemicals the mill uses to make CS dissolving pulp on its other two lines, A mill and B mill.

Did the project cause effluent color to increase?

No. As part of the CSE project, Rayonier developed innovative technology to capture color from certain wastewater streams. By applying a technology commonly used for drinking water treatment, we are able to remove color from filtrate generated by the extra screening requirements of some of our CS dissolving pulp grades. We installed this dissolved air flotation (DAF) technology on both the B and C mills.

In addition, the mill has continued to implement other color control technologies as agreed in the color consent order. Since 2008, effluent color has decreased by about 55 percent. See *Figure 1*.

Figure 1
Color, Annual Average

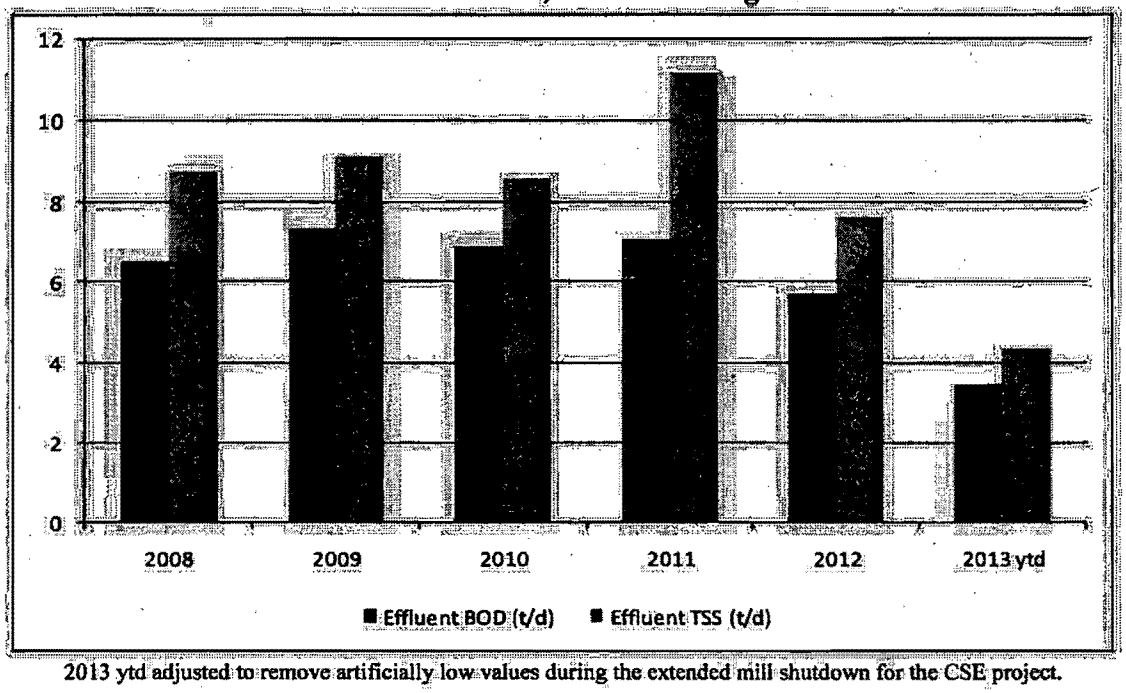


2013 ytd adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Did the project cause an increase in loading to the river?

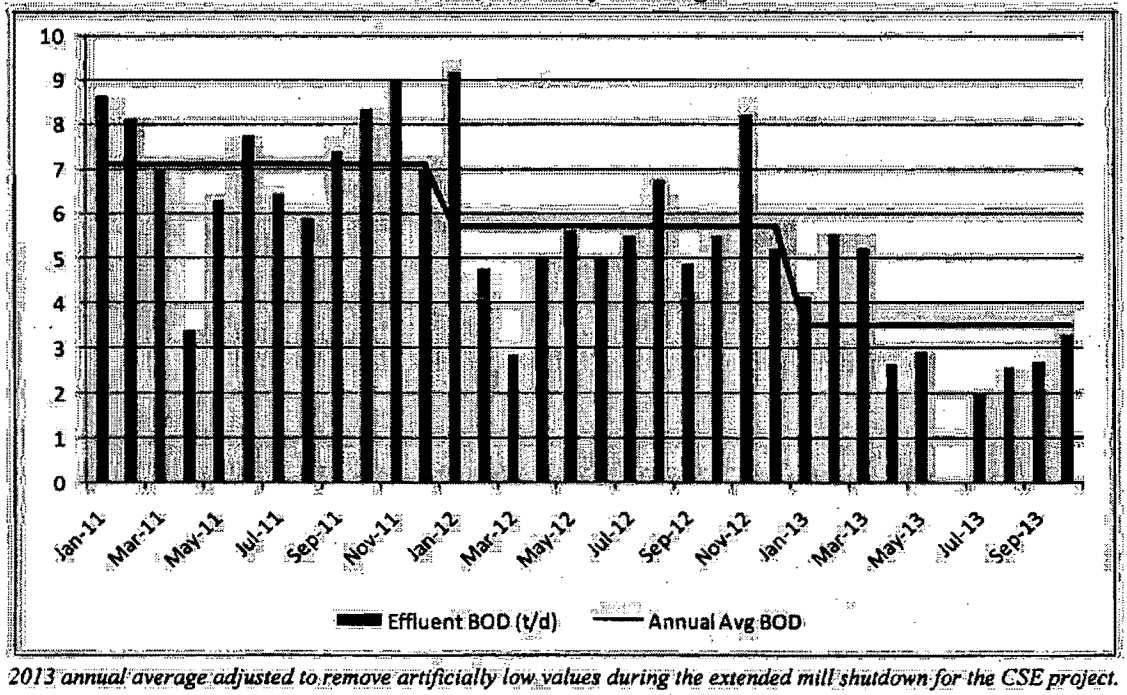
No. Production equipment was modified to allow the mill to make high purity CS dissolving pulp products using the same pulping process and chemicals we were using before the project. As part of the engineering design for the rebuild of the C mill, improvements in chemical recovery systems were made. At the same time, the mill continued to install technology for color reduction as agreed in the color consent order. All of these systems work together to reduce loading to the wastewater treatment system, resulting in reductions in loading to the river as shown in *Figures 2, 3, and 4*.

Figure 2
BOD and TSS, Annual Average



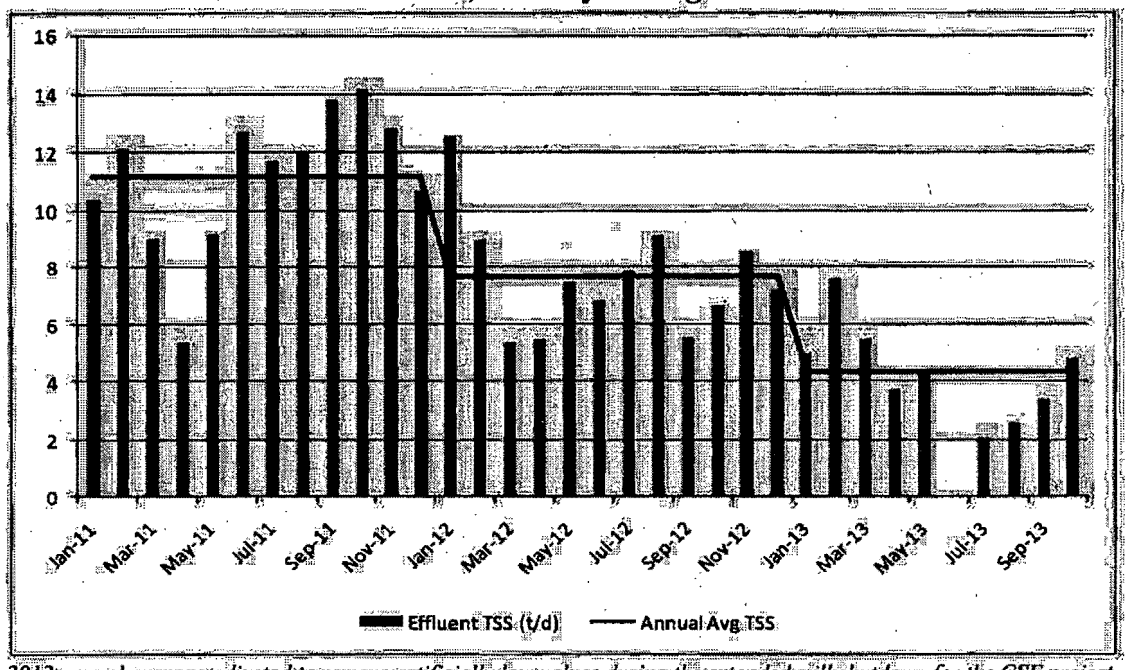
2013 ytd adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Figure 3
BOD, Monthly Average



2013 annual average adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Figure 4
TSS, Monthly Average



2013 annual average adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Highlights of the wastewater improvements associated with the CSE project include:

- Increased Prehydrolysis Pulping

  CS dissolving pulp production utilizes a prehydrolysis pulping step in the process that uses only steam and water to remove hemicellulose and other components from wood chips. These components are sent to the chemical recovery system to be burned in the recovery boilers. Prehydrolysis removes about 10% of the wood, reducing subsequent kraft pulping chemical demand and pulp washing requirements. This reduces process discharges to wastewater treatment.

- Improved Brown Stock Washing

  An additional washing stage was added to C mill which will lower carryover of chemicals in pulp that goes to the bleach plant, reducing discharges to wastewater treatment. In addition, overall brown stock washing efficiency is improved because the pulp production rate is lower than the existing washers were designed to accommodate, resulting in lower discharges to wastewater treatment.

- Increased Spill Collection Capacity

  The CSE Project included additional spill collection capacity that will improve black liquor spill collection and control, reducing black liquor spill discharges to wastewater treatment.

- Increased Evaporator Capacity

  The CSE Project included an additional evaporator train. The evaporators concentrate black liquor from the process and the spill collection systems so it can be burned for energy recovery rather than being discharged to the wastewater treatment system.

- Dissolved Air Flotation (DAF) Units and Screen Room Closure

  Prior to the CSE project, the C mill was designed to operate with a closed screen room, meaning filtrates from the screen room were recycled into the process. Some of our CS products require additional screening, and filtrates from this part of the operation typically are not recycled due to the ultra high purity required for these products. As part of the CSE project, we installed the DAF systems on both the B and C mills to treat these filtrate streams. In the C mill, this technology allows us to recycle these streams, so no new discharge to the treatment system was created. In the B mill, the DAF technology captures color from the filtrate streams that are sewered. Along with color, the DAF system also reduces loading of BOD and chemicals like sodium and sulfur to the wastewater treatment system.

- Reduced Loading to Bleach Plant

  In the CS pulp process, significantly more lignin is removed from the pulp in the digester cooking process where it can be captured and used for energy recovery. This means there is less lignin that must be removed in the bleach plant, which lowers bleaching chemical demand and bleach plant discharges to the wastewater treatment system.

- Proprietary Chemical Recycling System

  The CSE project included installation of a proprietary chemical recycling process that reduces loading to the wastewater treatment system and reduces the usage of neutralization chemicals in the wastewater treatment operation.

Will the use of water treatment chemicals in the DAF systems result in additional loading to the river?

No. Aluminum occurs naturally in the environment and is present in the mill's water supply and in wood. Aluminum has previously been reported in the mill's effluent at concentrations of about 0.27 mg/l (2012 data).

In the DAF systems, alum is added to coagulate color and fiber in certain filtrate streams, then the coagulated material, called flocs, is removed, dewatered, and burned in onsite power boilers. At the typical pH of water in such systems, aluminum exists as insoluble aluminum oxides that are attached to flocs that are removed by settling. In the worst case, this process would add 0.06 mg/l aluminum to the influent of the wastewater treatment system. This is less than ten percent of the aluminum absorption capacity of the biomass in the wastewater treatment system, so no increase in the effluent aluminum concentration over historical levels is expected.

In its "2011 Annual Effluent Guidelines Review Report," EPA showed the median aluminum concentration in effluents from mills in the pulp, paper, and paperboard category was 0.29 mg/l, which is consistent with the Jesup mill's data. EPA concluded that "aluminum is not a pollutant of concern because it is detected at concentrations below treatable levels with end-of-pipe treatment technologies suitable for large effluent flows." (page 20-16)

Conclusion

The antidegradation policy is not triggered by the Jesup mill's CSE project because there is no new or expanded discharge. The project actually resulted in a reduction of pollutants in the effluent, and no new chemicals are being discharged.

Rayonier

Jesup Mill

November 11, 2013

RECEIVED
Environmental Protection Division
NOV 12 2013
DIRECTOR'S OFFICE

Orig. hand-del.

Mr. James A. (Jac) Capp
Branch Chief
Watershed Protection Branch
Georgia Environmental Protection Division
4220 International Parkway
Atlanta, GA 30354

Dear Mr. Capp:

Please find attached a supplement to Rayonier's application for renewal of our NPDES permit No. GA 0003620. The company is updating the application to reflect progress since the 2012 supplement including:

- Conversion to elemental chlorine free (ECF) bleaching
- Completion of our cellulose specialty expansion (CSE) project
- Completion of several environmental projects which improve the effluent from the mill
- Revised production plans

The CSE project and associated environmental projects have improved our effluent, including lower BOD, TSS, and color. The elimination of elemental chlorine from our bleaching process is the culmination of a multi-year partnership with our customers and in many cases their customers to make, test, and qualify ECF products.

Additionally, we have updated our production plans due to unforeseeable changes in the market for our products. Our initial plans were to produce commodity viscose on our new C line while we completed product qualifications and market placement for our higher purity cellulose specialty products. However, since we submitted our initial application, China initiated an investigation into alleged dumping of imported commodity viscose products from the United States, Canada and Brazil. Last week, China's Ministry of Commerce issued preliminary findings which impose import duties on future shipments of certain of our dissolving pulp products. As a result, we will need the flexibility to produce some pre-CSE products in addition to dissolving pulps. This change in our production plan will not result in changes to our effluent compared to our original post-CSE production plan, as described in our previously-submitted permit application.

As always, feel free to contact Rayonier with any questions you may have.

Sincerely,

Fred J. Perrett
General Manager

cc: Mr. Judson H. Turner, Director
Ms. Audra Dickson, Industrial Permit Manager

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

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Environmental Protection Division
NOV 12 2013
DIRECTOR'S OFFICE

SUPPLEMENTAL INFORMATION

In Support of

NPDES PERMIT No. GA 0003620

RENEWAL APPLICATION

JESUP MILL

RAYONIER PERFORMANCE FIBERS, LLC

SUBMITTED November 11, 2013

Introduction

NPDES permit GA0003620 was issued on May 25, 2001 and expired on April 30, 2006. The permit was administratively extended because Rayonier submitted a timely renewal application on October 28, 2005. At the EPD's request, Rayonier submitted an updated application on July 29, 2008, and a second updated application on July 13, 2012.

Rayonier is providing this supplemental information as an addendum to the permit renewal application submitted on July 13, 2012. The purpose of this submittal is to document the status of mill process improvements and production plans, so that the application remains current and sufficient.

Elemental Chlorine Free (ECF) Bleaching

As reported in our July 2012 application, Rayonier has continued to conduct research on technology for manufacturing all of our products using ECF bleaching. This work required extensive trials, since for every process change that is made each customer as well as the customers' customers must qualify the pulp according to their fitness for use standards. We have followed the trial schedule presented to the EPD in September 2009. Our target for completion of all of the mill and customer trials was the end of 2013.

We have now successfully completed all of the trials, and have received confirmation from all of our customers that our ECF pulp meets their demanding quality specifications. We discontinued the use of elemental chlorine in July, and now that the final customer approvals have been granted we are able to commit to elemental chlorine free bleaching for our current products..

Under the "Effluent Limitation Guidelines for the Pulp and Paper and Paperboard Category" (the "Cluster Rules") promulgated on April 15, 1998, the Jesup mill is in the Dissolving Kraft category (Subpart A). (See Federal Register Volume 63, No. 72, pp 18504 – 19751) On August 29, 2005 EPA announced that the Agency would not develop Effluent Guidelines for Subpart A mills due to the small number of facilities in that category that were still in operation. Instead, EPA indicated NPDES permit writers should use their best professional judgment (BPJ) to establish permit limits for those chlorinated compounds for which EPA established effluent guidelines for other sectors of the pulping industry.

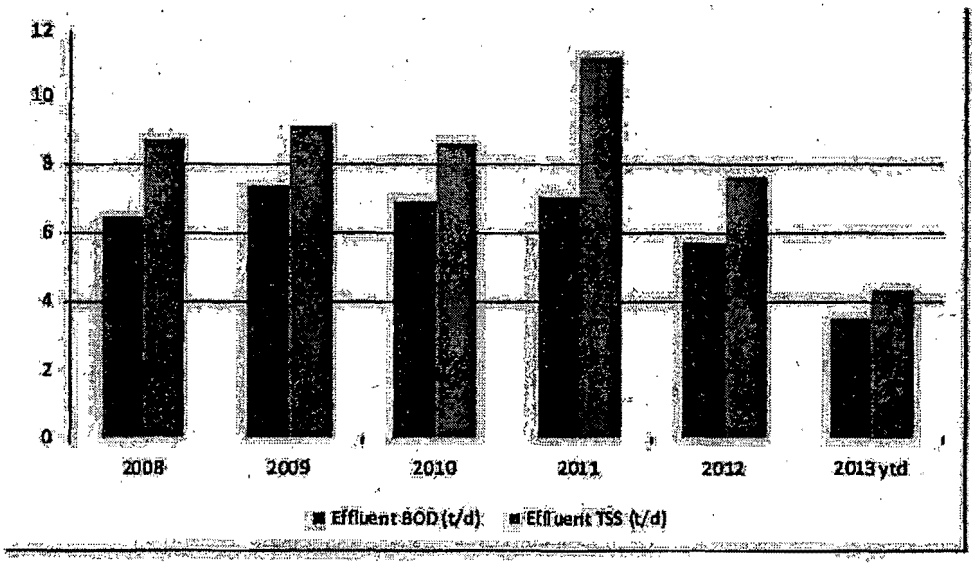
The Jesup mill needs time to collect data on which to base site-specific BPJ effluent limits for AOX, chlorophenolics, chloroform, dioxin and furan. Therefore we propose to conduct a two-year monitoring program for bleach plant and final effluent discharges commencing upon issuance of the NPDES permit. This information will be used to assess the impacts of effluent improvements and provide a basis for future consideration of BPJ effluent limits.

Status of the Cellulose Specialties Expansion Project

Rayonier has now completed the projects necessary to reconfigure the Jesup mill's "C" mill to be capable of producing Cellulose Specialties (CS) dissolving pulp products, similar to the operation of the "A" and "B" mills. Previously, the C mill was designed to produce various pulp products but primarily absorbent materials (AM). This project is referred to as the Cellulose Specialties Expansion (CSE) project because it increased the mill's ability to produce high value, differentiated cellulose specialty (CS) dissolving pulp products and begin the eventual exit of the AM market. This project was not an expansion of the overall production capacity of the Jesup facility. In fact, equipment modifications necessary to enable production of the CS products actually *reduced* the mill's overall production capacity.

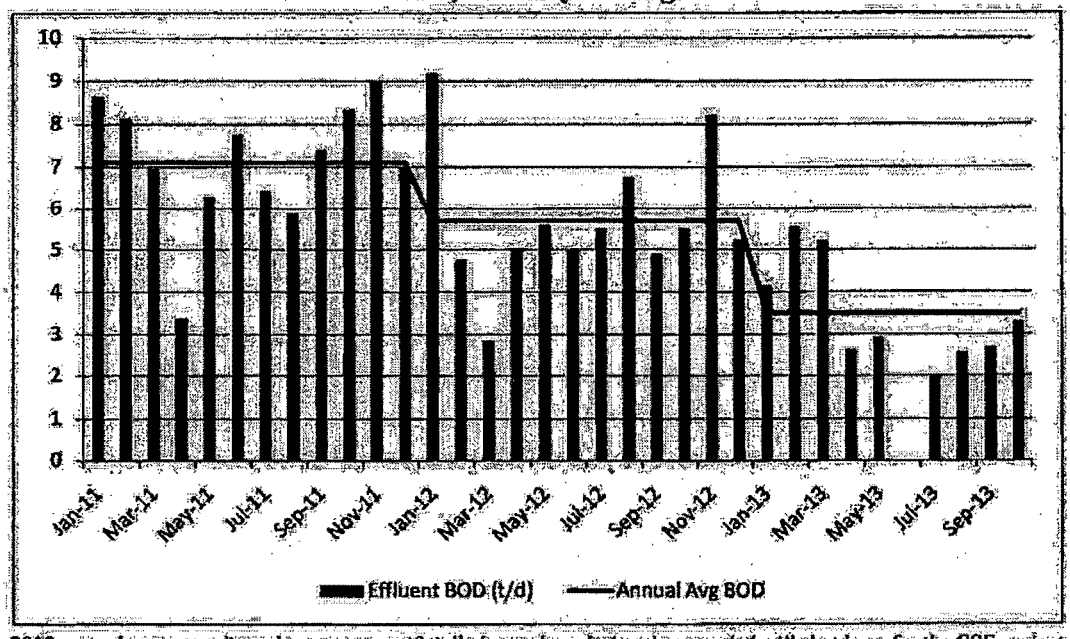
As we have previously reported to EPD, the CSE project was designed and engineered to minimize water usage, maximize chemical recovery, and reduce chemical and color loading to the wastewater treatment system and in our effluent. The environmental control technologies implemented as part of this project along with other technologies implemented for color control over the past several years have also resulted in improvements in our effluent, as measured by BOD and TSS loadings. These improvements are shown in *Figures 1, 2, and 3*.

Figure 1
BOD and TSS, Annual Average



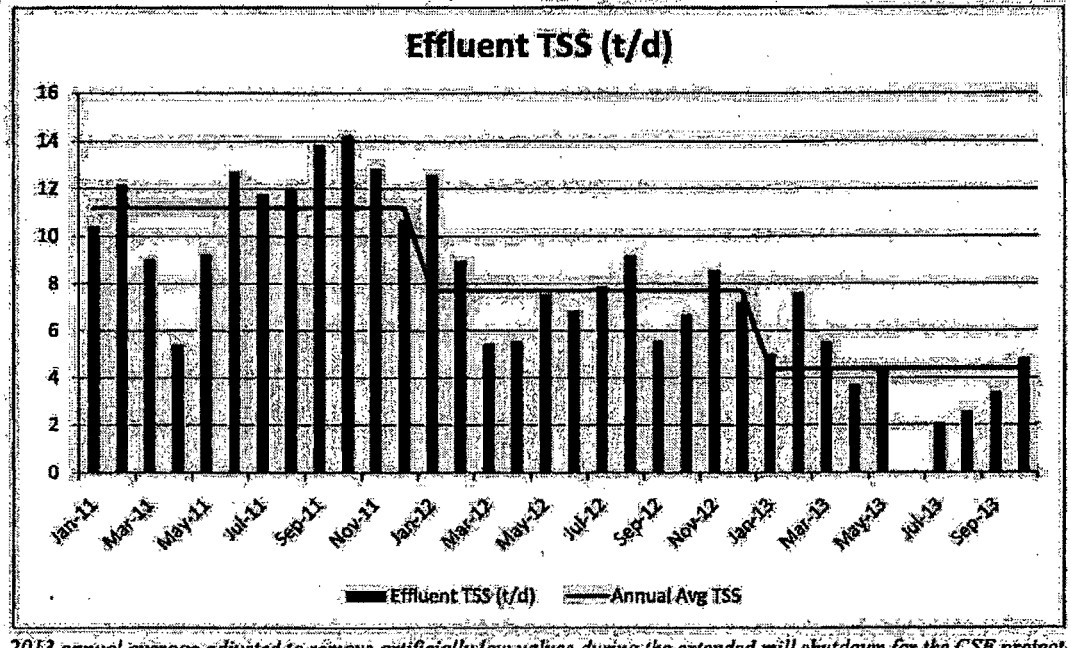
2013 ytd adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Figure 2
BOD, Monthly Average



2013 annual average adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Figure 3
TSS, Monthly Average



2013 annual average adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

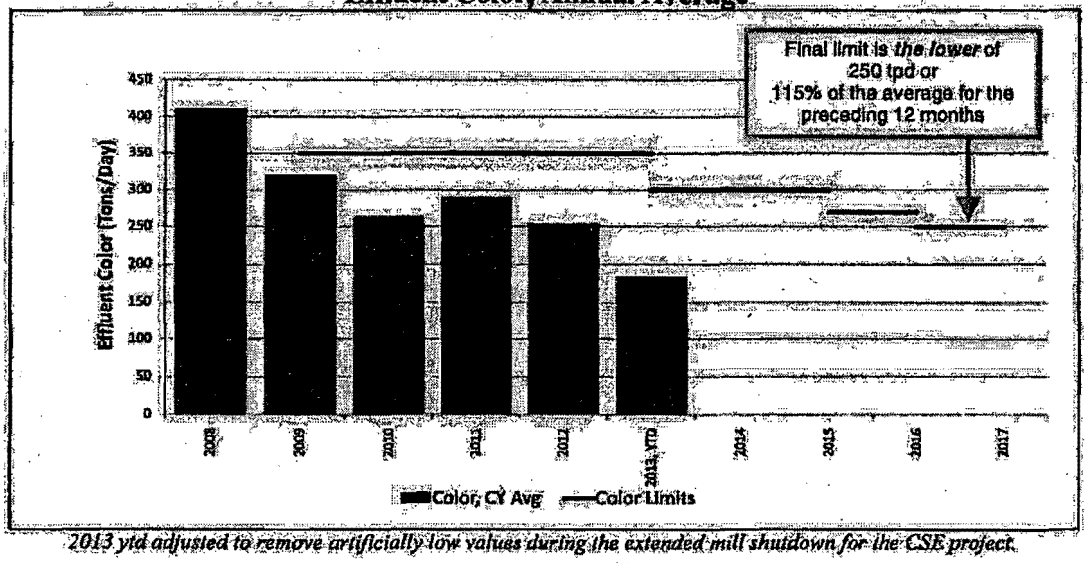
The reconfigured C mill and all of the effluent improvements have only been in operation for a few months, so we don't yet have enough data to quantify the statistical variability in the performance of the mill's processes or the treatment system. Therefore, Rayonier proposes that the BOD and TSS limits remain at the current levels in the renewed permit. The limits for BOD and TSS in the mill's existing NPDES permit are already significantly more restrictive than the EPA's Effluent Limitation Guidelines (ELGs), especially for the summer months.

Status of Effluent Color Reduction Projects

Since 2008, effluent color has been reduced by more than 50 percent.

This performance was achieved by implementing the color control technologies required to meet consent order commitments and by completing color reduction projects voluntarily identified by Rayonier. More than seventy million dollars of investment in color reduction projects has pushed Rayonier's color performance further along and faster than anticipated under the consent order, as shown in *Figure 4*.

Figure 4
Effluent Color, Annual Average



2013 ytd adjusted to remove artificially low values during the extended mill shutdown for the CSE project.

Rayonier has systematically identified higher strength color streams and addressed them by implementing known color reduction technologies, or as in the case of dissolved air flotation, we innovated a new color removal technology. By applying a technology commonly used for drinking water treatment, we are able to remove color from the

filtrate generated by the extra screening requirements of some of our specialty cellulose grades.

Color Reduction Technology Projects	Date Installed
Sumps (8), A, B, C mills, Recovery and Evaporators	2006 – 2012
Spill collection, A,B,C mills	2007- 2012
B mill – Brown stock washing improvements	2008
No. 2 Outfall diffuser	2010
Accumulator heat exchanger	2008
C mill washing and spill collection	2012
B & C mills dissolved air flotation and solids dewatering	2013
Knot handling and pressing	2012 - 2013
New evaporators	2013
A mill – Brown stock washing improvements	(2015)

We have implemented initiatives to improve awareness of color performance across the mill and have empowered our workforce to identify opportunities to reduce color losses. Operators receive training through "SkillsNOW" training system, which also makes the information readily available at their operating consoles. This training is developed specifically for each job in the mill. The training includes specific task identification, training on task execution and extensive data and equipment information.

Data from our sewer monitoring systems are available in real time at operating consoles and computers throughout the mill. Color data are reviewed daily at shift change and production meetings, and any corrective actions needed are executed promptly. The mill's color balance is also reviewed weekly to identify opportunities for achieving additional color reductions through process and equipment improvements.

Revised Production Plans

Since the startup of the reconfigured C mill, we have successfully produced the intended range of Cellulose Specialty (CS) dissolving pulp products on this line. Our high purity CS products require extensive customer evaluations and approval for even small changes in the manufacturing process. We are required to go through that same evaluation and approval process for the products now manufactured in the reconfigured C mill to demonstrate to our customers that these products perform at least as well as those manufactured in A and B mills, so we are producing those grades as needed for the trials.

Our initial plans were to exit the absorbent materials market and produce commodity viscose dissolving pulp on our new C mill while we completed product qualifications and market placement for our higher purity CS dissolving pulp products. However, we now find that we need the flexibility to produce some pre-CSE products in addition to dissolving pulps. With all of the process improvements and pollution control systems installed as part of the CSE project, this change in our production plan will not result in changes to our effluent compared to our original post-CSE production plan, described in our previously-submitted permit application.

Rayonier Altamaha River Study Plan
November 18, 2013

In issuing the color consent order, GA EPD asserted its concern that the aesthetic impact of the Rayonier mill's discharge had the reasonable potential to produce turbidity or other objectionable conditions that interfere with legitimate water quality uses of the Altamaha River. As part of the 303(d) listing process, in December 2012 the GA EPD concluded that there were insufficient data to determine whether the stretch of the Altamaha River adjacent to the Rayonier mill in Jesup, GA is "impaired" for color under the narrative water quality standard (391-3-6-.03(5)(c)), which states that "all waters shall be free from material related to municipal, industrial, or other discharges which produce turbidity, color, odor, or other objectionable conditions which interfere with legitimate water uses."

Because the permittee has completed almost all of the projects required by the color consent order, resulting in effluent color reduction of more than fifty percent since 2008, the permittee has agreed to conduct a color behavior study to quantify the extent and visual effect of the mill's current effluent color. This study will also assess color influences of other water bodies in the region.

The permittee has also agreed to conduct a water quality study to develop the data EPD needs to assess whether the narrative standard is met. The designated use of this stretch of the Altamaha River is fishing, so the water quality study must be designed to evaluate whether color in the river interferes with fishing. The three study modules will evaluate the degree to which the river is currently meeting the designated use of fishing by assessing fish population and health, fishing habits upstream and downstream of the Jesup mill, and the presence of freshwater mussels downstream of the mill.

A Quality Assurance Project Plan (QAPP) will be submitted within ninety days of the effective date of this permit for review and approval by GA EPD. The QAPP will allow for participation in and oversight of the study by EPD staff. Modifications to the plan will be permitted with the agreement of EPD staff as necessitated by field conditions. Results of the study will be submitted within ninety days of completion of the study. Progress reports will be submitted within thirty days of the end of each semiannual period (January – June and July – December) until the final report is submitted.

Study Question 1: What is the visual effect of effluent color on the river in relation to other color influences in water bodies in the region?

Study Module 1: Evaluation of Near-Field Color Behavior

Goals:

- Define the behavior of effluent color as it travels downstream of the outfalls and interacts with receiving water under different river flow conditions.
- Collect river water color values from reference locations, including locations further downstream on the Altamaha River (e.g., Paradise Park, Williamsburg, Everett, and Darien) and locations in Penholloway Creek and other regional rivers that represent the range of natural river water color in southern Georgia coastal rivers. The reference location data would be compared to the color values of completely mixed Altamaha River water.
- Collect data necessary to calibrate the Cormix model and determine the extent of visual impact of the mill's discharges (mixing zone determination).

Study Elements:

- Characterize background water color in the Altamaha River upstream of mill effluent.
- Characterize water color downstream of the Outfall 002 diffuser by measuring color across channel transects over an approximate 1-mile reach of the river (i.e., downstream of Dick's Swift bend).
- Perform sampling at various river flow stages. Because of the importance of color mixing behavior at 7Q10 low flow in defining a mixing zone, perform additional sampling when the river flow is near the 7Q10.
- Collect reference samples from the Altamaha River at Paradise Park, Williamsburg Landing, Everett Landing, and other coastal plain streams, including Penholloway Creek.
- Conduct a minimum of 7 sampling events over the course of 1 year to encompass the four seasons:
  - Four sampling events in low-flow periods when flow is near the 7Q10 flow (2,250 cfs)
  - Three sampling events in higher, wet season flows (approximately 5,000, 8,000, and 10,000 cfs or more), if conditions are safe for field work in the river.

Study Question 2: Is the fish community downstream of the mill healthy?

Study Module 2: Evaluation of Game Fish Population and Health

Goal:

- Evaluate, through the analysis of existing DNR fish community survey data, whether the game fish community found below the mill outfalls is similar to the game fish community found upstream of the mill.

Study Elements:

- DNR has an ample database of fish population data collected between 1994 and 2013. Rayonier will analyze the data to determine whether there are significant differences in fish population or fish health above and below the mill's discharges.

- Analysis will include a comparison of the number and biomass of each species game fish collected above and below the mill's discharges and an analysis of general fish health based on the relationship between fish weight and total length (a common metric used by resource managers).

Study Question 3: Do anglers use all sections of this stretch of the river?

Study Module 3: Evaluation of Fishing Habits

Goal:

- Evaluate, through the analysis of existing DNR fish creel survey data, whether the section of the Altamaha River in the vicinity of the mill is used by recreational fishers.

- Evaluate whether anglers frequent fishing locations downstream of the mill's outfalls. This analysis should be in comparison to the number of anglers frequenting fishing locations upstream of the mill.

Study Elements:

- DNR conducted creel surveys at boat launching locations between 1995 and 2011. Rayonier will analyze the raw data (number of hours fished, species caught, biomass of the catch) collected during the creel surveys to determine the catch per unit effort for anglers fishing in the section of the Altamaha River where the mill is located. The catch per unit effort will be compared to other sections of the Altamaha River serviced by other boat launches.

- DNR may also have records of fishing violations issued to anglers that were intercepted while they were on the river. Rayonier will seek to obtain the citation records for analysis. If the records provide information on the location of the angler at the time of the citation then these data can be used as a surrogate for fishing habits.

- If the DNR fishing citations data are not useable, and EPD is not satisfied that the creel survey data is sufficient to evaluate whether anglers are accessing fishing locations below the mill's outfalls, then Rayonier will conduct a survey of fishing habits of boat anglers by using an on-river field method to note fishing locations for boat anglers. An alternative to on-river survey would be to conduct the survey by airplane, using visual counts and photography to note locations. Briefly, the survey would include the following components:

  - Survey dates: randomly selected days of week and randomly selected weekends and holidays
  - Time: randomly selected survey times; start and end time of survey randomly selected
  - Locations: survey several miles above and below the mill
  - Survey period: late Spring to mid Fall (May-October)
  - Data collected: fishing location based on GPS or other method, notation on the number in fishing party

Study Question 4: Are freshwater mussels present in the river downstream of the Jesup Mill.

Study Module 4: Evaluation of Freshwater Mussels

Goal:

- Evaluate the status of freshwater mussels by reviewing available data and by surveying for the presence of freshwater mussels if necessary.

  The life cycle of freshwater mussels is complex and not well-understood. Mussel populations may be impacted by many factors unrelated to the mill's discharge, such as river level, competition by invasive clam species, and other conditions. This module will focus on whether mussels are present both upstream and downstream of the mill.

Study Elements:

- Rayonier will review available literature and mussel survey data to assess the freshwater mussel community upstream and downstream of the mill.

- If there are insufficient data to determine the status of freshwater mussels upstream and downstream of the mill Rayonier will conduct a mussel study:
  - The freshwater mussel survey would include both tactile and visual searches of suitable nearshore habitat.
  - A minimum of 10 locations, five upstream and five downstream of the Jesup Mill outfalls, would be surveyed.
  - Specimens of freshwater mussels found at each location would be photographed and returned to their original location. Species identification would be verified by a malacologist.
  - Surveying for the presence of mussels will be done between late April and late November (Carlson et al. 2008).

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

CONSENT ORDER

RAYONIER PERFORMANCE FIBERS, LLC **ORDER NO. EPD-WQ-4837**
JESUP, GEORGIA
WAYNE COUNTY

Whereas, Rayonier Performance Fibers, LLC (hereinafter called "Rayonier") presently owns and operates a dissolving pulp mill (hereinafter called the "Facility") in Jesup, Wayne County, Georgia; and

Whereas, the Facility discharges into the Altamaha River through two distinct permitted outfalls; and

Whereas, pursuant to the State of Georgia Office of State Administrative Hearings' Administrative Law Judge's February 11, 2002 Order on Intervenor's Motion for Summary Determination, the Facility is regulated as a Dissolving Kraft Subcategory under 40 C.F.R. Part 430, Subpart A; and

Whereas, the Facility is the only such facility in the State of Georgia and is one of only three currently operating in the United States; and

Whereas, on May 25, 2001, the Georgia Department of Natural Resources, Environmental Protection Division ("EPD" or the "Division") issued to Rayonier National Pollutant Discharge Elimination System Permit No. GA0003620, with respect to the discharge of treated wastewater from Rayonier's Facility (the "Permit"); and

Whereas, the Facility is subject to, among other regulations, the Ga. Comp. R. & Regs. r. 391-3-6-.03(5), General Criteria for All Waters; and

Whereas, the General Criteria for All Waters includes the Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(c), which states that "all waters shall be free from material related to municipal, industrial, or other discharges which produce turbidity, color, odor, or other objectionable conditions which interfere with legitimate water quality uses"; and

Whereas, the General Criteria for All Waters includes the Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(d), which states that "all waters shall be free from turbidity which results in a substantial visual contrast in a water body due to man-made activity"; and

Whereas, Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(c) and r. 391-3-6-.03(5)(d) are narrative water quality standards rather than numeric standards ("Narrative Water Quality Standards"); and

Whereas, Ga. Comp. R. & Regs. r. 391-3-6-.06(8)(c) incorporates 40 C.F.R. § 122.44 by reference and under 40 C.F.R. § 122.44(d)(1)(iii), if EPD concludes that a facility's discharge causes or has the reasonable potential to cause a violation of a narrative standard, the facility's permit must contain an effluent limit for the pollutant; and

Whereas, Ga. Comp. R. & Regs. r. 391-3-6-.06(8)(c) incorporates 40 C.F.R. § 122.44 by reference and under 40 C.F.R. § 122.44(d)(1)(ii), when determining whether a discharge has the reasonable potential to violate

a Narrative Water Quality Standard, EPD considers the existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, the sensitivity of species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water; and

Whereas, Ga. Comp. R. & Regs. r. 391-3-6-.06(8)(c) incorporates 40 C.F.R. § 122.44 by reference and 40 C.F.R. § 122.44(d)(vi) sets out the options by which, if EPD determines that a discharge has the reasonable potential to violate a Narrative Water Quality Standard, EPD can establish an effluent limit for the pollutant; and

Whereas, Ga. Comp. R. & Regs. r. 391-3-6-.06(8)(c) incorporates 40 C.F.R. § 122.44 by reference and under 40 C.F.R. § 122.44(k)(3), effluent limitations may take the form of Best Management Practices when numeric limitations are not feasible; and

Whereas, EPD's policy regarding color discharges from existing facilities is that, upon permit reissuance, existing facilities with color in their effluent are required to collect color samples upstream and downstream of their discharge and to conduct an assessment of the sources of color; and

Whereas, the Permit required Rayonier to conduct a color impact study for its Facility; and

Whereas on June 22, 2001, the Altamaha Riverkeeper, Inc. ("ARK") challenged the issuance of the Permit, alleging that the Permit did not meet certain requirements of the federal Clean Water Act and Georgia law (the "Permit Challenge"); and

Whereas, ARK and Rayonier's predecessor-in-interest ("the Parties") entered into a settlement agreement dated as of April 15th 2002 (the "Settlement Agreement") to resolve the issues related to the Permit Challenge; and

Whereas, the EPD and an Office of State Administrative Hearings' Administrative Law Judge reviewed and accepted the Settlement Agreement to resolve the Permit Challenge; and

Whereas, Rayonier has submitted an application for a renewal of the Permit which has been extended administratively by the EPD ("Permit Application"); and

Whereas, on July 31, 2007, EPD received a citizen complaint regarding the Facility's effluent; and

Whereas, the citizen complaint alleged that the Facility's discharge violated the Narrative Water Quality Standards; and

Whereas, EPD has concluded that the aesthetic impact of the Facility's discharge has the reasonable potential to violate the Narrative Water Quality Standards because it has the reasonable potential to produce turbidity or other objectionable conditions that interfere with

legitimate water quality uses of the Altamaha River and it has the reasonable potential to cause turbidity that results in a substantial visual contrast in the Altamaha River due to man-made activity; and

Whereas, EPD, under the Georgia Water Quality Act, has the authority to issue and enforce National Pollutant Discharge Elimination System permits that ensure compliance with applicable standards, including the state water quality standards; and

Whereas, Rayonier does not agree with EPD's conclusion that its Facility has a reasonable potential to violate the Narrative Water Quality Standards, but wishes to avoid the time and expense of litigation and resolve these matters with EPD; and

Whereas, both Rayonier and EPD wish to cooperate fully to resolve the issues in this Order; and

Whereas, Rayonier currently estimates that, implementing the Color Reduction Plan outlined below over the life of this Order will cost between $65 and $75 million.

NOW, THEREFORE, before taking any testimony and without adjudicating the merits of the parties' positions in this matter, and without admission or assignment of liability by Rayonier, the parties hereby resolve the issues in this case by agreement and upon the order of the Director and the consent of Rayonier as follows:

1. Color Reduction Plan. Rayonier shall implement the following Color Reduction Plan at its Facility.

a. Brownstock Washing. Reducing color from the effluent at the Facility is dependent upon capturing more black liquor from the pulping and brownstock washing processes and limiting the volume of black liquor that enters the wastewater treatment system. In order to capture more liquor, the Facility must install new technology, modify existing processes, and change certain operational practices.

i. Improved brownstock washing is a known method for capturing more black liquor and reducing the amount of color carried through the process. Brownstock washing efficiency is described in terms of carryover of kilograms (kg) of sodium sulfate (Na_2SO_4) remaining in each ton of washed pulp (expressed in air dried metric tons – ADMT). The Environmental Protection Agency (EPA) recognizes 10 kg/ADMT sodium sulfate carryover as representing 99% effective brownstock washing and the technology basis for

establishing effluent guidelines for papergrade kraft pulp facilities.[1]

ii. Rayonier shall install equipment and make related process changes in its A and B mills that will improve effectiveness of brownstock washing. The goal of these improvements shall be designed to reduce salt cake carryover from the brownstock washing operation to at or below 10 kg/ADMT of sodium sulfate in unbleached, washed pulp.

b. Oxygen Delignification and Filtrate Recycling. Oxygen delignification ("O_2 Delignification") can also be used to recover additional black liquor from papergrade kraft pulp. The amount of delignification is expressed as a "kappa number". EPA recognizes extended delignification in softwood as a kappa value of 20 or lower.

i. Rayonier shall install an oxygen delignification system in its C mill. The system shall be a two-stage system targeted to reduce the kappa number of pulp entering the first bleaching stage to between 12 and 16 kappa units.

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[1] While the Facility is not subject to the papergrade kraft technology-based effluent guidelines, the parties agree that such guidelines are instructive in analyzing the efficiency of the brownstock washing and O_2 Delignification at the Facility.

ii. Post delignification washing filtrate will be recycled through the brownstock washers, combined with brownstock washing filtrate, and further processed in the mill's recovery cycle.

c. Spill Recovery. Rayonier shall continue to upgrade its black liquor spill recovery systems, using customary engineering practices developed in the industry. The system shall be designed to recover spills and to pump the spills to the mill's main black liquor recovery system, directly or via appropriate intermediate stages. A minimum of eight (8) spill collection systems, complete with proper instrumentation, shall be installed in areas in the mill where black liquor is stored, handled, or could enter the mill's sewer system (e.g., digesters, knot pads, and recovery operations).

d. Operating Practices (C-Mill Screen Room). The screening operation in C mill shall be designed to be operated in a "closed" condition, which means that color containing filtrate streams will be recycled with the exception of a purge stream for sand removal and rejects from the brownstock cleaners.

e. Color Balance. In order to understand and control color contributions to the mill sewer, Rayonier shall conduct a mill color balance not less than once every six months. The color balance shall be designed to measure the contribution of color compounds

from the various mill process elements, and shall be sufficiently detailed to identify the source of untreated discharges of colored material, measured before the effluent treatment plant.

f. Color Reduction Technologies. The above referenced brownstock washing improvements, O_2 Delignification, filtrate recycling, spill recovery, operating practices and color balances (the "Color Reduction Technologies"), constitute the Facility's Best Management Practices and serve as the appropriate means to achieve compliance with the Narrative Water Quality Standards, Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(c) and r. 391-3-6-.03(5)(d).

2. Implementation of Color Reduction Plan. Rayonier shall install and implement the Color Reduction Plan in accordance with the following deadlines:

a. EPD acknowledges that engineering, bidding, contract negotiation, construction (which must be performed during planned mill outages), employee training and full project implementation will take a substantial period due to the magnitude of the Color Reduction Technologies. As more fully described in Section 9 below, Rayonier shall prepare a detailed capital implementation schedule based on the engineering work completed to support the Color Reduction Technologies and improvements described above. The schedule shall provide for

consistent implementation of projects over the period specified in this Order, with all components of the Color Reduction Plan completed no later than eighty-four (84) months following the effective date of this Order. Rayonier shall submit to EPD the schedule and provide EPD with semi-annual progress reports as described below.

b. For the period over which the capital improvements required by this Order are implemented, Rayonier shall provide semi-annual progress reports to EPD summarizing the activities and achievements for the previous period and outlining the work plan for the next six months. Each progress report shall be provided to EPD not later than forty-five (45) days following the close of the six-month period covered by the report. The first such progress report shall cover the period commencing with the effective date of this Order and ending six months following the effective date of this Order.

c. As described above, the Color Reduction Technologies consist of three major process improvements and modifications: (1) O_2 Delignification in C mill; (2) improved brownstock washing in A mill, and (3) improved brownstock washing in B mill, each being individually referred to as a "Project" and collectively as the "Projects."

d. The Projects will be implemented in stages. The B mill brownstock washing Project shall be completed within eighteen (18) months following the effective date of this Order. The O_2 Delignification Project in C mill shall be completed in two phases, the first phase of which is additional brownstock washing capacity and the second phase of which is the installation of oxygen delignification equipment. The first phase of the O_2 Delignification Project shall be completed within thirty-nine (39) months and the second phase shall be completed within sixty-three (63) months following the effective date of this Order. The A mill brownstock washing Project and any other remaining work required by the Color Reduction Plan but not designated as one of the capital Projects shall be completed within eighty-four (84) months following the effective date of this Order. Rayonier shall demonstrate progress by providing EPD with semi-annual progress reports as described above.

e. Within thirty-six (36) months following the effective date of this Order Rayonier shall install eight spill collection systems in addition to those that it employed at the beginning of 2007. Two (2) shall be installed not later than twelve (12) months following the effective date of this Order; an additional three (3) not later than twenty-four (24) months following the effective date of this Order; and the final

three (3) not later than thirty-six (36) months following the effective date of this Order. All spill collection systems shall be commissioned and operators trained within forty-eight (48) months of the effective date of this Order. Rayonier shall provide updates to EPD in the semi-annual progress reports until such time as all spill collection systems are commissioned and operators trained.

3. Color Limits.

a. Rayonier shall achieve at least the color discharge performance specified in the following chart commencing with the expiration of each deadline, which deadline shall be calculated from the effective date of this Order:

Deadline	**Annual Average Color Discharge**
Within 18 months	350 U.S. tons/day
Within 63 months	300 U.S. tons/day
Within 84 months	270 U.S. tons/day
Within 96 months	115% of the average of the color discharge for the immediately preceding 12 months, not to exceed 250 U.S. tons/day annual average

b. The Color Limits shall be annual averages, expressed in U.S. tons (2,000 pounds) of color per day, consistent with the above-described limits. The Annual Average is the arithmetic average of color results for any daily samples taken in any calendar year. A daily sample is any grab sample or composite sample for any calendar day. Daily samples shall be taken at least five (5) times per week.

c. The Color Limits specified in the table above shall be incorporated into the Permit upon the Permit's renewal.

4. Diffuser. Rayonier shall also conduct an engineering study to evaluate the feasibility, cost, and effect of installing a diffuser at its discharge to further minimize the aesthetic impact of color on the Altamaha River. The diffuser study should also evaluate the need for Rayonier to obtain additional permits for its installation, including, but not limited to, a permit from U. S. Army Corps of Engineers. Rayonier shall submit the results of the feasibility study to EPD within twelve (12) months of the Order's effective date.

5. Contingency for Evaporation and Recovery Capacity. The Color Reduction Technologies and compliance with the Color Limits largely depend on additional collection of black liquor. A project to upgrade evaporation capacity may be required to manage the added black liquor volume. In order to accommodate the increased evaporator and

boiler capacity, and to sustain Facility production increases, Rayonier may need to obtain a Prevention of Significant Deterioration ("PSD") or other permits from EPD or other regulatory agencies. If Rayonier requires additional permits to meet the limits contained in this Order, Rayonier shall notify EPD of the permits that are required and shall diligently pursue obtaining any and all such permits. If the required permits are not issued, are delayed or are issued with more restrictive limits or conditions than Rayonier requested, Rayonier shall implement the requirements of this Order to the fullest extent possible in a manner that achieves compliance with existing or modified permits and that does not adversely impact the production capacity of the Facility.

6. Best Available Technology. As stated by EPA in its Notice of Preliminary 2006 Effluent Guideline Program Plan, 70 FR 51042 (Aug. 29, 2005), EPD may use its Best Professional Judgment to develop new dissolving Kraft mill effluent limits applicable to Rayonier's Jesup mill. Those limits are to be based on Best Available Technology Economically Achievable ("BAT"). In its NPDES renewal Permit application, Rayonier has stated that it believes that the BAT for the Jesup mill is demonstrated by the current operation of the mill. However, if it is determined by EPD that some or all of the Color Reduction Technologies must be implemented to meet the effluent limits for the mill, then those technologies shall be implemented on the schedule provided in Section 2 herein.

7. Force Majeure. Failure to complete a condition mandated by this Consent Order within the time period specified may be excused and not subject Rayonier to further enforcement action if the failure is the result of a force majeure event as identified below and Rayonier complies with the requirements set forth below. Rayonier shall have the burden of proving to the Division that it was rendered unable, wholly or in part, by Force Majeure to carry out its obligations.

The term "Force Majeure" as used herein shall be limited to the following: Act of God; strike, lockout, or other labor or industrial disturbance not caused by an unfair labor practice by the Rayonier; act of the public enemy; war; blockade; public riot; fire; storm; flood; explosion; failure to secure timely and necessary federal, state, or local approvals or permits, provided such approvals or permits have been timely and diligently sought; or other delay caused by unforeseeable circumstances beyond the reasonable control of Rayonier, its employees, agents, consultants, or contractors. Force Majeure does not include financial inability to perform an obligation required by this Consent Order or a failure to achieve compliance with applicable regulatory permits.

Rayonier shall notify the Division in writing within thirty (30) days after Rayonier learns of an occurrence Rayonier believes constitutes a Force Majeure. Such written notice shall include Rayonier's best estimate of the anticipated length (if known) and cause of any delay due to Force

Majeure. Failure to so notify the Division shall constitute a waiver of any claim to Force Majeure.

Rayonier and the Division agree to negotiate informally and in good faith to identify delays resulting from Force Majeure. Rayonier shall comply with the Division's determination as to the appropriate time period to be excused by Force Majeure, which shall be communicated to Rayonier in writing. In the event that any circumstance or series of circumstances cause the schedule to extend over thirty (30) calendar days, Rayonier and the Division shall meet formally to assess the overall schedule impact and attempt to mitigate same. Any Force Majeure event or events that cause the schedule to extend over sixty (60) consecutive days shall be noticed to the citizens of Wayne County in a form to be determined by the Division.

If Force Majeure has occurred, the affected time for performance specified in this Consent Order shall be extended for a period of time equal to the delay resulting from such Force Majeure. Rayonier shall exercise due diligence and adopt all reasonable measures to avoid or minimize any delay.

8. Changed Circumstances. Rayonier may petition EPD to modify the terms of this Order in the event of changed circumstances, and EPD agrees to consider such petition in good faith. Such circumstances may include, but are not limited to, significant changes in the operation of the

mill and the availability of new, improved or more cost-effective color reducing technologies or methods that may complement or replace the Color Reduction Technologies that Rayonier is required to implement herein.

9. Permit Application Modification/Permit Incorporation. If, upon execution of this Order, Rayonier's Permit has not been renewed, Rayonier shall modify its Permit application to incorporate paragraphs 1 through 6 of this Order (hereinafter the "Key Provisions"). The renewal Permit shall include the Key Provisions that are to be implemented within the term of such renewal Permit. Any remaining Key Provisions with completion dates beyond the term of the renewal Permit shall be incorporated into any subsequent Permit(s).

Completing the Projects defined in Section 2.c. will require numerous phases of design and construction (hereinafter the "Interim Projects"). The Projects and the Interim Projects shall be completed in accordance with a detailed schedule to be proposed by Rayonier that shall be included in the renewal Permit. This schedule shall provide that Rayonier shall complete a Project or an Interim Project no less frequently than every nine (9) months and shall report each such completion in writing to EPD within fourteen (14) days. Rayonier shall provide EPD with updates regarding the implementation of the Projects and Interim Projects in the semi-annual reports required under Section 2.b. Rayonier shall

inform EPD of any necessary modifications to the schedule of Interim Projects in the semi-annual reports.

10. Termination of Order. This Order shall terminate the earliest of the completion of the installation of the Color Reduction Technologies, when EPD issues a renewal Permit that incorporates the final Key Provisions, or at such time EPD is prohibited by court order from incorporating any Key Provision in any subsequent Permit.

11. Captions. All headings contained herein are not to be considered in the construction or interpretation of this Agreement, as they are included for reference only.

12. Non-Admission of Liability. This Order is executed and entered solely for the purpose of resolving and disposing of the allegations set forth herein and does not constitute a finding, adjudication, or evidence of a violation of any law, rule, or regulation by Rayonier, and, by consenting to this Order, Rayonier does not admit to any factual allegation contained herein or to any violations of State laws. In addition, this Order is not intended to create and it shall not be construed or otherwise deemed to recognize or create any claim, right, liability, estoppel, or waiver of rights in favor of any third-party or parties.

13. Stipulated Penalties.

a. The failure of Rayonier to meet the deadlines for implementing the Color Reduction Plan (as specified in Section 2 of

the Order) or report submittals shall result in the following stipulated penalties:

Period of Non-Compliance	Stipulated Penalty (Plan deadline)	Stipulated Penalty (Report submittals)
1st through 60th day	$1,000	$100
61st through 120th day	$2,500	$250
121st day and beyond	$5,000	$500

b. The above stipulated penalties shall not apply to the Color Limits, which shall become enforceable Permit terms. Stipulated Penalties shall apply only to the failure to complete the Projects defined in Section 2.c by the deadlines set forth in Section 2.d. They shall not apply to a failure to complete an Interim Project by the date set forth on the schedule to be included in the renewal Permit. Notwithstanding this, EPD reserves the right to pursue an enforcement action for a failure to complete or install an Interim Project every nine months unless such failure is excused under the terms of this Consent Order.

14. Effect of Order.

This Order does not waive the Director's right to take further enforcement action against Rayonier, or imply that the Director will not take such action, either for (1) violations referenced herein if Rayonier fails to fully comply with the conditions of this Order, or (2) violations not

referenced herein based on any other relevant requirements of this Order, the law, rules, and permit(s).

By agreement of the parties, this Order shall have the same force and binding effect as a Final Order of the Director, and shall become final and effective immediately upon its execution by the Director. The parties further agree that this Order shall not be appealable by Rayonier, and Rayonier hereby waives its right to initiate any administrative or judicial hearing on the terms and conditions of this Order.

Unless modified or terminated by a subsequent order, or otherwise specified in writing by the Director, this Order shall be deemed satisfied and terminated upon full, complete, and timely performance of each and every condition set forth herein.

It is so ORDERED and AGREED to this 6th day of March 2008.

CAROL A. COUCH, Ph.D., DIRECTOR
ENVIRONMENTAL PROTECTION DIVISION

RAYONIER PERFORMANCE FIBERS, LLC

BY: W M Burch

NAME: W. Michael Burch

TITLE: Vice President & General Manager

DATE: 2/14/08

Altamaha River – Rayonier Jesup Mill
Remaining Issues for the NPDES Permit Renewal and Study Plan
January 2014

Issue Summary:
In 2012 Georgia EPD was faced with two decisions on the Altamaha River Rayonier Jesup Mill: the assessment and listing of the Altamaha River in Jesup; and, the renewal of the NPDES permit for the Rayonier Jesup Mill. At the same time, the Altamaha Riverkeeper expressed concern about both of these issues - requesting that the Altamaha River be 303(d) listed and the NPDES permit have defined numeric limits for color. EPD has a narrative color standard. However, they do not have a way to develop a numeric limit. To address these issues, EPD decided a study was necessary. EPD expressed their plan to renew the NPDES permit by including a study plan and requiring Rayonier Jesup Mill to conduct the study. EPD would then use those results to reopen the permit to include numeric color limits and for the 2016 listing cycle to assess the Altamaha River. Over the past year, EPD and EPA have had numerous discussions and meetings related to the scope of the study plan. EPA still has several outstanding concerns that are identified below.

Current Status: In early 2013, EPD submitted a draft study plan to EPA. The EPA's Altamaha Team did not feel that the proposed plan would accomplish the needed results to determine the current color situation or to develop a numerical limit for the permit. EPA's comments were sent to EPD and several conference calls were held between the agencies. As of today, EPD has not agreed to all the recommended changes to the Study Plan. A meeting between Jack Capp and Jim Giattina is scheduled for January 30, 2014. On November 26, 2013, GeenLaw, on behalf of the Altamaha Riverkeeper, submitted a Notice of Intent to file a citizen suit citing that the Rayonier Jesup facility has violated, and continues to violate their NPDES permit. The NPDES permit has been administratively continued since May 2006.

303(d) Study Plan Issues Resolved: The following three issues raised by EPA have been addressed in the revised study plan.

- EPD should refer to designated uses instead of legitimate uses as it is not a defined term. To meet water quality standards in the river, designated uses must be met.
  - GA revised the study plan language to address this concern.

- EPA believes that examining creel data will, at best, only partially indicate whether legitimate water uses are being met. The discharge must not, "...produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses."
  - GA revised the study plan to look at creel data with concurrent ambient color data.

- The study language should clarify that fish analyses for both organoleptics and dioxins must follow a sampling program that has been submitted and approved by EPD.
  - GA revised the study plan language to address this concern.

EPA's Remaining Issues with the 303(d) Study Plan:

- The color study as written will not provide a numeric translator so that permit limits can be developed. We would like to reach a consensus now on how to numerically translate Georgia's narrative: "All waters shall be free from material related to... industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses." A translator could be based on precedent (e.g. Δ 40 pcu), a color perception study, or other defensible means – but the proposed study will only broadly characterize the extent of the plume, and won't derive a target to protect designated uses. We would also like to reach a consensus now on the width, maximum allowable downstream extent of the plume and any restrictions against a shore hugging plume.
  - EPD has made it clear they do not want to establish any specific color delta number at this time. After subsequent discussions between Craig Hesterlee and Liz Booth, EPD indicated they would likely restrict the allowed area of mixing and use a stringent range of color (e.g. Δ 40 pcu). If EPD chooses a conservative color range, that would compensate for some of the uncertainty regarding the extent of the mixing zone, and likely minimize the downstream or shore-hugging plume. EPD did not guarantee the use of a stringent color delta or to restrict the

area of mixing, and could face pressure from the discharger to choose less stringent targets post-study. If EPD doesn't confirm color and mixing zone targets in writing, then EPA can comment or take another course of action. It's hoped that resolution of the color issues will also ameliorate any odor issues from the discharge.

- "Visual observations and conductivity measurements shall be used to determine complete vertical mixing." EPA recommends that the state use conservative tracers such as dye to evaluate complete vertical mixing. Plumes contain variable internal water quality. The study should support methods to measure the centerline minimum dilution within a plume. Conductivity is not necessarily a conservative tracer. Visual observations can be highly arbitrary and should not be used to estimate mixing.
  - After Craig's subsequent discussions with Liz Booth, EPD's current approach of limiting the allowed area of mixing and using a stringent delta was deemed by EPA technical staff to be sufficiently conservative. That approach would alleviate EPA's concern about the lack of technical rigor of the mixing zone study.

NPDES Permit Issues:

Color Limits: The public notice draft permit may not include defined numeric limits for color but may include a conservative range based on an upstream/downstream delta. EPA would not be concerned with a delta of ~20-40 pcu. EPA would be concerned with a large mixing zone for color (like the ~12 mile mixing zone allowed in the Weyerhauser-Flint River Mill Permit).

Company prefers Study Plan not be included in the permit: At a September 25, 2013 meeting between Rayonier and EPD, the company wanted changes to the draft permit study plan language so that it would not be presumed or inferred that there is a current impairment of the Altamaha, but that the results from the study would inform the answer to that question. Rayonier prefers that the permit not contain detailed plan of study language, but simply require that one be submitted. EPD is considering what to do and at a minimum, will revise the language to make it more neutral. EPA has concerns about this because the Altamaha Riverkeeper and other environmental groups agreed to this approach because they could have input into the development of the study through the permitting and public notice process.

Antidegradation: EPD administratively continued the permit after Rayonier submitted a timely renewal application on October 2, 2005. Updates to the 2005 application were submitted on July 29, 2008 and on July 13, 2012. Rayonier has made process changes under Consent Order modifications in 2009, 2010 and 2011. Information in the 2012 application update stated that the conversion to make more dissolving pulp would not result in an overall increase in production nor would it cause a change in effluent characteristics. Supplemental information submitted with the 2012 update included the following statement: "As the EPD is aware, the Jesup mill has undertaken a significant capital project to convert the C-mill to a Cellulose Specialties line. After the conversion, the C-mill process will be similar to the A and B-mills, resulting in a Cellulose Specialties expansion, or CSC, while eliminating fluff pulp capacity. This project will not increase the mill's pulping capacity nor will it result in the introduction of any new pulping or bleaching chemicals into the process."

In November2013, EPD said they were delaying going to public notice with a draft permit until Rayonier submitted additional info regarding antideg for the switch to all dissolving pulp products. EPD said Rayonier verbally stated at the September 25 meeting that there will be no increase in pollutant loading, that antideg will therefore not be triggered, and the company will provide documentation to support this in writing to GA.

EPD sent the anti deg information that they received from Rayonier to EPA on January 27, 2014. EPA is currently reviewing the material submitted.

Informal pre-draft permit: EPA requested to see the permit before EPD placed it on public notice. Based upon a conversation between EPA and EPD on January 21, EPD will not be sending an informal pre- draft copy of the permit to EPA. Once received, EPA will have the standard 30-days to review and provide comments unless an extension is requested. The NPDES Section has already discussed plans to request a 90-day extension. EPD did not say when the permit would go out for public comment, however, it should be very soon.

Additional Background on Altamaha River: Rayonier's Jesup Mill

Rayonier Jesup paper mill makes fluff pulp used in disposable diapers and other sanitary products and high-quality specialty fibers used in food and pharmaceuticals. A facility line switch was made in the summer of 2013. The current facility permit was issued in 2001, modified in 2004, and expired in April 2006. Since that date, the permit has been administratively continued. Based on the facility 2005 permit application, long-term average discharge flow was 56.7 MGD and long-term average color loading was 523 tons/day.

In 2001, the Altamaha Riverkeeper challenged the 2001 permit and a settlement agreement with the facility was reached in 2002. This settlement required continuous flow monitoring and once/week color monitoring for outfalls 001 and 002. It also required that a study of the color contribution of the permittee's discharges be submitted by May 2002. Based on the study, the permittee was required to develop a best management plan for control of color.

In July 2007, the Altamaha Riverkeeper filed a citizen complaint alleging that the mill violated Georgia's narrative water quality standard. A Consent Order was issued in March 2008 which required the facility to: improve their brownstock washing processes; install oxygen delignification; improve black liquor spill recovery; operate third paper line as a closed system so that color streams were mostly recycled; conduct color balance once every 6 months, and; conduct a diffuser feasibility study within 12 months. Under this Consent Order, the facility was required to meet the annual color limits schedule as shown in Table 1. Since 2007, three separate modifications were made to the Consent Order. These modifications changed various timelines for meeting the required facility operations improvements and color limits. A modification in August 2009, required the installation of oxygen delignification in a third paper line within 51 months and to reach an annual average color limit of 300 tons/day within 57 months. The December 2010 modification changed the 51 month requirement back to 63 as in the original order. While the September 2011 modification was in response to the facility changing its third paper line from making absorbent materials to ultra-high purity cellulose specialty fibers. Since oxygen delignification will not remove color from this product line the order was changed to require the installation of solid-liquid separation technology within the same 63 month schedule.

In June 2012, the facility was on schedule for meeting both the technical improvements and color reduction requirements of the Consent Decree. Table 2 shows the reported color discharges based upon facility monitoring.

According to EPD, in 2011 a line leading to the discharge diffuser had an on-going leak. This occurred sometime between December 2010 and September 2011. This failure in the line allowed effluent to flow into the river without passing through the diffuser. Also between June 2011 and February 2012, the flow levels in the Altamaha River were exceptionally low due to drought conditions. This may have exacerbated the color issues in the river. EPD inspected the facility in February 2011 and again in March 2012 after the equipment was repaired. At the time of this recent inspection, EPD's Coastal District Office found no violations of the Water Quality Rules or the facility permit. In EPD's follow up to the facility, they did recommend that Rayonier Jesup develop a solution for controlling foam along the banks of treatment ponds 2A/2B that forms when winds make the spray barge ineffective.

303(d) Listing Issues: On December 17, 2012, Region 4 Monitoring, TMDL, Permitting, and Standards staff held a conference call with GA EPD to discuss the most appropriate category for the Altamaha River on the 2012 303d list. Region 4 and GA EPD agreed that insufficient data is available to determine compliance with Georgia's narrative water quality standard for color and to develop a defensible NPDES permit limit. GA EPD agreed to reissue Rayonier's NPDES permit with a requirement to conduct a study that addresses color sources to the River during low and high flow periods and to better define the extent to which Rayonier's discharge influences water quality. As a result, the Altamaha River was not included on Georgia's 2012 303(d) list, but will be reassessed when study results are available.

Facility Visit: In April 2013, Karrie-Jo Shell visited the facility with representatives from EPD. During her visit she learned that the company is switching to a 100% specialty pulp that is used in TV screens, toothpaste, plastics and other technologies.

In March 2013, representatives from the Rayonier Company (Charlie Hood, Carla Yetter, William Menzer) and their legal counsel (Alan Barnes) met with the WPD Division Director and members of the Altamaha Team. This meeting was a courtesy visit to introduce the company to EPA.

Line Conversion: An update to the 2005 application package was submitted on July 13, 2012. The updated application reported a total production of 1840 gross air

dried metric tons per day. The application also stated that the conversion to make more dissolving pulp would not result in an overall increase in production nor would it cause a change in effluent characteristics. Supplemental information submitted with the 2012 update included the following statement: "As the EPD is aware, the Jesup mill has undertaken a significant capital project to convert the C-mill to a Cellulose Specialties line. After the conversion, the C-mill process will be similar to the A and B-mills, resulting in a Cellulose Specialties expansion, or CSC, while eliminating fluff pulp capacity. This project will not increase the mill's pulping capacity nor will it result in the introduction of any new pulping or bleaching chemicals into the process."

Table 1. Annual Color Limits Schedule

Months	Tons/Day
18	350
63*	300
84	270
96	250

* changed to 57 months in 2009 Consent Order Modification

Table 2. Reported Annual Color Discharge Levels

Year	Tons/Day
2008	488
2009	375
2010	300
2011	324*

* through August 2011 (41 months)

Color Limits in other GA Paper Mills:NPDES GA0049336

Weyerhaeuser – Flint River Mill

Oglethorpe, GA

Discharge to Flint River

One of EPA's XL Projects; Initiative in the late 90's that allowed certain facilities to have reduced monitoring requirements in lieu of agreed upon improvements

Issued June 30, 2005 and expired May 31, 2010

The permit includes the following special conditions related to the XL Project:

Average instream delta color of 20 pcu, where the delta is measured at a location immediately upstream of the effluent diffuser and a downstream location (approx 12 miles) at Reeve's landing.

Rayonier

Jesup Mill

RECEIVED JUN 1 1 2013

June 3, 2013

Mr. Glen Behrend
Industrial Permitting Unit
GA EPD Watershed Protection Branch
4220 International Parkway, Suite 101
Atlanta, GA 30354

Subject: NPDES Permit No. GA0003620

Dear Mr. Behrend,

Enclosed are revised application forms for renewal of NPDES permit GA0003620 for the Rayonier Performance Fibers LLC – Jesup Mill (Rayonier). The application forms have been revised to correct a typographical error on the Form 2C, on Page V-1 for Outfall Number 001. The application forms previously submitted on July 13, 2012 indicated on Page V-1 for Outfall Number 001 that the long term average value for BOD mass discharges from this outfall was 19.6 tons per day; the revised form now shows the correct long term average BOD mass discharge value of 1.96 tons per day. This is the only correction made to the previous application information, so only the Forms I and 2C are enclosed.

NPDES permit GA0003620 was issued on May 25, 2001 and expired on April 30, 2006. The permit was administratively extended because Rayonier submitted a timely renewal application on October 28, 2005. Rayonier has previously submitted an updated application on July 29, 2008 in response to a GA EPD request, and submitted an updated application on July 13, 2012 in response to a GA EPD request.

If you have any questions about this application, or need any additional information, please free to contact Debra Lane at (912) 588-8117, or at debra.lane@rayonier.com.

Sincerely,

Daniel Price
Manager of Environmental Operations

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

For Approved. OMB No. 2040-0086. Approval expires 5-31-92

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F	GA0003620		D
1	2 13	14	15

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING LIST
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been proved. Refer to the instructions for detailed item descriptions and for the legal authorization under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental from listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)	☐ 16	☒ 17	☐ 18	B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)	☐ 19	☒ 20	☐ 21
C. Is this facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	☒ 22	☐ 23	☐ 24	D. Is this proposal facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)	☐ 25	☒ 26	☐ 27
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	☐ 28	☒ 29	☐ 30	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	☐ 31	☒ 32	☐ 33
G. Do you or will you inject at this facility any produced water other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	☐ 34	☒ 35	☐ 36	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfer by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	☐ 37	☒ 38	☐ 39
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	☐ 40	☒ 41	☐ 42	J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment are? (FORM 5)	☐ 43	☒ 44	☐ 45

III. NAME OF FACILITY

C	SKIP	
1		*Rayonier Performance Fibers LLC*
15	16-29	30 69

IV. FACILITY CONTACT

C	A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*		
2	*Price, Daniel L. Environmental Operations Manager*	*912*	*588*	*8358*
15	16 45	46 48	49 51	52 55

V. FACILITY MAILING ADDRESS

C	A. STREET OR P.O. BOX
3	*PO Box 1278*
15	16 45

C	B. CITY OR TOWN	C. STATE	D. ZIP CODE
4	*Jesup*	*GA*	*31598*
15	16 40	41 42	47 51

VI. FACILITY LOCATION

C	A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER
5	*4470 Savannah Hwy*
15	16 45

B. COUNTY NAME
Wayne
46 70

C	C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE
6	*Jesup*	*GA*	*31545*	
15	16 40	41 42	47 51	52 54

CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST		B. SECOND	
2611	(specify) manufacture of chemical cellulose		(specify)

C. THIRD		D. FOURTH	
	(specify)		(specify)

VIII. OPERATOR INFORMATION

A. NAME: Rayonier Performance Fibers LLC

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other," specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): 912 427 5000

E. STREET OR PO BOX: 4470 Savannah Hwy

F. CITY OR TOWN: Jesup

G. STATE: GA

H. ZIP CODE: 31545

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	GA0003620	D. PSD (Air Emissions from Proposed Sources)	
B. UIC (Underground Injection of Fluids)		E. OTHER (specify)	2631-305-0001-V-03-0 2631-305-0001-V-03-1 2631-305-0001-V-03-4
C. RCRA (Hazardous Wastes)		E. OTHER (specify)	151-0001 151-012D(L)(I) PG3050006 GA381-1

(Specify) Title V Part 70

(Specify) Groundwater Use, Solid Waste Handling, Drinking Water, Radioactive Material License

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Manufacturer of bleached kraft pulp and dissolving pulp using the kraft and prehydrolyzed kraft processes respectively.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Fred J. Perrett, General Manager, Jesup Mill	Fred J. Perrett	June 3, 2013

COMMENTS FOR OFFICIAL USE ONLY

Please type or print in the unshaded areas only	EPA ID Number (Copy from Item 1 of Form 1) GA0003620	Form Approved OMB No. 2040-0086 Approval expires 7-31-88

Form **2C** NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number (list)	Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Receiving Water (name)
001	31	39	29	81	49	53	Altamaha River
002	31	39	04	81	49	06	Altamaha River
003	31	38	55	81	49	27	Altamaha River

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow: a. OPERATION (list)	b. AVERAGE FLOW	3. Treatment: a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	1. Process water associated with the production of dissolving and bleached market kraft pulp (excluding bleaching operations)	3.50 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1G*, 1U, 2D, 2K, 3B, 3C, 3G 4A 5B, 5G, 5P, 5T	* flocculant may be used as a settling aid.

 CONTINUED ON REVERSE

001	2. Sanitary waste	0.02 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1U, 2D, 2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
001	3. Process water associated with the bleaching of the above listed pulp	3.00 MGD	As above without primary clarification	2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
001	4. Surface runoff	0.22 MGD	As above	1U, 3B, 4A, 5B	
001	5.Collected MACT pulping condensates per Title V permit 2631-305-0001	2.75 MGD	Aerated stabilization prior to being discharged to receiving water	2B, 3B, 3C, 3G 4A, 5B	

 CONTINUED ON REVERSE

002	1. Process water associated with the production of dissolving and bleached market pulp (excluding bleaching operations)	23.75 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1G*, 1U, 2D, 2K, 3B, 3C, 3G 4A, 5B, 5G, 5P, 5T	*flocculant may be used as a settling aid
002	2. Sanitary waste	0.09 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1U, 2D, 2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
002	3. Process water associated with the bleaching of the above listed pulp	20.75 MGD	As above without primary clarification	2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
002	4. Surface runoff	1.28 MGD	As above	1U, 3B, 4A, 5B	
002	5.Collected MACT pulping condensates per Title V permit 2631-305-0001	0.40 MGD	Aerated stabilization prior to being discharged to receiving water	2B, 3B, 3C, 3G 4A, 5B	

 CONTINUED ON REVERSE

003	*1. Surface runoff from non-process areas*	*1.10 MGD*	*This effluent receives settling before being discharged to receiving water*	*1U, 4A*	
003	*2. Surface runoff from process areas associated with the production of dissolving and bleached market kraft pulp*	*0.18 MGD*	*This effluent receives settling before being discharged to receiving water*	*1U, 4A*	

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ YES *(complete the following table)* ☒ NO *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY a. DAYS PER WEEK (specify average)	3. FREQUENCY b. MONTHS PER YEAR (specify average)	4. FLOW a. FLOW RATE (in mgd) 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE (in mgd) 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME (specify with units) 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME (specify with units) 2. MAXIMUM DAILY	4. FLOW c. DURATION (in days)

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ YES *(complete Item III-B)* ☐ NO *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☒ YES *(complete Item III-C)* ☐ NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	2. AFFECTED OUTFALLS (list outfall numbers)
1840	***gross air dried metric ton per operating day***	***manufacturer of bleached market kraft and dissolving pulp by the kraft and prehydrolyzed kraft processes, respectively***	***001, 002***

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☒ YES *(complete the following table)* ☐ NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. No.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED
GA EPD Consent Order No. EPD-WQ-4837	***001, 002***	***Plant-wide operations***	***Effluent color reduction***	***March 6, 2016***	***March 6, 2016***

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED

 CONTINUED ON PAGE 3

EPA ID Number *(Copy from Item 1 of Form 1)*
GA0003620

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables for each outfall - Annotate the outfall number in the space provided. **NOTE:** Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
asbestos	***present in insulation used in the pulp mill; although not detected in mill effluent it is potentially present***		
acetaldehyde	***incidental to the pulping process and may be found in the mill effluent on occasion***		
carbon disulfide	***incidental to the pulping process and may be found in the mill effluent on occasion***		
cresol	***incidental to the pulping process and may be found in the mill effluent on occasion***		
methyl mercaptan	***incidental to the pulping process and may be found in the mill effluent on occasion***		
furfural	***incidental to the pulping process and may be found in the mill effluent on occasion***		
strontium	***trace contaminant in raw materials; may be detected in effluent on occasion***		
vanadium	***trace contaminant in raw materials; may be detected in effluent on occasion***		
zirconium	***trace contaminant in raw materials; may be detected in effluent on occasion***		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **YES** *(list all such pollutants below)* ☒ **NO** *(go to Item VI-B)*

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES *(identify the test(s) and describe their purpose below)* ☐ NO *(go to Section VIII)*

Whole Effluent Toxicity Test

Multi-concentration chronic toxicity testing using the water flea, Ceriodaphnia dubia, and fathead minnow, Pimephales promelas, on effluent samples collected from outfalls 001 and 002 from May 31 - June 7, 2012.

Analyses conducted by:

AMEC Environment & Infrastructure, Inc.
AMEC Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
telephone (352) 332-3318

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Columbia Analytical Services, Inc. dba ALS Environmental	***9143 Philips Highway, Suite 200 Jacksonville, FL 32256***	***(904) 739-2277***	***TOC, nitrate/nitrite, oil & grease, sulfide, phosphorus, sulfate, volatiles, acids, base/neutrals, metals, MBAS, pesticides, fecal coliform, cyanide, total organic nitrogen, sulfite, general chemistry***
Columbia Analytical Services, Inc. dba ALS Environmental	***2655 Park Center Dr., Suite A Simi Valley, CA 93065***	***(805) 526-7161***	***methyl mercaptan***
ALS, formerly Columbia Analytical Services	***2860 S. Palo Verde Rd, Suite 302 Tuscon, AZ 85714***	***(520) 573-1061***	***zirconium***
EMSL Analytical	***5125 Adamson St, Suite 900 Orlando, FL 32804***	***(407) 599-5887***	***asbestos***
Florida Radiochemistry Services, Inc.	***5456 Hoffner Ave., Suite 201 Orlando, Fl 32812***	***(407) 382-7733***	***radiation chemistry***
Test America - Sacramento	***880 Riverside Parkway Sacramento, CA 95605***	***(916) 373-5600***	***2,3,7,8 TCDD***

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Fred J. Perrett General Manager, Jesup Mill	***(912) 427-5383***
C. SIGNATURE *Fred J. Perrett*	D. DATE SIGNED ***June 3, 2013***

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	001

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	196	7.15	114	3.40	58	1.96	366	mg/l	tpd			
b. Chemical Oxygen Demand *(COD)*	1205	46.74	1058	32.45	723	24.52	238	mg/l	tpd			
c. Total Organic Carbon *(TOC)*	46.6	1.57					1	mg/l	tpd			
d. Total Suspended Solids *(TSS)*	305	14.78	244	7.28	152	5.10	366	mg/l	tpd			
e. Ammonia *(as N)*	4.35	0.15					1	mg/l	tpd			
f. Flow	Value 16.41		Value 11.86		Value 8.08		366	MGD		Value		
g. Temperature *(winter)*	Value 30.8		Value 27.7		Value 26.0		183	°C		Value		
h. Temperature *(summer)*	Value 36.0		Value 35.0		Value 32.4		183	°C		Value		
i. pH	Minimum 6.7	Maximum 8.6	Minimum 7.0	Maximum 7.6			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK "X" a. BE LIEVED PRES-ENT	b. BE-LIEVED AB-SENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS (specify if blank) a. CONCEN-TRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☒	☐	0.21	14.89					1	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						1					
c. Color	☒	☐	2730	136.75	2397	91.40	1805	59.71	366	CPU	tpd			
d(1). Fecal Coliform	☒	☐	240						2	CFU/100ml				
d(2) E. coli	☒	☐	6						1	MPN/100ml				
e. Fluoride (16984-48-8)	☒	☐	0.42	29.77					1	mg/L	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.258	18.29					1	mg/l	ppd			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	☒	☐	13.7	0.49					1	mg/l	tpd			
h(1). Oil and Grease (HEM)	☒	☐	18.2	0.65					2	mg/l	tpd			
h(2). Oil and Grease (SGT)	☒	☐	6.6	0.21					1	mg/l	tpd			
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	2.77	0.09					1	mg/l	tpd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND											
(2) Beta, Total	☐	☒	ND											
(3) Radium, Total	☐	☒	ND											
(4) Radium 226, Total	☒	☐	0.5						1	pCi/l				
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	878	31.12					1	mg/l	tpd			
l. Sulfide (as S)	☒	☐	2.4	170.14					1	mg/l	ppd			
m. Sulfite (as SO_3) (14265-45-3)	☒	☐	ND						2					
n. Surfactants	☒	☐	0.15	10.63					1	mg/l	ppd			
o. Aluminum, Total (7429-90-5)	☒	☐	174	12.5					1	ug/l	ppd			
p. Barium, Total (7440-39-3)	☒	☐	134	9.50					1	ug/l	ppd			
q. Boron, Total (7440-42-8)	☒	☐	116	8.22					1	ug/l	ppd			
r. Cobalt, Total (7440-48-4)	☒	☐	ND						1					
s. Iron, Total (7439-89-4)	☒	☐	180	12.76					1	ug/l	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	10.9	772.70					1	mg/l	ppd			
u. Molybdenum, Total (7439-98-7)	☒	☐	ND						1					
v. Manganese, Total (7439-96-5)	☒	☐	260	18.43					1	ug/l	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						1					
x. Titanium, Total (7440-32-6)	☒	☐	5.2	0.37					1	ug/l	ppd			

 CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1m Antimony, Total (7440-36-0)	☒	☒	☐	ND						1					
2M Arsenic, Total (7440-38-2)	☒	☒	☐	ND						1					
3M Beryllium, Total (7440-41-7)	☒	☒	☐	ND						1					
4M Cadmium, Total (7440-43-9)	☒	☒	☐	ND						1					
5M Chromium, Total (7440-47-3)	☒	☒	☐	1.3	0.09					1	ug/l	ppd			
6M Copper, Total (7440-50-8)	☒	☒	☐	2.4	0.17					1	ug/l	ppd			
7M lead, Total (7439-92-1)	☒	☒	☐	0.75	0.05					1	ug/l	ppd			
8M Mercury, Total (7439-97-6)	☒	☒	☐	ND						1					
9M Nickel, Total (7440-02-0)	☒	☒	☐	4.1	~~290.65~~ 0.291					1	ug/l	ppd			
10M Selenium, Total (7782-49-2)	☒	☐	☒	ND						1					
11M Silver, Total (7440-22-4)	☒	☐	☒	ND						1					
12M Thallium, Total (7440-28-0)	☒	☐	☒	ND						1					
13M Zinc, Total (7440-66-6)	☒	☒	☐	13.5	0.96					1	ug/l	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☒	ND						1					
15M Phenols, Total	☒	☒	☐	ND						1					
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☒	☒	☐	DESCRIBE RESULTS *Not detected at an average of 3.53 pg/l on four flow proportioned samples of outfall 001+002*											

Flow 8.5 MGD

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☒	☒	☐	ND						1					
2V Acrylonitrile (107-13-1)	☒	☐	☒	ND						1					
3V Benzene (71-43-2)	☒	☒	☐	ND						1					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☒	ND						1					
5V Bromoform (75-25-2)	☒	☐	☒	ND						1					
6V Carbon Tetrachloride (56-23-5)	☒	☒	☐	ND						1					
7V Chlorobenzene (108-90-7)	☒	☒	☐	ND						1					
8V Chlorodibromomethane (124-48-1)	☒	☒	☐	ND						1					
9V Chloroethane (75-00-3)	☒	☒	☐	ND						1					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☒	ND						1					
11V Chloroform (67-66-3)	☒	☒	☐	ND						1					
12V Dichlorobromoethane (75-71-8)	☒	☒	☐	ND						1					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☒	ND						1					
14V 1,1-Dichloroethane (75-34-3)	☒	☒	☐	ND						1					
15V 1,2-Dichloroethane (107-06-2)	☒	☒	☐	ND						1					
16V 1,1-Dichloroethylene (75335-4)	☒	☒	☐	ND						1					
17V 1,2-Dichloropropane (78-87-5)	☒	☒	☐	ND						1					
18V 1,3-Dichloropropylene (542-76-6)	☒	☒	☐	ND						1					
19V Ethylbenzene (100-41-4)	☒	☒	☐	ND						1					
20V Methyl Bromide (74-83-9)	☒	☒	☐	ND						1					
21V Methyl Chloride (74-87-3)	☒	☒	☐	ND						1					

 CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK X			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22V Methylene Chloride (75-09-2)	☒	☒	☐	ND						1					
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☒	☒	☐	ND						1					
24V Tetrachloroethylene (127-18-4)	☒	☒	☐	ND						1					
25V Toluene (108-88-3)	☒	☒	☐	ND						1					
26V 1,2-Trans-Dichloroethylene (156-60-5)	☒	☒	☐	ND						1					
27V 1,1,1-Trichloroethane (71-55-6)	☒	☒	☐	ND						1					
28V 1,1,2-Trichloroethane (79-00-5)	☒	☒	☐	ND						1					
29V Trichloroethylene (79-01-6)	☒	☒	☐	ND						1					
30V Trichlorofluoromethane (75-69-4)	☒	☐	☒	ND						1					
31V Vinyl Chloride (75-01-4)	☒	☒	☐	ND						1					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☒	☐	ND						1					
2A 2,4-Dichlorophenol (120-83-2)	☒	☒	☐	ND						1					
3A 2,4-Dimethylphenol (105-67-9)	☒	☒	☐	ND						1					
4A 4,6-Dinitro-O-cresol (534-52-1)	☒	☒	☐	ND						1					
5A 2,4-Dinitrophenol (51-28-5)	☒	☒	☐	ND						1					
6A 2-Nitrophenol (88-75-5)	☒	☒	☐	ND						1					
7A 4-Nitrophenol (100-02-7)	☒	☒	☐	ND						1					
8A P-Chloro-M-Cresol (59-50-7)	☒	☒	☐	ND						1					
9A Pentachlorophenol (87-86-5)	☒	☒	☐	ND						1					
10A Phenol (108-95-2)	☒	☒	☐	ND						1					
11A 2,4,6-Trichlorophenol (88-06-2)	☒	☒	☐	ND						1					

 CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenaphthene (83-32-9)	☒	☐	☒	ND						1					
2B Acenaphthylene (208-96-8)	☒	☐	☒	ND						1					
3B Anthracene (120-12-7)	☒	☐	☒	ND						1					
4B Benzidine (92-87-5)	☒	☐	☒	ND						1					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☒	ND						1					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☒	ND						1					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☒	ND						1					
8B Benzo (ghi) Perylene (191-24-2)	☒	☐	☒	ND						1					
9B Benzo (k) Fluoranthene (207-08-9)	☒	☐	☒	ND						1					
10B Bis (2-Chloroethoxy) Methane (111-91-1)	☒	☐	☒	ND						1					
11B Bis (2-Chloroethyl) Ether (111-44-4)	☒	☐	☒	ND						1					
12B Bis (2-Chloroisopropyl) Ether (102-80-1)	☒	☐	☒	ND						1					
13B Bis (2-Ethylhexyl) Phthalate (117-81-7)	☒	☐	☒	ND						1					
14 B 4-Bromophenyl Phenyl Ether (101-55-3)	☒	☐	☒	ND						1					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☒	ND						1					
16B 2-Chloronaphthalene (91-58-7)	☒	☒	☐	ND						1					
17B 4-Chlorophenyl Phenyl Ether (7005-72-3)	☒	☐	☒	ND						1					
18B Chrysene (218-01-9)	☒	☐	☒	ND						1					
19B Dibenzo (a,h) Anthracene (53-70-3)	☒	☐	☒	ND						1					
20B 1,2-Dichlorobenzene (95-50-1)	☒	☒	☐	ND						1					
21B 1,3-Dichlorobenzene (541-73-1)	☒	☒	☐	ND						1					

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CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG VALUE (if available)		d. NO. OF ANALYSES			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS (continued)															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☒	☐	ND						1					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☒	☐	ND						1					
24B Diethyl Phthalate (84-66-2)	☒	☐	☒	ND						1					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☒	ND						1					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☒	ND						1					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☒	ND						1					
30B 1,2-Diphenylhydrazine (as Azo-benzene) (122-66-7)	☒	☐	☒	ND						1					
31B Fluoranthene (206-44-0)	☒	☐	☒	ND						1					
32B Fluorene (86-73-7)	☒	☐	☒	ND						1					
33B Hexachlorobenzene (118-74-1)	☒	☐	☒	ND						1					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☒	ND						1					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☒	ND						1					
36B Hexachloroethane (67-72-1)	☒	☐	☒	ND						1					
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☒	☐	☒	ND						1					
38B Isophorone (78-59-1)	☒	☐	☒	ND						1					
39B Naphthalene (91-20-3)	☒	☒	☐	ND						1					
40B Nitrobenzene (98-95-3)	☒	☐	☒	ND						1					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☒	ND						1					
42B N-Nitrosodi-N-Propylamine (621-64-7)	☒	☐	☒	ND						1					

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK X			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☒	ND						1					
44B Phenanthrene (85-01-8)	☒	☐	☒	ND						1					
45B Pyrene (129-00-0)	☒	☒	☐	ND						1					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☒	☐	ND						1					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☒	ND						1					
2P β-Bhc (319-85-7)	☒	☐	☒	ND						1					
4P γ-BHC (58-89-9)	☒	☐	☒	ND						1					
5P δ-BHC (319-86-8)	☒	☐	☒	ND						1					
6P Chlordane (57-74-9)	☒	☐	☒	ND						1					
7P 4,4'-DDT (50-29-3)	☒	☐	☒	ND						1					
8P 4,4'-DDE (72-55-9)	☒	☐	☒	ND						1					
9P 4,4'-DDD (72-54-8)	☒	☐	☒	ND						1					
10P Dieldrin (60-57-1)	☒	☐	☒	ND						1					
11P α-Endosulfan (115-29-7)	☒	☐	☒	ND						1					
12P β-Endosulfan (115-29-7	☒	☐	☒	ND						1					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☒	ND						1					
14P Endrin (72-20-8)	☒	☐	☒	ND						1					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☒	ND						1					
16P Heptachlor (76-44-8)	☒	☐	☒	ND						1					

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CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK X			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES (continued)															
17P Heptachlor Epoxide (1024-57-3)	☒	☐	☒	ND						1					
18P PCB-1242 (53469-21-9)	☒	☐	☒	ND						1					
19P PCB-1254 (11097-69-1)	☒	☐	☒	ND						1					
20P PCB-1221 (11104-28-2)	☒	☐	☒	ND						1					
21P PCB-1232 (11141-16-5)	☒	☐	☒	ND						1					
22P PCB-1248 (12672-29-6)	☒	☐	☒	ND						1					
23P PCB-1260 (11096-82-5)	☒	☐	☒	ND						1					
24P PCB-1016 (12674-11-2)	☒	☐	☒	ND						1					
25P Toxaphene (8001-35-2)	☒	☐	☒	ND						1					

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
Error! Reference source not found.	*002*

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	62	11.38	39	7.33	25	4.84	362	mg/l	tpd			
b. Chemical Oxygen Demand *(COD)*	619	132.25	459	93.75	406	78.24	238	mg/l	tpd			
c. Total Organic Carbon *(TOC)*	64.8	12.01					1	mg/l	tpd			
d. Total Suspended Solids *(TSS)*	63	12.26	40	8.52	30	5.82	366	mg/l	tpd			
e. Ammonia *(as N)*	1.94	0.36					1	mg/l	tpd			
f. Flow	Value 67.13		Value 50.94		Value 44.45		366	MGD		Value		
g. Temperature *(winter)*	Value 29.7		Value 25.9		Value 23.2		183	°C		Value		
h. Temperature *(summer)*	Value 34.5		Value 32.9		Value 30.7		183	°C		Value		
i. pH	Minimum 7.7	Maximum 8.4	Minimum 7.8	Maximum 8.0			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly or indirectly but expressly in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK "X" a. BE LIEVED PRESENT	b. BE LIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☒	☐	0.23	77.94					1	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						1					
c. Color	☒	☐	1530	372.03	1396	283.43	1228	234.10	354	CPU	tpd			
d(1). Fecal Coliform	☒	☐	3600						2	CFU/100ml				
d(2). *E. coli*	☒	☐	ND						1	MPN/100ml				
e. Fluoride (16984-48-8)	☒	☐	0.51	172.82					1	mg/l	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.079	26.77					1	mg/l	ppd			

Flow 40.665 MGD

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. RECEIVED PRESENT	b. RECEIVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	☒	☐	3.55	0.60					1	mg/l	tpd			
h(1). Oil and Grease (HEM)	☒	☐	98.9	16.76					2	mg/l	tpd			
h(2). Oil and Grease (SGT)	☒	☐	2.6	0.62					1	mg/l	tpd			
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	2.77	0.09					1	mg/l	tpd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND											
(2) Beta, Total	☐	☒	ND											
(3) Radium, Total	☐	☒	ND											
(4) Radium 226, Total	☒	☐	0.6						1	pCi/l				
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	1020	172.82					1	mg/l	tpd			
l. Sulfide (as S)	☒	☐	2.5	0.42					1	mg/l	tpd			
m. Sulfite (as SO_3) (14265-45-3)	☒	☐	ND						2					
n. Surfactants	☒	☐	0.16	54.22					1	mg/l	tpd			
o. Aluminum, Total (7429-90-5)	☒	☐	270	91.49					1	ug/l	ppd			
p. Barium, Total (7440-39-3)	☒	☐	229	77.60					1	ug/l	ppd			
q. Boron, Total (7440-42-8)	☒	☐	121	20.50					1	mg/l	tpd			
r. Cobalt, Total (7440-48-4)	☒	☐	ND						1					
s. Iron, Total (7439-89-4)	☒	☐	180	60.99					1	ug/l	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	14.1	2.39					1	mg/l	tpd			
u. Molybdenum, Total (7439-98-7)	☒	☐	ND						1					
v. Manganese, Total (7439-96-5)	☒	☐	440	149.10					1	ug/l	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						1					
x. Titanium, Total (7440-32-6)	☒	☐	ND						1					

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CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
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PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, non-process wastewater outfalls, and non-required GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part, please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS						
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☒	☒	☐	ND						1					
2M. Arsenic, Total (7440-38-2)	☒	☒	☐	ND						1					
3M. Beryllium, Total (7440-41-7)	☒	☒	☐	ND						1					
4M. Cadmium, Total (7440-43-9)	☒	☒	☐	ND						1					
5M Chromium, Total (7440-47-3)	☒	☒	☐	ND						1					
6M Copper, Total (7440-50-8)	☒	☒	☐	2.6	0.88					1	ug/l	ppd			
7M lead, Total (7439-92-1)	☒	☒	☐	1.4	0.47					1	ug/l	ppd			
8M Mercury, Total (7439-97-6)	☒	☒	☐	ND						1					
9M Nickel, Total (7440-02-0)	☒	☒	☐	4.0	0.68					1	ug/l	tpd			
10M Selenium, Total (7782-49-2)	☒	☐	☒	ND						1					
11M Silver, Total (7440-22-4)	☒	☐	☒	ND						1					
12M Thallium, Total (7440-28-0)	☒	☐	☒	ND						1					
13M Zinc, Total (7440-66-6)	☒	☒	☐	29	9.83					1	ug/l	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☒	ND						1					
15M Phenols, Total	☒	☒	☐	ND						1					
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☒	☒	☐	DESCRIBE RESULTS Not detected at an average of 3.53 pg/l on four flow proportioned samples of outfall 001+002											

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				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☒	☒	☐	ND						1					
2V Acrylonitrile (107-13-1)	☒	☐	☒	ND						1					
3V Benzene (71-43-2)	☒	☒	☐	ND						1					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☒	ND						1					
5V Bromoform (75-25-2)	☒	☐	☒	ND						1					
6V Carbon Tetrachloride (56-23-5)	☒	☒	☐	ND						1					
7V Chlorobenzene (108-90-7)	☒	☒	☐	ND						1					
8V Chlorodibromomethane (124-48-1)	☒	☒	☐	ND						1					
9V Chloroethane (75-00-3)	☒	☒	☐	ND						1					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☒	ND						1					
11V Chloroform (67-66-3)	☒	☒	☐	ND						1					
12V Dichlorobromoethane (75-71-8)	☒	☒	☐	ND						1					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☒	ND						1					
14V 1,1-Dichloroethane (75-34-3)	☒	☒	☐	ND						1					
15V 1,2-Dichloroethane (107-06-2)	☒	☒	☐	ND						1					
16V 1,1-Dichloroethylene (75335-4)	☒	☒	☐	ND						1					
17V 1,2-Dichloropropane (78-87-5)	☒	☒	☐	ND						1					
18V 1,3-Dichloropropylene (542-75-6)	☒	☒	☐	ND						1					
19V Ethylbenzene (100-41-4)	☒	☒	☐	ND						1					
20V Methyl Bromide (74-83-9)	☒	☒	☐	ND						1					
21V Methyl Chloride (74-87-3)	☒	☒	☐	ND						1					

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				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22V Methylene Chloride (75-09-2)	☒	☒	☐	ND						1					
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☒	☒	☐	ND						1					
24V Tetrachloroethylene (127-18-4)	☒	☒	☐	ND						1					
25V Toluene (108-88-3)	☒	☒	☐	ND						1					
26V 1,2-Trans-Dichloroethylene (156-60-5)	☒	☒	☐	ND						1					
27V 1,1,1-Trichloroethane (71-55-6)	☒	☒	☐	ND						1					
28V 1,1,2-Trichloroethane (79-00-5)	☒	☒	☐	ND						1					
29V Trichloroethylene (79-01-6)	☒	☒	☐	ND						1					
30V Trichlorofluoromethane (75-69-4)	☒	☐	☒	ND						1					
31V Vinyl Chloride (75-01-4)	☒	☒	☐	ND						1					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☒	☐	ND						1					
2A 2,4-Dichlorophenol (120-83-2)	☒	☒	☐	ND						1					
3A 2,4-Dimethylphenol (105-67-9)	☒	☒	☐	ND						1					
4A 4,6-Dinitro-O-cresol (534-52-1)	☒	☒	☐	ND						1					
5A 2,4-Dinitrophenol (51-28-5)	☒	☒	☐	ND						1					
6A 2-Nitrophenol (88-75-5)	☒	☒	☐	ND						1					
7A 4-Nitrophenol (100-02-7)	☒	☒	☐	ND						1					
8A P-Chloro-M-Cresol (59-50-7)	☒	☒	☐	ND						1					
9A Pentachlorophenol (87-86-5)	☒	☒	☐	ND						1					
10A Phenol (108-95-2)	☒	☒	☐	ND						1					
11A 2,4,6-Trichlorophenol (88-06-2)	☒	☒	☐	ND						1					

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				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenaphthene (83-32-9)	☒	☐	☒	ND						1					
2B Acenaphthylene (208-96-8)	☒	☐	☒	ND						1					
3B Anthracene (120-12-7)	☒	☐	☒	ND						1					
4B Benzidine (92-87-5)	☒	☐	☒	ND						1					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☒	ND						1					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☒	ND						1					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☒	ND						1					
8B Benzo (ghi) Perylene (191-24-2)	☒	☐	☒	ND						1					
9B Benzo (k) Fluoranthene (207-08-9)	☒	☐	☒	ND						1					
10B Bis (2-Chloroethoxy) Methane (111-91-1)	☒	☐	☒	ND						1					
11B Bis (2-Chloro-ethyl) Ether (111-44-4)	☒	☐	☒	ND						1					
12B Bis (2-Chloroisopropyl) Ether (102-60-1)	☒	☐	☒	ND						1					
13B Bis (2-Ethyl-hexyl) Phthalate (117-81-7)	☒	☐	☒	ND						1					
14B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☒	☐	☒	ND						1					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☒	ND						1					
16B 2-Chloro-naphthalene (91-58-7)	☒	☒	☐	ND						1					
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☒	☐	☒	ND						1					
18B Chrysene (218-01-9)	☒	☐	☒	ND						1					
19B Dibenzo (a,h) Anthracene (53-70-3)	☒	☐	☒	ND						1					
20B 1,2-Dichloro-benzene (95-50-1)	☒	☒	☐	ND						1					
21B 1,3-Dichloro-benzene (541-73-1)	☒	☒	☐	ND						1					

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GC/MS - BASE/NEUTRAL COMPOUNDS (continued)															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☒	☐	ND						1					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☒	☐	ND						1					
24B Diethyl Phthalate (84-66-2)	☒	☐	☒	ND						1					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☒	ND						1					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☒	ND						1					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☒	ND						1					
30B 1,2-Diphenylhydrazine (as Azo-benzene) (122-66-7)	☒	☐	☒	ND						1					
31B Fluoranthene (206-44-0)	☒	☐	☒	ND						1					
32B Fluorene (86-73-7)	☒	☐	☒	ND						1					
33B Hexachlorobenzene (118-74-1)	☒	☐	☒	ND						1					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☒	ND						1					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☒	ND						1					
36B Hexachloroethane (67-72-1)	☒	☐	☒	ND						1					
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☒	☐	☒	ND						1					
38B Isophorone (78-59-1)	☒	☐	☒	ND						1					
39B Napthalene (91-20-3)	☒	☒	☐	ND						1					
40B Nitrobenzene (98-95-3)	☒	☐	☒	ND						1					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☒	ND						1					
42B N-Nitrosodi-N-Propylamine (621-64-7)	☒	☐	☒	ND						1					

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GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☒	ND						1					
44B Phenanthrene (85-01-8)	☒	☐	☒	ND						1					
45B Pyrene (129-00-0)	☒	☒	☐	ND						1					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☒	☐	ND						1					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☒	ND						1					
2P α-BHC (319-85-7)	☒	☐	☒	ND						1					
4P β-BHC (58-89-9)	☒	☐	☒	ND						1					
5P γ-BHC (319-86-8)	☒	☐	☒	ND						1					
6P Chlordane (57-74-9)	☒	☐	☒	ND						1					
7P 4,4'-DDT (50-29-3)	☒	☐	☒	ND						1					
8P 4,4'-DDE (72-55-9)	☒	☐	☒	ND						1					
9P 4,4'-DDD (72-54-8)	☒	☐	☒	ND						1					
10P Dieldrin (60-57-1)	☒	☐	☒	ND						1					
11P α-Endosulfan (115-29-7)	☒	☐	☒	ND						1					
12P β-Endosulfan (115-29-7)	☒	☐	☒	ND						1					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☒	ND						1					
14P Endrin (72-20-8)	☒	☐	☒	ND						1					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☒	ND						1					
16P Heptachlor (76-44-8)	☒	☐	☒	ND						1					

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GC/MS - PESTICIDES (continued)															
17P Heptachlor Epoxide (1024-57-3)	☒	☐	☒	ND						1					
18P PCB-1242 (53469-21-9)	☒	☐	☒	ND						1					
19P PCB-1254 (11097-69-1)	☒	☐	☒	ND						1					
20P PCB-1221 (11104-28-2)	☒	☐	☒	ND						1					
21P PCB-1232 (11141-16-5)	☒	☐	☒	ND						1					
22P PCB-1248 (12672-29-6)	☒	☐	☒	ND						1					
23P PCB-1260 (11096-82-5)	☒	☐	☒	ND						1					
24P PCB-1016 (12674-11-2)	☒	☐	☒	ND						1					
25P Toxaphene (8001-35-2)	☒	☐	☒	ND						1					

Rayonier

Jesup Mill

EPD/WPB/WRP

JUL 16 2012

RECEIVED

July 13, 2012

Mr. Bill Noell
Industrial Permitting Unit Manager
GA EPD Watershed Protection Branch
4220 International Parkway, Suite 101
Atlanta, GA 30354

Subject: NPDES Permit No. GA0003620

Dear Mr. Noell,

As requested in an April 16, 2012 letter from the Georgia Environmental Protection Division (GA EPD), enclosed is an updated application for renewal of NPDES permit GA0003620 for the Rayonier Performance Fibers LLC – Jesup Mill (Rayonier). The permit was issued on May 25, 2001 and expired on April 30, 2006. The permit was administratively extended because Rayonier submitted a timely renewal application on October 28, 2005. Rayonier has previously submitted an updated application on July 29, 2008 in response to a previous GA EPD request.

Enclosed are completed application Forms 1 and 2C, the results of Whole Effluent Toxicity (WET) testing, and an attachment containing supplemental information in support of the permit application.

If you have any questions about this application, or need any additional information, please free to contact Debra Lane at (912) 588-8117, or at debra.lane@rayonier.com.

Sincerely,

Daniel Price
Manager of Environmental Operations

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

SUPPLEMENTAL INFORMATION

In Support of

NPDES PERMIT No. GA 0003620

RENEWAL APPLICATION

JESUP MILL

RAYONIER PERFORMANCE FIBERS, LLC

SUBMITTED July 13, 2012

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I. INTRODUCTION

This application is being submitted in response to the April 16, 2012 letter from the Georgia Environmental Protection Division (EPD), for renewal of NPDES permit GA0003620. That permit was issued on May 25, 2001 and expired on April 30, 2006. The permit was administratively extended because Rayonier submitted a timely renewal application on October 28, 2005. At the EPD's request, Rayonier had submitted an updated application on July 29, 2008. In June 2009, the EPD issued a preliminary draft permit, which included limits for chlorinated organics based on papergrade effluent guidelines. Following a meeting with Rayonier in September 2009, the agency agreed to defer establishing chlorinated organics limits for this dissolving kraft pulp mill while the mill continued with customer evaluations of elemental chlorine free (ECF) pulp.

A. The Rayonier Performance Fibers, LLC Jesup Pulp Mill

The Rayonier Jesup mill employs unique technology to produce Cellulose Specialty products, a technically demanding type of dissolving pulp, using the prehydrolyzed kraft pulping process. What starts as simple wood chips is transformed into high-value Cellulose Specialties used as chemical feedstock in the manufacture of flat panel televisions, computer screens, impact-resistant plastics, filters, tires, paint, food, pharmaceuticals, and many other consumer products (Figure 1).

Figure 1: Cellulose Specialties Products

The Cellulose Specialties process is similar to the typical kraft pulping process (Figure 2), but requires some additional proprietary steps.

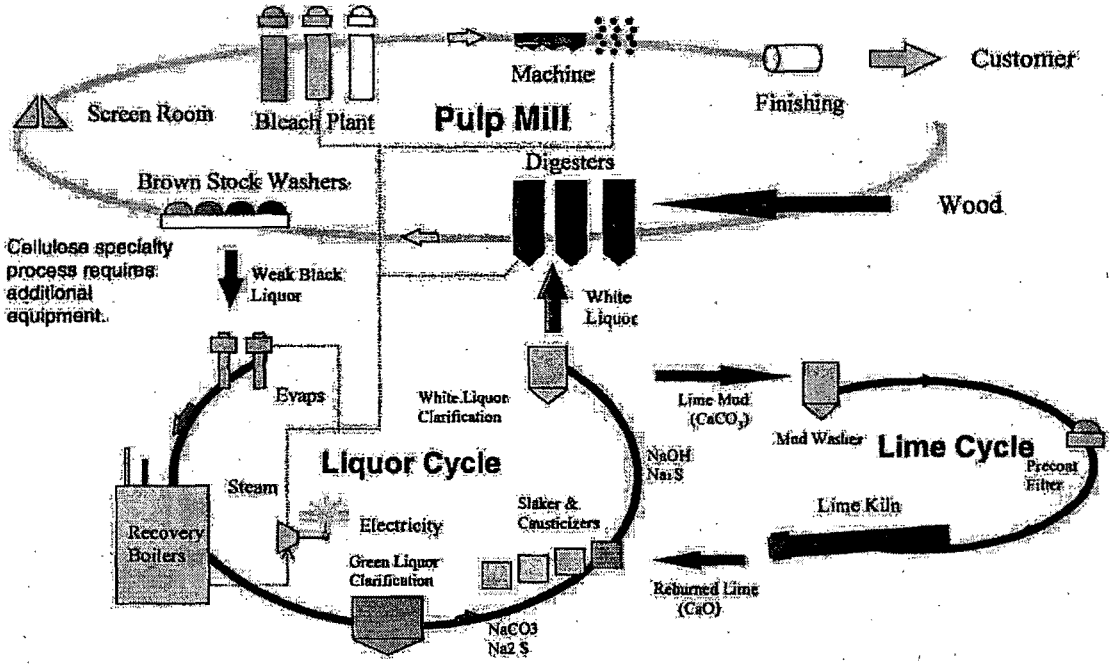


Figure 2: Typical Kraft Pulping Process

The technical challenge in Cellulose Specialties production is to isolate the natural cellulose polymers in wood. These polymers are nature's most abundant, versatile plastic (Figure 3).

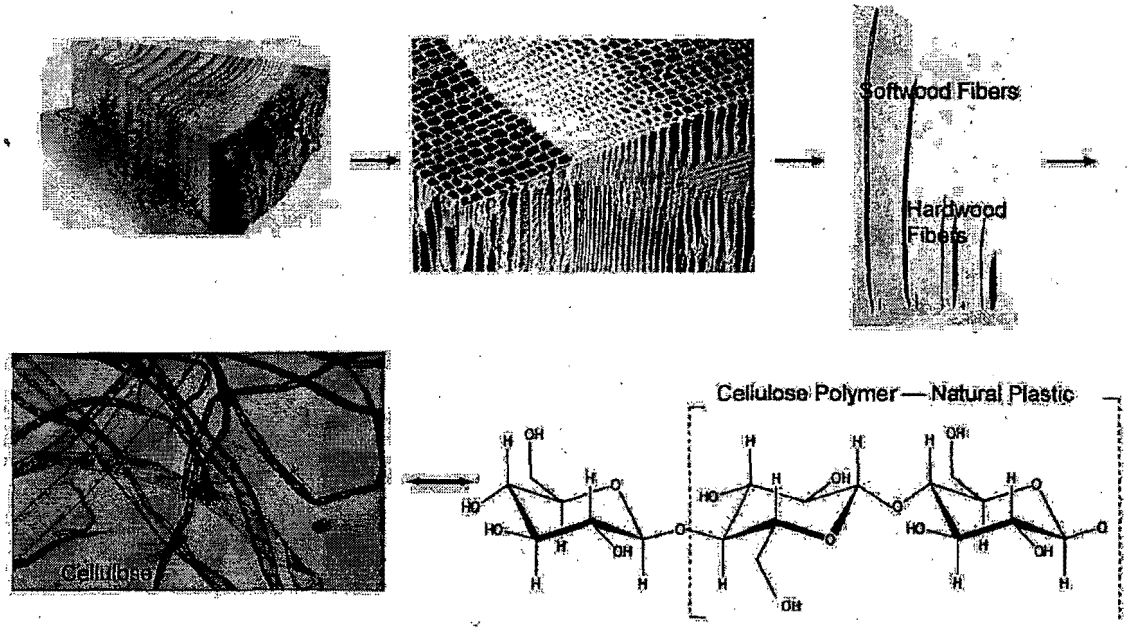


Figure 3: From Wood to Natural Plastic

Unlike commodity papergrade pulp, which can contain lignin, hemicellulose, and extractives in quantities of fifteen percent or more, Cellulose Specialties are highly purified, often to levels of ninety-eight percent cellulose or more (Figure 4).

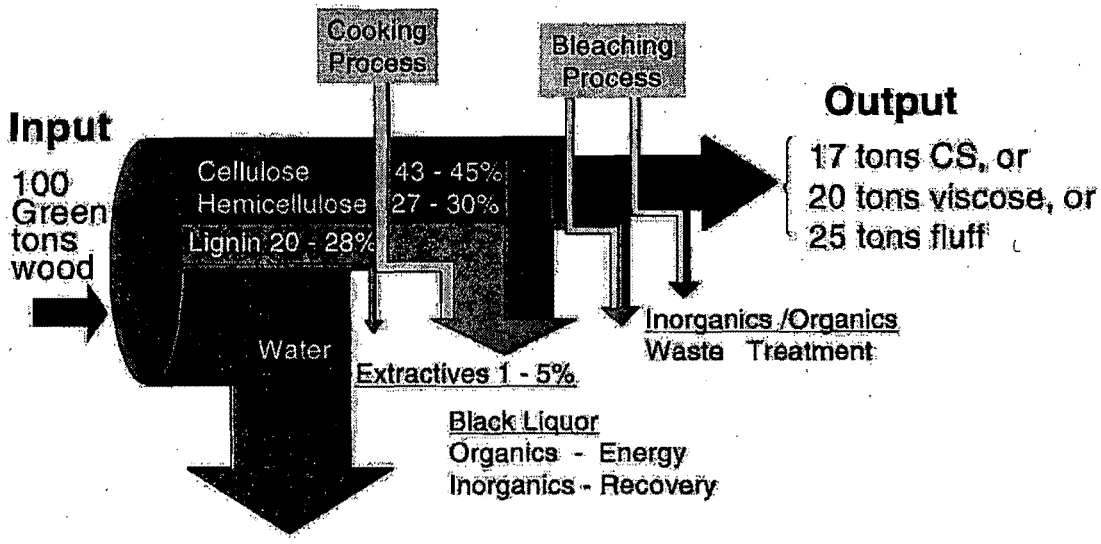


Figure 4: Typical Market Pulp Yields

While papergrade pulp is used mainly for its physical properties in papers for printing, packaging, and tissue, Cellulose Specialties are used almost exclusively for their chemical properties. Demanding specifications for cellulose purity, molecular weight, structure and physical properties must be met in order for the product to react properly in subsequent manufacturing steps and to yield the required end product performance. For many applications it is not Rayonier's customers who make the end product, as they convert the specialty cellulose for additional processing by subsequent customers in the product chain. The Jesup mill's Cellulose Specialties products are customized to meet each customer's specifications. In many cases, based upon final end product requirements, the Jesup Mill is the only producer of a feedstock for a customer who is the only producer of a given product.

Pulp quality deviations may create operating or product quality issues for the immediate customer, or may not become evident until several steps along the supply chain. For example, a customer uses Rayonier product to produce an acetate fiber and then uses a spinneret to spin the acetate fiber into a filament that is only one-fifth the diameter of a human hair. Impurities in the specialty cellulose pulp can build up in the spinneret, causing flaws in the filament.

Another customer converts the Rayonier specialty cellulose pulp into flakes in their process, and the flakes are then converted in a high-temperature process to create plastics. Changes in the Jesup mill's pulp bleaching process may result in higher levels of impurities in the pulp, which for some customers would not be detectable; however, for some producers, these impurities can cause the final product to develop unacceptable clarity or performance characteristics.

The Jesup mill operates three pulping lines: A-mill, B-mill, and C-mill. The A and B-mills produce Cellulose Specialties products. The C-mill currently produces primarily fluff pulp, a commodity product similar to paper pulp, for baby diapers and other absorbent products; however, a project is underway to convert this line to the production of Cellulose Specialties. Following completion of this project in mid-2013, the Jesup mill will produce only Cellulose Specialties. This project is discussed in more detail below.

B. Overview of the Wastewater Treatment System

Wastewater from the mill's processes which contain entrained solids passes through a bar screen to remove large solid materials and then flows to a primary clarifier where smaller solids such as fiber settle out. The clarified wastewater and other wastewater streams which do not contain significant entrained solids flow into a lift station sump and are then pumped to one of two aerated stabilization basins (ASBs), where biological treatment occurs. In this process, naturally-occurring microorganisms break down materials in the wastewater for use as food. Some wastewater streams that contain insignificant amounts of suspended solids are pumped directly to the ASBs. Surface aerators are used in the ASBs to make sure that there is enough oxygen in the water for the microorganisms to effectively treat the water. Calm areas at the ends of the basins allow the suspended solids to settle out, and the treated wastewater is discharged to the Altamaha River through Outfalls 001 and 002.

Solids removed from the primary clarifier or dredged from the ASBs are treated in anaerobic compost cells. In the compost cells, solids are broken down into a rich, loamy compost material by other naturally-occurring microorganisms that thrive in a low-oxygen (anaerobic) environment. Water decanted from the compost cells is routed to one of the ASBs for additional treatment. Compost produced in this process has been approved by GA EPD for land application, and can be used for soil amendment, erosion control, and dike construction. This significantly reduces the amount of material that must be disposed of in a landfill.

II. C-MILL PROJECT

As the EPD is aware, the Jesup mill has undertaken a significant capital project to convert the C-mill to a Cellulose Specialties line. After the conversion, the C-mill process will

be similar to the A and B-mills, resulting in a Cellulose Specialties expansion, or CSE, while eliminating fluff pulp capacity. This project will not increase the mill's pulping capacity nor will it result in the introduction of any new pulping or bleaching chemicals into the process. New effluent color removal technology developed for the modified C-mill will require use of a coagulant (alum) and a flocculant. These chemicals are commonly used to treat industrial and municipal drinking water supplies. Most of these chemicals will stay with the solids removed in the dissolved air flotation (DAF) unit being constructed as part of the new C-mill effluent color removal technology. The small amount which is left with the clarified water from the DAF will be treated in the mill's wastewater treatment system. Therefore, no material change in the characteristics of the final effluent is expected due to the conversion project.

III. CONVENTIONAL POLLUTANT DISCHARGE LIMITS

Effluent Limitation Guidelines (ELGs) for TSS and BOD_5 discharges from pulp mills have been in effect for many years; however, the limitations for these conventional pollutants in the Jesup mill's current NPDES permit are already significantly more restrictive than the EPA's ELGs, especially for the summer months. Therefore, Rayonier expects that the total mass discharge limits will remain unchanged in the renewed permit.

IV. EFFLUENT GUIDELINES AND BEST AVAILABLE TECHNOLOGY

A. Cluster Rule history

Under a consent decree entered into in Civ No. 85-0973 DDC and subsequently amended, EPA was required to use its best efforts to promulgate regulations addressing discharges of dioxins and furans from 104 bleaching pulp mills. On April 15, 1998 EPA promulgated revised "Effluent Limitation Guidelines for the Pulp and Paper and Paperboard Category, as one of several anticipated actions called the "Cluster Rules". (See Federal Register Volume 63, No. 72, pp 18504 – 19751). In this new rule EPA also consolidated 26 subcategories of the types of facilities in the Pulp and Paper Industry into 12. One of those was Category B for Pulp, Paper and Paperboard mills, Category B or sometimes referred to as 'Bleached Papergrade Kraft'. EPA retained the Dissolving Kraft category (Subpart A) and the Dissolving Sulfite category (Subpart D).

EPA intended to develop Effluent Limitation Guidelines for the two dissolving categories in the future. It decided to defer regulatory activity and wait for completed research by the affected entities on modifications to their manufacturing processes and customer approvals of the subsequent products. On August 29, 2005 EPA announced that the Agency would not develop Effluent Guidelines for the Dissolving Kraft and Dissolving Sulfite categories due to the small number of facilities in those categories that were still

in operation. (See Federal Register Volume 70, No. 166, p51051). EPA instead stated it would provide guidance to permit writers in their development of Best Professional Judgment (BPJ) for the control of chlorinated organics for each individual NPDES permit. In May 2007, EPA issued a "Background Information Document for Permit Writers: Dissolving Kraft and Dissolving Sulfite Pulp Mills" (the Background Document) to assist state permit writers in making BPJ determinations.

Unfortunately, the Background Document was not developed with stakeholder or public involvement, and contains significant factual errors and several gross generalizations that are not appropriate for an industry segment with the diverse array of processes and products seen in the dissolving pulp sector. Rayonier submitted detailed comments on the Background Document to EPA in August 2008 (Appendix A), and urges the EPD to consider these comments in any development of limits for chlorinated organics.

B. Appropriate Basis for Dissolving Kraft Effluent Limits

As described in section I.A., the Jesup mill must meet exacting product quality specifications. Minor deviations can produce ripples through the rest of the supply chain; therefore, whenever a process change is made each customer as well as the customers' customers must qualify the pulp according to their fitness for use standards. When Rayonier met with the EPD in September 2009 to discuss the feasibility of converting to ECF bleaching at the Jesup mill, a schedule of planned customer trials was presented. Since then, substantial progress has been made. Because some of the impacts of the bleaching changes did not become apparent until several steps along the supply chain, additional trials have been required for some customers. The mill currently anticipates completing all trials by the end of 2013; however, that schedule is partly dependent upon the customers' schedules and processes. While Rayonier is continuing to conduct research on technology for manufacturing all of our products with ECF bleaching, at this time there is not a technical basis to confirm ECF bleaching as BAT for the Jesup mill. In addition, the C-mill project currently in progress will convert the mill from a blend of dissolving pulp and fluff pulp production to one-hundred percent dissolving kraft pulp production. Rayonier proposes that BAT for the Jesup mill is the existing mill process, including the process for C-mill after conversion. Rayonier also proposes to establish interim effluent monitoring.

C. AOX, Chloroform, Chlorophenolics and Dioxin/Furan Limits

The Jesup mill has little experience on which to base site-specific BAT effluent limits for AOX, chlorophenolics, chloroform, dioxin and furan. In addition the mill will be undergoing a major change in grade structure beginning in 2013, and is assessing the feasibility of ECF conversion for all dissolving pulp grades. The point of compliance for the mill's only U.S. competitor, to the extent there are limits, is the final effluent. No measurements of any of these pollutants are made

at the bleach plant. Therefore, Rayonier proposes to monitor and report AOX, 2,3,7,8 TCDD and 2,3,7,8 TCDF in the mill final effluent discharge at Outfalls 001, 002 and 003 (when utilized). This information will be used to assess effluent quality improvements and provide a basis for future consideration of BAT effluent limits following the C-mill conversion and the completion of ECF feasibility studies for the Jesup mill.

V. EFFLUENT COLOR

A. Sources of Color and Available Control Technologies

Color in wastewater from the kraft pulping process is generally attributable to lignin removed from the pulp. Lignin is a natural component of trees that is released when trees decompose. In pulping process wastewaters, colored particles tend to be very tiny and well-dispersed. These colloidal color bodies are very difficult to remove because they do not settle out and are too small to filter using conventional technologies. The Jesup mill has reviewed technical studies of potential color reduction technologies, and has conducted pilot-scale studies of the most promising options including enzyme treatment and nanofiltration. None of the end-of-pipe technologies studied proved technically and economically feasible for full-scale implementation.

Color control can be achieved by process modifications designed to prevent the introduction of color into the wastewater stream. Improved capture of spent pulping liquors using spill collection systems and best management practices (BMP) has proven very effective. These improvements have been implemented at the Jesup mill, and additional improvements, discussed in section V.C., are planned.

At some papergrade mills, closure of screen rooms and other technologies that enhance capture of lignin have also resulted in wastewater color improvements. Unfortunately, these technologies increase the levels of certain impurities in the pulp. Since the unique pulp produced by the Jesup mill must meet very demanding customer quality specifications, such color reduction technologies cannot be used.

As part of the CSE project, the Jesup mill conducted engineering studies and developed a new color reduction technology that is being installed. Dissolved air flotation (DAF) will remove lignin and other components from process streams, preventing its introduction into the wastewater system. Captured lignin and other components are burned for energy recovery. The mill is continuing to investigate other color removal technologies.

B. Consent Order

In 2007, EPD found that Rayonier had the potential to violate the water quality standard for color. To avoid litigation, Rayonier and EPD agreed to a consent order (Consent

Order EPD-WQ-4837) ("Order"), which was executed on March 6, 2008. The Order requires Rayonier to implement a specified color reduction plan and achieve compliance with new effluent color limits in several phases. The mill is fully compliant with the terms of the Order. Highlights of color improvements include:

- Effluent color was reduced from an annual average of 411 tons/day in 2008 to 291 tons/day in 2011, a reduction of nearly a third.
- A new spill collection system is being installed on C-mill and will be operational by the middle of 2013. This equipment will increase capture of color, which will be burned in the recovery boilers, reducing process losses to wastewater treatment.
- Improved black liquor evaporation is being engineered to process the additional filtrate from the CSE project and additional water from the new spill collection systems.
- Dissolved air flotation (DAF) clarification is being installed to remove solids and color from screening process rejects in the C-mill.

Progress toward completing the required capital projects is summarized in Table 1.

Table 1

Major Consent Order Task	Actual Completion Date	Due Date
Sump #1 (B-Knot Pad)	Dec 31, 2008	Mar 6, 2009
Sump #2 (A-Knot Pad)	Dec 31, 2008	Mar 6, 2009
ASB Diffuser Study	Mar 5, 2009	Mar 6, 2009
ASB Diffuser Installed and Operational	December 2010	NA
Construction complete 5B BSW	Jul 16, 2008	Mar 6, 2009
5B BSW Fully Operational	Mar 3, 2009	Sept 9, 2009
Sump #3	July 28, 2009	Mar 6, 2010
Sump #4	Dec 7, 2009	Mar 6, 2010
Sump #5	Jan 26, 2010	Mar 6, 2010
Sump #6	Oct 27, 2010	Mar 6, 2011
Sump #7	Dec 29, 2010	Mar 6, 2011
Sump #8	Dec 20, 2010	Mar 6, 2011
BL Spill Systems Operational and Op's Trained	February 24, 2012	Mar 6, 2012
C-mill DAF Color Removal Eng Complete	February 2012	
C-mill DAF Color Removal Operational		June 6, 2013
5A-BSW Improvements Eng Complete		Jun 6, 2013
5A-BSW Improvements Ordered		Sep 6, 2013
5A-BSW Improvements Constr Complete		Sep 6, 2014
5A-BSW Improvements Operational		Mar 6, 2015

Paragraph 9 of the Order requires paragraphs 1 through 6 (the "Key Provisions") to be included in the next NPDES renewal permit. Based on Rayonier's evaluation of available alternatives, the technologies and effluent limitations in the Order have been determined to constitute the Best Available Technology Economically Achievable (BAT) for achieving color reductions at the Jesup dissolving kraft pulp mill. Therefore, Rayonier requests that the Key Provisions of the Order be incorporated in the permit as written except that, for clarity, actual compliance dates should be substituted for deadlines expressed in the Order as numbers of months following the effective date of the Order. Rayonier also request that paragraphs 7 and 8 be incorporated into the permit as these are related to compliance with the Key Provisions. The Order establishes a final color limit of 115 percent of the average of the color discharge for the immediately preceding 12 months, not to exceed 250 U.S. tons/day annual average, effective on March 6, 2016. Rayonier requests that this limit be expressly incorporated into the renewed permit. The consent order language, with actual compliance deadlines inserted, is included in Appendix B.

C. Additional Voluntary Color Improvement Projects

The mill is also continuing to evaluate potential color control technologies, and has begun voluntarily implementation of additional capital projects that will contribute to color improvements. These include:

- An effluent diffuser was installed in December 2010 on Outfall No. 2, which accounts for about eighty percent of the total effluent color.
- A new brown stock washing stage and filtrate tank on C-mill have been installed and were placed in service in April 2012.
- A new knot pressing, handling and disposal system has been engineered to increase capture of color from these solids (partially digested residual wood particles). This will reduce black liquor losses to wastewater treatment from these streams.

The schedule for completion of these voluntary projects is summarized in Table 2.

Table 2

Voluntary Color Control Projects	Actual Completion Date	Planned Completion Date
ASB Diffuser Installed and Operational	December 2010	NA
4C-BSW Improvements	April 2012	December 2012
B-mill DAF Color Removal		January 2013
CSE Project New Evaporator		June 2013
Knot Handling Improvements, C-mill		June 2012
Knot Handling Improvements, A- & B-mills		June 2013

VI. OTHER CHANGES

A. Addition of Emergency Storm Water Outfall, 003

In this permit application Rayonier is requesting an additional outfall, numbered "003", be permitted for the purpose of discharging storm water from mill property and outlying areas. The purpose of this outfall will be to relieve the mill's No. 2 aeration basin system, (discharging at Outfall 002) from potentially catastrophic basin levels during extreme rain events. Presently this storm water is subject to settling prior to being routed into the mill's aerated stabilization basins for aerobic treatment. The mill would like the option of discharging its storm water, after settling, through an existing but unused outfall. In practice Outfall 003 will be used primarily during or following rain events; however, because a portion of the drainage area captured in the Outfall 003 is located in process areas, the storm water could, in case of a spill or unintentional release, contain dilute mill process wastewater (See block flow diagram from section 2C).

Rayonier proposes that Outfall 003 be subject to the same monitoring provisions when it is utilized as 001 and 002. Pollutant loading from this new outfall will be added to loadings from outfalls 001 and 002 for demonstrating compliance with the mill's effluent limits on a mass basis, so there will be no net change in effluent water quality.

B. Serial Operation of ASBs as Option

Effluent streams from ASB 1 and ASB 2 are currently discharged separately through Outfalls 001 and 002, respectively. Rayonier notified the EPD on May 17, 2012 that while needed dredging operations are conducted the mill will divert the approximately 7 MGD of treated wastewater normally discharged to the river from ASB 1 into ASB 2. Operation of the system in series mode will provide additional retention time for any sludge solids disturbed by the dredging to settle in ASB 2. This change is not expected to result in non-compliance with any conditions of the permit.

The mill may have additional needs to operate the wastewater treatment system in series mode in the future, or might elect to operate in series mode as standard procedure. Therefore, Rayonier requests that the series mode of operation be specifically authorized by the permit.

C. Placement of Dredged Materials from Basins into Compost Cells

In order to maintain the wastewater treatment system, dredging of the various basins must be conducted from time to time. Rayonier notified the EPD of planned dredging activity in the May 17, 2012 letter and noted that dredged materials would be placed into the compost cells, where these biodegradable materials will be broken down into compost in the same way other solids are already being treated. Rayonier now requests that this mode of managing dredged materials be specifically authorized by the permit.

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

For Approved. OMB No. 2040-0086. Approval expires 5-31-92

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S/F	GA0003620	T/A	C/D
1	2 — 13	14	15

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING LIST

VI. FACILITY LOCATION

EPD/WPB/WRP

JUL 16 2012

RECEIVED

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been proved. Refer to the instructions for detailed item descriptions and for the legal authorization under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental from listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge to waters of the U.S.**? (FORM 2A)	☐ 16	☒ 17	☐ 18
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)	☐ 19	☒ 20	☐ 21
C. Is this facility which currently results in **discharges to waters of the U.S.** other than those described in A or B above? (FORM 2C)	☒ 22	☐ 23	☐ 24
D. Is this proposal facility *(other than those described in A or B above)* which will result in a **discharge to waters of the U.S.**? (FORM 2D)	☐ 25	☒ 26	☐ 27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	☐ 28	☒ 29	☐ 30
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	☐ 31	☒ 32	☐ 33
G. Do you or will you inject at this facility any produced water other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	☐ 34	☒ 35	☐ 36
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfer by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	☐ 37	☒ 38	☐ 39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	☐ 40	☒ 41	☐ 42
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment are? (FORM 5)	☐ 43	☒ 44	☐ 45

III. NAME OF FACILITY

C 1 | SKIP | Rayonier Performance Fibers LLC (30–69)

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: Price, Daniel L. Environmental Operations Manager (16–45)

B. PHONE *(area code & no.)*: 912 (46–48) 588 (49–51) 8358 (52–55)

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: PO Box 1278 (16–45)

B. CITY OR TOWN: Jesup (16–40)

C. STATE: GA (41–42)

D. ZIP CODE: 31598 (47–51)

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 4470 Savannah Hwy (16–45)

B. COUNTY NAME: Wayne (46–70)

C. CITY OR TOWN: Jesup (16–40)

D. STATE: GA (41–42)

E. ZIP CODE: 31545 (47–51)

F. COUNTY CODE: (52–54)

CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST		B. SECOND	
2611	(specify) manufacture of chemical cellulose		(specify)
C. THIRD		**D. FOURTH**	
	(specify)		(specify)

VIII. OPERATOR INFORMATION

A. NAME: Rayonier Performance Fibers LLC

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other," specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): 912 427 5000

E. STREET OR PO BOX: 4470 Savannah Hwy

F. CITY OR TOWN: Jesup

G. STATE: GA

H. ZIP CODE: 31545

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	GA0003620	D. PSD (Air Emissions from Proposed Sources)	
B. UIC (Underground Injection of Fluids)		E. OTHER (specify)	2631-305-0001-V-03-0 2631-305-0001-V-03-1 2631-305-0001-V-03-4
C. RCRA (Hazardous Wastes)		E. OTHER (specify)	151-0001 151-012D(L)(I) PG3050006 GA381-1

(Specify) Title V Part 70

(Specify) Groundwater Use, Solid Waste Handling, Drinking Water, Radioactive Material License

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

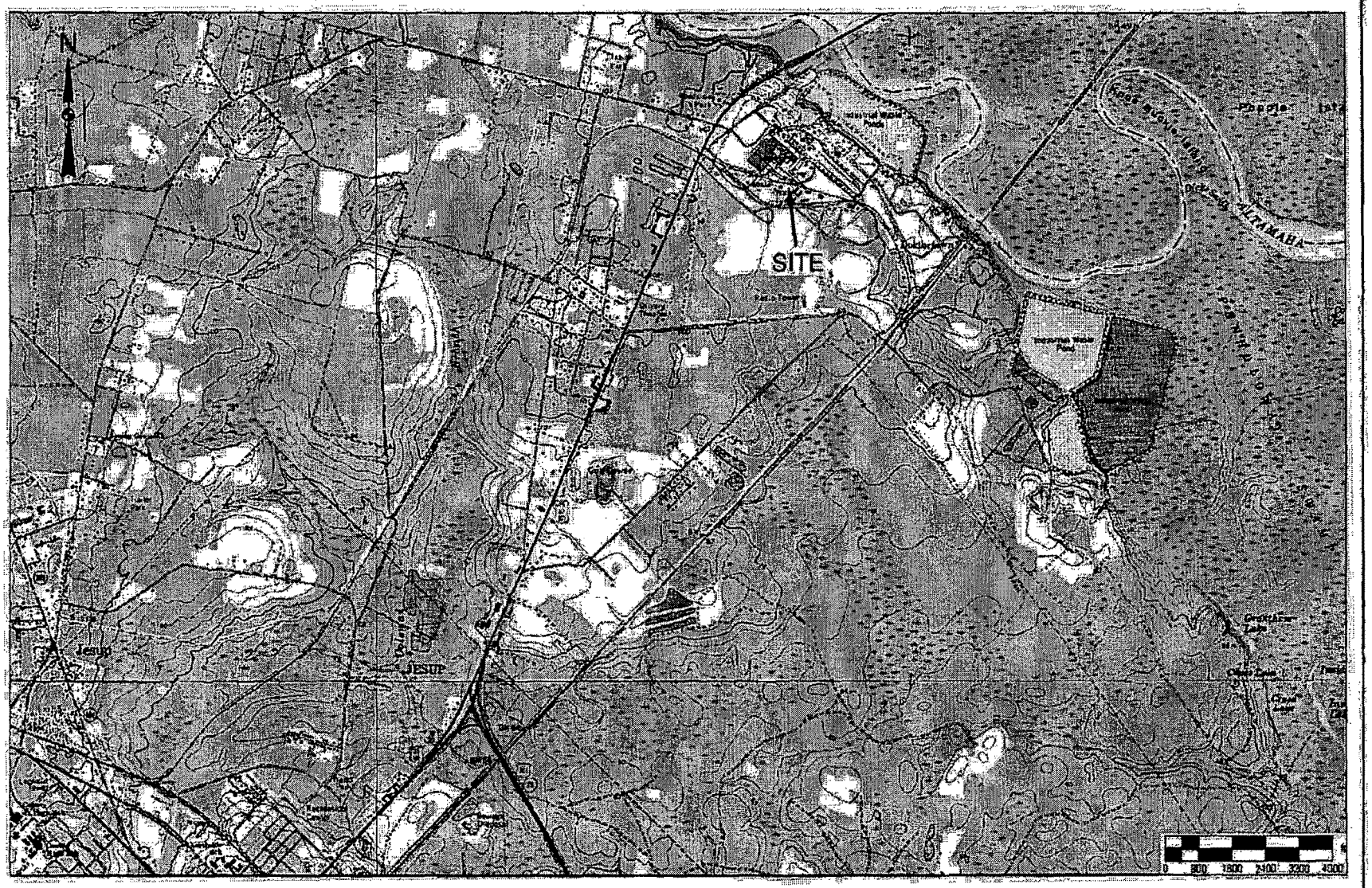
XII. NATURE OF BUSINESS (provide a brief description)

Manufacturer of bleached kraft pulp and dissolving pulp using the kraft and prehydrolyzed kraft processes respectively.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Fred J. Perrett, General Manager, Jesup Mill	Fred J Perrett	July 12, 2012

COMMENTS FOR OFFICIAL USE ONLY

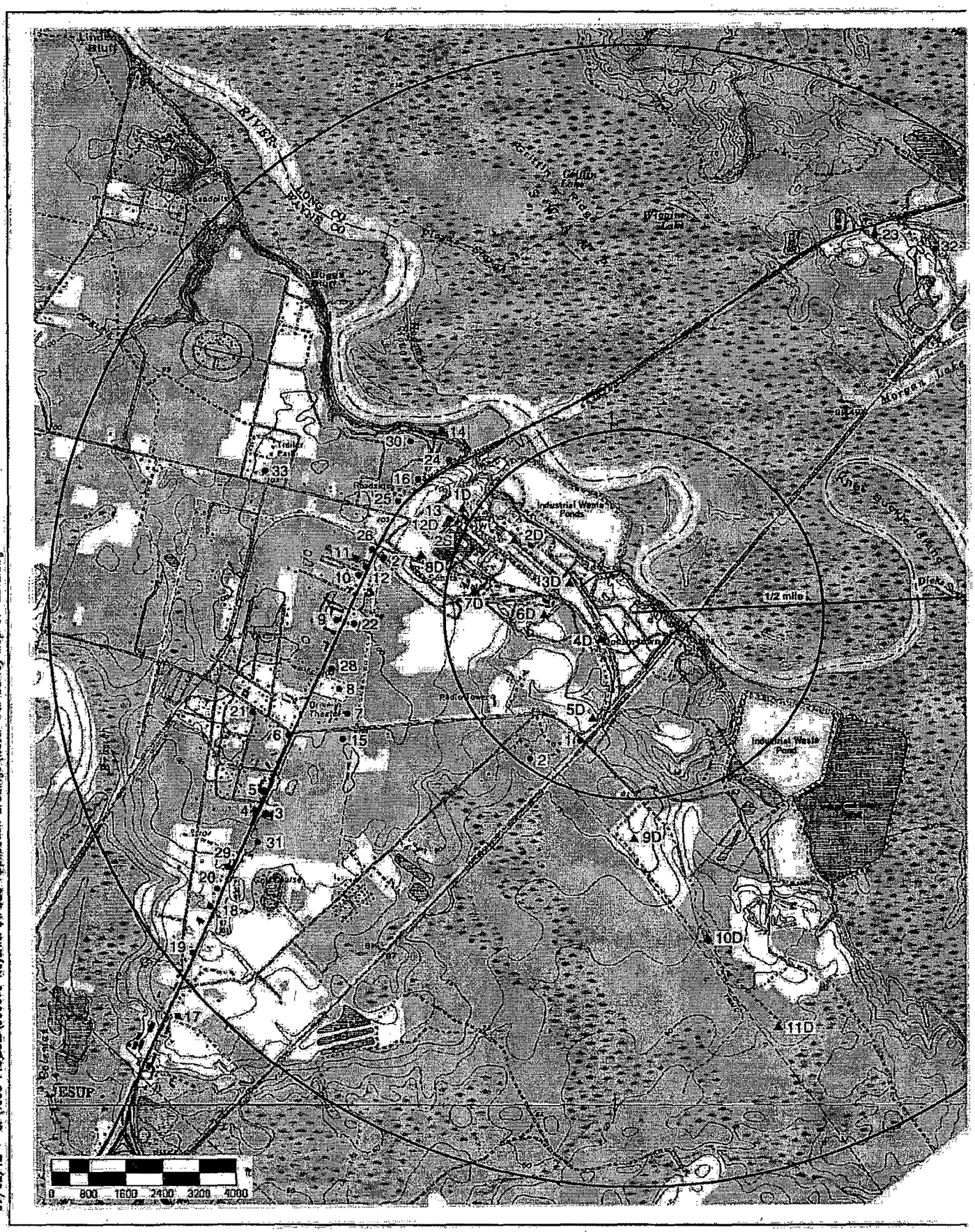


Source for Base Map: USGS 7.5 Minute Quad, Doctortown, GA, 1988

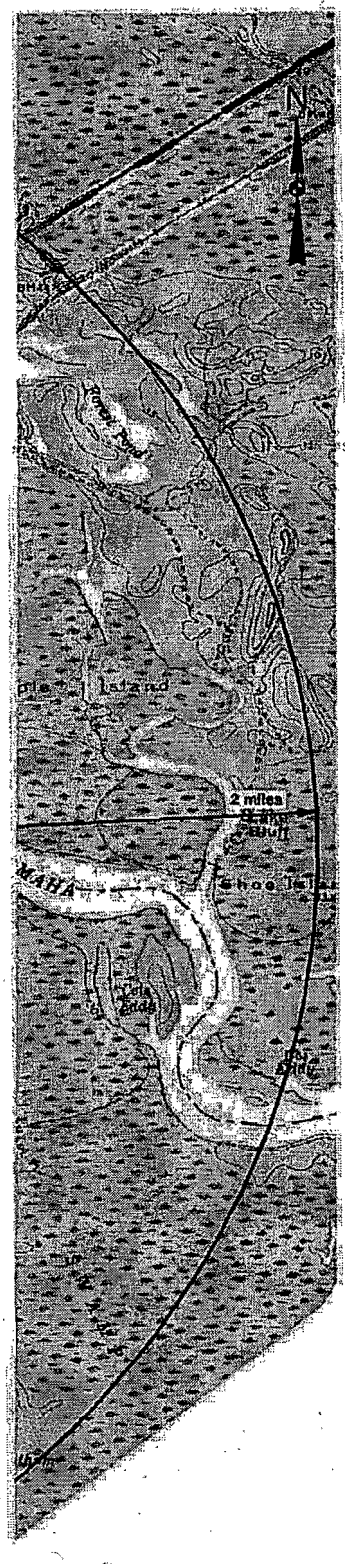
Schnabel ENGINEERING	RAYONIER PERFORMANCE FIBERS JESUP, WAYNE COUNTY, GEORGIA	DRAWN BY: CAB	DATE: 07/02/2012	SITE LOCATION MAP
		CHECKED BY: GBK	SCALE: AS SHOWN	PROJECT NO. 999079.00

© Schnabel Engineering 2012 All Rights Reserved

07/02/12 G:\1999 Projects\999079 Rayonier\NPDES Application Drawings\Site Location Map 07-2012.dwg



07/02/12 G:\1999 Projects\999079 Rayonier\NPDES Application Drawings\Water Well Survey Map 07-2012.dwg



2010 Water Supply Well Ground Truth Field Verification			
Map ID	Location	Phone	Remarks
Domestic Wells within 0.5 Miles:			
1	John McDidle	No contact	Out of business, 4-inch diameter well, approximately 50 feet deep
2	Southeastern General Contractors	No contact	Site abandoned, 4-inch diameter well, approximately 200 feet deep
Public Wells within Two Miles:			
3	Rest Awhile Nursing Home	912-427-6873	Approximately 500 feet deep
4	Mitchell Service Station	No contact	Out of business
5	Economy Inn	912-427-4294	Formerly Anchor Motel, approximately 100 feet deep
6	Beer and Tobacco Outlet	912-427-2119	Formerly Lil' Champ Food Store
7	McKenzie Tank Lines	912-427-7342	4-inch diameter, approximately 800 feet deep
8	Jesup Drive-In Theater	912-427-7294	Well use confirmed, no details
9	Motel Jesup	912-427-2086	2 wells on-site, approximately 120 feet deep
10	Tanglewood Motor Home Park	912-427-2189	2 wells
11	Reddish Mobile Home Park	No contact	3-inch diameter, approximately 260 feet deep
12	Antiques Store	912-270-1602	Former Northside Chevron
13	Rayonier Jesup Mill	912-427-5000	2 wells (12D and 2S), 8-inch diameter, 1017 feet deep and 183 feet deep
14	Wayne County Boat Landing	912-427-5900	Well use confirmed, no details
15	Occupational Compliance Training Services	912-427-9004	Well use confirmed, no details
16	Front Porch Antiques and Collectibles	912-530-8353	Well use confirmed, no details
17	Doane's Auto Sales	912-530-6484	Well use confirmed, no details
18	T&R Oil Company	912-427-3274	Well use confirmed, no details
19	Jesup Machine and Antique Cycles	No contact	Well visible
20	Kars R Us	912-588-1530	Well use confirmed, no details
21	Anderson Drive Baptist Church	912-427-6225	Well use confirmed, no details
22	Charlie's River Restaurant	912-284-2199	Well use confirmed, no details
23	Morris Diesel Repair	912-545-2008	Well use confirmed, no details
24	United Steel Workers Local 787	912-427-4101	Well visible
25	Trade Mart Inc.	912-427-6968	Well use confirmed, no details
26	Carter Dredging Company, Inc.	912-427-9071	Well use confirmed, no details
27	Altamaha Equipment Company	912-427-7082	Well use confirmed, no details
28	Quality Pre-owned Vehicles of Jesup	912-427-0883	Well use confirmed, no details
29	Friendly Express Shell Station	912-427-8683	Well use confirmed, no details
30	Jaycee Fairgrounds & Marina	No contact	Well visible
31	Jesup Healthcare	912-427-6873	Well use confirmed, no details
32	Sallie Mining	912-545-2133	Well use confirmed, no details
33	Arrowhead Village Mobile Home Park	912-427-5424	Well use confirmed, no details
34	Pine Grove Mobile Home Community	912-427-8446	From GEPD database, could not locate
35	Deerwood Manor Mobile Home	No contact	From GEPD database, could not locate
36	Riverside Acres	No contact	From GEPD database, could not locate
37	Altamaha Acres	No contact	From GEPD database, could not locate, 2 wells

Note: GEPD Drinking Water/Public Water System Permit List was reviewed on June 29, 2012. No new water supply wells have been added to the list that are located within 2 miles from the site.

LEGEND

- DOMESTIC WELL LOCATIONS (2)
- PUBLIC WELL LOCATIONS (31)
- RAYONIER DEEP PRODUCTION WELLS (11) (1D–11D)
- RAYONIER DRINKING WATER WELLS (12D, 2S)

NOTE: FIVE ADDITIONAL PUBLIC WELLS ARE ON THE GEPD DATABASE, BUT COULD NOT BE LOCATED. THESE WELLS ARE LISTED AS 35–38 ON THE ABOVE TABLE.

Source for Base Map: USGS 7.5 Minute Quad, Doctortown, GA, 1988.

Schnabel ENGINEERING

RAYONIER PERFORMANCE FIBERS, JESUP, WAYNE COUNTY, GEORGIA

DOMESTIC AND PUBLIC WATER SUPPLY WELL LOCATIONS

PROJECT NO. 999079.00

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Please type or print in the unshaded areas only	EPA ID Number *(Copy from Item 1 of Form 1)* **GA0003620**	*Form Approved OMB No. 2040-0086 Approval expires 7-31-88*

Form **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
001	*31*	*39*	*29*	*81*	*49*	*53*	*Altamaha River*
002	*31*	*39*	*04*	*81*	*49*	*06*	*Altamaha River*
003	*31*	*38*	*55*	*81*	*49*	*27*	*Altamaha River*

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION *(list)*	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	***1. Process water associated with the production of dissolving and bleached market kraft pulp (excluding bleaching operations)***	***3.50 MGD***	***This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.***	***1G*, 1U, 2D, 2K, 3B, 3C, 3G 4A 5B, 5G, 5P, 5T***	**** flocculant be be used as a settling aid.***

001	2. Sanitary waste	0.02 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1U, 2D, 2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
001	3. Process water associated with the bleaching of the above listed pulp	3.00 MGD	As above without primary clarification	2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
001	4. Surface runoff	0.22 MGD	As above	1U, 3B, 4A, 5B	
001	5.Collected MACT pulping condensates per Title V permit 2631-305-0001	2.75 MGD	Aerated stabilization prior to being discharged to receiving water	2B, 3B, 3C, 3G 4A, 5B	

 CONTINUED ON REVERSE

002	1. Process water associated with the production of dissolving and bleached market pulp (excluding bleaching operations)	23.75 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1G*, 1U, 2D, 2K, 3B, 3C, 3G 4A, 5B, 5G, 5P, 5T	*flocculant may be used as a settling aid
002	2. Sanitary waste	0.09 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells.	1U, 2D, 2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
002	3. Process water associated with the bleaching of the above listed pulp	20.75 MGD	As above without primary clarification	2K, 3B, 3C, 3G, 4A, 5B, 5G, 5P, 5T	
002	4. Surface runoff	1.28 MGD	As above	1U, 3B, 4A, 5B	
002	5.Collected MACT pulping condensates per Title V permit 2631-305-0001	0.40 MGD	Aerated stabilization prior to being discharged to receiving water	2B, 3B, 3C, 3G 4A, 5B	

 CONTINUED ON REVERSE

003	1. Surface runoff from non-process areas	1.10 MGD	This effluent receives settling before being discharged to receiving water	1U, 4A	
003	2. Surface runoff from process areas associated with the production of dissolving and bleached market kraft pulp	0.18 MGD	This effluent receives settling before being discharged to receiving water	1U, 4A	

Total Flow

57.04 MGD

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ YES *(complete the following table)* ☒ NO *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY a. DAYS PER WEEK *(specify average)*	3. FREQUENCY b. MONTHS PER YEAR *(specify average)*	4. FLOW a. FLOW RATE *(in mgd)* 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE *(in mgd)* 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME *(specify with units)* 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME *(specify with units)* 2. MAXIMUM DAILY	4. FLOW c. DURATION *(in days)*

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ YES *(complete Item III-B)* ☐ NO *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☒ YES *(complete Item III-C)* ☐ NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	2. AFFECTED OUTFALLS *(list outfall numbers)*
1840	***gross air dried metric ton per operating day***	***manufacturer of bleached market kraft and dissolving pulp by the kraft and prehydrolyzed kraft processes, respectively***	***001, 002***

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☒ YES *(complete the following table)* ☐ NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. No	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED
GA EPD Consent Order No. EPD-WQ-4837	***001, 002***	***Plant-wide operations***	***Effluent color reduction***	***March 6, 2016***	***March 6, 2016***

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED

 CONTINUED ON REVERSE

EPA ID Number *(Copy from Item 1 of Form 1)*
GA0003620

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables or each outfall - Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
asbestos	*present in insulation used in the pulp mill; although not detected in mill effluent it is potentially present*		
acetaldehyde	*incidental to the pulping process and may be found in the mill effluent on occasion*		
carbon disulfide	*incidental to the pulping process and may be found in the mill effluent on occasion*		
cresol	*incidental to the pulping process and may be found in the mill effluent on occasion*		
methyl mercaptan	*incidental to the pulping process and may be found in the mill effluent on occasion*		
furfural	*incidental to the pulping process and may be found in the mill effluent on occasion*		
strontium	*trace contaminant in raw materials; may be detected in effluent on occasion*		
vanadium	*trace contaminant in raw materials; may be detected in effluent on occasion*		
zirconium	*trace contaminant in raw materials; may be detected in effluent on occasion*		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES *(list all such pollutants below)* ☒ NO *(go to Item VI-B)*

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES *(identify the test(s) and describe their purpose below)* ☐ NO *(go to Section VIII)*

Whole Effluent Toxicity Test

Multi-concentration chronic toxicity testing using the water flea, Ceriodaphnia dubia, and fathead minnow, Pimephales promelas, on effluent samples collected from outfalls 001 and 002 from May 31 - June 7, 2012.

Analyses conducted by:

AMEC Environment & Infrastructure, Inc.
AMEC Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
telephone (352) 332-3318

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Columbia Analytical Services, Inc. dba ALS Environmental	***9143 Philips Highway, Suite 200 Jacksonville, FL 32256***	***(904) 739-2277***	***TOC, nitrate/nitrite, oil & grease, sulfide, phosphorus, sulfate, volatiles, acids, base/neutrals, metals, MBAS, pesticides, fecal coliform, cyanide, total organic nitrogen, sulfite, general chemistry***
Columbia Analytical Services, Inc. dba ALS Environmental	***2655 Park Center Dr., Suite A Simi Valley, CA 93065***	***(805) 526-7161***	***methyl mercaptan***
ALS, formerly Columbia Analytical Services	***2860 S. Palo Verde Rd, Suite 302 Tuscon, AZ 85714***	***(520) 573-1061***	***zirconium***
EMSL Analytical	***5125 Adamson St, Suite 900 Orlando, FL 32804***	***(407) 599-5887***	***asbestos***
Florida Radiochemistry Services, Inc.	***5456 Hoffner Ave., Suite 201 Orlando, Fl 32812***	***(407) 382-7733***	***radiation chemistry***
Test America - Sacramento	***880 Riverside Parkway Sacramento, CA 95605***	***(916) 373-5600***	***2,3,7,8 TCDD***
		( )	
		( )	
		( )	
		( )	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Fred J. Perrett General Manager, Jesup Mill	***(912) 427-5383***
C. SIGNATURE Fred J Perrett	D. DATE SIGNED 12 JUL 12

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	001

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	196	7.15	114	3.40	58	19.6	366	mg/l	tpd			
b. Chemical Oxygen Demand *(COD)*	1205	46.74	1058	32.45	723	24.52	238	mg/l	tpd			
c. Total Organic Carbon *(TOC)*	46.6	1.57					1	mg/l	tpd			
d. Total Suspended Solids *(TSS)*	305	14.78	244	7.28	152	5.10	366	mg/l	tpd			
e. Ammonia *(as N)*	4.35	0.15					1	mg/l	tpd			
f. Flow	Value 16.41		Value 11.86		Value 8.08		366	MGD		Value		
g. Temperature *(winter)*	Value 30.8		Value 27.7		Value 26.0		183	°C		Value		
h. Temperature *(summer)*	Value 36.0		Value 35.0		Value 32.4		183	°C		Value		
i. pH	Minimum 6.7	Maximum 8.6	Minimum 7.0	Maximum 7.6			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☒	☐	0.21	14.89					1	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						1					
c. Color	☒	☐	2730	136.75	2397	91.40	1805	59.71	366	CPU	tpd			
d(1). Fecal Coliform	☒	☐	240						2	CFU/100ml				
d(2) E. coli	☒	☐	6						1	MPN/100ml				
e. Fluoride (16984-48-8)	☒	☐	0.42	29.77					1	mg/L	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.258	18.29					1	mg/l	ppd			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	☒	☐	13.7	0.49					1	mg/l	tpd			
h(1). Oil and Grease (HEM)	☒	☐	18.2	0.65					2	mg/l	tpd			
h(2). Oil and Grease (SGT)	☒	☐	6.6	0.21					1	mg/l	tpd			
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	2.77	0.09					1	mg/l	tpd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND											
(2) Beta, Total	☐	☒	ND											
(3) Radium, Total	☐	☒	ND											
(4) Radium 226, Total	☒	☐	0.5						1	pCi/l				
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	878	31.12					1	mg/l	tpd			
l. Sulfide (as S)	☒	☐	2.4	170.14					1	mg/l	ppd			
m. Sulfite (as SO_3)(14265-45-3)	☒	☐	ND						2					
n. Surfactants	☒	☐	0.15	10.63					1	mg/l	ppd			
o. Aluminum, Total (7429-90-5)	☒	☐	174	12.5					1	ug/l	ppd			
p. Barium, Total (7440-39-3)	☒	☐	134	9.50					1	ug/l	ppd			
q. Boron, Total (7440-42-8)	☒	☐	116	8.22					1	ug/l	ppd			
r. Cobalt, Total (7440-48-4)	☒	☐	ND						1					
s. Iron, Total (7439-89-4)	☒	☐	180	12.76					1	ug/l	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	10.9	772.70					1	mg/l	ppd			
u. Molybdenum, Total (7439-98-7)	☒	☐	ND						1					
v. Manganese, Total (7439-96-5)	☒	☐	260	18.43					1	ug/l	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						1					
x. Titanium, Total (7440-32-6)	☒	☐	5.2	0.37					1	ug/l	ppd			

 CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	*001*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m Antimony, Total (7440-36-0)	☒	☒	☐	ND						1					
2M Arsenic, Total (7440-38-2)	☒	☒	☐	ND						1					
3M Beryllium, Total (7440-41-7)	☒	☒	☐	ND						1					
4M Cadmium, Total (7440-43-9)	☒	☒	☐	ND						1					
5M Chromium, Total (7440-47-3)	☒	☒	☐	1.3	0.09					1	ug/l	ppd			
6M Copper, Total (7440-50-8)	☒	☒	☐	2.4	0.17					1	ug/l	ppd			
7M lead, Total (7439-92-1)	☒	☒	☐	0.75	0.05					1	ug/l	ppd			
8M Mercury, Total (7439-97-6)	☒	☒	☐	ND						1					
9M Nickel, Total (7440-02-0)	☒	☒	☐	4.1	290.65					1	ug/l	ppd			
10M Selenium, Total (7782-49-2)	☒	☐	☒	ND						1					
11M Silver, Total (7440-22-4)	☒	☐	☒	ND						1					
12M Thallium, Total (7440-28-0)	☒	☐	☒	ND						1					
13M Zinc, Total (7440-66-6)	☒	☒	☐	13.5	0.96					1	ug/l	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☒	ND						1					
15M Phenols, Total	☒	☒	☐	ND						1					
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☒	☒	☐	DESCRIBE RESULTS *Not detected at an average of 3.53 pg/l on four flow proportioned samples of outfall 001+002*											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☒	☒	☐	ND						1					
2V Acrylonitrile (107-13-1)	☒	☐	☒	ND						1					
3V Benzene (71-43-2)	☒	☒	☐	ND						1					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☒	ND						1					
5V Bromoform (75-25-2)	☒	☐	☒	ND						1					
6V Carbon Tetrachloride (56-23-5)	☒	☒	☐	ND						1					
7V Chlorobenzene (108-90-7)	☒	☒	☐	ND						1					
8V Chlorodibromomethane (124-48-1)	☒	☒	☐	ND						1					
9V Chloroethane (75-00-3)	☒	☒	☐	ND						1					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☒	ND						1					
11V Chloroform (67-66-3)	☒	☒	☐	ND						1					
12V Dichlorobromoethane (75-71-8)	☒	☒	☐	ND						1					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☒	ND						1					
14V 1,1-Dichloroethane (75-34-3)	☒	☒	☐	ND						1					
15V 1,2-Dichloroethane (107-06-2)	☒	☒	☐	ND						1					
16V 1,1-Dichloroethylene (75335-4)	☒	☒	☐	ND						1					
17V 1,2-Dichloropropane (78-87-5)	☒	☒	☐	ND						1					
18V 1,3-Dichloropropylene (542-78-6)	☒	☒	☐	ND						1					
19V Ethylbenzene (100-41-4)	☒	☒	☐	ND						1					
20V Methyl Bromide (74-83-9)	☒	☒	☐	ND						1					
21V Methyl Chloride (74-87-3)	☒	☒	☐	ND						1					

 CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22V Methylene Chloride (75-09-2)	☒	☒	☐	ND						1					
23V 1,1,2,2-Tetra-Chloroethane (79-34-5)	☒	☒	☐	ND						1					
24V Tetrachloro-ethylene (127-18-4)	☒	☒	☐	ND						1					
25V Toluene (108-88-3)	☒	☒	☐	ND						1					
26V 1,2-Trans-Dichloroethylene (156-60-5)	☒	☒	☐	ND						1					
27V 1,1,1-Tri-chloroethane (71-55-6)	☒	☒	☐	ND						1					
28V 1,1,2-Tri-chloroethane (79-00-5)	☒	☒	☐	ND						1					
29V Trichloro-ethylene (79-01-6)	☒	☒	☐	ND						1					
30V Trichloro-fluoromethane (75-69-4)	☒	☐	☒	ND						1					
31V Vinyl Chloride (75-01-4)	☒	☒	☐	ND						1					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☒	☐	ND						1					
2A 2,4-Dichloro-phenol (120-83-2)	☒	☒	☐	ND						1					
3A 2,4-Dimethyl-phenol (105-67-9)	☒	☒	☐	ND						1					
4A 4,6-Dinitro-O-cresol (534-52-1)	☒	☒	☐	ND						1					
5A 2,4-Dinitro-phenol (51-28-5)	☒	☒	☐	ND						1					
6A 2-Nitro-phenol (88-75-5)	☒	☒	☐	ND						1					
7A 4-Nitro-phenol (100-02-7)	☒	☒	☐	ND						1					
8A P-Chloro-M-Cresol (59-50-7)	☒	☒	☐	ND						1					
9A Penta-chlorophenol (87-86-5)	☒	☒	☐	ND						1					
10A Phenol (108-95-2)	☒	☒	☐	ND						1					
11A 2,4,6-Tri-chlorophenol (88-06-2)	☒	☒	☐	ND						1					

 CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☒	☐	☒	ND						1					
2B Acenaphtylene (208-96-8)	☒	☐	☒	ND						1					
3B Anthracene (120-12-7)	☒	☐	☒	ND						1					
4B Benzidine (92-87-5)	☒	☐	☒	ND						1					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☒	ND						1					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☒	ND						1					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☒	ND						1					
8B Benzo *(ghi)* Perylene (191-24-2)	☒	☐	☒	ND						1					
9B Benzo *(k)* Fluoranthene (207-08-9)	☒	☐	☒	ND						1					
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☒	☐	☒	ND						1					
11B Bis *(2-Chloro-ethyl)* Ether (111-44-4)	☒	☐	☒	ND						1					
12B Bis *(2-Chloroisopropyl)* Ether (102-60-1	☒	☐	☒	ND						1					
13B Bis*(2-Ethyl-hexyl)* Phthalate (117-81-7)	☒	☐	☒	ND						1					
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☒	☐	☒	ND						1					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☒	ND						1					
16B 2-Chloro-naphthalene (91-68-7)	☒	☒	☐	ND						1					
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☒	☐	☒	ND						1					
18B Chrysene (218-01-9)	☒	☐	☒	ND						1					
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☒	☐	☒	ND						1					
20B 1,2-Dichloro-benzene (95-50-1)	☒	☒	☐	ND						1					
21B 1,3-Dichloro-benzene (541-73-1)	☒	☒	☐	ND						1					

 CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS (continued)															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☒	☐	ND						1					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☒	☐	ND						1					
24B Diethyl Phthalate (84-66-2)	☒	☐	☒	ND						1					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☒	ND						1					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☒	ND						1					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☒	ND						1					
30B 1,2-Diphenylhydrazine (as Azo-benzene) (122-66-7)	☒	☐	☒	ND						1					
31B Fluoranthene (206-44-0)	☒	☐	☒	ND						1					
32B Fluorene (86-73-7)	☒	☐	☒	ND						1					
33B Hexachlorobenzene (118-74-1)	☒	☐	☒	ND						1					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☒	ND						1					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☒	ND						1					
36B Hexachloroethane (67-72-1)	☒	☐	☒	ND						1					
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☒	☐	☒	ND						1					
38B Isophorone (78-59-1)	☒	☐	☒	ND						1					
39B Napthalene (91-20-3)	☒	☒	☐	ND						1					
40B Nitrobenzene (98-95-3)	☒	☐	☒	ND						1					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☒	ND						1					
42B N-Nitrosodi-N-Propylamine (621-64-7)	☒	☐	☒	ND						1					

 CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☒	ND						1					
44B Phenanthrene (85-01-/	☒	☐	☒	ND						1					
45B Pyrene (129-00-0)	☒	☒	☐	ND						1					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☒	☐	ND						1					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☒	ND						1					
2P β-Bhc (319-85-7)	☒	☐	☒	ND						1					
4P γ-BHC (58-89-9)	☒	☐	☒	ND						1					
5P δ-BHC (319-86-8)	☒	☐	☒	ND						1					
6P Chlordane (57-74-9)	☒	☐	☒	ND						1					
7P 4,4'-DDT (50-29-3)	☒	☐	☒	ND						1					
8P 4,4'-DDE (72-55-9)	☒	☐	☒	ND						1					
9P 4,4'-DDD (72-54-8)	☒	☐	☒	ND						1					
10P Dieldrin (60-57-1)	☒	☐	☒	ND						1					
11P α-Endosulfan (115-29-7)	☒	☐	☒	ND						1					
12P β-Endosulfan (115-29-7	☒	☐	☒	ND						1					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☒	ND						1					
14P Endrin (72-20-8)	☒	☐	☒	ND						1					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☒	ND						1					
16P Heptachlor (76-44-8)	☒	☐	☒	ND						1					

 CONTINUE ON PAGE V-9

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES (continued)															
17P Heptachlor Expxide (1024-57-3)	☒	☐	☒	ND						1					
18P PCB-1242 (53469-21-9)	☒	☐	☒	ND						1					
19P PCB-1254 (11097-69-1)	☒	☐	☒	ND						1					
20P PCB-1221 (11104-28-2)	☒	☐	☒	ND						1					
21P PCB-1232 (11141-16-5)	☒	☐	☒	ND						1					
22P PCB-1248 (12672-29-6)	☒	☐	☒	ND						1					
23P PCB-1260 (11096-82-5)	☒	☐	☒	ND						1					
24P PCB-1016 (12674-11-2)	☒	☐	☒	ND						1					
25P Toxaphene (8001-35-2)	☒	☐	☒	ND						1					

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	*002*

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	62	11.38	39	7.33	25	4.84	362	mg/l	tpd			
b. Chemical Oxygen Demand *(COD)*	619	132.25	459	93.75	406	78.24	238	mg/l	tpd			
c. Total Organic Carbon *(TOC)*	64.8	12.01					1	mg/l	tpd			
d. Total Suspended Solids *(TSS)*	63	12.26	40	8.52	30	5.82	366	mg/l	tpd			
e. Ammonia *(as N)*	1.94	0.36					1	mg/l	tpd			
f. Flow	Value 67.13		Value 50.94		Value 44.45		366	MGD		Value		
g. Temperature *(winter)*	Value 29.7		Value 25.9		Value 23.2		183	°C		Value		
h. Temperature *(summer)*	Value 34.5		Value 32.9		Value 30.7		183	°C		Value		
i. pH	Minimum 7.7	Maximum 8.4	Minimum 7.8	Maximum 8.0			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☒	☐	0.23	77.94					1	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						1					
c. Color	☒	☐	1530	372.03	1396	283.43	1228	234.10	354	CPU	tpd			
d(1). Fecal Coliform	☒	☐	3600						2	CFU/100ml				
d(2) *E. coli*	☒	☐	ND						1	MPN/100ml				
e. Fluoride (16984-48-8)	☒	☐	0.51	172.82					1	mg/l	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.079	26.77					1	mg/l	ppd			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	☒	☐	3.55	0.60					1	mg/l	tpd			
h(1). Oil and Grease (HEM)	☒	☐	98.9	16.76					2	mg/l	tpd			
h(2). Oil and Grease (SGT)	☒	☐	2.6	0.62					1	mg/l	tpd			
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	2.77	0.09					1	mg/l	tpd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND											
(2) Beta, Total	☐	☒	ND											
(3) Radium, Total	☐	☒	ND											
(4) Radium 226, Total	☒	☐	0.6						1	pCi/l				
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	1020	172.82					1	mg/l	tpd			
l. Sulfide (as S)	☒	☐	2.5	0.42					1	mg/l	tpd			
m. Sulfite (as SO_3)(14265-45-3)	☒	☐	ND						2					
n. Surfactants	☒	☐	0.16	54.22					1	mg/l	tpd			
o. Aluminum, Total (7429-90-5)	☒	☐	270	91.49					1	ug/l	ppd			
p. Barium, Total (7440-39-3)	☒	☐	229	77.60					1	ug/l	ppd			
q. Boron, Total (7440-42-8)	☒	☐	121	20.50					1	mg/l	tpd			
r. Cobalt, Total (7440-48-4)	☒	☐	ND						1					
s. Iron, Total (7439-89-4)	☒	☐	180	60.99					1	ug/l	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	14.1	2.39					1	mg/l	tpd			
u. Molybdenum, Total (7439-98-7)	☒	☐	ND						1					
v. Manganese, Total (7439-96-5)	☒	☐	440	149.10					1	ug/l	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						1					
x. Titanium, Total (7440-32-6)	☒	☐	ND						1					

 CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	002

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK "X"			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m Antimony, Total (7440-36-0)	☒	☒	☐	ND						1					
2M Arsenic, Total (7440-38-2)	☒	☒	☐	ND						1					
3M Beryllium, Total (7440-41-7)	☒	☒	☐	ND						1					
4M Cadmium, Total (7440-43-9)	☒	☒	☐	ND						1					
5M Chromium, Total (7440-47-3)	☒	☒	☐	ND						1					
6M Copper, Total (7440-50-8)	☒	☒	☐	2.6	0.88					1	ug/l	ppd			
7M lead, Total (7439-92-1)	☒	☒	☐	1.4	0.47					1	ug/l	ppd			
8M Mercury, Total (7439-97-6)	☒	☒	☐	ND						1					
9M Nickel, Total (7440-02-0)	☒	☒	☐	4.0	0.68					1	ug/l	tpd			
10M Selenium, Total (7782-49-2)	☒	☐	☒	ND						1					
11M Silver, Total (7440-22-4)	☒	☐	☒	ND						1					
12M Thallium, Total (7440-28-0)	☒	☐	☒	ND						1					
13M Zinc, Total (7440-66-6)	☒	☒	☐	29	9.83					1	ug/l	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☒	ND						1					
15M Phenols, Total	☒	☒	☐	ND						1					
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☒	☒	☐	DESCRIBE RESULTS *Not detected at an average of 3.53 pg/l on four flow proportioned samples of outfall 001+002*											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☒	☒	☐	ND						1					
2V Acrylonitrile (107-13-1)	☒	☐	☒	ND						1					
3V Benzene (71-43-2)	☒	☒	☐	ND						1					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☒	ND						1					
5V Bromoform (75-25-2)	☒	☐	☒	ND						1					
6V Carbon Tetrachloride (56-23-5)	☒	☒	☐	ND						1					
7V Chlorobenzene (108-90-7)	☒	☒	☐	ND						1					
8V Chlorodibromomethane (124-48-1)	☒	☒	☐	ND						1					
9V Chloroethane (75-00-3)	☒	☒	☐	ND						1					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☒	ND						1					
11V Chloroform (67-66-3)	☒	☒	☐	ND						1					
12V Dichlorobromoethane (75-71-8)	☒	☒	☐	ND						1					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☒	ND						1					
14V 1,1-Dichloroethane (75-34-3)	☒	☒	☐	ND						1					
15V 1,2-Dichloroethane (107-06-2)	☒	☒	☐	ND						1					
16V 1,1-Dichloroethylene (75335-4)	☒	☒	☐	ND						1					
17V 1,2-Dichloropropane (78-87-5)	☒	☒	☐	ND						1					
18V 1,3-Dichloropropylene (542-76-6)	☒	☒	☐	ND						1					
19V Ethylbenzene (100-41-4)	☒	☒	☐	ND						1					
20V Methyl Bromide (74-83-9)	☒	☒	☐	ND						1					
21V Methyl Chloride (74-87-3)	☒	☒	☐	ND						1					

 CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22V Methylene Chloride (75-09-2)	☒	☒	☐	ND						1					
23V 1,1,2,2-Tetra-Chloroethane (79-34-5)	☒	☒	☐	ND						1					
24V Tetrachloro-ethylene (127-18-4)	☒	☒	☐	ND						1					
25V Toluene (108-88-3)	☒	☒	☐	ND						1					
26V 1,2-trans-Dichloroethylene (156-60-5)	☒	☒	☐	ND						1					
27V 1,1,1-Tri-chloroethane (71-55-6)	☒	☒	☐	ND						1					
28V 1,1,2-Tri-chloroethane (79-00-5)	☒	☒	☐	ND						1					
29V Trichloro-ethylene (79-01-6)	☒	☒	☐	ND						1					
30V Trichloro-fluoromethane (75-69-4)	☒	☐	☒	ND						1					
31V Vinyl Chloride (75-01-4)	☒	☒	☐	ND						1					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☒	☐	ND						1					
2A 2,4-Dichloro-phenol (120-83-2)	☒	☒	☐	ND						1					
3A 2,4-Dimethyl-phenol (105-67-9)	☒	☒	☐	ND						1					
4A 4,6-Dinitro-O-cresol (534-52-1)	☒	☒	☐	ND						1					
5A 2,4-Dinitro-phenol (51-28-5)	☒	☒	☐	ND						1					
6A 2-Nitro-phenol (88-75-5)	☒	☒	☐	ND						1					
7A 4-Nitro-phenol (100-02-7)	☒	☒	☐	ND						1					
8A P-Chloro-M-Cresol (59-50-7)	☒	☒	☐	ND						1					
9A Penta-chlorophenol (87-86-5)	☒	☒	☐	ND						1					
10A Phenol (108-95-2)	☒	☒	☐	ND						1					
11A 2,4,6-Tri-chlorophenol (88-06-2)	☒	☒	☐	ND						1					

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1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☒	☐	☒	ND						1					
2B Acenaphtylene (208-96-8)	☒	☐	☒	ND						1					
3B Anthracene (120-12-7)	☒	☐	☒	ND						1					
4B Benzidine (92-87-5)	☒	☐	☒	ND						1					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☒	ND						1					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☒	ND						1					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☒	ND						1					
8B Benzo (ghi) Perylene (191-24-2)	☒	☐	☒	ND						1					
9B Benzo (k) Fluoranthene (207-08-9)	☒	☐	☒	ND						1					
10B Bis (2-Chloroethoxy) Methane (111-91-1)	☒	☐	☒	ND						1					
11B Bis (2-Chloro-ethyl) Ether (111-44-4)	☒	☐	☒	ND						1					
12B Bis (2-Chloroisopropyl) Ether (102-60-1)	☒	☐	☒	ND						1					
13B Bis(2-Ethyl-hexyl) Phthalate (117-81-7)	☒	☐	☒	ND						1					
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☒	☐	☒	ND						1					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☒	ND						1					
16B 2-Chloro-naphthalene (91-58-7)	☒	☒	☐	ND						1					
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☒	☐	☒	ND						1					
18B Chrysene (218-01-9)	☒	☐	☒	ND						1					
19B Dibenzo (a,h) Anthracene (53-70-3)	☒	☐	☒	ND						1					
20B 1,2-Dichloro-benzene (95-50-1)	☒	☒	☐	ND						1					
21B 1,3-Dichloro-benzene (541-73-1)	☒	☒	☐	ND						1					

 CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
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				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS (continued)															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☒	☐	ND						1					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☒	☐	ND						1					
24B Diethyl Phthalate (84-66-2)	☒	☐	☒	ND						1					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☒	ND						1					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☒	ND						1					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☒	ND						1					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☒	ND						1					
30B 1,2-Diphenylhydrazine (as Azo-benzene) (122-66-7)	☒	☐	☒	ND						1					
31B Fluoranthene (206-44-0)	☒	☐	☒	ND						1					
32B Fluorene (86-73-7)	☒	☐	☒	ND						1					
33B Hexachlorobenzene (118-74-1)	☒	☐	☒	ND						1					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☒	ND						1					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☒	ND						1					
36B Hexachloroethane (67-72-1)	☒	☐	☒	ND						1					
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☒	☐	☒	ND						1					
38B Isophorone (78-59-1)	☒	☐	☒	ND						1					
39B Napthalene (91-20-3)	☒	☒	☐	ND						1					
40B Nitrobenzene (98-95-3)	☒	☐	☒	ND						1					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☒	ND						1					
42B N-Nitrosodi-N-Propylamine (621-64-7)	☒	☐	☒	ND						1					

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1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☒	ND						1					
44B Phenanthrene (85-01-/	☒	☐	☒	ND						1					
45B Pyrene (129-00-0)	☒	☒	☐	ND						1					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☒	☐	ND						1					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☒	ND						1					
2P β-Bhc (319-85-7)	☒	☐	☒	ND						1					
4P γ-BHC (58-89-9)	☒	☐	☒	ND						1					
5P δ-BHC (319-86-8)	☒	☐	☒	ND						1					
6P Chlordane (57-74-9)	☒	☐	☒	ND						1					
7P 4,4'-DDT (50-29-3)	☒	☐	☒	ND						1					
8P 4,4'-DDE (72-55-9)	☒	☐	☒	ND						1					
9P 4,4'-DDD (72-54-8)	☒	☐	☒	ND						1					
10P Dieldrin (60-57-1)	☒	☐	☒	ND						1					
11P α-Endosulfan (115-29-7)	☒	☐	☒	ND						1					
12P β-Endosulfan (115-29-7	☒	☐	☒	ND						1					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☒	ND						1					
14P Endrin (72-20-8)	☒	☐	☒	ND						1					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☒	ND						1					
16P Heptachlor (76-44-8)	☒	☐	☒	ND						1					

 CONTINUE ON PAGE V-9

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
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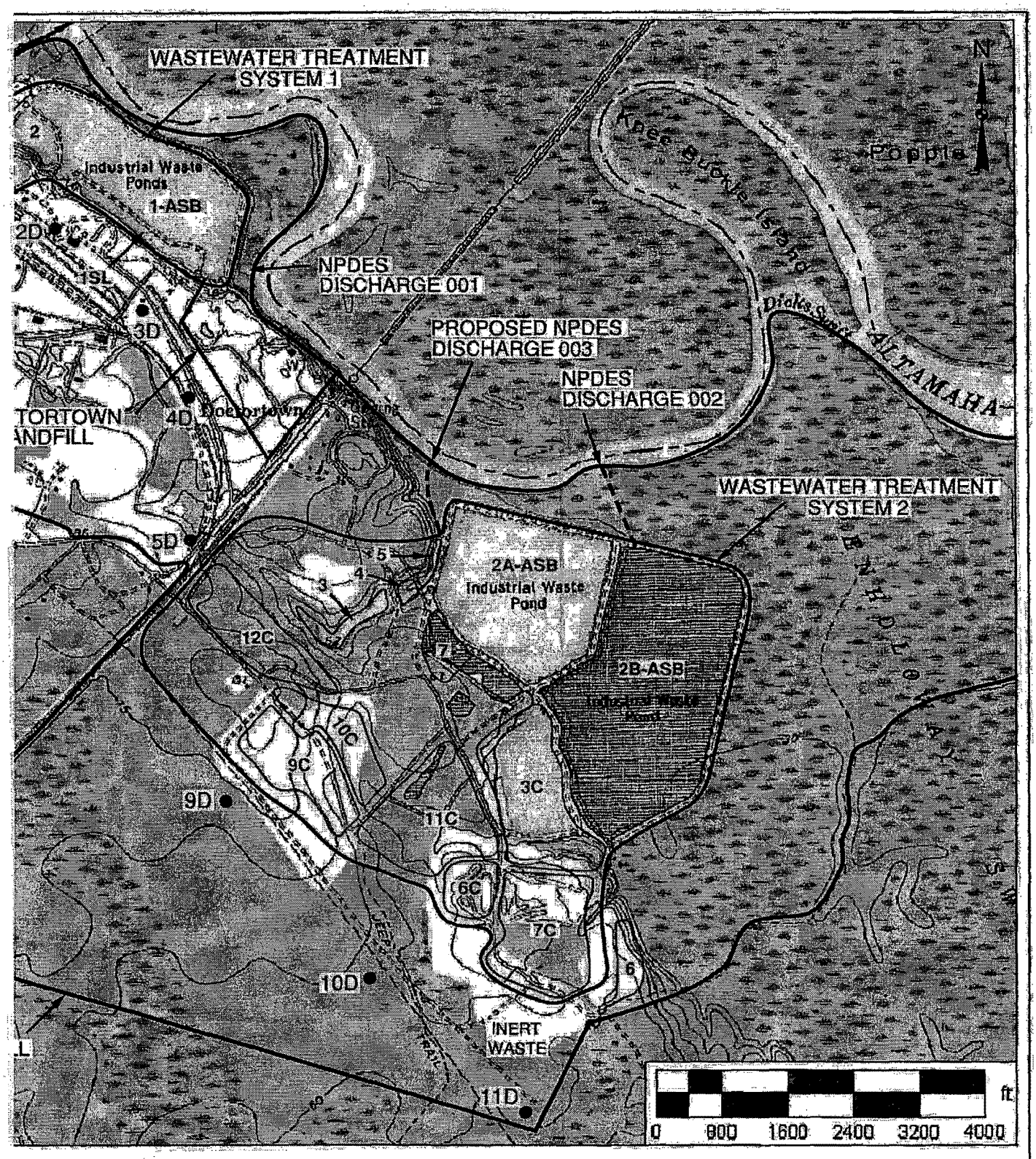
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES (continued)															
17P Heptachlor Expxide (1024-57-3)	☒	☐	☒	ND						1					
18P PCB-1242 (53469-21-9)	☒	☐	☒	ND						1					
19P PCB-1254 (11097-69-1)	☒	☐	☒	ND						1					
20P PCB-1221 (11104-28-2)	☒	☐	☒	ND						1					
21P PCB-1232 (11141-16-5)	☒	☐	☒	ND						1					
22P PCB-1248 (12672-29-6)	☒	☐	☒	ND						1					
23P PCB-1260 (11096-82-5)	☒	☐	☒	ND						1					
24P PCB-1016 (12674-11-2)	☒	☐	☒	ND						1					
25P Toxaphene (8001-35-2)	☒	☐	☒	ND						1					



Source for Base Map: USGS 7.5 Minute Quad, Doctortown, GA, 1988

Schnabel ENGINEERING	RAYONIER PERFORMANCE FIBERS JESUP, WAYNE COUNTY, GEORGIA	WASTEWATER TREATMENT SYSTEM COMPONENTS PROJECT NO. 999079.00

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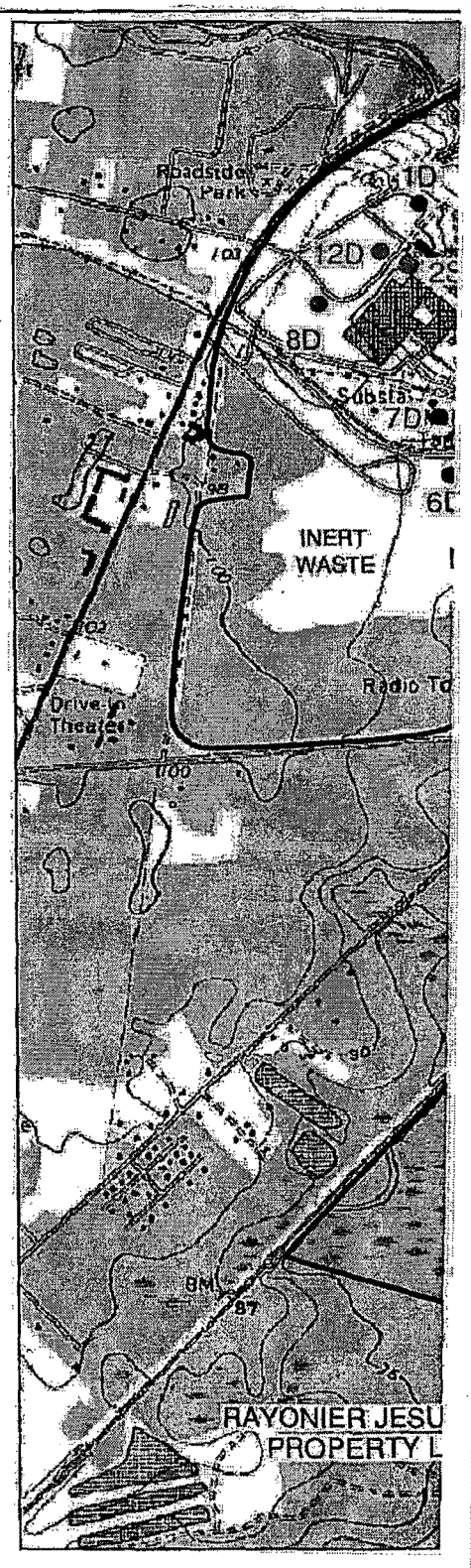
IMPOUNDMENT NUMBER	IMPOUNDMENT NAME	IMPOUNDMENT USE
1	Weak clarifier	Primary solids removal
2	Sludge lagoon	Storage for weak clarifier solids
3	No. 1 Rayonier Lake	Storm water rentention
4	No. 2 Rayonier Lake	Storm water rentention
5	No. 3 Rayonier Lake	Storm water rentention
6	Fish Pond	Storm water rentention
1-ASB	No. 1 ASB	Aeration basin
2A-ASB	No. 2A ASB	Aeration basin
2B-ASB	No. 2B ASB	Aeration basin
1SL	No. 1 SL	Strong waste
7	No. 7 ESB	Emergency settling basin
3C	No. 3 Compost	Clarifier/Dredging solids composting
6C	No. 6 Compost	Clarifier/Dredging solids composting
7C	No. 7 Compost	Clarifier/Dredging solids composting
9C	No. 9 Compost	Clarifier/Dredging solids composting
10C	No. 10 Compost	Clarifier/Dredging solids composting
11C	No. 11 Compost	Clarifier/Dredging solids composting
12C	No. 12 Compost	Proposed Clarifier/Dredging solids composting

ASB = Aeration Stabilization Basin
ESB = Emergency Settling Basin
SL = Strong Lagoon
C = Compost

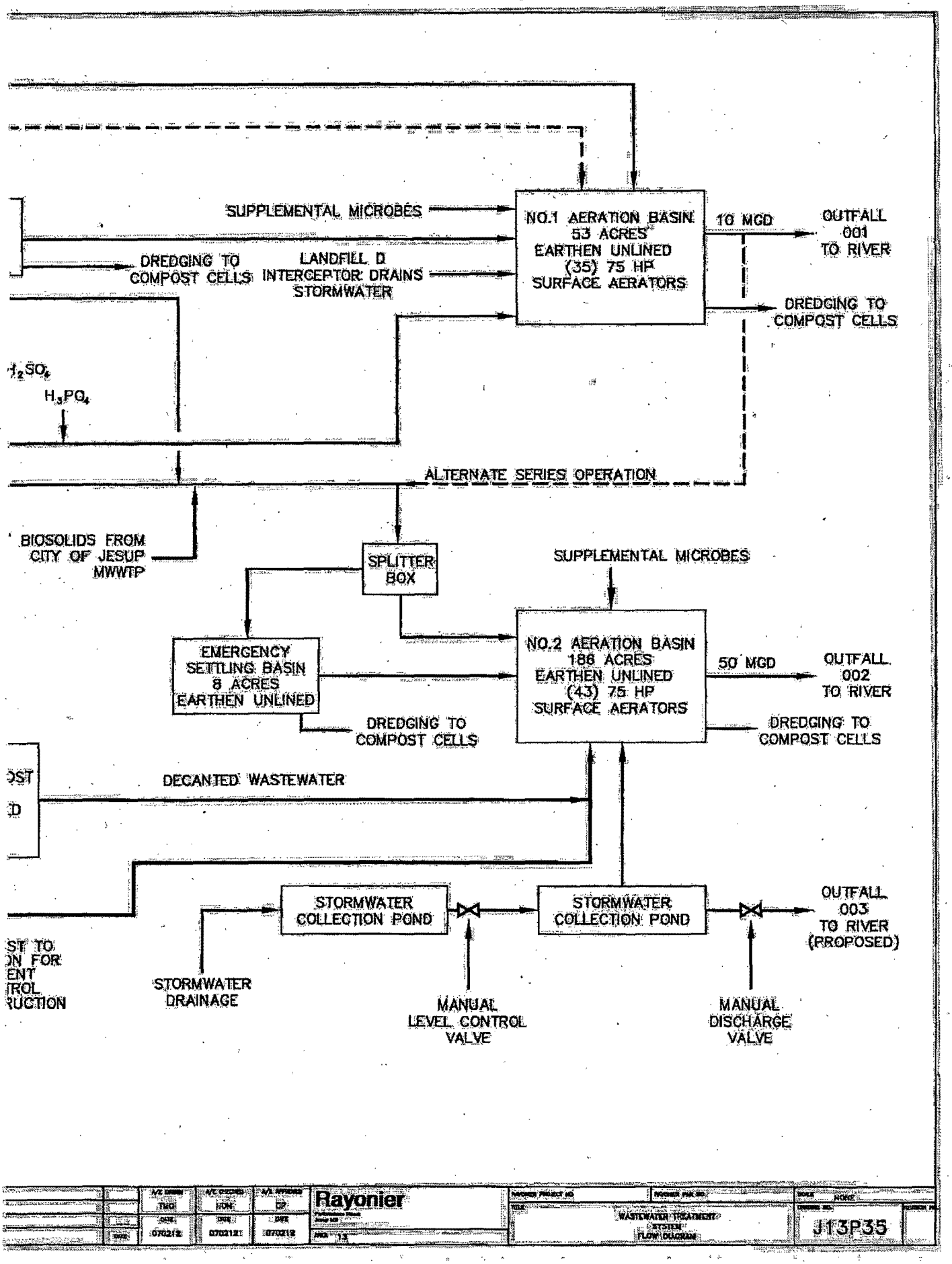


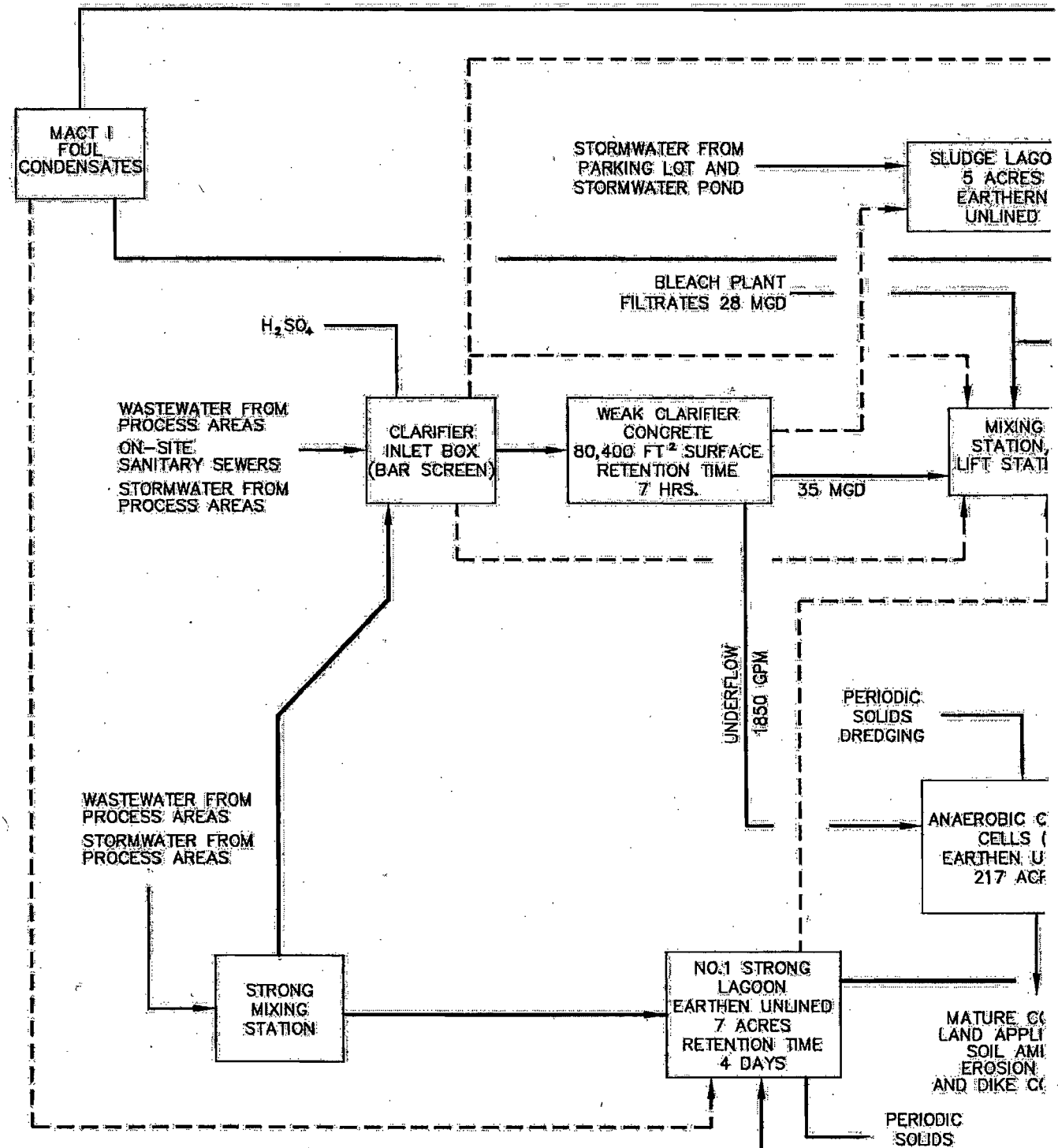
LEGEND

● DEEP GROUNDWATER WELLS (11)

● DRINKING WATER WELL (2)

07/02/12 G:\1999 Projects\999079 Rayonier\NPDES Application Drawings\Wastewater Treatment System 07-2012.dwg


SUPPLEMENTAL MICROBES
NO.1 AERATION BASIN
53 ACRES
EARTHEN UNLINED
(35) 75 HP
SURFACE AERATORS
10 MGD
OUTFALL
001
TO RIVER
DREDGING TO
COMPOST CELLS
LANDFILL D
INTERCEPTOR DRAINS
STORMWATER
DREDGING TO
COMPOST CELLS
H_2SO_4
H_3PO_4
ALTERNATE SERIES OPERATION
BIOSOLIDS FROM
CITY OF JESUP
MWWTP
SPLITTER
BOX
SUPPLEMENTAL MICROBES
EMERGENCY
SETTLING BASIN
8 ACRES
EARTHEN UNLINED
NO.2 AERATION BASIN
186 ACRES
EARTHEN UNLINED
(43) 75 HP
SURFACE AERATORS
50 MGD
OUTFALL
002
TO RIVER
DREDGING TO
COMPOST CELLS
DREDGING TO
COMPOST CELLS
DECANTED WASTEWATER
STORMWATER
COLLECTION POND
STORMWATER
COLLECTION POND
OUTFALL
003
TO RIVER
(PROPOSED)
STORMWATER
DRAINAGE
MANUAL
LEVEL CONTROL
VALVE
MANUAL
DISCHARGE
VALVE
Rayonier
WASTEWATER TREATMENT
SYSTEM
FLOW DIAGRAM
J13P35



NOTES:

1. ALL PROCESS WATER IS SUPPLIED BY GROUNDWATER DEEP WELLS PERMITTED WELL FLOW IS 68.0 MGD ANNUAL AVERAGE
2. ALL PROCESS OR DISCHARGE FLOWRATES ARE NOMINAL VALUES AND NOT INDICATIVE OF ANY PERMIT LIMITS

CHRONIC TOXICITY TESTING REPORT

Rayonier-Jesup Performance Fibers
4470 Savannah Highway
Jesup, Georgia 31598

Test Period: May 31-June 7, 2012

Prepared for:
Rayonier Performance Fibers
4470 Savannah Highway
Jesup, GA 31598

Prepared by:
AMEC Environment & Infrastructure, Inc.
AMEC Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318
NELAC# E82998

Project Number 6067120062

June 13, 2012

June 13, 2012

Deborah Oder
Rayonier Performance Fibers
4470 Savannah Highway
Jesup, GA 31598

Dear Ms. Oder:

Re: Chronic Toxicity Testing of Effluent Samples conducted May 31-June 7, 2012
Rayonier-Jesup Performance Fibers, Jesup, Georgia
AMEC Project Number: 6067120062

AMEC Environment & Infrastructure, Inc. (AMEC) Biology Toxicology Laboratory has completed multi-concentration chronic toxicity testing using the water flea (*Ceriodaphnia dubia*) and Fathead Minnow (*Pimephales promelas*), on effluent samples collected by Rayonier personnel during the week of May 31-June 7, 2012.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the Fathead Minnow survival or growth at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 2 samples tested.

Chronic toxicity was not exhibited to the Fathead Minnow survival or growth at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 2 samples tested.

Correspondence:
AMEC
404 SW 140th Terrace
Newberry, Florida
USA 32669-3000
Tel +1 352 332 3318
Fax +1 352 333 6622

Results are summarized in the accompanying report. All test results contained herein comply with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC). The results discussed in this report relate only to the samples tested during the period May 31-June 7, 2012; samples as identified on the Chain-of-Custody form (Appendix A). A summary of USEPA protocol test conditions for each test method is located in the Additional Tables section of this report. Test Organism data is located in Appendix B; chemical and physical data in Appendix C; and Laboratory Test Data (bench sheets), and Statistical Analyses is located in Appendix D.

We appreciate the opportunity to provide these environmental services to Rayonier-Jesup Performance Fibers, Jesup, Georgia and we look forward to working with you again in the future. Should you have any questions or need further assistance, please contact Dave Dickens or Bill Tucker at (352) 332-3318.

Sincerely,
AMEC Environment & Infrastructure, Inc.

R. Dave Dickens
Biology-Toxicology Laboratory Director
Direct Tel: + 1 352 333 6603
Direct Fax: + 1 352 333 6622
E-mail: Dave.Dickens@amec.com

For Judith L. Dudley, Ph.D.
Principal Scientist
Direct Tel: + 1 352 333 2623
Direct Fax: + 1 352 333 6622
E-mail: Judith.Dudley@amec.com
with permission

Attachment: Data Report

TEST SUMMARY

Executive Summary
Rayonier-Jesup Toxicity Test Conducted during May 31-June 7, 2012.

Outfall 1
C. dubia (water flea)
Survival NOEC = 4.64% effluent
Reproduction NOEC = 4.64% effluent

P. promelas (Fathead Minnow)
Survival NOEC = 4.64% effluent
Growth NOEC = 4.64% effluent

Outfall 2
C. dubia (water flea)
Survival NOEC = 28.28% effluent
Reproduction NOEC = 28.28% effluent

P. promelas (Fathead Minnow)
Survival NOEC = 28.28% effluent
Growth NOEC = 28.28% effluent

I. Client

Facility Tested:	Rayonier-Jesup 4470 Savannah Highway Jesup, GA 31598
NPDES Permit #:	GA0003620
Samples Tested:	Rayonier-Jesup Effluent AMEC Unique Identification Numbers: W12-MAY- RAY1-053012 W12-MAY- RAY1-060112 W12-MAY- RAY1-060412 W12-MAY- RAY2-053012 W12-MAY- RAY2-060112 W12-MAY- RAY2-060412

Sample Chain-of-Custody and sample tracking information can be found in Appendix A. Water quality parameters measured upon sample receipt can be found in Table 5 and 6 of the Additional Tables section at the end of this report.

II. Laboratory Accreditation

Laboratory:	Biology Toxicology Laboratory AMEC Environmental & Infrastructure, Inc. 404 SW 140 Terrace Newberry, Florida 32669
Accreditor:	State of Florida, Department of Health Bureau of Laboratories
Accreditation ID:	Lab ID. E82998
Category:	Non-Potable Water – Whole Effluent Toxicity
Effective:	July 1, 2011 through June 30, 2012

III. Tests Conducted

Test:	**Water Flea**, *Ceriodaphnia dubia* Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, Test Method 1002.0 (EPA, 2002). Chronic Definitive Survival and Reproduction Test **Fathead Minnow**, *Pimephales promelas* Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, Test Method 1000.0 (EPA, 2002). Chronic Definitive Survival and Growth Test

Test conditions and test acceptability criteria can be found in the Additional Tables section at the end of this report.

Test Dates (Times):	**Outfall #1** **Water Flea**: May 31 (1120) – June 6 (1300), 2012 **Fathead Minnow**: May 31 (1530) – June 7 (0910), 2012 **Outfall #2** **Water Flea**: May 31 (1500) – June 6 (1320), 2012 **Fathead Minnow**: May 31 (1540) – June 7 (0915), 2012
Source/Age of Organisms:	**Water Flea**: In house culture CD20120521/< 24 hours **Fathead Minnow**: Hydrosphere, ID# 2012-45 / <48 hours

Source organism information can be found in Appendix B of this report.

Test Concentrations:	Outfall 1: Control, 0.29%, 0.58%, 1.16%, 2.32%, and 4.64% effluent Outfall 2: Control, 1.39%, 2.79%, 5.57%, 11.14%, and 28.28% effluent
Control Water:	**Water Flea**: DMW, Diluted Mineral Water, 20-percent Perrier. **Fathead Minnow**: MHSFW, Moderately Hard Synthetic Fresh Water
Deviation from Test Method:	None.
Statistical Analyses:	NOEC determined using Comprehensive Environmental Toxicity Information System (CETIS) (Tidepool, 2008)

IV. Results

Chemical and physical data associated with the test sample material can be found in Appendix C. The results of the chronic toxicity tests conducted with the water flea and the Fathead Minnow are reflected in Tables 1 through 4 below. The water quality parameters of the dilution water, and each site sample received is reflected in Table 5 and 6 in the Additional Tables section of this report. Tables 7 and 8 in the Additional Tables section of this report reflect the Summary of Test Conditions for Test Methods 1002.0 and 1000.0, *C. dubia* and *P. promelas*, respectively.

Results of Toxicity Test Conducted with *C. dubia* for Outfall 1.

The results at the conclusion of the chronic toxicity test conducted with the water flea for Outfall 1 during the test period May 31-June 7, 2012 did not reflect chronic toxicity to the water flea survival or reproduction (Table 1). The results of the Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) ≥ an average of 15 neonates per surviving female; and (3) ≥ 60% of surviving females produced three broods.

Table 1. Survival and Reproduction Data for Water Flea Exposed for Six Days[a] to Rayonier-Jesup Outfall 1 Effluent, May 31- June 6, 2012.

Test Exposures (% Total Effluent)	Survival of All Organisms per Test Exposure (%)	Reproduction (Mean # of neonates per surviving female)
0, Control[b]	100	29.4
0.29	100	27.3
0.58	100	31.7
1.16	100	30.4
2.32	100	35.7
4.64	100	29.6
NOEC [c] (% Effluent)	**4.64**	**4.64**

Source: AMEC 2012 Prepared by: PSB PSB Checked by: RDD RDD
[a] The three brood *Ceriodaphnia dubia* test typically lasts 6 to 8 days.
[b] Laboratory Water Control; Diluted Mineral Water Batch #PD2012-8
[c] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *P. promelas* for Outfall 1.

The results at the conclusion of the chronic toxicity test conducted with the Fathead Minnow for Outfall 1 during the test period May 17-24, 2012, did not reflect chronic toxicity to the Fathead Minnow survival or growth (Table 2). Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) average dry weight per surviving organism ≥ 0.25 milligrams.

Table 2. Survival and Growth Data for Fathead Minnow Exposed for Seven Days to Rayonier-Jesup Outfall 1 Effluent, May 31- June 7, 2012.

Test Exposures % Total Effluent	Survival of All Organisms per Test Exposure (%)	Growth[a] (mg)
0, Control[b]	97.5	0.6450
0.29	100	0.8150
0.58	100	0.7800
1.16	97.5	0.8700
2.32	90	0.7900
4.64	100	0.9025
NOEC[c] (% Effluent)	**4.64**	**4.64**

Source: AMEC, 2012 Prepared by: PSB PSB Checked by: RDD RDD
[a] Mean dry weight per original number of fish at test initiation, excluding those that were accidentally killed or missing.
[b] Laboratory Water Control, Moderately Hard Synthetic Freshwater Batch #MHW20120524
[c] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *C. dubia* for Outfall 2.

The results at the conclusion of the chronic toxicity test conducted with the water flea for Outfall 2 during the test period May 31-June 7, 2012 did not reflect chronic toxicity to the water flea survival or reproduction (Table 3). The results of the Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) ≥ an average of 15 neonates per surviving female; and (3) ≥ 60% of surviving females produced three broods.

Table 3. Survival and Reproduction Data for Water Flea Exposed for Six Days[a] to Rayonier-Jesup Outfall 2 Effluent, May 31-June 6, 2012.

Test Exposures (% Total Effluent)	Survival of All Organisms per Test Exposure (%)	Reproduction (Mean # of neonates per surviving female)
0, Control[(b)]	100	26.0
1.39	100	30.8
2.79	100	32.1
5.57	90	30.9
11.14	90	36.6
28.28	100	25.4
NOEC [(c)] (% Effluent)	**28.28**	**28.28**

Source: AMEC 2012 Prepared by: PSB PSB Checked by: RDD

[(a)] The three brood *Ceriodaphnia dubia* test typically lasts 6 to 8 days.
[(b)] Laboratory Water Control; Diluted Mineral Water Batch #PD2012-8
[(c)] NOEC = No Observed Effect Concentration

Results of Toxicity Test Conducted with *P. promelas*

The results at the conclusion of the chronic toxicity test conducted with the Fathead Minnow for Outfall 2 during the test period May 31-June 7, 2012, did not reflect chronic toxicity to the Fathead Minnow survival or growth (Table 4). Control exposures met the test acceptability requirements (USEPA, 2002): (1) ≥ 80% survival; (2) average dry weight per surviving organism ≥ 0.25 milligrams.

Table 4. Survival and Growth Data for Fathead Minnow Exposed for Seven Days to Rayonier-Jesup Outfall 2 Effluent, May 17-24, 2012.

Test Exposures % Total Effluent	Survival of All Organisms per Test Exposure (%)	Growth[(a)] (mg)
0, Control[(b)]	97.5	0.7200
1.39	97.5	0.6375
2.79	95	0.8125
5.57	97.5	0.6000
11.14	97.5	0.7300
28.28	92.5	0.6900
NOEC	**28.28**	**28.28**

Source: AMEC, 2012 Prepared by: PSB PSB Checked by: RDD

[(a)] Mean dry weight per original number of fish at test initiation, excluding those that were accidentally killed or missing.
[(b)] Laboratory Water Control, Moderately Hard Synthetic Freshwater Batch #MHW20120524
[(c)] NOEC = No Observed Effect Concentration

V. Summary

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the Fathead minnow survival or growth at any of the Outfall 1 effluent concentrations tested when statistically compared to the control. The NOEC was 4.64% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (4.64%) are not less than the IWC (1.16%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 1 samples tested.

Chronic toxicity was not exhibited to the water flea survival or reproduction at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% for the water flea survival and reproduction. Since the water flea NOECs for survival and reproduction (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the water flea in the Rayonier-Jesup Outfall 2 samples tested.

Chronic toxicity was not exhibited to the Fathead minnow survival or growth at any of the Outfall 2 effluent concentrations tested when statistically compared to the control. The NOEC was 28.28% effluent for Fathead Minnow survival and growth. Since the Fathead Minnow NOECs for survival and growth (28.28%) are not less than the IWC (5.57%), chronic toxicity was not indicated to the Fathead Minnow in the Rayonier-Jesup Outfall 2 samples tested.

VI. Quality Assurance

Ceriodaphnia dubia, NaCl Reference Toxicant, RT7DCD20120517, 05/17/12
Reproduction: 7-day IC25 = 841.2 mg NaCl/L
7-day IC25 Lower and Upper Limits = 302 to 2078 mg NaCl/L

Pimephales promelas, NaCl Reference Toxicant, RT7DPP20120531, 05/31/2012
Growth: 7-day IC25 = 1897 mg NaCl/L
7-day IC25 Lower and Upper Limits = 986 to 3704 mg NaCl/L

GLOSSARY AND ABBREVIATIONS

Acute	Involving a stimulus severe enough to rapidly induce a response; in toxicity tests, a response observed in 96 hours or less typically is considered acute.
Algae Suspension	Cultures of the green alga, *Selenastrum capricornutum* are purchased as food for the *Ceriodaphnia dubia* test organisms. This algal species is variably referred to as "*Selenastrum*" and "SC" on project data sheets.
Chronic	Involving a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. A chronic effect can be lethality, growth, reduced reproduction, etc.
Chronic Value	A numeric value representing the geometric mean of the numeric values of concentrations analyzed as the NOEC (No Observed Effect Concentration) and the LOEC (Lowest Observed Effect Concentration) by chronic toxicity testing. The chronic value is an estimate of the toxicant concentration that will be the actual no effect concentration based on the chronic effect tested.
Critical Value	Minimum numeric value for a toxicity test endpoint (i.e., survival, growth, or reproduction) below which a given test result will be statistically significantly different from the control value.
DMW	Diluted Mineral Water
EC	Effective concentration, a point estimate of the toxicant concentration that would cause an adverse response such as death, immobilization, or serious incapacitation.
Ft-c	Foot candles - a measure of light intensity
Graphical Method	Log concentration versus percent mortality method. Toxicity test data are plotted on 2-cycle semi-log graph paper. The logarithmic axis (y axis) is used for percent effluent concentration, and the linear axis (x axis) is used for percent mortality. The graph provides a reasonably accurate estimate of the LC_{50}, but does not provide a confidence interval.
IC	Inhibition Concentration, a point estimate of the toxicant concentration that would cause a given percent reduction in a biological measurement such as fecundity or growth.
LC	Lethal Concentration, identical to EC when the observed response is death.
LC_{50}	The toxicant concentration that is lethal to 50 percent of exposed organisms at a specific time of observation.
IWC	Instream Waste Concentration
LCL	Lower 95% Confidence Limit
LOEC	Lowest-Observed-Effect-Concentration, the lowest concentration of toxicant to which organisms are exposed that causes adverse effects.

LWC	Lab Water Control, moderately hard synthetic freshwater prepared from MILLIPORE MILLI-Q^R water and reagent grade chemicals.
NOEC	No-Observed-Effect-Concentration, the highest concentration of toxicant to which organisms are exposed that causes no observable adverse effects.
NOEL	No-Observed-Effect-Level, the highest concentration of toxicant to which organisms are exposed that causes no observable adverse effects.
MHSFW	Moderately Hard Synthetic Fresh Water
PMSD	Percent Minimum Significant Difference
RWC	Receiving Water Control
UCL	Upper 95% Confidence Limit
$\mu E/m^2/s$	Microeinsteins per square meter per second - a measure of light intensity
USEPA	U.S. Environmental Protection Agency
WPCP	Water Pollution Control Plant
YTC	Yeast and Trout Chow Mixture

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

QA Form 063
Revised Feb 2012

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC – Jesup Mill

Location/Address (including county): 4470 Savannah Hwy. Jesup, GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 001

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O. mg/L	
No. 1 outfall	Composite	6/3/12 6/4/12	0616 0804	2.6	7.3	25	
Total Number of Samples:	2 gallons						

SAMPLE INFORMATION

Sampler(s): C. D.

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 7.4 Diss. Oxygen: 2.9 ~~Salinity~~/Cond.: 2470 Chlorine (TRC): Ø

Water Quality Measured by: M.W. / D.O. Date: 6/4/12 Time: 0845

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
Deborah M. Oder		6/4/12	0900
	Pamel Bellat	6/4/12	1410

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC - Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup, GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	5/29/12 5/30/12	8:04 7:55	2.0	8.0	4.5	

Total Number of Samples: 2 gallons

SAMPLE INFORMATION

Sampler(s): C.D / DO

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):
Temp: 4°C pH: 8.0 Diss. Oxygen: 4.5 Salinity/Cond.: 3950 Chlorine (TRC):

Water Quality Measured by: Brian Herrin Date: 5/30/12 Time: 0850

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[signature]		5/30/12	0900
	[signature]	5-30-12	1315

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

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404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

QA Form 063
Revised Feb 2012

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC - Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	5/31/12 6/1/12	7:50 7:47	34	8.0	4.1	
Total Number of Samples:	2 gallons						

SAMPLE INFORMATION

Sampler(s): C. Drury / B. Herrin

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 7.9 Diss. Oxygen: 4.5 ~~Salinity~~/Cond.: 3690 Chlorine (TRC):

Water Quality Measured by: B. Herrin Date: 6/1/12 Time: 0820

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[signature]	[signature]	6/1/12	0830
	[signature]	6/1/12	1400

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

AMEC Environment & Infrastructure, Inc.
Biology-Toxicology Laboratory
404 SW 140th Terrace
Newberry, FL 32669
Telephone (352) 332-3318

SAMPLE CHAIN OF CUSTODY

Facility: Rayonier Performance Fibers LLC - Jesup Mill

Location/Address (including county): 4470 Savannah Hwy Jesup, GA 31545 (Wayne)

Permit Number: GA 0003620 Outfall Number: 002

SAMPLE INFORMATION

Sample Identification	Sample Type Grab or Composite?	Start & End Date	Start & End Time	Water Quality Upon Arrival in AMEC Lab: Temp °C	pH	D.O mg/L	
No. 2 outfall	Composite	6/3/12 6/4/12	0610 0758	25	8.1	4.9	
Total Number of Samples:	2 gallons						

SAMPLE INFORMATION

Sampler(s): C.D.

Sampling Point (Description): Composite sampler @ outfall, refrigerated to 4°C

Water Quality Measurements at Facility (optional):

Temp: 4°C pH: 8.1 Diss. Oxygen: 5.0 Salinity/Cond.: 3570 Chlorine (TRC): Ø

Water Quality Measured by: M.W. / D.O. Date: 6/4/12 Time: 0842

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
Deborah M. Oder		6/14/12	0900
	Pamul Billat	6/4/12	1330

SAMPLE ACCEPTANCE POLICY AND SAMPLING INSTRUCTIONS ON REVERSE SIDE.

APPENDIX B

Test Organism Documents

AMEC Environment & Infrastructure, Inc.
Biology Toxicology Laboratory

***Ceriodaphnia dubia* Culture Source Document**

Brood Board ID No.	Source	Brood Date	Age of Test Organisms	Water Type/Temp. (°C)	Food Type
CD20120521	In House Culture	05/31/12	< 24 hrs	DMW / 25.0	YCT & *Selenastrum*

AMEC Environment & Infrastructure, Inc.
Biology Toxicology Laboratory

***Pimephales promelas* Culture Source Document**

Larvae Batch ID No.	Source	Hatch Date	Age of Test Organisms	Water Type/Temp. (°C)	Food Type
2012-45	Hydrosphere	05/29/12	<48hrs	MHW / 25.0	*Artemia*

APPENDIX C

Chemical and Physical Data

amec

Toxicology Laboratory
Newberry, Florida

AMEC QA Form Number: 011A
Revised: March 22, 2011

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 6067120062

Sponsor: Rayonier - Jesup Receipt Date: 5/30/12

Type and Number of Containers: 4- 1 gallon jugs (2-Outfall 1 + 2-Outfall 2)

Mode of Transport (check one): ___ Mail ✓ Hand ___ Courier: ☐FedEx ☐UPS ☐Other:_____

Shipping tracking number:_____

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab:_____

Information: _____

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	Outfall 1	Outfall 2
AMEC Unique ID:	W12-MAY-RAY1-053012	W12-MAY-RAY2-053012
Temperature (°C):	2.9	2.0
Conductivity (umhos/cm;):/Salinity (ppt):	2240	3820
pH (standard units):	7.4	8.0
Dissolved Oxygen (mg/L):	4.1	4.5
Color:	brown	brown
Total Residual Chlorine (mg/L): Zero: _____	unable to determine b/c color	
Ammonia (mg/L as N): Zero: _____	unable to determine b/c color	
Alkalinity (mg/L of CaCO3):	286.2	7500
Hardness (mg/L of CaCO3):	unable to determine b/c color	

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☑1 ☐2 4°±2°C

Date/Time Recorded: 5-30-12 1350 Sample Custodian: [signature]

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: _____ By: _____

Reviewed By: _____ Date: _____

amec

Toxicology Laboratory
Newberry, Florida

AMEC QA Form Number: 011A
Revised: March 22, 2011

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 60671200062

Sponsor: Rayonier - Jesup Receipt Date: 6/1/12

Type and Number of Containers: 4 1 gal jugs - 2 for Outfall 1 / 2 for outfall 2

Mode of Transport (check one): ___ Mail ✓ Hand ___ Courier: ☐FedEx ☐UPS ☐Other:_____

Shipping tracking number: —

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab:_____

Information: _____

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	No. 1 Outfall		No. 2 Outfall	
AMEC Unique ID:	W12-JUN-RAY1-060112		W12-JUN-RAY2-060112	
Temperature (°C):	3.0		3.4	
Conductivity (umhos/cm;)/Salinity (ppt):	2340		3790	
pH (standard units):	7.4		8.0	
Dissolved Oxygen (mg/L):	3.9		4.1	
Color:	brown		brown	
Total Residual Chlorine (mg/L): Zero:	unable to determine b/c color			
Ammonia (mg/L as N): Zero:	unable to determine b/c color			
Alkalinity (mg/L of CaCO3):	281		>500	
Hardness (mg/L of CaCO3):	unable to determine b/c color			

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☑1 ☐2 4°±2°C

Date/Time Recorded: 6/1/12 1430 Sample Custodian: Pamel Bellah

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: _____ By: _____

Reviewed By: _____ Date: _____

amec

Toxicology Laboratory
Newberry, Florida

AMEC QA Form Number: 011A
Revised: March 22, 2011

EFFLUENT/SEDIMENT RECEIPT AND USAGE LOG

Test Material: Effluent Project No.: 60671200062

Sponsor: Rayonier - Jesup Receipt Date: 6-4-12

Type and Number of Containers: 4-1gal jugs - (2-outfall 1 + 2-outfall 2)

Mode of Transport (check one): ___ Mail ___ Hand ___ Courier: ☐FedEx ☐UPS ☐Other:_____

Shipping tracking number:_____

Preserved on Ice: ✓ Chain-of-Custody Tape Intact: ✓ Composite or Grab:_____

Information: _____

INITIAL TEST MATERIAL CHARACTERISTICS

Client Sample ID:	No. 1 Outfall	No. 2 Outfall
AMEC Unique ID:	W12-JUN-RAY1-060412	W12-JUN-RAY2-060412
Temperature (°C):	2.6	2.5
Conductivity (umhos/cm;):/Salinity (ppt):	2280	3470
pH (standard units):	7.3	8.1
Dissolved Oxygen (mg/L):	2.5	4.9
Color:	Brown	Brown
Total Residual Chlorine (mg/L): Zero:	unable to determine b/c color	
Ammonia (mg/L as N): Zero:	unable to determine b/c color	
Alkalinity (mg/L of CaCO3):	242.4	7500
Hardness (mg/L of CaCO3):	unable to determine b/c color	

Sample Used Upon Receipt (Y/N): N

Storage: Fridge# ☐1 ☑2 4°±2°C

Date/Time Recorded: 6-4-12 1410 Sample Custodian: [signature]

TEST MATERIAL USAGE

Date	Amount	Purpose	Storage	Initials

Test Material Discarded On: _____ By: _____

Reviewed By: _____ Date: _____

APPENDIX D

Laboratory Test Data Sheets and Statistical Analyses

Project Number: 6067120062 Client: Rayonier Jesup Outfall 1 Test: 7 day Chronic *P. promelas* and *C. dubia*

DAILY LOG

5/31/12 - Received sample, warmed sample, checked-in sample, made dilutions, loaded tests, monitored orgs, fed orgs, WQ NM, PB, JH

6/1/12 Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, fed orgs, WQ NM, DW, PB

6/2/12 warmed sample, fed orgs, made dilutions, renewed test, monitored orgs + WQs, fed orgs JH JM

6-3-12 - Warmed sample, fed orgs, made dilutions, renewed test, monitored + WQs fed RJM DW

6-4-12 Warmed sample Am & Pm fed orgs, made dilutions, renewed test, monitored orgs WQs RJM JH

6/5/12 - Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, WQ, fed orgs JH, PB, NM, DW

6/6/12 Warmed sample, made dilutions, renewed test, monitored orgs, fed orgs, WQ NM, JH, DW, SW

6/7/12 monitored orgs + WQs, took down test JH JM

Project Number: 6067120062 Client: Rayonier Jesup Outfall 2 Test: 7 day Chronic *P. promelas* and *C. dubia*

DAILY LOG

5/31/12 - Received sample, warmed sample, checked-in sample, made dilutions, loaded test, monitored orgs, fed orgs, WQ NM, PB, JH

6/1/12 Warmed sample, fed orgs, made dilutions, renewed test, monitored orgs, WQ, fed orgs NM, DW, PB

6-2-12 Warmed samples, made dilutions, renewed test, monitored orgs, WQs, fed Am + Pm RJM, JH

6-3-12 Warmed samples, made dilutions, renewed + monitored orgs, WQs, fed Am + Pm RJM DW

6-4-12 Warmed samples, made dilutions, renewed, & monitored orgs, WQ's, fed Am + Pm RJM, JH

6/5/12 Warmed sample, fed orgs, made dilution, renewed test, monitored orgs, fed orgs, WQ NM, DW, JH, PB

6/6/12 Warmed sample, made dilutions, renewed test, monitored orgs, fed, orgs, WQ NM, DW, JH, PB

6/7/12 - monitored orgs to WQS, took down test

Outfall 1
Water Flea
Effluent Test

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 051
Revised: March 2012

SUBJECT: Ceriodaphnia dubia CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Ceriodaphnia dubia

ANIMAL HISTORY

LOT NUMBER: CD2012-0521

Date Neonates Collected: 5/31/12

See Page No.: 15 of Cladoceran Logbook

Age of Neonates: < 24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Type Lighting: Fluorescent
Dilution Water: 20%Perrier/80%MilliQ
Test Container: 30 mL plastic cup
Replicates per Concentration: 10
Test Temperature: 25 ± 1 °C
Dilution Water Batch Number: DMW: PD2012-9

Photoperiod: 16 light/8 dark
Solution Volume: 15 mL
Organisms per rep: 1
Feeding: Daily (see Daily Feeding Log) below
WaterBath /Incubator (Circle One)

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	0.29	0.58	1.16	2.32	4.64	
Volume of Dilution Water (ml)	200	199.42	198.84	197.68	195.36	190.72	
Volume of Effluent / Stock (ml)	0	0.58	1.16	2.32	4.64	9.28	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
In Holding	5/31/12	~~1030~~	NM	YTC/SC	0.1 mL of each
After Loading	5/31/12	~~1130~~	NM	YTC/SC	0.1 mL of each
1	6/1/12	~~1050~~	DW	YTC/SC	0.1 mL of each
2	6/2/12	~~1000~~	JH	YTC/SC	0.1 mL of each
3	6/3/12	~~0945~~	RJM	YTC/SC	0.1 mL of each
4	6/4/12	~~1045~~	RJM	YTC/SC	0.1 mL of each
5	6/5/12	~~1015~~	JH	YTC/SC	0.1 mL of each
6	6/6/12	~~1310~~	DW	YTC/SC	0.1 mL of each

TEST DATA RECORDED BY: RB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: DUBIA CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 1 — Project Number: 6067120062

Test Substance: WWTP Effluent — Test Species: Ceriodaphnia dubia

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.7		25.1		25.7		25.1		24.9		24.8		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0		
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	7.9	7.9	8.2	8.3	
	Alkalinity (mg of CaCO3)	75													
	Hardness (mg of CaCO3)	80													
	Conductivity (µmhos/cm)	175													
0.29	Temp (°C)	23.7	24.7		24.0		25.5		25.0		24.7		24.6		
	pH (su)	8.1	8.1		8.1		7.9		8.0		7.5		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.6	7.7	7.7	7.8	7.9	7.7	5.9	7.8	8.2	8.4	
0.58	Temp (°C)	23.5	24.7		24.0		25.6		25.0		24.8		24.6		
	pH (su)	8.1	8.1		8.1		7.9		8.1		7.6		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.6	7.8	7.7	7.8	7.9	7.7	6.1	7.7	8.2	8.4	
1.16	Temp (°C)	23.5	24.6		24.1		25.7		25.1		24.8		24.5		
	pH (su)	8.1	8.1		8.1		8.0		8.1		7.6		8.2		
	DO (mg/L)	8.1	7.9	7.9	7.6	7.8	7.6	7.8	7.9	7.7	6.2	7.7	8.1	8.3	
2.32	Temp (°C)	23.6	24.6		24.2		25.8		25.2		24.9		24.4		
	pH (su)	8.1	8.2		8.1		8.0		8.1		7.6		8.2		
	DO (mg/L)	7.8	8.0	7.9	7.8	7.5	7.6	7.6	7.8	7.7	6.1	7.7	8.0	8.3	
4.64	Temp (°C)	23.7	24.5		24.2		25.8		25.2		25.1		24.4		
	pH (su)	8.1	8.2		8.2		8.0		8.09		7.6		8.1		
	DO (mg/L)	7.5	7.9	7.8	7.7	7.5	7.5	7.7	7.7	7.6	6.2	7.6	7.8	8.0	
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	~~287~~ 286	~~>500~~ 78 SU			~~>500~~	281			~~>500~~	~~>500~~				
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	2340				~~3790~~	~~3910~~			~~3470~~	~~3470~~				
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS 15		FS15		
pH Meter		PH2	PH2		PH2		PH2		PH 2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4			SCT-4				SCT.4						
INITIALS:		NM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1640	1140		1315		1120		1250		1030		1235		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

Revised: March 2012

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc %	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	3	1	4	1	4	1	0	1	4	1	4	1	0	1	0	1	0
	4	1	6	1	0	1	7	1	7	1	6	1	10	1	10	1	5	1	6	1	7
	5	1	12	1	12	1	1	1	1	1	11	1	0	1	13	1	13	1	11	1	10
	6	1	15	1	14	1	13	1	15	1	12	1	14	1	0	1	10	1	16	1	18
	✓		33		29		25		27		29		28		27		28		33		35
0.29	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	0	1	5	1	5	1	0	1	6	1	1	1	0	1	0	1	0
	4	1	5	1	2	1	4	1	10	1	5	1	10	1	7	1	6	1	4	1	5
	5	1	13	1	11	1	3	1	0	1	8	1	17	1	1	1	0	1	16	1	12
	6	1	16	1	14	1	16	1	15	1	14	1	0	1	16	1	13	1	15	1	18
	✓		34		27		28		30		27		33		25		19		35		35
0.58	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	2	1	0	1	6	1	3	1	4	1	3	1	4	1	2	1	0	1	0
	4	1	0	1	4	1	9	1	10	1	11	1	12	1	9	1	10	1	4	1	6
	5	1	12	1	12	1	2	1	0	1	0	1	1	1	0	1	1	1	14	1	13
	6	1	20	1	14	1	17	1	16	1	16	1	18	1	18	1	15	1	14	1	15
	✓		34		30		34		29		31		34		~~32~~ 31		28		32		34

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7
INITIALS	NM	DW	JH	RJM	RJM	JH	DW	
DATE	5/31/12	6/1/12	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12	
TIME	1120	1045	1010	0940	1040	1010	1300	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 1
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
1.16	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	0	1	5	1	5	1	5	1	6	1	5	1	0	1	0	1	0
	4	1	2	1	6	1	10	1	10	1	10	1	8	1	7	1	3	1	6	1	4
	5	1	12	1	9	1	0	1	0	1	0	1	0	1	0	1	5	1	11	1	9
	6	1	16	1	17	1	15	1	17	1	15	1	22	1	18	1	10	1	16	1	15
	✓		35		32		30		32		30		36		30		18		33		28
2.32	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	8	1	4	1	6	1	7	1	3	1	4	1	5	1	0	1	0	1	0
	4	1	1	1	1	1	10	1	0	1	16	1	9	1	8	1	7	1	6	1	6
	5	1	17	1	11	1	0	1	14	1	0	1	0	1	0	1	13	1	12	1	14
	6	1	20	1	17	1	14	1	21	1	19	1	17	1	19	1	18	1	18	1	18
	✓		46		33		30		42		32		30		32		~~51~~ 38		36		38
4.64	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	5	1	7	1	5	1	6	1	5	1	0	1	0	1	0
	4	1	4	1	1	1	10	1	0	1	6	1	9	1	9	1	6	1	4	1	7
	5	1	10	1	9	1	0	1	6	1	0	1	0	1	0	1	14	1	12	1	10
	6	1	15	1	19	10	0	1	19	1	18	1	17	1	17	1	16	1	11	1	15
	✓		29		33	X	15		32		29		32		31		36		27		32

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JH JA	DW	RJM	DW	SW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4	6/5/12	6/6/12			
TIME	1600	1035	1010	0940	1040	1010	1200			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

CETIS Summary Report

Report Date: 06 Jun-12 14:26 (p 1 of 1)
Test Code: 03-0447-1329/W12-MAY-RAY1-CD

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Dilute Mineral Water
Ending Date:	06 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample ID:	08-0111-7024	**Code:**	2FC01360	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-4081-5485	7d Survival Rate	4.64	>4.64	N/A	N/A	21.55	Fisher Exact/Bonferroni-Holm Test
21-2510-4991	Reproduction	4.64	>4.64	N/A	15.58%	21.55	Steel Many-One Rank Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
12-4081-5485	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Result Within Limits
21-2510-4991	Reproduction	Control Resp	29.4	15 - NL	Yes	Result Within Limits
21-2510-4991	Reproduction	PMSD	0.1556	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	1	1	1	1	1	0	0	0.0%	0.0%
0.29		10	1	1	1	1	1	0	0	0.0%	0.0%
0.58		10	1	1	1	1	1	0	0	0.0%	0.0%
1.16		10	1	1	1	1	1	0	0	0.0%	0.0%
2.32		10	1	1	1	1	1	0	0	0.0%	0.0%
4.64		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	29.4	28.2	30.6	25	35	0.585	3.204	10.9%	0.0%
0.29		10	27.3	25.68	28.92	19	34	0.7937	4.347	15.92%	7.14%
0.58		10	31.7	30.85	32.55	28	34	0.4132	2.263	7.14%	-7.82%
1.16		10	30.4	28.54	32.26	18	36	0.9117	4.993	16.43%	-3.4%
2.32		10	35.7	33.71	37.69	30	46	0.9739	5.334	14.94%	-21.43%
4.64		10	29.6	27.47	31.73	15	36	1.041	5.7	19.26%	-0.68%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
0.29		1	1	1	1	1	1	1	1	1	1
0.58		1	1	1	1	1	1	1	1	1	1
1.16		1	1	1	1	1	1	1	1	1	1
2.32		1	1	1	1	1	1	1	1	1	1
4.64		1	1	0	1	1	1	1	1	1	1

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	29	25	27	29	28	27	28	33	35
0.29		34	27	28	30	27	33	25	19	25	25
0.58		34	30	34	29	31	34	31	28	32	34
1.16		35	32	30	32	30	36	30	18	33	28
2.32		46	33	30	42	32	30	32	38	36	38
4.64		29	33	15	32	29	32	31	36	27	32

Analyst: DD QA: PB

Outfall 1
Fathead Minnow
Effluent Test

SUBJECT: FATHEAD MINNOW CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 1

Project Number: 6067120062

Test Substance: WWTP Effluent

Test Species: Pimephales promelas

ANIMAL HISTORY

LOT NUMBER: 2012-45

Date of Hatch: 5/29/12

See Page No. NA of Fish Holding Log for Larvae History

Source of Larvae: Hydrosphere

See Page No. 12 of Animal Receipt Log

Condition of Larvae: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 Method 1000.0

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Dilution Water: synthetic mod-hard water

Solution Volume: 250 mL

Test Container: 600 mL beaker

Organisms per rep: 10

Replicates per Concentration: 4

Feeding: Daily (see Daily Feeding Log)

Test Temperature: 25 ± 1 °C

WaterBath / Incubator (Circle One)

Dilution Water Batch Number: MHW20120524

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	0.29	0.58	1.16	2.32	4.64	
Volume of Dilution Water (ml)	1000	997.1	994.2	988.4	976.8	953.6	
Volume of Effluent / Stock (ml)	0	2.9	5.8	11.6	23.2	46.4	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
0	5/31/12	1200	JH	BS	2.0 mL
		1630	JH		
1	6/1/12	0800	PB	BS	0.2 mL
		1630	PB		
2	6/2/12	0845	RJM	BS	0.2 mL
		1500	JH		
3	6-3-12	0900	RJM	BS	0.2 mL
		1215	RJM		
4	6/4/12	~~PB~~ 0745	~~07~~ 0745 PB	BS	0.2 mL
		1650	PB		
5	6/5/12	0720	DB	BS	0.2 mL
		1540	RJM		
6	6/6/12	0630	NM	BS	0.2 mL
		1530	PB		

PB 5/4/12

TEST DATA RECORDED BY: PB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 1 — **Project Number: 6067120062**

Test Substance: WWTP Effluent — **Test Species: Pimephales promelas**

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	25.0	24.1		24.9		25.6		25.3		25.0		24.3		24.5
	pH (su)	7.8	7.9		7.9	7.8	7.7		7.5		7.5		8.2		8.0
	DO (mg/L)	8.2	6.6	8.1	7.0	8.1	5.4	7.8	6.1	7.7	7.2	7.8	8.3	7.9	8.1
	Alkalinity (mg of CaCO3)	63.6													
	Hardness (mg of CaCO3)	79.8													
	Conductivity (µmhos/cm)	269													
0.29	Temp (°C)	24.0	24.3		24.7		25.6		25.0		25.1		24.4		24.4
	pH (su)	8.2	7.8		7.8	7.7	7.6		7.5		7.6		8.1		8.0
	DO (mg/L)	8.0	6.5	8.0	7.0	8.0	5.5	7.8	5.9	7.7	7.0	7.6	8.2	7.9	8.1
0.58	Temp (°C)	23.9	24.3		24.6		25.7		25.0		25.1		24.4		24.3
	pH (su)	8.1	7.8		7.8		7.5		7.5		7.6		8.1		8.0
	DO (mg/L)	8.1	6.8	8.1	7.1	7.8	5.5	7.8	5.9	7.7	7.5	7.4	8.2	7.9	8.1
1.16	Temp (°C)	23.1	24.2		24.6		25.5		25.0		24.9		24.4		24.2
	pH (su)	8.1	7.9		7.9		7.6		7.5		7.6		8.1		7.9
	DO (mg/L)	8.0	7.1	8.0	7.5	7.7	5.7	7.8	5.9	7.6	6.6	7.5	8.1	7.9	7.9
2.32	Temp (°C)	23.7	24.2		24.6		25.5		25.0		24.8		24.4		24.3
	pH (su)	8.1	7.9		7.9		7.6		7.6		7.5		8.1		7.9
	DO (mg/L)	7.8	7.0	7.9	7.1	7.7	5.5	7.8	6.0	7.6	6.9	7.5	8.0	8.0	7.8
4.64	Temp (°C)	23.7	24.1		24.6		25.7		25.1		24.8		24.6		24.4
	pH (su)	8.0	7.9		8.0		7.6		7.6		7.6		8.1		8.0
	DO (mg/L)	7.8	7.2	7.7	7.5	7.8	5.7	7.7	6.1	7.5	6.4	7.3	7.9	7.8	8.1
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	291				281				242					
	Hardness (mg of CaCO3)	NA				NA				NA					
	Conductivity (µmhos/cm)	234				2340				2280					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		FS-15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
Conductivity Meter					SCT-4				SCT-4						
INITIALS:		MM	DW		KJM		DW		KJM		PB		SW		SW
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1635	1150		1325		1175		1255		1030		1250		1115

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

AMEC
Newberry, FC

QA Form Number 105C
August 2008

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 1						Project Number: 6067120062								Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6-3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: _%_	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10 loaded		10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1390	1.1463
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1385	1.1451
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1384	1.1450
	D			10	N	10	N	10	N	10	N	9	D	9	N	9	N	1.1567	1.1620
	E																		
	F																		
0.29	A			10	N	10	N	9	D	10	N	10	N	10	N	10	N	1.1330	1.1419
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1282	1.1363
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1472	1.1551
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1420	1.1497
	E																		
	F																		
0.58	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1481	1.1565
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1360	1.1425
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1332	1.1419
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1389	1.1465
	E																		
	F																		
1.16	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1527	1.1603
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1485	1.1575
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1447	1.1538
	D			9	D	9	N	9	N	9	N	9	N	9	N	9	N	1.1522	1.1613
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1530	DW	1050	JH	1300	RJM	1050	JM	1130	WM	0925	JM	1130	JH	0910	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead Obs.= Observation

AMEC
Newberry, FL

QA Form Number 105C
August 2008

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 1						Project Number: 6067120062								Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
2.32	A	10	loaded	8	2D	8	N	8	N	8	N	8	N	8	N	7	1D	1.1434	1.1490
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1597	1.1694
	C			10	N	10	N	10	N	9	1D	9	N	9	N	9	N	1.1617	1.1690
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1447	1.1537
	E																		
	F																		
64	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1428	1.1520
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1419	1.1501
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1438	1.1540
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1450	1.1535
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1530	DW	1100	JH	1215	DW	1115	JH	1125	MM	0925	JH	1130	JH	0920	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

Comments:

CETIS Summary Report

Report Date: 12 Jun-12 07:45 (p 1 of 1)
Test Code: 18-3045-9568/W12-MAY-RAY1-PP

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	08-0111-7024	**Code:**	2FC01360	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
09-3847-9977	7d Survival Rate	4.64	>4.64	N/A	10.11%	21.55	Steel Many-One Rank Test
17-5128-6991	Mean Dry Biomass-mg	4.64	>4.64	N/A	27.75%	21.55	Dunnett's Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
09-3847-9977	7d Survival Rate	Control Resp	0.975	0.8 - NL	Yes	Result Within Limits
17-5128-6991	Mean Dry Biomass-mg	Control Resp	0.645	0.25 - NL	Yes	Result Within Limits
17-5128-6991	Mean Dry Biomass-mg	PMSD	0.2775	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
0.29		4	1	1	1	1	1	0	0	0.0%	-2.56%
0.58		4	1	1	1	1	1	0	0	0.0%	-2.56%
1.16		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
2.32		4	0.9	0.8472	0.9528	0.7	1	0.02582	0.1414	15.71%	7.69%
4.64		4	1	1	1	1	1	0	0	0.0%	-2.56%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.645	0.6138	0.6762	0.53	0.73	0.01524	0.08347	12.94%	0.0%
0.29		4	0.815	0.7954	0.8346	0.77	0.89	0.009604	0.0526	6.45%	-26.36%
0.58		4	0.78	0.7433	0.8167	0.65	0.87	0.01795	0.09832	12.61%	-20.93%
1.16		4	0.87	0.8426	0.8974	0.76	0.91	0.01342	0.07348	8.45%	-34.88%
2.32		4	0.79	0.7215	0.8585	0.56	0.97	0.0335	0.1835	23.23%	-22.48%
4.64		4	0.9025	0.8693	0.9357	0.82	1.02	0.01622	0.08883	9.84%	-39.92%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	0.9
0.29		1	1	1	1
0.58		1	1	1	1
1.16		1	1	1	0.9
2.32		0.7	1	0.9	1
4.64		1	1	1	1

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.73	0.66	0.66	0.53
0.29		0.89	0.81	0.79	0.77
0.58		0.84	0.65	0.87	0.76
1.16		0.76	0.9	0.91	0.91
2.32		0.56	0.97	0.73	0.9
4.64		0.92	0.82	1.02	0.85

Analyst: PD QA: PB

Outfall 2
Water Flea
Effluent Test

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 051
Revised: March 2012

SUBJECT: Ceriodaphnia dubia CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Ceriodaphnia dubia

ANIMAL HISTORY

LOT NUMBER: CA20120521

Date Neonates Collected: 5/31/12

See Page No.: 15 of Cladoceran Logbook

Age of Neonates: < 24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Type Lighting: Fluorescent
Dilution Water: 20%Perrier/80%MilliQ
Test Container: 30 mL plastic cup
Replicates per Concentration: 10
Test Temperature: 25 ± 1 °C
Dilution Water Batch Number: PD2012-9

Photoperiod: 16 light/8 dark
Solution Volume: 15 mL
Organisms per rep: 1
Feeding: Daily (see Daily Feeding Log) below
WaterBath / Incubator (Circle One)

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	1.39	2.79	5.57	11.14	28.28	
Volume of Dilution Water (ml)	200	197.22	194.42	188.86	177.72	143.44	
Volume of Effluent / Stock (ml)	0	2.78	5.58	11.14	22.28	56.56	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
In Holding	5/31/12	~~1045~~	JH	YTC/SC	0.1 mL of each
After Loading	5/31/12	~~1230~~	NM	YTC/SC	0.1 mL of each
1	6/1/12	~~1030~~	DW	YTC/SC	0.1 mL of each
2	6/2	~~1025~~	JH	YTC/SC	0.1 mL of each
3	6/3	~~1010~~	RJM	YTC/SC	0.1 mL of each
4	6/4	~~1100~~	RJM	YTC/SC	0.1 mL of each
5	6/5	~~0955~~	JH	YTC/SC	0.1 mL of each
6	6/6	~~1330~~	DW	YTC/SC	0.1 mL of each

TEST DATA RECORDED BY: PB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: DUBIA CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 2 — Project Number: 6067120062

Test Substance: WWTP Effluent — Test Species: Ceriodaphnia dubia

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.7		25.1		25.7		25.1		24.6		24.8		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0		
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	8.0	7.8	8.2	8.3	
	Alkalinity (mg of CaCO3)	75													
	Hardness (mg of CaCO3)	80													
	Conductivity (µmhos/cm)	175													
1.39	Temp (°C)	23.8	24.2		24		25.9		25.1		24.6		24.2		
	pH (su)	8.1	8.2		8.2		8.1		8.1		8.0		8.2		
	DO (mg/L)	8.0	7.9	7.9	7.9	7.8	7.7	7.8	7.7	7.7	8.0	7.8	8.1	8.3	
2.79	Temp (°C)	23.4	24.4		24.2		25.9		25.2		24.6		24.2		
	pH (su)	8.2	8.2		8.2		8.1		8.1		8.0		8.3		
	DO (mg/L)	8.2	7.9	7.9	7.9	7.8	7.7	7.8	7.8	7.8	7.9	7.7	8.2	8.5	
5.57	Temp (°C)	23.2	24.4		24.3		26.1		25.2		24.6		24.1		
	pH (su)	8.2	8.3		8.3		8.2		8.2		8.0		8.3		
	DO (mg/L)	8.2	7.9	7.9	7.9	7.8	7.7	7.8	7.8	7.8	7.8	7.8	8.2	8.3	
11.14	Temp (°C)	23.2	24.5		24.3		26.1		25.3		24.8		24.2		
	pH (su)	8.3	8.4		8.4		8.3		8.3		8.1		8.4		
	DO (mg/L)	8.1	7.9	7.7	7.9	7.8	7.6	7.7	7.8	7.8	7.8	7.7	8.1	8.3	
28.28	Temp (°C)	23.4	24.5		24.3		26.1		25.3		24.9		24.4		
	pH (su)	8.4	8.6		8.6		8.5		8.5		8.2		8.5		
	DO (mg/L)	7.6	7.7	7.3	7.8	7.6	7.5	7.3	7.7	7.4	7.8	7.6	7.9	8.2	
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	7500				7500				7500					
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	3790				3790				3790					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS15		
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4			SCT4				SCT4						
INITIALS:		MM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1625	1145		1315		1125		1250		1035		1240		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

Revised: March 2012

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc %	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	3	1	4	1	4	1	3	1	6	1	6	1	0	1	3
	4	1	0	1	3	1	1	1	9	1	7	1	10	1	6	1	0	1	3	1	2
	5	1	9	1	9	1	3	1	0	1	1	1	7	1	9	1	9	1	10	1	8
	6	1	13	1	15	1	11	1	18	1	13	1	4	1	11	1	14	1	15	1	13
	Σ		22		31		18		31		25		24		26		29		28		26
1.39	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	4	1	3	1	3	1	2	1	5	1	4	1	3	1	0	1	3	1	3
	4	1	0	1	1	1	8	1	14	1	9	1	6	1	3	1	6	1	1	1	0
	5	1	13	1	13	1	0	1	0	1	4	1	0	1	12	1	13	1	12	1	8
	6	1	20	1	18	1	17	1	16	1	19	1	21	1	15	1	17	1	16	1	15
	Σ		37		35		28		32		18		31		33		36		32		26
2.79	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	0	1	3	1	2	1	4	1	6	1	0	1	0	1	0	1	0
	4	1	16	1	6	1	12	1	10	1	6	1	7	1	5	1	4	1	4	1	0
	5	1	0	1	8	1	1	1	0	1	0	1	1	1	10	1	12	1	11	1	13
	6	1	21	1	19	1	19	1	15	1	17	1	13	1	16	1	17	1	16	1	16
	Σ		42		33		35		27		27		27		31		33		31		35

TEST DAY	0	1	2	3	4	5	6	7
INITIALS	NM	DW	JH	RJM	RJM	JH	DW	
DATE	5/31/12	6/1/12	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12	
TIME	1500	1025	1020	1005	1055	0950	1320	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

DW
6/1

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent
Project Number: 6067120062

Test Species: Ceriodaphnia dubia

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
5.57	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	6	1	5	1	5	1	6	1	5	1	0	1	0	1	0	1	4
	4	1	4	1	9	1	11	1	13	1	4	1	11	1	6	1	6	1	5	1	0
	5	1	10	1	0	1	0	1	0	1	4	1	1	1	10	1	11	1	10	10	12
	6	1	16	1	19	1	21	1	17	1	14	1	18	1	20	1	23	1	16		
	✓		17		34		37		~~34~~ 35		28		35		36		40		31		16
11.14	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	10	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	5	1	6	1	5		DW 4/3	1	~~6~~ 2	1	~~0~~ 6	1	0	1	0	1	0	1	0
	4	1	0	1	12	1	6			1	0	1	8	1	6	1	0	1	6	1	6
	5	1	8	1	0	1	0			1	6	1	0	1	6	1	9	1	11	1	13
	6	1	15	1	16	1	18			1	10	1	18	1	15	1	17	1	22	1	14
	✓		28		34		29				18		32		27		26		39		33
25.28	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	4	1	6	1	4	1	3	1	5	1	0	1	2	1	0	1	3
	4	1	0	1	7	1	7	1	9	1	0	1	9	1	5	1	1	1	3	1	0
	5	1	0	1	2	1	0	1	0	1	7	1	0	1	8	1	10	1	11	1	9
	6	1	5	1	18	1	16	1	14	1	15	1	18	1	13	1	12	1	12	1	16
	✓		5		31		29		27		25		32		26		25		26		28

PB 6/6/12

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JM	DW	JH	DW	SW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4/12	6/5/12	6/6/12			
TIME	1500	1035	1015	1005	1055	1055	1320			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

CETIS Summary Report

Report Date: 06 Jun-12 14:28 (p 1 of 1)
Test Code: 15-3642-3444/W12-MAY-RAY2-CD

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	31 May-12	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Dilute Mineral Water
Ending Date:	06 Jun-12	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	6d 0h	Source:	In-House Culture	Age:	

Sample ID:	00-8374-6737	Code:	4FDDFB1	Client:	Rayonier
Sample Date:	30 May-12	Material:	Pulp Mill Effluent	Project:	6067120062
Receive Date:	30 May-12	Source:	Rayonier		
Sample Age:	24h	Station:	Outfall#2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-8724-3623	7d Survival Rate	28.28	>28.28	N/A	N/A	3.536	Fisher Exact/Bonferroni-Holm Test
12-3263-0826	Reproduction	28.28	>28.28	N/A	28.49%	3.536	Steel Many-One Rank Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-8724-3623	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Result Within Limits
12-3263-0826	Reproduction	Control Resp	26	15 - NL	Yes	Result Within Limits
12-3263-0826	Reproduction	PMSD	0.2849	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	1	1	1	1	1	0	0	0.0%	0.0%
1.39		10	1	1	1	1	1	0	0	0.0%	0.0%
2.79		10	1	1	1	1	1	0	0	0.0%	0.0%
5.57		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%
11.14		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	10.0%
28.28		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	26	24.49	27.51	18	31	0.7404	4.055	15.6%	0.0%
1.39		10	30.8	28.7	32.9	18	37	1.028	5.633	18.29%	-18.46%
2.79		10	32.1	30.35	33.85	27	42	0.854	4.677	14.57%	-23.46%
5.57		10	30.9	27.82	33.98	16	40	1.507	8.252	26.71%	-18.85%
11.14		10	26.6	22.53	30.67	0	39	1.989	10.9	40.96%	-2.31%
28.28		10	25.4	22.58	28.22	5	32	1.38	7.56	29.76%	2.31%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
1.39		1	1	1	1	1	1	1	1	1	1
2.79		1	1	1	1	1	1	1	1	1	1
5.57		1	1	1	1	1	1	1	1	1	0
11.14		1	1	1	0	1	1	1	1	1	1
28.28		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	22	31	18	31	25	24	26	29	28	26
1.39		37	35	28	32	18	31	33	36	32	26
2.79		42	33	35	27	27	27	31	33	31	35
5.57		17	34	37	35	28	35	36	40	31	16
11.14		28	34	29	0	18	32	27	26	39	33
28.28		5	31	29	27	25	32	26	25	26	28

Analyst: [illegible] QA: PB

Outfall 2
Fathead Minnow
Effluent Test

SUBJECT: FATHEAD MINNOW CHRONIC TEST - COVER

Client: Rayonier Jesup Outfall 2
Test Substance: WWTP Effluent

Project Number: 6067120062
Test Species: Pimephales promelas

ANIMAL HISTORY

LOT NUMBER: 2012-45

Date of Hatch: 5/30/12

See Page No.: 12 of Fish Holding Log for Larvae History

Source of Larvae: Hydrosphere

See Page No.: NA of Animal Receipt Log

Condition of Larvae: Good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 Method 1000.0

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Dilution Water: synthetic mod-hard water

Solution Volume: 250 mL

Test Container: 600 mL beaker

Organisms per rep: 10

Replicates per Concentration: 4

Feeding: Daily (see Daily Feeding Log)

Test Temperature: 25 ± 1 °C

WaterBath /Incubator (Circle One)

Dilution Water Batch Number: MHW20120524

For Effluent Sample Information, See Page Number _____ of Effluent Receipt Log

TEST CONCENTRATION %	Control	1.39	2.79	5.57	11.14	28.28	
Volume of Dilution Water (ml)	1000	986.1	972.1	944.3	888.6	717.2	
Volume of Effluent / Stock (ml)	0	13.9	27.9	55.7	111.4	282.8	

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY
0	5/31/12	1200	JH	BS	2.0 mL
		1645	JH		
1	6/1/12	0800	PB	BS	0.2 mL
		1630	PB		
2	6-2-12	0845	RJM	BS	0.2 mL
		1400	JH		
3	6-3-12	0800	RJM	BS	0.2 mL
		1215	RJM		
4	6-4-12	0745	RB	BS	0.2 mL
		1650	RB		
5	6-5-12	0650	DD	BS	0.2 mL
		1540	RJM		
6	6/6/12	0630	DD	BS	0.2 mL
		1530	PB		

TEST DATA RECORDED BY: PB DATE: 6/8/12

AMEC Environment & Infrastructure, Inc.
Newberry, Florida

QA Form Number: 055
Revised: March 2012

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

Client: Rayonier Jesup Outfall 2 — **Project Number:** 6067120062

Test Substance: WWTP Effluent — **Test Species:** Pimephales promelas

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
100%	pH (su) prior test solution made														
CTRL (0)	Temp (°C)	24.9	24.1		~~25.1~~	24.4	25.6		25.3		24.5		24.3		24.5
	pH (su)	7.8	7.9		~~8.1~~	7.9	7.7		7.5		7.8		8.2		8.0
	DO (mg/L)	8.2	6.6	8.1	7.8	7.8	5.4	7.8	6.1	7.7	7.2	7.9	8.3	7.9	8.1
	Alkalinity (mg of CaCO3)	62.6													
	Hardness (mg of CaCO3)	79.8													
	Conductivity (µmhos/cm)	269													
1.39	Temp (°C)	23.9	23.9		~~24.0~~	24.4	25.4		25.0		24.2		24.6		24.3
	pH (su)	8.3	8.1		~~8.2~~	7.97	7.6		7.7		7.6		8.2		8.1
	DO (mg/L)	8.0	7.3	7.7	~~7.9~~	~~7.8~~	6.0	7.6	6.7	7.6	6.3	7.7	8.1	7.1	8.3
2.79	Temp (°C)	23.9	23.7		~~24.2~~	24.6	25.4		25.0		24.4		24.5		24.3
	pH (su)	8.2	8.1		~~8.2~~	7.97	7.6		7.7		7.6		8.2		8.1
	DO (mg/L)	8.2	7.2	7.8	~~7.9~~	~~7.8~~	5.8	7.8	6.4	7.7	6.3	7.7	8.1	7.7	8.1
5.57	Temp (°C)	23.9	23.8		~~24.3~~	24.6	25.3		25.0		24.5		24.4		24.2
	pH (su)	8.2	8.1		~~8.3~~	7.97	7.7		7.8		7.6		8.2		8.1
	DO (mg/L)	8.1	7.3	7.8	~~7.9~~	~~7.8~~	5.9	7.7	6.2	7.7	6.4	7.7	8.1	7.6	8.2
11.14	Temp (°C)	23.6	23.8		~~24.7~~	24.5	25.3		25.0		24.6		24.4		24.3
	pH (su)	8.3	8.3		~~8.4~~	7.97	7.9		7.9		7.7		8.3		8.3
	DO (mg/L)	7.9	7.3	7.5	~~7.9~~	~~7.8~~	5.8	7.7	6.2	7.6	6.3	7.7	8.1	7.9	8.3
28.28	Temp (°C)	23.7	24.0		~~24.3~~	24.5	25.5		25.1		24.8		24.5		24.4
	pH (su)	8.5	8.5		8.6	7.99	8.2		8.2		7.7		8.4		8.5
	DO (mg/L)	7.4	6.9	7.3	~~7.8~~	~~7.6~~	5.8	7.2	6.2	7.3	6.1	7.6	7.9	7.8	8.1
	Alkalinity (mg of CaCO3)														
	Hardness (mg of CaCO3)														
	Conductivity (µmhos/cm)														
WQ in New Sample															
100% (new sample)	Alkalinity (mg of CaCO3)	7500				7500				7500					
	Hardness (mg of CaCO3)	N/A				N/A				N/A					
	Conductivity (µmhos/cm)	3790				3790				3790					
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS 15		FS-15		FS15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
Conductivity Meter		SCT4			SCT-4				SCT-4						
INITIALS:		NM	DW		KJM		DW		RJM		PB		SW		SW
DATE:		5/31/12 5/25	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1825	1200		1315		1135		1255		1035		1255		1120

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 2 | **Project Number:** 6067120062 | **Test Substance:** WWTP Effluent

		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6-3	4	6/4	5	6/5	6	6/6	7	6-7	6/4/12	6/8/12
Treatment, unit: _%_	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10	loaded	10	N	10	N	~~9~~ 10	~~10~~ N	10	N	10	N	10	N	10	N	1.1504	1.1578
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1473	1.1543
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1347	1.1412
	D			10	N	10	N	9	10	9	N	9	N	~~10~~ 9	N	9	N	1.1060	1.1139
	E																		
	F																		
1.39	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1395	1.1473
	B			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1476	1.1526
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1401	1.1466
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1312	1.1374
	E																		
	F																		
2.79	A			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1436	1.1514
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1444	1.1525
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1465	1.1553
	D			10	N	10	N	9	10	9	N	9	N	9	N	9	N	1.1454	1.1532
	E																		
	F																		
5.57	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1439	1.1491
	B			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 10	~~10~~ N	1.1732	1.1788
	C			10	N	10	N	10	N	10	N	10	N	10	N	~~10~~ 9	~~N~~ 10	1.1958	~~1.1~~ 1.2018
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1369	1.1441
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1540	DW	1100	JH	1245	DW	1100	JH	1145	PB	0830	MM	1115	RJM	0915	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead Obs.= Observation

RJM
6-7-12
entered wrong

AMEC
Newberry, FL

QA Form Number 105C
August 2008

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Client: Rayonier Jesup Outfall 2						Project Number: 6067120062								Test Substance: WWTP Effluent					
		Test Day	Date.	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6-7	6/4/12	6/8/12
Treat-ment, unit: __%__	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
11.14	A	10 loaded		10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1470	1.1541
	B			10	N	10	N	10	N	10	N	10	N	10	N	10-9	10	1.1552	1.1609
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1379	1.1451
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1293	1.1385
	E																		
	F																		
26.28	A			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1730	1.1792
	B			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1705	1.1778
	C			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1476	1.1543
	D			10	N	10	N	10	N	10	N	10	N	10	N	9	10	1.1751	1.1825
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1500	DW	1100	JM	1230	DW	1100	JH	1145	PB	0830	NM	1115	RM	0915	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

Comments:

RJM 6-7-12
Entered wrong
#

CETIS Summary Report

Report Date: 12 Jun-12 07:50 (p 1 of 1)
Test Code: 05-9031-8924/W12-MAY-RaY2-PP

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	00-8374-6737	**Code:**	4FDDFB1	**Client:**	Rayonier
Sample Date:	30 May-12	**Material:**	Pulp Mill Effluent	**Project:**	6067120062
Receive Date:	30 May-12	**Source:**	Rayonier		
Sample Age:	24h	**Station:**	Outfall#2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-1080-1287	7d Survival Rate	28.28	>28.28	N/A	8.97%	3.536	Steel Many-One Rank Test
02-0874-0521	Mean Dry Biomass-mg	28.28	>28.28	N/A	21.65%	3.536	Dunnett's Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
16-1080-1287	7d Survival Rate	Control Resp	0.975	0.8 - NL	Yes	Result Within Limits
02-0874-0521	Mean Dry Biomass-mg	Control Resp	0.72	0.25 - NL	Yes	Result Within Limits
02-0874-0521	Mean Dry Biomass-mg	PMSD	0.2165	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
1.39		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
2.79		4	0.95	0.9284	0.9716	0.9	1	0.01054	0.05774	6.08%	2.56%
5.57		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
11.14		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	0.0%
28.28		4	0.925	0.9063	0.9437	0.9	1	0.009129	0.05	5.41%	5.13%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.72	0.6978	0.7422	0.65	0.79	0.01085	0.05944	8.26%	0.0%
1.39		4	0.6375	0.5946	0.6804	0.5	0.78	0.021	0.115	18.04%	11.46%
2.79		4	0.8125	0.7949	0.8301	0.78	0.88	0.008613	0.04717	5.81%	-12.85%
5.57		4	0.6	0.5677	0.6323	0.52	0.72	0.01578	0.08641	14.4%	16.67%
11.14		4	0.73	0.6762	0.7838	0.57	0.92	0.02629	0.144	19.72%	-1.39%
28.28		4	0.69	0.6691	0.7109	0.62	0.74	0.01022	0.05598	8.11%	4.17%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	0.9
1.39		1	0.9	1	1
2.79		0.9	1	1	0.9
5.57		1	1	0.9	1
11.14		1	0.9	1	1
28.28		0.9	1	0.9	0.9

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.74	0.7	0.65	0.79
1.39		0.78	0.5	0.65	0.62
2.79		0.78	0.81	0.88	0.78
5.57		0.52	0.56	0.6	0.72
11.14		0.71	0.57	0.72	0.92
28.28		0.62	0.73	0.67	0.74

Analyst: QA: PB

Water Flea
Reference Toxicant Test

SUBJECT: CERIODAPHNIA CHRONIC TEST - COVER

Sponsor: REFERENCE TOXICANT TEST

Test Substance: NaCL

Test Species: *Ceriodaphnia dubia*

ANIMAL HISTORY

LOT NUMBER: CD20120521

Date Neonates Collected: 5/31/12

See Page 15 of Cladoceran Neonate History Log

Age of Neonates (hours): <24 hours

Condition of Neonates: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1002.0

Dilution Water: 20%Perrier/80%MilliQ

Dilution Water Batch Number:

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Test Container: 30 mL Plastic Beaker

Solution Volume: 15 mL

Replicates per Concentration: 10

Organisms per rep: 1

Test Temperature: 25 ± 1 °C

WaterBath/ Incubator (circle one)

PB 5/31/12

TEST SOLUTION PREPARATION .10 g NaCl /L of dilution water Reftox Batch # ~~PB~~ NACL 2012-24

TEST CONCENTRATION % g/L	Control	0.125	0.25	0.50	1	2	4
Volume of dilution Water Added (ml)	1400.00	1382.50	1365.00	1330.00	1260.00	1120.00	420.00
Volume of Effluent / Stock Added (ml)	---	17.50	35.00	70.00	140.00	280.00	280.00

TEST VALIDITY CRITERIA

Percent of Surviving Female Adults with 3 Broods in Control: 80%

Percent Survival of Control Adults: 90 %

Mean Number of Neonates per Adult Female in Control: 21.5

TEST SUMMARY

Test Concentration (g/L)	Number of Neonates	Number of Broods	Adult C. dubia No. Alive	Adult C. dubia No. Dead	Number of Males	Neonates Per Adult	Brood per Adult
CONTROL	215		9	1		21.5	
0.125	270		10	0		27	
0.25	250		10	0		25	
0.5	251		9	1		25.1	
1	160		9	1		16	
2	15		5	5		1.5	
4	0		0	10		0	

Additional Comments:

TEST DATA RECORDED BY: PB DATE: 6/8/12

TEST SUMMARY RECORDED BY: PB DATE: 6/8/12

SUBJECT: REFERENCE TOXICANT TEST - WATER QUALITY

REFERENCE TOXICANT TEST

Test Substance: NaCl

Test Species: Ceriodaphnia dubia

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
CTRL (0)	Temp (°C)	24.9	24.7		25.1		25.7		25.1		24.9		24.3		
	pH (su)	8.0	8.0		8.1		7.7		7.9		7.9		8.0	8.4	
	DO (mg/L)	8.1	7.9	8.0	7.8	7.8	7.7	7.8	7.7	7.7	7.9	7.9	~~8.4~~	~~8.2~~	
	Alkalinity												~~8.0~~	6/13	
	Hardness												8.7	SW	
	Conductivity														
0.125	Temp (°C)	24.2	24.2		24.1		25.2		24.5		24.2		26.0		
	pH (su)	8.1	8.0		8.0		8.0		8.0		8.0		7.8		
	DO (mg/L)	8.0	7.8	7.9	7.8	8.0	7.7	7.8	8.0	8.0	8.0	8.0	8.4	8.4	
0.25	Temp (°C)	24.1	24.2		23.9		25.5		24.4		24.1		25.8		
	pH (su)	8.2	8.1		8.1		8.1		8.1		8.1		8.2		
	DO (mg/L)	8.1	7.8	8.0	7.8	8.0	7.8	7.7	8.0	8.0	8.0	8.0	8.4	8.3	
0.5	Temp (°C)	24.1	24.3		23.6		25.6		24.5		24.3		25.7		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.1		8.2		
	DO (mg/L)	8.1	7.8	8.1	7.8	8.1	7.7	7.9	8.0	8.0	8.0	8.0	8.4	8.3	
1	Temp (°C)	24.2	24.3		23.6		25.7		24.5		24.3		25.5		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.0		8.2		
	DO (mg/L)	8.1	7.9	8.0	7.7	8.1	7.6	7.9	8.0	8.0	8.0	8.1	8.4	8.4	
2	Temp (°C)	24.2	24.3		23.7		25.8		24.6		24.2		25.5		
	pH (su)	8.1	8.1		8.1		8.1		8.1		8.0		8.0		
	DO (mg/L)	8.1	7.8	8.1	7.7	8.1	7.8	7.9	8.0	8.1	8.0	8.0	8.2	8.4	
4	Temp (°C)														
	pH (su)														
	DO (mg/L)		7.7												
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		
Conductivity Meter		SCT4													
INITIALS:		NM	DW		RJM		DW		RJM		PB		SW		
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		
TIME:		1540	1205		1335		1140		1305		1050		1355		

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos cm

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc (mg/L)	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
Control 0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	2	1	5	1	2	1	3	1	0	1	5	1	4	1	4	1	0	1	1
	4	1	1	1	0	1	3	1	0	1	4	1	8	1	6	1	10	1	3		
	5	1	8	1	10	1	10	1	12	1	5	1	0	1	1	1	12	1	0		
	6	1	15	1	12	1	10	1	13	1	13	1	12	1	14	1	0	1	8		
	/		27		27		25		28		22		25		25		26		11		
			26																		
0.125	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	4	1	0	1	0	1	0	1	2	1	3	1	0	1	4	1	3
	4	1	0	1	0	1	4	1	5	1	7	1	9	1	11	1	8	1	1	1	0
	5	1	9	1	10	1	11	1	12	1	11	1	0	1	0	1	0	1	7	1	10
	6	1	15	1	14	1	16	1	14	1	16	1	11	1	16	1	11	1	11	1	12
	/		27		28		31		31		34		22		30		19		23		25
0.25	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	2	1	2	1	0	1	0	1	0	1	0	1	4	1	5	1	0	1	2
	4	1	0	1	0	1	4	1	3	1	5	1	3	1	4	1	0	1	1	1	1
	5	1	6	1	7	1	11	1	12	1	10	1	11	1	12	1	1	1	11	1	10
	6	1	11	1	13	1	15	1	12	1	11	1	13	1	14	1	12	1	10	1	14
	/		19		22		30		27		26		27		34		16		22		27

TEST DAY	0	1	2	3	4	5	6	7
INITIALS	NM	DW	GH	RJM	RJM	GH	DW	
DATE	5/31/12	~~1015~~ 6/1/12	6/2/12	6-3-12	6-4-12	6/5/12	6/6/12	
TIME	1400	1015	1025	1030	1015	1025	1300	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

DW 6/1/12

PB 6/6/12

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
0.5	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	3	1	3	1	6	1	0	1	0	1	0	1	2	1	5	1	3	1	3
	4	1	0	1	1	1	1	1	6	1	5	1	5	1	6	1	7	1	6	1	0
	5	1	8	1	10	1	12	1	11	1	10	1	8	1	0	1	0	1	0	1	11
	6	1	14	1	13	1D	0	1	15	1	17	1	8	1	12	1	15	1	13	1	12
	/		25		27		19		32		32		21		29		27		22		26
1	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	2	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
	3	1	0	1	0	1	7	1	0	1	0	1	0	1	4	1	0	1	0	1	0
	4	1	3	1	2	1	0	1	2	1	5	1	5	1	4	1	9	1	0	1	0
	5	1	6	1	6	1	12	1	7	1	7	1	6	1	0	1	0	1	9	1	1
	6	1	2	1	6	1D	0	1	12	1	10	1	5	1	9	1	12	1	7	1	2
	/		11		14	X	19		21		22		16		17		21		16		3
2	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1D	0
	2	1	0	1	0	1D	0	1	0	1	0	1	0	1	0	1	0	1D	0		
	3	1	0	1D	0			1D	0	1D	0	1D	0	1	0	1	0				
	4	1	0											1	0	1	0				
	5	1	0											1	0	1	0				
	6	1	7											1	3	1	5				
	/		7												3		5				

TEST DAY	0	1	2	3	4	5	6	7		
INITIALS	NM	NM	JM	DW	JH	DW	DW			
DATE	5/31/12	6/1/12	6/2/12	6/3/12	6/4/12	6/5/12	6/6/12			
TIME	1400	1020	1030	1035	1025	1025	1300			

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed; not cumulative)

SUBJECT: CERIODAPHNIA CHRONIC TEST - SURVIVAL

REFERENCE TOXICANT TEST

Test Substance: NaCl Test Species: *Ceriodaphnia dubia*

Test Conc	Day	A AD	A N	B AD	B N	C AD	C N	D AD	D N	E AD	E N	F AD	F N	G AD	G N	H AD	H N	I AD	I N	J AD	J N
	REPLICATE																				
4	1	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0	1D	0
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
	1																				
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
	1																				
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
TEST DAY		0		1		2		3		4		5		6		7					
INITIALS				DW																	
DATE				6/1/12																	
TIME				1015																	

A = Alive D = Dead N = Neonates (number of neonates recorded for day observed, not cumulative)

CETIS Summary Report

Report Date: 06 Jun-12 14:35 (p 1 of 2)
Test Code: 06-0557-4494/RT7DCD20120531

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Batch ID:	11-8245-3522	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Dilute Mineral Water
Ending Date:	06 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample ID:	20-0329-5174	**Code:**	7767DBC6	**Client:**	ADMIN
Sample Date:	31 May-12	**Material:**	Sodium chloride	**Project:**	ADMIN
Receive Date:	31 May-12	**Source:**	Reference Toxicant		
Sample Age:	N/A	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-9438-1314	7d Survival Rate	2	4	2.828	N/A		Fisher Exact/Bonferroni-Holm Test
06-2544-5949	Reproduction	0.5	1	0.7071	26.9%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	gm/L	95% LCL	95% UCL	TU	Method
02-3871-9291	7d Survival Rate	LC5	0.4266	0.3083	1.179		Linear Interpolation (ICPIN)
		LC10	1.062	0.3693	1.483		
		LC15	1.165	0.4332	2.039		
		LC20	1.274	0.7321	2.129		
		LC25	1.388	0.9064	2.222		
		LC40	1.766	1.289	2.518		
		LC50	2.052	1.481	2.73		
01-8108-4939	Reproduction	IC5	0.5628	0.1921	0.5932		Linear Interpolation (ICPIN)
		IC10	0.6282	0.4033	0.6923		
		IC15	0.6963	0.5462	0.8048		
		IC20	0.7673	0.6207	0.9403		
		IC25	0.8412	0.6855	1.03		
		IC40	1.069	0.8769	1.207		
		IC50	1.216	0.9894	1.343		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-3871-9291	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Result Within Limits
12-9438-1314	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Result Within Limits
01-8108-4939	Reproduction	Control Resp	21.5	15 - NL	Yes	Result Within Limits
06-2544-5949	Reproduction	Control Resp	21.5	15 - NL	Yes	Result Within Limits
06-2544-5949	Reproduction	PMSD	0.269	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
0.125		10	1	1	1	1	1	0	0	0.0%	-11.11%
0.25		10	1	1	1	1	1	0	0	0.0%	-11.11%
0.5		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
1		10	0.9	0.7819	1	0	1	0.05774	0.3162	35.14%	0.0%
2		10	0.5	0.3032	0.6968	0	1	0.09623	0.527	105.4%	44.44%
4		10	0	0	0	0	0	0	0		100.0%

Ceriodaphnia 7-d Survival and Reproduction Test — **AMEC Biology-Toxicology LAB**

Reproduction Summary

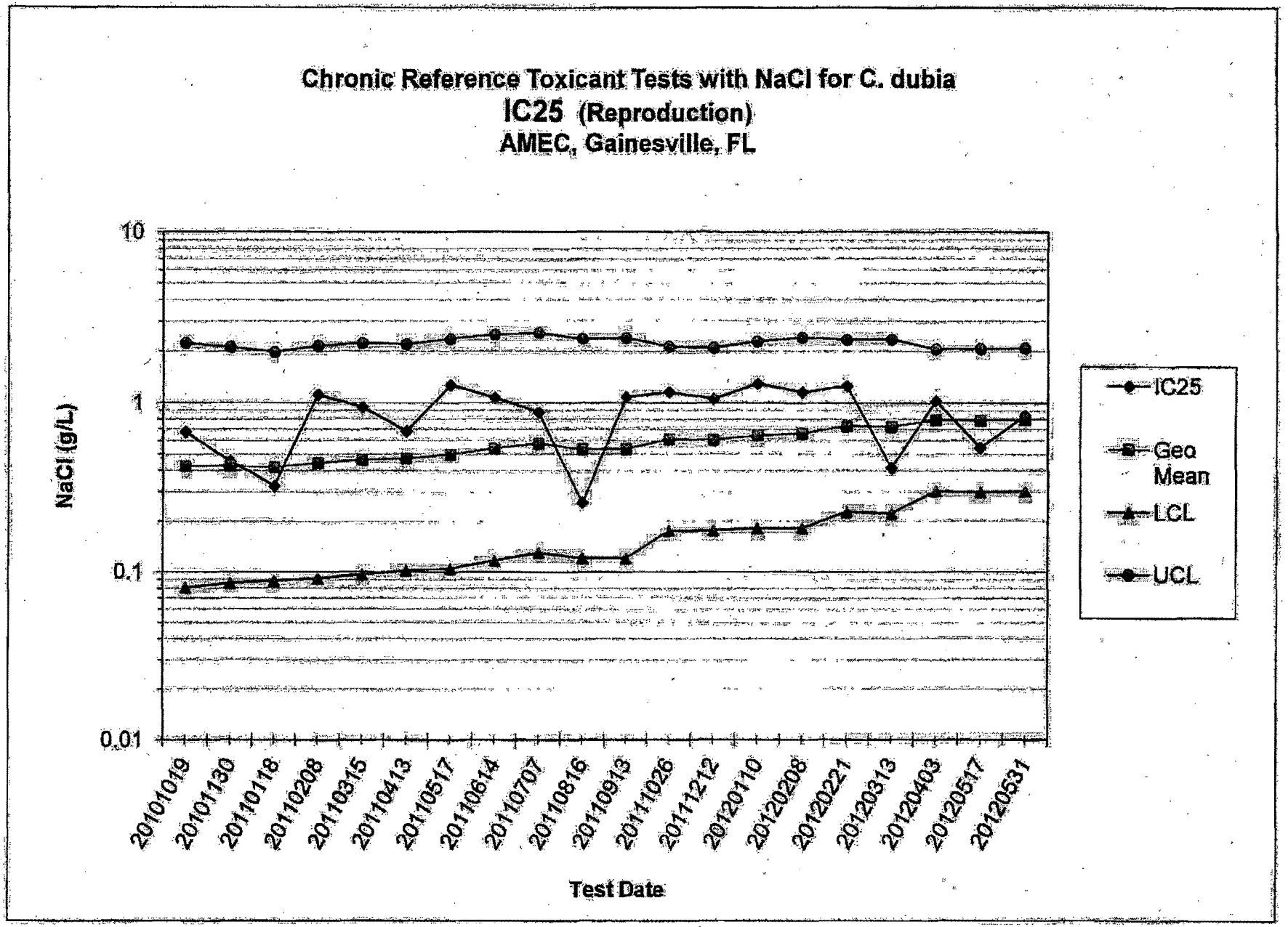
Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	21.5	18.15	24.85	0	28	1.636	8.96	41.67%	0.0%
0.125		10	27	25.24	28.76	19	34	0.8607	4.714	17.46%	-25.58%
0.25		10	25	23.02	26.98	16	34	0.9699	5.312	21.25%	-16.28%
0.5		10	25.1	23.37	26.83	19	32	0.8452	4.63	18.44%	-16.74%
1		10	16	13.87	18.13	3	22	1.043	5.715	35.72%	25.58%
2		10	1.5	0.5319	2.468	0	7	0.4734	2.593	172.8%	93.02%
4		10	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	0
0.125		1	1	1	1	1	1	1	1	1	1
0.25		1	1	1	1	1	1	1	1	1	1
0.5		1	1	0	1	1	1	1	1	1	1
1		1	1	0	1	1	1	1	1	1	1
2		1	0	0	0	0	0	1	1	1	1
4		0	0	0	0	0	0	0	0	0	0

Reproduction Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	27	25	28	22	25	25	26	11	0
0.125		27	28	31	31	34	22	30	19	23	25
0.25		19	22	30	27	26	27	34	16	22	27
0.5		25	27	19	32	32	21	20	27	22	26
1		11	14	19	21	22	16	17	21	16	3
2		7	0	0	0	0	0	3	5	0	0
4		0	0	0	0	0	0	0	0	0	0


Chronic Reference Toxicant Tests with NaCl for C. dubia
IC25 (Reproduction)
AMEC, Gainesville, FL
NaCl (g/L)
10
1
0.1
0.01
20101019
20101130
20110118
20110208
20110315
20110413
20110517
20110614
20110707
20110816
20110913
20111026
20111212
20120110
20120208
20120221
20120313
20120403
20120517
20120531
Test Date
IC25
Geo Mean
LCL
UCL

Fathead Minnow
Reference Toxicant Test

SUBJECT: PROMELAS CHRONIC TEST - COVER

Reference Toxicant

Test Substance: NaCl

Test Species: *Pimephales promelas*

ANIMAL HISTORY

LOT NUMBER: 2012-45

See Page 12 of Organism Receipt Log

Date received: 5/31/12

Age of Organisms: <48 hrs

Condition of Organisms: good

TEST CONDITIONS

Test Protocol: EPA-821-R-02-013 1000.0

Dulution water Type: Chemically Prepared Mod Hard Water

Dilution Water Batch number: MHW 20120524

Type Lighting: Fluorescent

Photoperiod: 16 light/8 dark

Test Container: 600ml Glass Beaker

Solution Volume: 250 mL

Replicates per Concentration: 2

Organisms per rep: 10

Test Temperature: 25 ± 1 °C

WaterBath / Incubator (circle one)

TEST SOLUTION PREPARATION

15g NaCl /L or 30g NaCl/2L of dilution water

Reftox Batch # NACL 2012-25

TEST CONCENTRATION % mg/L	Control	0.75	1.5	3	6	12	-
Volume of dilution Water Added (ml)	3500	3325	3150	2800	2100	200	-
Volume of Effluent / Stock Added (ml)	---	175	350	700	1400	800	-

TEST VALIDITY CRITERIA

80% survial in controls; average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg

Percent Survival of Control Adults: 92.5 %

Average dry weight of survival in the Control: 0.825

TEST SUMMARY

Test Concentration ( )	Number of Surviving organisms	Percent Survival	Comments
CONTROL	37	92.5	
0.75	39	97.5	
1.5	36	90	
3	21	52.5	
6	0	0	
12	0	0	
-			

Additional Comments:

TEST DATA RECORDED BY: PB DATE: 6/8/12

TEST SUMMARY RECORDED BY: PB DATE: 6/8/12

SUBJECT: PROMELAS CHRONIC TEST - WATER QUALITY

REFERENCE TOXICANT TEST

Test Substance: NaCl

Test Species: Pimephales promelas

Test Conc %	Parameter	Day 0	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
CTRL (0)	Temp (°C)	25.0	24.1		24.9		25.6		25.3				24.4		24.5
	pH (su)	7.8	7.9		7.9		7.7		7.5				8.0		8.0
	DO (mg/L)	8.2	6.6	8.1	7.0	7.8	5.4	7.8	6.1	7.7			8.4	8.4	8.1
0.75	Temp (°C)	24.3	24.5		24.3		25.4		24.7		24.2		24.9		25.6
	pH (su)	8.5	7.9		7.7		7.7		7.5		8.0		8.0		7.6
	DO (mg/L)	8.2	6.9	7.9	7.1	7.8	6.2	7.6	6.6	7.8	6.4	8.0	8.1	8.3	7.2
1.5	Temp (°C)	24.1	24.3		24.3		25.6		24.7		24.2		24.8		25.4
	pH (su)	8.3	7.8		7.7		7.6		7.5		7.9		8.0		7.7
	DO (mg/L)	8.2	7.0	8.0	7.3	7.9	5.9	7.8	6.7	7.9	7.1	8.0	8.1	8.3	7.4
3	Temp (°C)	24.1	24.7		24.3		25.6		24.8		24.1		24.8		25.4
	pH (su)	8.2	7.8		7.7		7.5		7.5		7.7		8.0		7.7
	DO (mg/L)	8.1	6.9	8.0	7.5	8.0	6.2	7.9	6.8	7.9	6.7	8.1	8.1	8.2	7.5
6	Temp (°C)	24.2	24.7		24.3		25.7		24.9		24.1		25.0		25.3
	pH (su)	8.2	7.7		7.7		7.5		7.4		7.6		8.0		7.7
	DO (mg/L)	8.1	7.1	8.0	7.5	8.1	6.1	7.8	6.8	8.0	7.0	8.2	8.1	8.3	7.5
12	Temp (°C)	24.2													
	pH (su)	8.2													
	DO (mg/L)	8.0													
Thermocouple		FS15	FS-15		FS-15		FS-15		FS-15		FS15		FS-15		FS15
pH Meter		PH2	PH2		PH2		PH2		PH2		PH2		PH2		PH2
DO Meter		DO6	DO6		DO6		DO6		DO6		DO6		DO6		DO6
INITIALS:		NM	DW		RM		DW		RM		PB		SW		SW
DATE:		5/31/12	6/1/12		6-2-12		6/3/12		6-4-12		6/5/12		6/6/12		6/7/12
TIME:		1535	1205		1340		1145		1310		1000		1350		1210

Temp = Temperature DO = Dissolved Oxygen su = standard units Conductivity reported as umhos/cm

SHORT-TERM CHRONIC TOXICITY TEST

Organism Exposed: *P. promelas*

Reftox														Test Substance: WWTP Effluent					
		Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Test Day	Date	Date	Date
		0	5/31	1	6/1	2	6/2	3	6/3	4	6/4	5	6/5	6	6/6	7	6/7	6/4/12	6/8/12
Treatment, unit: %	Replicate	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	# Alive	Obs.	Weight of Oven-Dried Pan (g)	Dry Weight of Pan and Organisms (g)
CTRL	A	10	loaded	10	N	10	N	10	N	9	N	10	N	10	N	10	N	1.1434	1.1531
	B			10	N	10	N	10	N	9	10	9	N	9	N	9	N	1.1308	1.1379
	C			10	N	10	N	10	N	9	N	10	N	10	N	9	10	1.1436	1.1513
	D			10	N	10	N	10	N	9	10	9	N	9	N	9	N	1.1404	1.1489
	E																		
	F																		
0.75	A			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1473	1.1570
	B			10	N	10	N	10	N	10	N	9	10	9	N	9	N	1.1449	1.1552
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1472	1.1579
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1512	1.1622
	E																		
	F																		
1.5	A			9	10	9	N	9	N	9	N	9	N	8	10	8	N	1.1439	1.1525
	B			10	N	10	N	8	10	8	N	8	N	8	N	8	N	1.1373	1.1466
	C			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1943	1.2034
	D			10	N	10	N	10	N	10	N	10	N	10	N	10	N	1.1602	1.1693
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JM	1500	NM	1130	JM	1300	JM	1145	JM	1200	NM	0955	NM	1145	BM/JK	1040	PB	PB

BM 6-7-12

PB 6/8/12

N = Normal Leth = Err = Swimming A = NF = Not D = Dead Obs.= Observation

3	A	No	loaded	10	N	10	N	10	N	8	2D	4	4D	3	1D	3	N	1.1699	1.1710
	B			10	N	10	N	8	2D	6	2D	6	N	5	1D	4	1D	1.1289	1.1302
	C			10	N	9	1D	8	1D	7	1D	6	1D	6	N	6	N	1.1327	1.1355
	D			10	N	10	N	10	N	9	1D	9	N	9	N	8	1D	1.1326	1.1377
	E																		
	F																		
6	A			10	N	5	5D	1	4D	1	N	1	N	1	N	0	1D	1.1434	
	B			9	1D	3	6D	0	3D	—								1.1378	
	C			10	N	6	4D	3	3D	2	1D	2	N	1	1D	0	1D	1.1476	
	D			10	N	5	5D	2	3D	1	1D	0	1D			—		1.1480	
	E																		
	F																		
12	A			0	10D														
	B			0	10D														
	C			0	10D														
	D			0	10D														
	E																		
	F																		
Date recorded by:		Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Time	Initials	Initials
		JH	1500	NM	1140	JH	1300	RM	1145	JH	1150	NM	0955	DW	1145	JH	1040	PB	PB

N = Normal Leth = Lethargic Err = Swimming Erratically A = Alive NF = Not Found D = Dead

CETIS Summary Report

Report Date: 12 Jun-12 08:03 (p 1 of 2)
Test Code: 19-8072-8244/RT7DPP20120531

Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

Batch ID:	08-5378-4613	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	31 May-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	07 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Hydrosphere	**Age:**	

Sample ID:	20-0329-5174	**Code:**	7767DBC6	**Client:**	ADMIN
Sample Date:	31 May-12	**Material:**	Sodium chloride	**Project:**	ADMIN
Receive Date:	31 May-12	**Source:**	Reference Toxicant		
Sample Age:	N/A	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-4183-1673	7d Survival Rate	1.5	3	2.121	19.98%		Dunnett's Multiple Comparison Test
15-6055-8276	Mean Dry Biomass-mg	1.5	3	2.121	22.09%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	gm/L	95% LCL	95% UCL	TU	Method
00-4902-9424	7d Survival Rate	LC5	1.456	0.6385	1.836		Linear Interpolation (ICPIN)
		LC10	1.645	0.9226	2.055		
		LC15	1.807	1.245	2.316		
		LC20	1.98	1.471	2.771		
		LC25	2.162	1.631	3.257		
		LC40	2.781	1.919	3.833		
		LC50	3.219	2.129	4.13		
07-2312-8026	Mean Dry Biomass-mg	IC5	1.528	0.8522	1.632		Linear Interpolation (ICPIN)
		IC10	1.616	1.439	1.734		
		IC15	1.706	1.513	1.839		
		IC20	1.8	1.61	1.967		
		IC25	1.897	1.694	2.113		
		IC40	2.208	1.914	2.59		
		IC50	2.434	2.087	3.001		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-4902-9424	7d Survival Rate	Control Resp	0.925	0.8 - NL	Yes	Result Within Limits
21-4183-1673	7d Survival Rate	Control Resp	0.925	0.8 - NL	Yes	Result Within Limits
07-2312-8026	Mean Dry Biomass-mg	Control Resp	0.825	0.25 - NL	Yes	Result Within Limits
15-6055-8276	Mean Dry Biomass-mg	Control Resp	0.825	0.25 - NL	Yes	Result Within Limits
15-6055-8276	Mean Dry Biomass-mg	PMSD	0.2209	0.12 - 0.3	Yes	Result Within Limits

7d Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.925	0.9063	0.9437	0.9	1	0.009129	0.05	5.41%	0.0%
0.75		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	-5.41%
1.5		4	0.9	0.8569	0.9431	0.8	1	0.02108	0.1155	12.83%	2.7%
3		4	0.525	0.4422	0.6078	0.3	0.8	0.04048	0.2217	42.24%	43.24%
6		4	0	0	0	0	0	0	0		100.0%
12		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	0.825	0.783	0.867	0.71	0.97	0.02052	0.1124	13.62%	0.0%
0.75		4	1.042	1.022	1.063	0.97	1.1	0.01026	0.0562	5.39%	-26.36%
1.5		4	0.9025	0.8913	0.9136	0.86	0.93	0.005452	0.02986	3.31%	-9.39%
3		4	0.2575	0.1886	0.3264	0.11	0.51	0.03371	0.1846	71.71%	68.79%
6		4	0	0	0	0	0	0	0		100.0%
12		4	0	0	0	0	0	0	0		100.0%

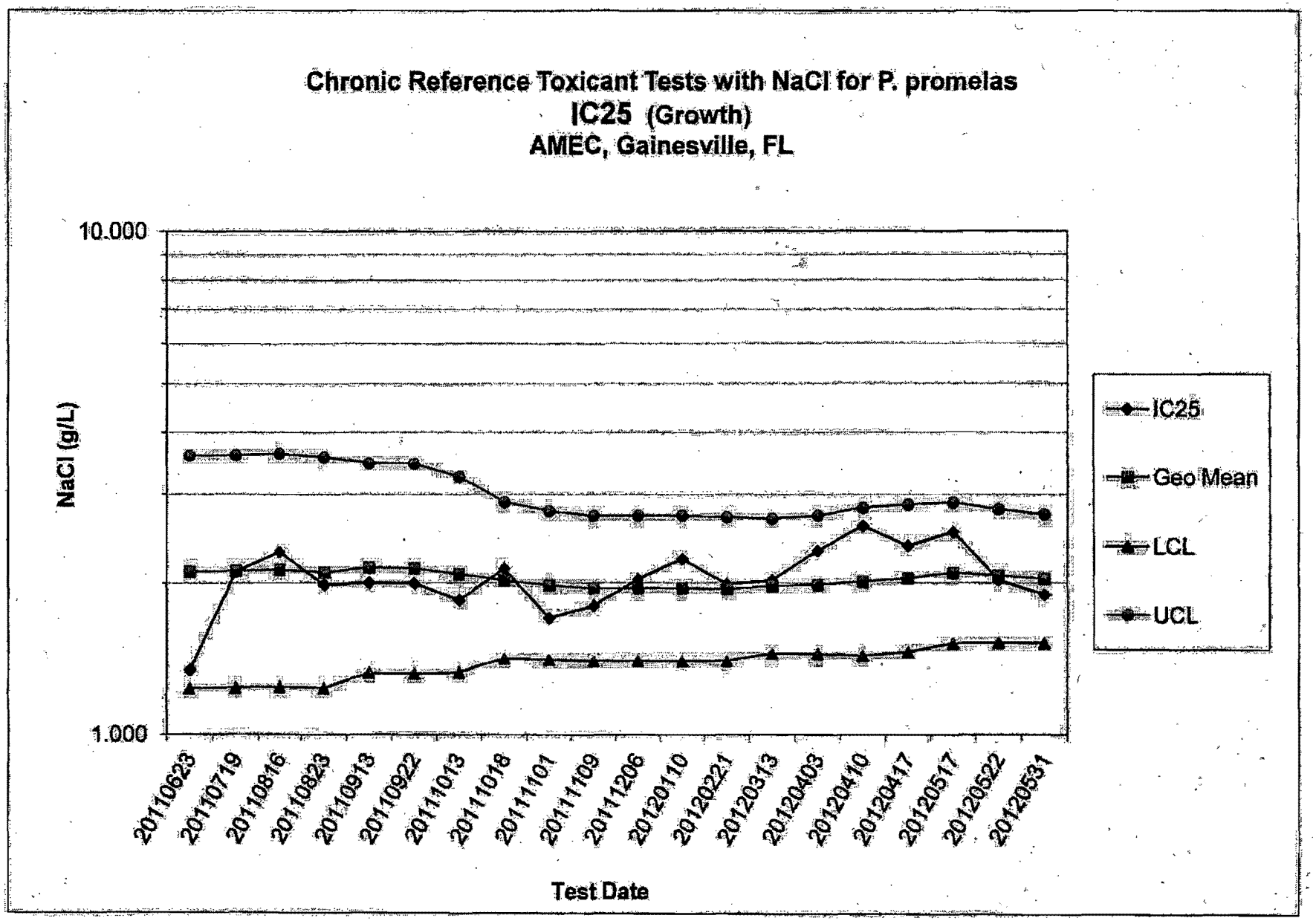
Fathead Minnow 7-d Larval Survival and Growth Test — **AMEC Biology-Toxicology LAB**

7d Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	0.9	0.9	0.9
0.75		1	0.9	1	1
1.5		0.8	0.8	1	1
3		0.3	0.4	0.6	0.8
6		0	0	0	0
12		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.97	0.71	0.77	0.85
0.75		0.97	1.03	1.07	1.1
1.5		0.86	0.93	0.91	0.91
3		0.11	0.13	0.28	0.51
6		0	0	0	0
12		0	0	0	0


Chronic Reference Toxicant Tests with NaCl for P. promelas
IC25 (Growth)
AMEC, Gainesville, FL
10.000
1.000
NaCl (g/L)
20110623
20110719
20110816
20110823
20110913
20110922
20111013
20111018
20111101
20111109
20111206
20120110
20120221
20120313
20120403
20120410
20120417
20120517
20120522
20120531
Test Date
IC25
Geo Mean
LCL
UCL

Georgia Department of Natural Resources

2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-9000
Noel Holcomb, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division
404/656-4713

June 30, 2005

Final
XC permit
no comment
AP
7/13/05

Mr. Joseph W. Parker
Waste and Water Process Engineer
Weyerhaeuser Company - Flint River Operations
P.O. Box 238
Oglethorpe, Georgia 31068

Re: NPDES Permit No. GA0049336
Flint River Basin

Dear Mr. Parker:

Pursuant to the Georgia Water Quality Control Act, as amended; the Federal Clean Water Act, as amended; and the Rules and Regulations promulgated thereunder, we have issued the attached National Pollutant Discharge Elimination System (NPDES) permit for the specified wastewater treatment facility.

Please be advised that on and after the effective date indicated in the attached NPDES permit, the permittee must comply with all the terms, conditions and limitations of the permit.

Sincerely,

Carol A. Couch, Ph.D.
Director

CAC/th

Attachment

cc: Mr. Scott Gordon (w/attachment)
U.S. Environmental Protection Agency

Ms. Angela Westin - EPD (w/attachment)

Ms. Jennifer Patch - EPD (w/attachment)

PERMIT NO. GA0049336

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act;" the Federal Water Pollution Control Act, as amended (33 U.S. C. 1251 et seq.), hereinafter called the "Federal Act;" and the Rules and Regulations promulgated pursuant to each of these Acts,

Weyerhaeuser Company - Flint River Operations
Post Office Box 238
Oglethorpe, Georgia 31068

is authorized to discharge from a facility located at

Weyerhaeuser Company - Flint River Operations - Project XL
(SIC Code 2611)
Old Stagecoach Road
Oglethorpe, Macon County, Georgia 31068

to receiving waters

Flint River
(Flint River Basin)

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

This permit shall become effective on June 30, 2005.

This permit and the authorization to discharge shall expire at midnight, May 31, 2010.

Signed this 30th day of June, 2005.

Director,
Environmental Protection Division

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through May 31, 2010, the permittee is authorized to discharge from outfall(s) serial number(s) 001 - final effluent process wastewater and commingled storm water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics (Specify Units)	Discharge Limitations{3}				Monitoring Requirements		
	Mass Based (lbs/day)		Concentration Based (µg/l)				
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)	---	---	---	---	Continuous	Recorder	Final Effluent
BOD, 5-day (Nov. 1 - Apr. 30)	9,652	23,072	---	---	Weekly	Composite	Final Effluent
BOD, 5-day (May 1 - Oct. 31)	4,826	14,420	---	---	Weekly	Composite	Final Effluent
Total Suspended Solids (TSS) (Nov. 1 - Apr. 30)	10,388	23,968	---	---	Weekly	Composite	Final Effluent
Total Suspended Solids (TSS) (May 1 - Oct. 31)	5,194	14,980	---	---	Weekly	Composite	Final Effluent
Chemical Oxygen Demand (COD){2}	---	---	---	---	Weekly	Composite	Final Effluent
Absorbable Organic Halides (AOX){1}	419.1	2450	---	---	Weekly	Composite	Final Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored weekly by a grab sample of the final effluent.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

{1} The permittee shall adhere to EPA Method 1650 for AOX (adsorbable organic halides).

{2} Once EPA promulgates categorical effluent guidelines (ELGs) for this pollutant, the permit will be reopened to reflect COD permit limits based on these ELGs.

{3} For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period. "Daily", as referenced in the discharge limitations, is the consecutive 24-hour period that the composite sample represents.

2. During the period beginning on the effective date and lasting through May 31, 2010, the permittee is authorized to discharge from outfall(s) serial number(s) 002 - bleach plant effluent (internal waste stream).{7}

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics (Specify Units)	Discharge Limitations				Monitoring Requirements		
	Mass Based (lbs/day)		Concentration Based (µg/l)				
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type{5}	Sample Location{6}
Flow (MGD)	---	---	---	---	Weekly	Recorder	Effluent
Chloroform{2}	10.7	17.8	---	---	Weekly{2}	Composite	Effluent
Tetrachlorocatechol{1}	---	---	---	< 5.0	Monthly	Composite	Effluent
Tetrachloroguaiacol{1}	---	---	---	< 5.0	Monthly	Composite	Effluent
Trichlorosyringol{1}	---	---	---	< 2.5	Monthly	Composite	Effluent
4,5,6-Trichloroguaiacol{1}	---	---	---	< 2.5	Monthly	Composite	Effluent
3,4,6-Trichlorocatechol{1}	---	---	---	< 5.0	Monthly	Composite	Effluent
3,4,5-Trichlorocatechol{1}	---	---	---	< 5.0	Monthly	Composite	Effluent
3,4,5-Trichloroguaiacol{1}	---	---	---	< 2.5	Monthly	Composite	Effluent
2,3,4,6-Tetrachlorophenol{1}	---	---	---	< 2.5	Monthly	Composite	Effluent
3,4,6-Trichloroguaiacol{1}	---	---	---	< 2.5	Monthly	Composite	Effluent
2,4,5-Trichlorophenol{3}	---	---	---	< 2.5	Monthly	Composite	Effluent
2,4,6-Trichlorophenol{3}	---	---	---	< 2.5	Monthly	Composite	Effluent
Pentachlorophenol{3}	---	---	---	< 5.0	Monthly	Composite	Effluent
2,3,7,8-TCDD{4}	---	---	---	<0.000010	Monthly	Composite	Effluent
2,3,7,8-TCDF{4}	---	---	---	0.0000319	Monthly	Composite	Effluent

{1} The permittee shall adhere to EPA Method 1653 for these parameters.

{2} Acid and alkaline streams are to be monitored separately. The permittee shall adhere to the approved EPA methods for chloroform, Methods 601 or 624, or Standard Methods 6210B or 6230B. In accordance with 40 CFR Part 430.02, weekly chloroform monitoring is **not required** if the permittee has provided certification of process changes in lieu of monitoring.

{3} The permittee shall adhere to EPA Method 1653 for these parameters and submit a certification statement certifying that these chlorophenolic compounds are not being used as biocides.

{4} The permittee shall adhere to EPA Method 1613 for 2,3,7,8-TCDD and 2,3,7,8-TCDF.

{5} Bleach plant sampling will be conducted in accordance with EPA's established generic sampling plan described in Appendix B - Sample Collection Methods of the EPA guidance document entitled Permit Guidance Document, Pulp, Paper and Paperboard Manufacturing Point Source Category, EPA-821-B-00-003, except where exceptions are approved by the Environmental Protection Division. As an exception, EPD hereby approves the National Council for Air and Stream Improvement (NCASI) Special Report 98-01, Appendix C as the guidance for sample collection (full title is "NCASI Guidance on Sampling, Contracting, and Auditing Analytical Data for the Effluent Limitations Guidelines Monitoring Parameters - Special Report No. 98-01, April 1998). As a further exception for the collection of chloroform samples, EPD hereby approves the use of the second generation ISCO 6100CR automated grab sampling device or other samplers capable of automating the grab sampling process, provided samples are collected according to the manual grab sampling requirements.

{6} Bleach plant effluent is defined as "the total discharge of process wastewaters from the bleach plant from each physical bleach line operated at the mill, comprising separate acid and alkaline filtrates or the combination thereof" (40 CFR 430.01). Monitoring locations are to be situated after the sewers have collected all of the acid or alkaline bleaching stage discharges and before they are mixed with other mill wastewaters. An exception is chloroform sampling, in which case the acid and alkaline monitoring locations are separate and should be at the point as close as possible to where bleach plant wastewater is discharged from process equipment.

{7} Sampling is not required if the bleach plant is not operating or if the bleach plant operates for less than 48 consecutive hours during the monitoring period.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

N/A

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the Permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Note: EPD as used herein means the Environmental Protection Division of the Department of Natural Resources.

C. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

a. Monthly Report

Monitoring results obtained during the previous **12 months** may be summarized for each month and reported on an Operation Monitoring Report (Form WQ 1.45). Forms other than Form WQ 1.45 may be used upon approval by EPD. These forms and any other required reports and information may be completed, signed and certified by a principal executive officer or ranking elected official, or by a duly authorized representative of that person. **Annual compliance certification is allowed in lieu of periodic Operation Monitoring Report submission. See Part III.B. Special Requirements.** Signed copies of these and all other reports required herein may be submitted to the following address:

Georgia Environmental Protection Division
Permitting, Compliance and Enforcement Program
Industrial Wastewater Unit
4220 International Parkway, Suite 110
Atlanta, Georgia 30354

All instances of noncompliance not reported under Part I. B. and C. and Part II. A. shall be reported at the time the operation monitoring report is submitted.

3. Definitions

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days sampled during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

c. The "daily average" concentration means the arithmetic average of all the daily determinations of concentrations made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample.

d. The "daily maximum" concentration means the daily determination of concentration for any calendar day.

e. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.

f. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

g. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

4. Test Procedures

Monitoring must be conducted according to test procedures approved pursuant to 40 CFR Part 136 unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling or measurements, and the person(s) performing the sampling or the measurements;

b. The dates the analyses were performed, and the person(s) who performed the analyses;

c. The analytical techniques or methods used; and

d. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Operation Monitoring Report Form (WQ 1.45). Such increased monitoring frequency shall also be indicated. The Division may require by written notification more frequent monitoring or the monitoring of other pollutants not required in this permit.

7. Records Retention

The permittee shall retain records of all monitoring information, including all records of analyses performed, calibration and maintenance of instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Division at any time.

8. Penalties

The Federal Clean Water Act and the Georgia Water Quality Control Act provide that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The Federal Clean Water Act and the Georgia Water Quality Control Act also provide procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

a. Advance notice to the Division shall be given of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Any anticipated facility expansions, production increases, or process modifications must be reported by submission of a new NPDES permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Division of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

b. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 100 μg/l, (ii) five times the maximum concentration reported for that pollutant in the permit application, or (iii) 200 μg/l for acrolein and acrylonitrile, 500 μg/l for 2,4 dinitrophenol and for 2-methyl-4-6-dinitrophenol, or 1 mg/l antimony.

c. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in any discharge on a nonroutine or infrequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 500 μg/l, (ii) ten times the maximum concentration reported for that pollutant in the permit application, or (iii) 1 mg/l antimony.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Division with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypassing

a. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Division at least 10 days (if possible) before the date of the bypass. The permittee shall submit notice of any unanticipated bypass with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

1. A description of the discharge and cause of noncompliance; and

2. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

b. Any diversion or bypass of facilities covered by this permit is prohibited, except (i) where unavoidable to prevent loss of life, personal injury, or severe property damage; (ii) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if the permittee could have installed adequate back-up equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and (iii) the permittee submitted a notice as required above. The permittee shall operate the treatment works, including the treatment plant and total sewer system, to minimize discharge of the pollutants listed in Part I of this permit from combined sewer overflows or bypasses. Upon written notification by the Division, the permittee may be required to submit a plan and schedule for reducing bypasses, overflows, and infiltration in the system.

6. Sludge Disposal Requirements

Hazardous sludge shall be disposed of in accordance with the regulations and guidelines established by the Division pursuant to the Federal Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA). For land application of nonhazardous sludge, the permittee shall comply with any applicable criteria outlined in the Division's "Guidelines for Land Application of Municipal Sludges." Prior to disposal of sludge by land application, the permittee shall submit a proposal to the Division for approval in accordance with applicable criteria in the Division's "Guidelines for Land Application of Municipal Sludges." Upon evaluation of the permittee's proposal, the Division may require that more stringent control of this activity is required. Upon written notification, the permittee shall submit to the Division for approval, a detailed plan of operation for land application of sludge. Upon approval, the plan will become a part of the NPDES permit. Disposal of nonhazardous sludge by other means, such as landfilling, must be approved by the Division.

7. Sludge Monitoring Requirements

The permittee shall develop and implement procedures to insure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained which document the quantity of solids removed from the plant. The ultimate disposal of solids shall be reported monthly (in the unit of lbs/day) to the Division with the Operation Monitoring Report Forms required under Part I (C)(2) of this permit.

8. Power Failures

Upon the reduction, loss, or failure of the primary source of power to said water pollution control facilities, the permittee shall use an alternative source of power if available to reduce or otherwise control production and/or all discharges in order to maintain compliance with the effluent limitations and prohibitions of this permit.

If such alternative power source is not in existence, and no date for its implementation appears in Part I, the permittee shall halt, reduce or otherwise control production and/or all discharges from wastewater control facilities upon the reduction, loss, or failure of the primary source of power to said wastewater control facilities.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Director of the Division, the Regional Administrator of EPA, and/or their authorized representatives, agents, or employees, upon the presentation of credentials:

a. To enter upon the permittee's premises where a regulated activity or facility is located or conducted or where any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times, to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and to sample any substance or parameters in any location.

2. Transfer of Ownership or Control

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing of the proposed transfer at least thirty (30) days in advance of the proposed transfer;

b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director at least thirty (30) days in advance of the proposed transfer; and

c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

3. Availability of Reports

Except for data deemed to be confidential under O.C.G.A. § 12-5-26 or by the Regional Administrator of the EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at an office of the Division. Effluent data, permit applications, permittee's names and addresses, and permits shall not be considered confidential.

4. Permit Modification

After written notice and opportunity for a hearing, this permit may be modified, suspended, revoked or reissued in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge; or

d. To comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et.al. v. Russell E. Train, 8 ERC 2120(D.D.C. 1976), if the effluent limitation so issued:

(1) is different in conditions or more stringent than any effluent limitation in the permit; or

(2) controls any pollutant not limited in the permit.

5. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established pursuant to Section 307(a) of the Federal Clean Water Act for toxic pollutants, which are present in the discharge within the time provided in the regulations

that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Federal Clean Water Act.

8. Water Quality Standards

Nothing in this permit shall be construed to preclude the modification of any condition of this permit when it is determined that the effluent limitations specified herein fail to achieve the applicable State water quality standards.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Expiration of Permit

Permittee shall not discharge after the expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date.

11. Contested Hearings

Any person who is aggrieved or adversely affected by an action of the Director of the Division shall petition the Director for a hearing within thirty (30) days of notice of such action.

12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

13. Best Management Practices

The permittee will implement best management practices to control the discharge of hazardous and/or toxic materials from ancillary manufacturing activities. Such activities include, but are not limited to, materials storage areas, in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas.

14. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

15. Duty to Provide Information

a. The permittee shall furnish to the Director of the Division, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish upon request copies of records required to be kept by this permit.

b. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts and information.

16. Upset Provisions

Provisions of 40 CFR 122.41(n)(1)-(4), regarding "Upset" shall be applicable to any civil, criminal, or administrative proceeding brought to enforce this permit.

A. PREVIOUS PERMITS

1. All previous State water quality permits issued to this facility, whether for construction or operation, are hereby revoked by the issuance of this permit. This action is taken to assure compliance with the Georgia Water Quality Control Act, as amended, and the Federal Clean Water Act, as amended. Receipt of the permit constitutes notice of such action. The conditions, requirements, terms and provisions of this permit authorizing discharge under the National Pollutant Discharge Elimination System govern discharges from this facility.

B. SPECIAL REQUIREMENTS

1. The applicable provisions of the January 17, 1997 **Project XL** Final Project Agreement are incorporated in this permit in order to provide environmental regulatory flexibility as an incentive for superior environmental results.

2. The permittee will conform to an approved Plan of Operation for collection of wasteload allocation model input data, including instream dissolved oxygen monitoring, effluent nutrients sampling, and holding pond management. The approved Plan of Operation will also describe procedures for the ultimate disposal of solids/sludge. Issuance of this permit constitutes approval of the initial plan. The plan may be modified during the life of the permit upon written approval by the Division.

3. Annual compliance certification is allowed in lieu of periodic Operation Monitoring Report submission. Monitoring results are to be made available upon request. Failure by the permittee to provide reasonably requested data or reports may result in reinstitution of the requirement for periodic OMR reporting. The permittee is to submit an annual compliance certification report, certifying compliance with applicable effluent discharge limits for the calendar period. All instances of non-compliance events shall be reported immediately and followed up with a written report within seven working days from the noncompliance event. No monthly OMR/DMR reports are required by this permit. The annual certification of compliance shall be submitted by **February 15** of the following year.

4. In lieu of filling out a new application form for the year 2010 permit renewal, the Division authorizes the permittee to certify, where appropriate, that the information submitted for the year 1997 renewal continues to be true and correct. The permit renewal process shall proceed upon receipt of an application from the permittee consisting of a certification from the permittee attesting that (a) all effluent and other permit requirements are being met at the time of the certification; (b) no substantial changes in product type or production rate have occurred during the term of the permit; and (c) the information contained in the last permit application continues to be true and correct. The certification shall be deemed sufficient evidence of the permittee's compliance with Georgia Rules and Regulations for Water Quality Control, Section 391-3-6-.06(5)(a)-(b). This certification is submitted subject to penalties for perjury as provided by Georgia law. If the permittee is unable to make this certification, it shall comply with Georgia Rules and Regulations for Water Quality Control, §§391-3-6-.06(5)(a)-(b).

5. During the wasteload allocation process which will precede the reissuance of NPDES Permit GA0049336, the Division will utilize the water quality model that was developed for Weyerhaeuser's Flint River Operations during the previous permit reissuance. The Division may revise any model inputs, factors, etc. where scientifically justified to determine compliance with the State's water quality standards. The permittee will not be required to perform a study of the Flint River's assimilative capacity at the time of NPDES permit renewal.

6. In addition to the outfall identified in Part I, Section A. of this permit, the permittee is authorized to discharge stormwater runoff from point sources at this facility provided that these discharges do not cause violations of State water quality standards in the receiving streams.

7. The Permittee must implement and maintain compliance with the requirements of the Best Management Practices (BMP) Program as specified below:

   a. Certify to the Division that the BMP Plan has been prepared in accordance with the requirements specified in the latest editions and amendments of 40 CFR Part 430 - The Pulp, Paper, and Paperboard Point Source Category and Permit Guidance Document - Pulp, Paper and Paperboard Manufacturing Point Source Category, EPA-821-B-00-003, May 2000. Such plan is to include, but not be limited to, the following:

      i. Contain a detailed engineering review of the mill;

      ii. Specify procedures and practices to be implemented to meet the requirements of every mandatory component, as specified in 40 CFR 430.03(c), including those that require the construction of containment or diversion structures or the installation of monitoring and alarm systems;

      iii. Detail the construction that the mill determines is necessary to meet the mandatory components, including the construction schedule;

      iv. Describe the monitoring program that will be used to meet the BMPs monitoring requirements;

      v. Establish action levels required by 40 CFR 430.03(h)(3);

      vi. Documentation that operation of all new or upgraded continuous, automatic monitoring systems that the mill determines to be necessary under 40 CFR 430.03(c)(3) including those associated with construction of containment or diversion structures has commenced; and

vii. Documentation that construction and operation of any spent pulping liquor, collection, containment, diversion, or other facilities, including any associated continuous monitoring systems, necessary to fully implement BMPs specified in 40 CFR 430.03(c) has commenced.

b. Such plan shall be amended whenever there is a change in mill design, construction, operation, or maintenance that affects the potential for leaks and spills from the immediate process areas [40 CFR 430.03(e)].

c. Such plan is to be reviewed at least once every five years for necessary changes. The plan must be amended within three months of the review if the mill determines that any new or modified management practices are necessary to reduce significantly the likelihood of spills and leaks.

d. A complete current copy of the plan and records that demonstrate compliance with the BMP implementation requirements are to be maintained on site at all times in a location that is readily available for inspection. The following records must be maintained for at least three years from the date created:

i. Records tracking repairs performed as part of the mill's repair program;

ii. Records of initial and refresher training;

iii. Reports of reviews of spills and intentional diversions; and

iv. Records of wastewater monitoring to detect leaks and spills, track the effectiveness of the BMPs, and detect trends in spent pulping liquor losses.

8. The permittee shall prepare annual reports which contain a summary of the monitoring results, the number of times and dates action levels were exceeded, and brief descriptions of any actions taken to correct the situation. Such report shall be made available upon request. Exceeding an action level does not constitute a violation of the permit, but failure to investigate and take corrective action is a violation of the permit.

C. BIOMONITORING AND TOXICITY REDUCTION REQUIREMENTS

The Permittee shall comply with effluent standards or prohibitions established by section 307(a) of the Federal Act and with chapter 391-3-6-.03(5) of the State Rules and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, the EPD may require the Permittee to perform any of the following actions:

1. Acute biomonitoring tests;

2. Chronic biomonitoring tests;

3. Stream studies;

4. Priority pollutant analyses;

5. Toxicity reduction evaluations (TRE); or

6. Any other appropriate study.

The EPD will specify the requirements and methodologies for performing any of these tests or studies. Unless other concentrations are specified by the EPD, the critical concentration used to determine toxicity in biomonitoring tests will be the effluent instream wastewater concentration (IWC) based on the representative plant flow of the facility and the critical low flow of the receiving stream (7Q10). The endpoints that will be reported are the effluent concentration that is lethal to 50% of the test organisms (LC50) if the test is for acute toxicity, and the no observed effect concentration (NOEC) of effluent if the test is for chronic toxicity.

The Permittee must eliminate effluent toxicity and supply the EPD with data and evidence to confirm toxicity elimination. When approved by the EPD, all study plans and TRE plans will become part of the requirements of this permit.

WEYERHAEUSER COMPANY - FLINT RIVER OPERATIONS - PROJECT XL

PLAN OF OPERATION

NPDES PERMIT NO. GA0049336

April 15, 2005

I. Instream Dissolved Oxygen Monitoring Program:

1. Monitoring of Flint River and Lake Blackshear dissolved oxygen (DO) concentrations will be conducted weekly during May through October when river flow at the Montezuma Bridge is below 1000 cfs, as measured by the U.S. Geological Survey gauge, and the Mill is discharging treated wastewater to the river.

2. DO and temperature will be measured in the morning at a depth of one meter at the following stations: Georgia Highway 27, Joe's Island, and U.S. Highway 280. Morning DO readings approximate daily minimum values following respiration by both plants and animals during nighttime hours, and thus, provide a conservative estimate of instream DO conditions for aquatic life.

3. Monitoring frequency will increase to twice per week if DO falls below 5.5 mg/l at any station.

4. If any individual measurement falls below 4.0 mg/l or the daily average of multiple readings is less than 5.0 mg/l the Division will be notified by telephone by the end of the next working day.

5. Records of monitoring results will be available upon request.

II. Effluent Nutrients Sampling Program:

1. A 24-hour composite sample of final effluent will be collected monthly and analyzed for Nitrate + Nitrite (as Nitrogen), Total Kjeldahl Nitrogen, and Total Phosphorus.

2. Records of monitoring results will be available upon request.

III. Holding Pond Management Program:

1. Perform daily color measurement on final effluent composite sample.

2. Utilize Holding Pond for storage of treated effluent, such that an average instream measured delta color increase of 20 PCU is not exceeded during appropriate river conditions.

3. Delta color measurement sample collection locations - (upstream) collect river water sample immediately upstream from effluent diffuser, (downstream) collect downstream river water sample at Reeve's landing.

4. The instream color measurements will be performed twice weekly when the river flow at the Montezuma Bridge is below 1000 cfs, as measured by the U.S. Geological Survey gauge.

5. The Holding Pond will also be used to manage the BOD loading to the Flint River during periods of low stream flow as determined by the DO measurements in Item I above.

6. Records of monitoring results will be available upon request.

IV. Ultimate Disposal of Solids/Sludge:

1. All process nonhazardous solid waste (including lime mud, waste pulp fiber, waste clarifier sludge, boiler fly ash, causticizing grits and dregs, oversize/reject logs, and secondary sludge) is disposed of in the on-site industrial landfill under Georgia Solid Waste Handling Permit 094-004D(L)(I).

2. Approval from the Division will be obtained before nonhazardous sludge is land applied or disposed of by any means other than disposal in the on-site industrial landfill.

3. Records of the sludge volume and concentration of the sludge that are landfilled are maintained under Georgia Solid Waste Handling Permit (094-004D(L)(I). The records of the quantity of solids landfilled are available upon request.

GreenLaw
Giving Georgia's Environment Its Day In Court

By Fax: (912)-262-3160 and Regular Mail

July 18, 2011

Mr. Bruce Foisy, Acting Manager
Environmental Protection Division
400 Commerce Center Drive
Brunswick, Georgia 31523

Re: Rayonier Performance Fibers; Amendment # 3 to EPD-WQ-4837 Consent Order

Dear Mr. Foisy:

I am writing on behalf of the Altamaha Riverkeeper ("ARK") to comment upon the above-referenced Consent Order Amendment. ARK is a non-profit environmental organization dedicated to protecting and restoring the habitat, water quality, and flow of the Altamaha River from its headwaters in North Georgia to its terminus at the Atlantic Ocean near Darien. ARK represents over 1,000 members who live, work, and recreate in the Oconee, Ocmulgee, and Ohoopee River Basins and their feeder streams that make up the Altamaha River Watershed.

For most if not all of the history of this facility, it has violated state and federal environmental laws by virtue of its near constant discharge of highly colored effluent directly into the Altamaha River. Although EPD has occasionally taken some action in response to these violations, such as the subject Consent Order, EPD has never required Rayonier to perform in a way that actually solves the problem of this colored discharge. If you doubt this statement, we recently had someone do a flyover on a random day (July 13, 2011) to view the site. As you can see from the attached photographs, Rayonier's discharge is wildly unacceptable from any reasonable standpoint. Based upon our inspections and experience, these photographs are typical. We believe that the subject Amendment not only fails to address this ongoing problem but will actually make it worse.

Pursuant to its permit and applicable law, the facility is subject to the Federal Clean Water Act ("CWA"), federal regulations, and the regulations of the State of Georgia. The facility is subject to, among other regulations, Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(c), which states that "all waters shall be free from material related to municipal, industrial, or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water quality uses." Additionally, the facility is subject to Ga. Comp. R. & Regs. r. 391-3-6-.03(5)(d), which states that "all waters shall be free from turbidity which results in a substantial visual contrast in a water body due to man-made activity."

100% Post Consumer Fiber

We believe that the facility remains in violation of these standards and, for the reasons stated in this letter, ARK is opposed to the proposed Consent Order amendment. As proposed, the Order fails adequately to protect the receiving waters from Rayonier's highly colored discharge. As proposed, the Consent Order allows Rayonier to continue to discharge color at levels that will continue to violate the Clean Water Act and Georgia law and fails to impose sufficient standards and protocols to address the long-standing problems from this facility. EPD has already allowed Rayonier to discharge excess color in its effluent in violation of the above-referenced laws. This has resulted in a near constant stream of complaints to the ARK offices from local citizens who fish and recreate in this area of the River. Both the color and the odor from the Plant's discharge remain fundamentally offensive to many of the citizens in this area of the State. The Consent Order which this proposed amendment relates to was, frankly, bad enough in its allowance for pollution from this plant. The proposed amendment will only make things worse and is therefore a bridge too far.

Specifically, with regard to the proposed Amendment, Rayonier wishes to convert part of the mill to a more profitable product and is suggesting replacing its commitment to install the very well proven oxygen delignification process for pollutant discharge reduction with an unproven physical/chemical wastewater treatment process akin to those that have failed in others pulp mills in the past. Rayonier's decision to convert its C-mill (the largest of the 3 pulp manufacturing lines in the Jesup plant) to produce "ultra high purity cellulose speciality fiber" ("CSP") is likely to result in a failure to obtain the color limits envisioned in the original Consent Order schedule, which themselves were much higher color discharge levels than are normal in other United States mills.

If the mill were modified according to the original decree, Rayonier would have installed an oxygen delignification system in the C-mill which would have removed a significant proportion of the color (and otherwise polluting) molecules from the pulp stream and burned them in the mill's existing recovery boiler, instead of dumping them to the wastewater treatment plant, where color is further increased before being discharged to the Altamaha River. Rayonier's proposal is to continue to discharge the large flow of highly colored matter from the C-mill, and to treat it using "solid-liquid separation technology" and to recover the filtrates for burning.

It is important to realize that "solid-liquid separation technology" refers to a wide range of generic chemical engineering techniques which are used for a host of purposes. The original consent order referred to oxygen delignification, which is a very specific technology, already proven in over 80% of the kraft pulp mills in the world, including all mills built in the past 20 years or so.

The conversion of C-mill to CSP production will increase color generation, so that treatment will have to be very successful to realize a net reduction. Furthermore, nobody knows whether the discharges from the proposed "solid-liquid separation technology" will cause other issues, such as color enhancement across the existing effluent treatment system, or discharge of environmentally damaging chemicals. Other pulp companies have argued against EPA forcing them to install treatment systems using solid-liquid separation technologies on the basis of such concerns. Most "solid-liquid separation technology" requires adding chemicals to the

wastewater, some of which are ultimately discharged to the river. Some are environmentally problematic. Rayonier has not provided any clues on which chemicals it may use.

ARK believes that Rayonier should comply with the original Consent Order. This would allow it to convert to CSP production while solving the problems of using oxygen delignification to do so. Other mills making competitive grades of pulp have already done so. An alternative would be to replace the existing wastewater treatment system (which uses the aerated stabilization basin or "ASB" process) with a modern activated sludge treatment (AST) system. The Rayonier ASB is considered obsolete by most experts in the industry and would not be accepted anywhere in the world outside North America. All systems built since about 1980 have been AST. Most ASB systems in the European pulp industry have long been replaced by AST systems. Both AST and ASB treatment systems are designed to reduce BOD, suspended solids and toxicity of pulp mill effluents. Any impact on effluent color is incidental. Thus, ARK believes that Rayonier should not be able to modify the C-Mill unless it installs an AST system. While ASB systems, as at Rayonier today, increase wastewater color by about 30%, AST systems reduce it by about one-third. Thus simple replacement of Rayonier's ASB with an AST system would reduce color by about 40%. AST systems use well proven, very widely used, off-the-shelf technology. A system could be installed in under two years.

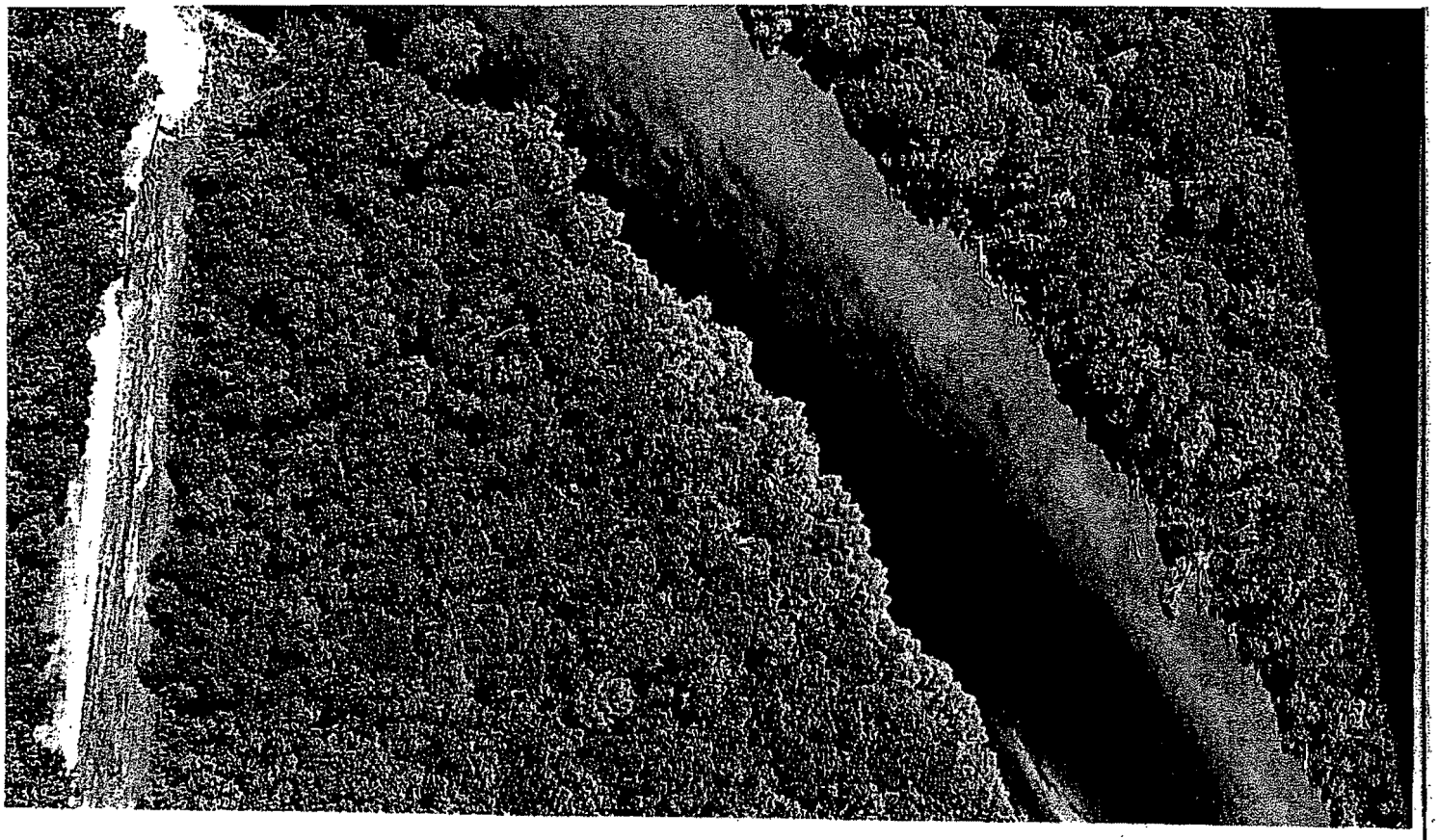
To allow Rayonier to convert to a process and system that will likely result in an increase in color discharge is, in effect, illegal backsliding. The aim with regard to this plant should be to improve the discharge color levels, not go backward as this proposal likely will.

We appreciate your consideration of these comments and look forward to your response.

Sincerely,

Hutton Brown
Senior Attorney

cc: Deborah Shepherd (ARK)



GreenLaw®

Giving Georgia's Environment Its Day In Court

TO:	Mr. Bruce Foisy, Acting Manager	FAX:	(912)-262-3160
FROM:	Scott Sykes		
DATE:	7/18/2011		
RE:	Rayonier Performance Fibers; Amendment # 3	PAGES:	5

Message:

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Jul 18	02:38p	Fax Sent	19122623160	2:25	5	OK

Rayonier information

Christopher Beranek to: Ken Kwan 03/15/2012 11:40 AM

From: "Christopher Beranek" <Christopher.Beranek@dnr.state.ga.us>

To: Ken Kwan/R4/USEPA/US@EPA

History: This message has been replied to.

2 attachments

CB Rayonier 2-13-12.pdf CB Rayonier 03-14-12.pdf

The message is ready to be sent with the following file or link attachments:
CB Rayonier 2-13-12
CB Rayonier 03-14-12

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Christopher Beranek
Environmental Engineer
Coastal District - Brunswick
Phone: (912) 264-7284
Fax: (912) 262-3160

Jesup Mill

Rayonier

February 13, 2012

Kevin Farrell
Assistant Branch Chief
Watershed Protection Branch
4220 International Parkway Suite 101
Atlanta, GA 30354-3902

Re: Rayonier Performance Fibers, LLC – Jesup Mill
NPDES Permit No. GA0003620
Effluent Color Improvement Update

Dear Mr. Farrell,

Rayonier continues to make progress on improving Jesup mill effluent color to the Altamaha River. As you will see in the updated capital spending plan, attached, we are completing the projects identified in the Color Consent Order (the Order) on schedule. We are also implementing additional color control projects that are not required by the Order. Highlights of color improvement progress include:

- Effluent color was reduced from an annual average of 411 tons/day in 2008 to 291 tons/day in 2011, a reduction of 29%.

- The effluent diffuser was installed in December 2011 on Outfall No. 2, which accounts for about 80% of the total effluent color. It is performing well.

- A new brown stock washing stage, filtrate tank and spill collection system is being installed on C Mill (4C BSW). Engineering is nearly complete and the system will be installed and operational by the end of 2012. This equipment will increase capture of color, which will be burned in the recovery boilers, and lower process losses to wastewater treatment.

- A new black liquor evaporator system is being engineered to process the additional filtrate from the Cellulose Specialties Expansion (CSE) project and additional water from spill collection.

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

- For specific brown stock filtrate streams, a new color removal technology was developed and demonstrated in pilot plant trials using commercial equipment, and full-scale process engineering has been completed. Dissolved air flotation (DAF) and screw press equipment have been selected and several purchase orders issued, and layout and piping engineering work is in progress.

- A new knot pressing, handling and disposal system has been engineered to increase capture of color from these solids (partially digested residual wood particles). This will reduce black liquor losses to wastewater treatment from these streams.

Our communication with GA EPD last year included a summary of the new color removal technology in a question and answer format which I attached to the end of this letter.

Rayonier is committed to continuous improvement in effluent color. Color increases that naturally occur in the wastewater treatment system itself have been studied, and process improvements implemented to reduce those increases. Internal mill color reduction goals have been set and performance tracked, and environmental training of all employees includes awareness of the importance of color reduction.

We would be happy to meet with you to discuss further our progress in reducing effluent color. If you have any questions, I can be reached at 912-427-5424.

Regards,

Wilson T. Gautreaux
Environmental Manager

4474 Savannah Highway, Jesup, Georgia 31545
Telephone (912) 588-8000 Facsimile (912) 588-8300

CAPITAL SPENDING PLAN FOR COLOR CONTROL

Major Consent Order Task	Actual Completion Date	Due Date
Sump #1 (B-Knot Pad)	Dec 31, 2008	Mar 6, 2009
Sump #2 (A-Knot Pad)	Dec 31, 2008	Mar 6, 2009
ASB Diffuser Study	Mar 5, 2009	Mar 6, 2009
ASB Diffuser Installed and Operational	December 2010	NA
Construction complete 5B BSW	Jul 16, 2008	Mar 6, 2009
5B BSW Fully Operational	Mar 3, 2009	Sept 9, 2009
Sump #3	July 28, 2009	Mar 6, 2010
Sump #4	Dec 7, 2009	Mar 6, 2010
Sump #5	Jan 26, 2010	Mar 6, 2010
Sump #6	Oct 27, 2010	Mar 6, 2011
Sump #7	Dec 29, 2010	Mar 6, 2011
Sump #8	Dec 20, 2010	Mar 6, 2011
BL Spill Systems Operational and Op's Trained	February 2012	Mar 6, 2012
C Mill DAF Color Removal Eng Complete	February 2012	
C Mill DAF Color Removal Operational		June 6, 2013
5A-BSW Improvements Eng Complete		Jun 6, 2013
5A-BSW Improvements Ordered		Sep 6, 2013
5A-BSW Improvements Constr Complete		Sep 6, 2014
5A-BSW Improvements Operational		Mar 6, 2015

Additional Color Control Projects	Actual Completion Date	Planned Completion Date
ASB Diffuser Installed and Operational	December 2010	NA
4C-BSW Improvements		December 2012
B Mill DAF Color Removal		January 2013
CSE Project New Evaporator		June 2013
Knot Handling Improvements, C Mill		June 2012
Knot Handling Improvements, A & B Mills		June 2013

What is the process Rayonier plans to use to achieve effluent color reduction with the conversion of C Mill to cellulose specialties?
The Cellulose Specialties Expansion (CSE) project design includes two features to reduce effluent color. First, a fourth stage of brown stock washing will be added to improve capture of black liquor solids before the unbleached pulp goes to the screening process. This additional brown stock washer will be a modern wash press, similar to that installed on B Mill. The second color removal process in the CSE design is dissolved air flotation (DAF) clarification that will installed to remove solids and color from the screening process rejects. The material removed will be dewatered using rotary thickeners and screw presses and is planned to be burned in our power boilers as a biomass fuel.

Does this new color separation process use new chemicals?
Yes, to separate and remove the color from the screening process rejects a coagulant and flocculant will be used. These chemicals are commonly used in industrial and municipal fresh water and waste water treatment systems to remove colloidal particles. Flocculants and coagulants attach to the colloidal particles to make them large enough for separation with the DAF clarifier. As a result, most of these chemicals stay with the solids removed in the DAF.

How do you know there will not be a material change in effluent characteristics with the conversion of C Mill?
The pulp manufacturing process that will be used in C Mill after conversion will be a duplicate of the A and B Mill processes, except for the DAF color removal process. C Mill will use the same chemicals in digesting and bleaching that are used on A and B Mills today. Although new chemicals will be used in the DAF color removal process, these are commonly used water treatment chemicals that will mostly be retained with the solids removed.

What has Rayonier done to demonstrate that the new color removal technology will work?
Rayonier has conducted on-site trials with pilot scale equipment to demonstrate the efficacy of the new color removal and dewatering technology and establish the design basis for full scale installation. The equipment tested is commercially available and widely used in industry for solids separation. We believe the use of this equipment for color removal in the pulp and paper industry is new and is possible because of Rayonier's unique and proprietary pulp screening process. Rayonier has conducted on-site trials with pilot units from two potential vendors using screening process rejects from the mill. Color removal results from both vendor trials were consistent and demonstrated excellent color removal efficiency.

From: Wilson Gautreaux <wilson.gautreaux@rayonier.com>
To: Christopher Beranek <Christopher.Beranek@dnr.state.ga.us>
CC: Debra Lane <debra.lane@rayonier.com>
Date: 2/14/2012 9:00 AM
Subject: Color Update
Attachments: Rayonier to Farrell Color Update 2-13-12.pdf

Hi Chris,

Attached is a color update requested by Kevin Farrell that we just sent him. Please share with Bruce Foisy. Give me a call if any questions.

Regards,

Wilson

--
Wilson Gautreaux
Environmental Manager
Rayonier Performance Fibers
Jesup Mill
4470 Savannah Highway
P.O. Box 2070
Jesup, GA 31545
Tel: 912-427-5424
Cell: 912-424-9091
wilson.gautreaux@rayonier.com

Georgia Department of Natural Resources
Environmental Protection Division • Coastal District
400 Commerce Center Drive • Brunswick • Georgia 31523-8251
Phone: 912/264-7284
Mark Williams, Commissioner
Judson H. Turner, Director

FILE COPY

March 14, 2012

Wilson T. Gautreaux
Rayonier, Inc.,
Post Office Box 2070
Jesup, Georgia 31545

RE: NPDES Permit No. GA0003620
Rayonier, Inc.
Jesup, Wayne County, GA

Dear Mr. Gautreaux:

This letter documents our March 1, 2012 Compliance Evaluation Inspection. At that time I met with Brian Herrin, Garret Lewis, Ted Mathis and you. No violations of the Water Quality Control Rules or the above referenced permit were noted at the time of the inspection. The Division recommends Rayonier develop a solution for controlling the foam along the banks of treatment ponds 2A/2B when the winds make the spray barge ineffective. Enclosed is the Division's inspection report.

Please contact me at (912)264-7284 if you have any questions regarding this or any matter.

Sincerely,

C. Beranek

Christopher Beranek
Environmental Engineer
Coastal District – Brunswick

att: Inspection Report
cc: facility file

Georgia Department of Natural Resources
Environmental Protection Division • Coastal District
400 Commerce Center Drive • Brunswick • Georgia 31523-8251
Phone: 912/264-7284
Mark Williams, Commissioner
Judson H. Turner, Director

INDUSTRIAL	☒	MUNICIPAL	☐

NPDES	CEI	☒	RECON	☐
LAS	CEI	☐	RECON	☐

Compliance Evaluation Inspection Checklist

Facility Name Rayonier Performance Fibers LLC		**County** Wayne
Permit No. GA0003620	**Permit Effective Date** May 5, 2001	**Permit Expiration Date** April 30, 2006
Name of On-site Representative Wilson Gautreaux	**Phone** 912-427-5424	**Fax**
Inspection by Christopher Beranek	**Date of Inspection** March 1, 2012	**Name of Receiving Stream** Altamaha River

AREA EVALUATED DURING INSPECTION
(S = Satisfactory, M = Marginal, U = Unsatisfactory, NA = Not Applicable)

S	Permit	NA	Secondary Clarifier	S	Treatment Pond(s)	S	Effluent/Receiving Waters
S	Records/Reports	NA	Disinfection	NA	Storage Pond(s)	S	Operations & Maintenance
S	Facility Site Review	NA	Aerobic Digester	NA	Distribution System	S	Sludge Disposal
NA	LAS Facility Site Review	NA	Anaerobic Digester	NA	Collection System	NA	Bio-solid Report
S	Preliminary Treatment	NA	Filtration	NA	Constructed Wetlands	S	Safety
NA	Trickling Filter	NA	Chemical Treatment Equip	S	Flow Measurement	S	Plant Grounds
NA	Activated Sludge Tanks	S	Sludge Dewatering	S	Laboratory		Notes/Diagrams

SAMPLE DMR RECORD – previous twelve (12) months
(S = RESULTS ACCEPTABLE, V = RESULTS EXCEED PERMIT LIMITS, X = RESULTS NOT SUBMITTED)

MONTH	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
RESULTS	S	S	S	S	S	S	S	S	S	S	S	S

Section A - PERMIT	Yes	No	NA
1. Is there a current copy of the facility's permit available on-site?	☒	☐	☐
2. Is the correct name and mailing address of permittee identified on permit?	☒	☐	☐
3. Is the facility as described in permit?	☒	☐	☐
4. Have there been any expansions, production increases, or process modifications since the effective date of the Permit? (See question #10)	☒	☐	
5. If there have been any recent permit modifications, amendments or compliance orders, are copies located in facility file?	☒	☐	☐
6. Are the number of discharge outfalls the same as listed in the permit?	☒	☐	☐

Compliance Evaluation Inspection Checklist

Section A - PERMIT	Yes	No	NA
7. If applicable, is the name of receiving waters listed correctly in the permit?	☒	☐	☐
8. What is the permit status (i.e., current, expired, or extended)?	Extended		
9. Has the permit renewal application been submitted to the Division within 180 days of expiration date?	☒	☐	☐
10. If applicable, has Permittee properly notified the Division of modifications of all process discharge changes?	☒	☐	☐
11. If required, is the operator properly certified? Certification number WW2-014876, WW3-016614, WW3-016241	☒	☐	☐
12. Date GPS performed and reported: _____ Location of GPS determination: _____			
13. Is the facility in compliance with Section A above?	☒	☐	☐

Notes:
Rayonier is converting their C-mill from fluff pulp to Cellulose specialty fibers. Rayonier has notified the Division that this would not change or affect their wastewater discharge. Rayonier is complying with Consent Order EPD-WQ-4837 and associated amendments.

Section B - RECORDS/REPORTS	Yes	No	NA
1. Are records maintained for time period required (3 years)?	☒	☐	☐
2. a. If required, are spills and bypasses reported and documented as required by the permit?	☐	☐	☒
b. Is follow-up written documentation given as required by the permit (within 5 days)?	☐	☐	☒
3. Discharge Monitoring Report (DMR) evaluation:			
• Does the responsible person or designee signs and certifies the DMR?	☒	☐	☐
• Is the facility monitoring at the frequency designated in permit?	☒	☐	☐
• Has the facility monitored more frequently than required by the permit? If so, is the data included?	☒	☐	☐
• Is the facility sampling the parameters required in the permit?	☒	☐	☐
• Is all data collected summarized on the DMR?	☒	☐	☐
• Is the facility reporting in the units required by the permit (lbs/day or kg/day)?	☒	☐	☐
• Is the data reported on DMR consistent with the analytical results?	☒	☐	☐
• Is the coliform concentration calculated as required by the permit (e.g., median, geometric mean)? Check flow and sample data to be the same.	☐	☐	☒
• Are the numerical values for minimum detection limits reported on the DMR when the laboratory reports "Not Detected"?	☒	☐	☐
• Is the facility composite/grab sampling where required in permit?	☒	☐	☐
• Is the Number Exceeding (N.E.) properly reported on all DMR's and annual reports?	☒	☐	☐
• Are the reports completed in time frame and frequency required by the permit?	☒	☐	☐
4. Sampling and analytical records include:			
• Dates, times, and location of sampling	☒	☐	☐
• Names of individuals performing sampling	☒	☐	☐
• Analytical methods (40 CFR Part 136)	☒	☐	☐
• Results of analyses	☒	☐	☐
• Dates of analyses	☒	☐	☐
• Analysts' names or initials	☒	☐	☐
5. Do plant records include:			
• Daily plant operational records or log book?	☒	☐	☐

Section B - RECORDS/REPORTS	Yes	No	NA
• Equipment maintenance records and schedules?	☒	☐	☐
• Records of auxiliary power checks?	☐	☐	☒
• Other	☐	☐	☒
6. Are all records and reports required by the permit organized and available for inspection?	☒	☐	☐
7. Compliance Schedules/Orders			
• Is the facility subject to a compliance schedule in either its permit or in an order?	☒	☐	☐
• Are the items in the compliance schedule, which are currently due, completed (includes both the permit and orders)?	☒	☐	☐
• Has the permittee a plan to comply with the items in the compliance schedule coming due in the future (includes both the permit and orders).	☒	☐	☐
8. If required, is the facility within permit schedules for:			
• WET test	☐	☐	☒
• Priority pollutants	☐	☐	☒
• Long-term BOD testing	☒	☐	☐
• Increased monitoring	☐	☐	☒
• TRC	☐	☐	☒
• Fecal	☐	☐	☒
• Watershed Protection Plan	☐	☐	☒
• Annual reporting	☐	☐	☒
9. Is the facility in compliance with Section B above?	☒	☐	

Notes:
Rayonier has not had any bypasses or spills since the last inspection. Therefore, notifications are not needed. Rayonier's permit does not require them to monitor for fecal coliform. Rayonier does not have auxillary power for their wastewater treatment system. For condition 8 of this section Rayonier is only required to perform Long-term BOD testing in accordance with their permit.

Section C - FACILITY SITE REVIEW	Yes	No	NA
1. Are all treatment units and supporting equipment in service and mechanically functioning properly?	☒	☐	☐
2. Are hydraulic and organic loadings consistent with plant design criteria?	☒	☐	☐
a. Are there signs of overloading to the facility and collection system, including I&I and septage loading?	☐	☒	☐
3. Do peak flows remain within the established plant capacity?	☒	☐	☐
4. Are lift stations properly monitored, maintained and have a back-up power source and are not subject to chronic spills and/or overflows?	☐	☐	☒
5. Are odors adequately controlled, resulting in limited complaints?	☒	☐	☐
6. Housekeeping procedures are adequate to prevent release of pollutants to environment:	☐	☐	☐
• Adequate dikes and secondary containment	☒	☐	☐
• Spill containment and clean-up	☒	☐	☐
• Signs of spillage to soil, groundwater, or surface water	☐	☒	☐
• Storm water and leachate management from storage piles	☐	☐	☒
• Leaking pipes, pumps, etc.	☐	☐	☒
• Drum and chemical storage areas	☐	☐	☒
• Minimization of pollutants entering storm water outfalls	☐	☐	☒
• Other open dumps or debris piles	☐	☐	☒
• Other	☐	☐	☒
7. Are there signs of tank deterioration and/or settlement?	☐	☐	☒
8. Safety concerns may interfere with proper operation, maintenance, and/or monitoring.	☐	☐	☒

Section C - FACILITY SITE REVIEW	Yes	No	NA
9. Are Material Safety Data Sheets (MSDS) available for stored chemicals?	☒	☐	☐
10. Is toxicity suspected in the effluent?	☐	☒	☐
11. Is equipment available for spill cleanup and containment?	☒	☐	☐
12. Is the facility is in compliance with Section C above?	☒	☐	☐

Notes:
Rayonier's wastewater treatment system did not show any signs of overloading. The treatment ponds have a retention time of 10 days. No lift stations are used in Rayonier's collection system that channels the wastewater to the treatment system. During the inspection of Rayonier's wastewater treatment system there were no signs of spills to soil, groundwater or surface water. Rayonier has coverage under the General stormwater permit and the stormwater from the process areas and treatment areas are discharged to the aeration basins for treatment. There was no evidence of Rayonier's discharge being toxic (i.e. no dead fish).

Section C – 1 LAS FACILITY SITE REVIEW NA ☒	Yes	No	NA
1. Is there excessive scum, grease, foam or floating sludge in clarifiers?	☐	☐	☐
2. Any severe corrosion of structures?	☐	☐	☐
3. Any vital equipment out of service?	☐	☐	☐
4. Any unusual or improvised equipment?	☐	☐	☐
5. Overflowing of influent lines, overflow weirs or other structures.	☐	☐	☐
6. Overflows at alternate discharge points, bypass, or any unpermitted discharges (give location).	☐	☐	☐
7. Are there pipes from process/storage areas that exhibit evidence of discharge to the ground or to surface water?	☐	☐	☐
8. Is there any spraying into buffer zone or adjacent surface water?	☐	☐	☐
9. Is there any spraying into on-site drainage or on-site surface water?	☐	☐	☐
10. Is there any surface runoff?	☐	☐	☐
11. Is there erosion or gullies?	☐	☐	☐
12. Is there sparse vegetation?	☐	☐	☐
13. Is there any pooling of Water?	☐	☐	☐
14. Is there any leaf defoliation or discoloration?	☐	☐	☐
15. Is there any presence of ground water?	☐	☐	☐
16. Any unapproved vegetation in use?	☐	☐	☐
17. Are meters calibrated as required in the LAS permit?	☐	☐	☐
18. Are applications rates in compliance with the LAS permit?	☐	☐	☐
19. Are groundwater wells properly labeled and maintained?	☐	☐	☐
20. Is sampling being conducted at the proper locations in accordance with the LAS permit?	☐	☐	☐
21. Is the facility in compliance with Section C-1 above?	☐	☐	☐

Notes:

Section D PRELIMINARY TREATMENT NA ☐	Yes	No	NA
1. Is there excessive debris on bar screen?	☐	☒	☐
2. Is the grit chamber clogged?	☐	☐	☒
3. Is grit and/or other screenings being improperly contained?	☐	☐	☒
4. Is any preliminary treatment equipment out of service?	☐	☒	☐
5. Is the facility in compliance with Section D above?	☒	☐	

Notes:
Rayonier's bar screen is kept clean by the revolving flights that lift the debris from the screen and discharge it to an isolated area that is cleaned periodically and placed in the dumpsters. Rayonier's wastewater treatment system does not have a grit chamber. The preliminary treatment at Rayonier is a clarifier used to settle out solids.

Section E TRICKLING FILTER NA ☒	Yes	No	NA
1. Is the trickling filter ponding?	☐	☐	☐
2. Is the distribution arm center column leaking?	☐	☐	☐
3. Is there an uneven distribution of flow on surface?	☐	☐	☐
4. Is there a sparse, uneven or thin growth on surface?	☐	☐	☐
5. Color of growth _____	☐	☐	☐
6. Are the distribution arm orifices clogged?	☐	☐	☐
7. Is there a restricted rotation of distribution arms?	☐	☐	☐
8. Are there filter flies?	☐	☐	☐
9. Is there trash on media surface?	☐	☐	☐
10. Is the facility in compliance with Section E above?	☐	☐	
Notes:			

Section F ACTIVATED SLUDGE TANKS NA ☒	Yes	No	NA
1. Are there dead spots, dark foam or a bad order?	☐	☐	☐
2. Is there surface aerator or compressor failure?	☐	☐	☐
3. Is the blower/aerator on a timer? Interval _____	☐	☐	☐
4. Is there air rising in clumps (boiling)?	☐	☐	☐
5. Are there leaks in the compressed air piping?	☐	☐	☐
6. Is there dark mixed liquor or dark tan foam?	☐	☐	☐
7. Is there thick billows of white, sudsy form?	☐	☐	☐
8. Low dissolved Oxygen (<1 mg/L) Actual D.O _____	☐	☐	☐
9. What is the MLSS concentration _____? Is this excessive or low?	☐	☐	☐
10. Is the facility in compliance with Section F above?	☐	☐	
Notes:			

Section G SECONDARY CLARIFIER NA ☒	Yes	No	NA
1. Are there excessive gas bubbles on surface?	☐	☐	☐
2. Are the overflow weirs fouled or not level?	☐	☐	☐
3. Is there short-circuiting overflow?	☐	☐	☐
4. Is there a buildup of solids in center well of the circular clarifier?	☐	☐	☐
5. Is pin floc visible in overflow?	☐	☐	☐
6. Is the scum rake ineffective or overloaded?	☐	☐	☐
7. Is sludge floating on surface or clumping?	☐	☐	☐
8. Is there billowing sludge? What is the depth the sludge blanket too high? Depth _____	☐	☐	☐
9. Are the sludge withdrawal ports clogged?	☐	☐	☐
10. Is there evidence of a solids washout?	☐	☐	☐
11. Is a sludge judge available and being used?	☐	☐	☐
12. Is the facility in compliance with Section G above?	☐	☐	

Notes:

Section H	DISINFECTION	NA ☒	Yes	No	NA
1. Are there excessive gas bubbles on surface?			☐	☐	☐
2. Is there sludge buildup in contact chamber?			☐	☐	☐
3. Any short-circuiting of flow?			☐	☐	☐
4. Is the detention time inadequate?			☐	☐	☐
5. Is there foaming at outfall or downstream?			☐	☐	☐
6. Is there floating scum and/or solids in chamber?			☐	☐	☐
7. What is the chlorine feed rate _____? Is it flow proportioned?			☐	☐	☐
8. Is the chlorine tank empty or nearly so?			☐	☐	☐
9. Is the feed equipment operational?			☐	☐	☐
10. In UV systems, are bulbs cleaned regularly?			☐	☐	☐
11. In UV systems, are replacement bulbs available?			☐	☐	☐
12. Is the facility in compliance with Section H above?			☐	☐	

Notes:

Section I	AEROBIC DIGESTER	NA ☒	Yes	No	NA
1. Is there excessive foaming or bad odor?			☐	☐	☐
2. Are the diffusers clogged?			☐	☐	☐
3. Mechanical aerator failure.			☐	☐	☐
4. Is there sufficient D.O. in digester? Actual D.O. _____			☐	☐	☐
5. Is the facility in compliance with Section I above?			☐	☐	

Notes:

Section J	ANEROBIC DIGESTER	NA ☒	Yes	No	NA
1. Are the mixers or heater operating?			☐	☐	☐
2. Is the floating cover tilting?			☐	☐	☐
3. Is the gas burner operative?			☐	☐	☐
4. Is the supernatant exuding a sour odor?			☐	☐	☐
5. Is the facility in compliance with Section J above?			☐	☐	

Notes:

Section K	FILTRATION (Sand filters, etc.)	NA ☒	Yes	No	NA
1. Is the filter surface clogged; ponding?			☐	☐	☐
2. Gravel displacement of filter media.			☐	☐	☐
3. Formation of mud balls in filter media.			☐	☐	☐
4. Is there a loss of filter media during backwashing?			☐	☐	☐

Section K	FILTRATION (Sand filters, etc.)	NA ☒	Yes	No	NA
5. Is there trash or vegetation on media surface?			☐	☐	☐
6. Is the facility in compliance with Section K above?			☐	☐	
Notes:					

Section L	CHEMICAL TREATMENT EQUIPMENT	NA ☒	Yes	No	NA
1. Is heavy corrosion evident?			☐	☐	☐
2. Have chemicals been left open in atmosphere?			☐	☐	☐
3. Are chemical containers stored improperly or in a hazardous manner?			☐	☐	☐
4. Are dry chemicals spilled between storage areas and feed units?			☐	☐	☐
5. Have empty chemical containers been disposed of properly?			☐	☐	☐
6. Are liquid chemical feed units appropriately contained (berm/dikes).			☐	☐	☐
7. Is chemical dust covering the feed unit area, storage or transfer areas?			☐	☐	☐
8. Are there ruptures in chemical feed lines?			☐	☐	☐
9. Is the facility in compliance with Section L above?			☐	☐	
Notes:					

Section M	SLUDGE DEWATERING	NA ☐	Yes	No	NA
1. How many drying beds? 6 compost cells					
2. Is the sludge being distributed poorly on drying beds?			☐	☐	☒
3. Is sludge being applied to drying beds that are already full?			☐	☐	☒
4. Is vegetation allowed to grow in the drying beds?			☒	☐	☐
5. I dry sludge allowed to remain in drying beds?			☐	☐	☐
6. Is there sludge runoff from plant site?			☐	☒	☐
7. Is the mechanical dewatering system working? (belt-press, plate & frame, etc.)			☐	☐	☒
8. Is there spilled sludge around dewatering units?			☐	☐	☒
9. Is sludge being stockpiled on plant grounds?			☐	☒	☐
10. Is the facility in compliance with Section M above?			☒	☐	

Notes:
Rayonier has compost cells for dewatering their sludge. The compost cells do have some vegetation growing on them. It takes approximately 12-18 months for the compost to dry once Rayonier no longer discharges solids to the compost cell. The water from the compost cells is directed to aeration basins 2A/2B.

Section N	TREATMENT POND(S)	NA ☐	Yes	No	NA
1. Is there any erosion of banks or dikes; animal burrows?			☐	☒	☐
2. Are there weeds in pond or along dike at water line?			☒	☐	☐
3. Is there foaming and/or spray in the aerated lagoon?			☒	☐	☐
4. Is there scum or debris accumulating along dike?			☒	☐	☐
5. Are there odors, foam, floating solids or oil sheens?			☒	☐	☐
6. Is there a bypass of one or more pond cells?			☐	☒	☐
7. Is the effluent structure properly maintained?			☒	☐	☐

8. Is there excessive sludge buildup?	☐	☒	☐
9. Is there excessive algae or duckweed?	☐	☒	☐
10. Is the facility in compliance with Section N above?	☒	☐	

Notes:
Rayonier has two large treatment ponds for wastewater treatment. There were no signs of erosion of banks or dikes. There are weeds along the dikes at the water line in both ponds. With Rayonier's wastewater, odor and foam are associated with the treatment. The foam is caused by the agitation of the wastewater by the aerators and is controlled by Rayonier. A spray barge is used to control the foam in treatment ponds 2A/2B and a chemical defoamer is used in treatment pond 1. During the inspection the winds were too high for the spray barge in 2A/2B to be effective in controlling the foam along the banks of the ponds. No foam was seen leaving the pond system during the inspection. The Division recommends Rayonier develop a solution for controlling the foam in 2A/2B when the winds make the spray barge ineffective to prevent possible violations by foam leaving the pond. There was not any scum or debris accumulating along the dikes of either set of treatment ponds. Rayonier's effluent structures were well maintained. There was no algae or duckweed visible on the treatment ponds.

Section O	STORAGE POND(S)	NA	☒	Yes	No	NA
1. Is there any erosion of banks or dikes; animal burrows?				☐	☐	☐
2. Are there weeds in pond or along dike at water line?				☐	☐	☐
3. Are there dead fish or other organisms visible?				☐	☐	☐
4. Is there scum or debris accumulating along dike?				☐	☐	☐
5. Are there odors, foam, floating solids or oil sheens?				☐	☐	☐
6. Is the effluent structure properly maintained?				☐	☐	☐
7. Is there excessive algae or duckweed?				☐	☐	☐
8. Is the facility in compliance with Section O above?				☐	☐	

Notes:

Section P	DISTRIBUTION SYSTEM	NA	☒	Yes	No	NA
1. Are there line breaks (big lines)?				☐	☐	☐
2. Are there saddle breaks (big pipes to feeder lines)?				☐	☐	☐
3. Are there tee breaks (underground piping)?				☐	☐	☐
4. Are there joint leaks?				☐	☐	☐
5. Are there any long or short risers broken (above ground piping)?				☐	☐	☐
6. Are there any sprinkler head blowouts?				☐	☐	☐
7. Are there any sprinklers damaged or missing?				☐	☐	☐
8. Are there any sprinklers clogged?				☐	☐	☐
9. Are there any sprinkler arms malfunctioning (due to vegetation interference)?				☐	☐	☐
10. Is the facility in compliance with Section P above?				☐	☐	☐

Notes:

Section Q	COLLECTION SYSTEM	NA	☒	Yes	No	NA
1. Has a sewer use ordinance been enacted?				☐	☐	☐
Who enforces the ordinance?						
2. Are there accurate updated maps of the collection system and lift stations available?				☐	☐	☐
3. Are right-of-ways for major interceptor sewer lines maintained and inspected annually?				☐	☐	☐

Compliance Evaluation Inspection Checklist

Section Q	COLLECTION SYSTEM	NA	☒	Yes	No	NA
What is the frequency?						
4. Are inspection and maintenance records for the lift stations available and up to date?				☐	☐	☐
5. Has a written inspection and maintenance program for the collection system been authored?				☐	☐	☐
6. Has a spare parts inventory been established for the lift stations to ensure continuous operation?				☐	☐	☐
7. Are all lift stations in service and properly maintained?				☐	☐	☐
8. Is Mfg. literature available to personnel on all lift station equipment?				☐	☐	☐
9. Is there an adequate alarm system and written emergency procedure in place for each lift station?				☐	☐	☐
10. Are P&S plans submitted to GA EPD for approval prior to construction or installation?				☐	☐	☐
11. Lift Station Inventory						
Station Name or Location	Comments					
12. Is the facility in compliance with Section Q above?				☐	☐	
Notes:						

Section R	CONSTRUCTED WETLANDS	NA	☒	Yes	No	NA
1. Is the wetland flow pattern in a series ☐ or in parallel ☐?						
2. Is the wetland's vegetation vigorous and healthy?				☐	☐	☐
3. Is plant coverage at least 90% of each cell, except in the deep water zones or sediment traps?				☐	☐	☐
4. Has exotic vegetation taken over cells? (Exotic plants should be removed)				☐	☐	☐
5. Are the interior and exterior earthen dikes eroded or leaking?				☐	☐	☐
6. Has the water depth been exceeded in any cell?				☐	☐	☐
7. Is there standing water present at the toe of the earthen dikes?				☐	☐	☐
8. Are the dikes stabilized with grass and being regularly cut?				☐	☐	☐
9. Are there trees, bushes, or weeds present on the interior or exterior dikes?				☐	☐	☐
10. Has sediment formed in the cells?				☐	☐	☐
11. Is sediment being removed from the deep water zones periodically?				☐	☐	☐
12. Have burrowing animals caused damage to the earthen dikes?				☐	☐	☐
13. Is each cell identified by signage?				☐	☐	☐
14. Does the perimeter fence have "No Trespassing" signs around the entire site?				☐	☐	☐
15. Is the perimeter fence gate locked?				☐	☐	☐
16. Does the entrance have signage identifying the facility as wastewater treatment plant?				☐	☐	☐
17. Are access roads well maintained? (No ruts, pot holes, etc.)				☐	☐	☐
18. Are all drain pipes connecting each cell free from obstructions?				☐	☐	☐
19. Has a mosquito control plan been implemented as necessary?				☐	☐	☐
20. Is the facility in compliance with Section R above?				☐	☐	
Notes:						

Section S - FLOW MEASUREMENT	NA ☐	Yes	No	NA
1. Flow Measurement devices and methods: **Influent Measurement** Primary Device (e.g. Parshall flume, weir, etc.): N/A Secondary Device (e.g. transducer, float, strip gauge, etc.): N/A **Effluent Measurement** Primary Device: _____ Secondary Device: Transducer Other method of estimating flow: Pond level can be used for total flow in 24 hours				
2. Are flow measurement devices designed to meet permit requirements ("continuously measure", "continuously record", etc.)?		☒	☐	☐
3. Are flow measurement locations representative of the actual discharge (considering return and by-pass lines, etc.)?		☒	☐	☐
4. Flumes:				
• Is the approach channel straight for at least 10 times the maximum head height in the flume?		☐	☐	☒
• Does the flow enter the flume evenly distributed across the channel and free of turbulence, boils, or other disturbances?		☐	☐	☒
• Is the flume clean and free of debris or deposits?		☐	☐	☒
• Are all flume dimensions appear accurate, level, and plumb?		☐	☐	☒
• Is the flume head being measured properly?		☐	☐	☒
• Is the flume appropriately sized to measure the existing range of flows?		☐	☐	☒
• Are there any obstructions downstream causing inaccurate flow measurement due to excessive "submergence" in flume?		☐	☐	☒
• Are proper flow tables being used?		☐	☐	☒
5. Weirs:				
• Is the approach channel straight for at least 10 times the maximum head height?		☐	☐	☒
• Is the flow in the approach channel evenly distributed and free of turbulence, boils, or other disturbances?		☐	☐	☒
• Is there any solids accumulation in the bottom of the approach channel?		☐	☐	☒
• Is the weir crest located at least two times the maximum head height off the floor of the flow channel?		☐	☐	☒
• Is the weir plate level, plumb and without distortions?		☐	☐	☒
• Is the weir beveled on downstream side if plate is >1/8 inch thick?		☐	☐	☒
• Is there leakage around weir plate?		☐	☐	☒
• Is the measuring point located at least 3 times the maximum head height behind (upstream of) the weir?		☐	☐	☒
• Is there free-fall and access for air below the nappe of the weir (i.e. water doesn't cling to the weir plate)?		☐	☐	☒
• Is the weir sized properly to measure the existing range of flows?		☐	☐	☒
• Are proper flow tables being used for the weir type and size?		☐	☐	☒
6. Is the secondary device properly installed, maintained, and operating without interference from foam, turbulence, webs, etc.?		☒	☐	☐
7. Date the flow meter was calibration last: February 8, 2012 Performed by: Brian Herrin, Ted Mathis, and Garrett Lewis of Rayonier				
8. Are calibration checks by plant personnel routinely performed?		☒	☐	☐
9. Are calibration records (external and internal checks) maintained?		☒	☐	☐

Section S - FLOW MEASUREMENT	NA ☐	Yes	No	NA
10. Is the facility in compliance with Section S above?		☒	☐	

Notes:
Rayonier does not have a flume or weir for measuring the flow thru their outfalls. Rayonier peformed in house calibration on the flow measuring devices.

Section T - LABORATORY	NA ☐	Yes	No	NA
1. Is the on-site lab certified? a. List parameters analyzed on-site that are used for DMR reporting: BOD5, TSS, Flow, Color, pH b. List additional parameters analyzed for internal monitoring and process control:				
2. Are EPA-approved analytical procedures used by the on-site laboratory (40 CFR 136.3)?		☒	☐	☐
3. Is adequate equipment and procedures used for on-site analyses:		☒	☐	☐
• BOD, TSS, pH, DO, residual chlorine, Temperature, other		☒	☐	☐
4. Do on-site laboratory records include:				
• Calibration and maintenance of equipment?		☒	☐	☐
• Equipment operating instructions and manuals?		☒	☐	☐
5. Is satisfactory calibration and maintenance of instruments performed?		☒	☐	☐
6. Is there satisfactory refrigeration in use (≤ 4°C)?		☒	☐	☐
7. Duplicate samples are analyzed 100% of time:				
8. Spiked samples are used 100% of time:				
9. Is a certified contract laboratory being used: Laboratory name: _____ Address: _____ Phone: _____ For what parameters: Long Term BOD, Dioxin		☒	☐	☐
10. Are EPA-approved analytical procedures identified on contract lab report? (40 CFR 136.3)		☒	☐	☐
11. Are holding times being met by on-site and/or contract laboratory.		☒	☐	☐
12. SAMPLING (SELF-MONITORING PROGRAM)				
• Are sampling locations, type, methods, and frequencies conforming to the NPDES permit for all required samples?		☒	☐	☐
• Are sampling locations and methods providing representative samples?		☒	☐	☐
a. Are grab samples collected during peak flow conditions rather than low-stress conditions?		☒	☐	☐
b. Do composite sampling procedures comply with the permit (time vs. flow weighted)?		☒	☐	☐
• Are automatic samplers and other sampling equipment properly cleaned?		☒	☐	☐
• Are samples preserved using methods listed in 40 CFR, Part 136 (e.g. chilled, acidified, etc.)?		☒	☐	☐
• Are sample containers as those listed in 40 CFR, Part 136?		☒	☐	☐
• Is chain-of-custody maintained and documented?		☒	☐	☐
• Are samples collected using approved protocols:		☒	☐	☐
a. Coliform samples taken directly into sterilized a container.		☐	☐	☒
b. BOD samples are taken prior to disinfection or reseeded.		☒	☐	☐
c. Oil and grease collected directly into a glass container.		☐	☐	☒
d. Other:		☐	☐	☒
13. Is the facility in compliance with Section T above?		☒	☐	

Section T - LABORATORY	NA ☐	Yes	No	NA

Notes:
Rayonier does not sample for coliform and oil and grease. Rayonier uses two contract laboratories for testing not performed by the facility personnel. The first laboratory isTestAmerica Laboratories, Inc. 880 Riverside Parkway, West Sacramento, CA 95605 and Columbia Analytical Services, 9143 Philips Highway, Jacksonville, FL 32256. Test America performs Rayonier's dioxin testing and Columbia Analytical Services performs Rayonier's Long term BOD.

Section U - EFFLUENT/RECEIVING WATERS	NA ☐	Yes	No	NA
1. Any violation of discharge limits?		☐	☒	☐
2. Any spills/bypasses?		☐	☒	☐
3. Any fish kills or other receiving water impacts?		☐	☒	☐

EFFLUEUNT/RECEIVING WATERS OBSERVATIONS (Further explanation attached) ☒

OUTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	VISIBLE FLOAT SOLIDS	COLOR	OTHER
001	Not seen	Not seen	Not seen	Not seen	Not seen	observed	
002	Not seen	Not seen	Not seen	Not seen	Not seen	Observed	

4. Has all reclaimed wastewater for non-restricted access areas met urban water reuse standards?	☐	☐	☒
5. Has all reclaimed wastewater for restricted access areas been pretreated to secondary levels and received disinfection?	☐	☐	☒
6. Is Outfall Identification posted as required by the Rules? (391-3-6-.06(17)) Sign must include the following: • *"Treated Wastewater" OR "Treated Industrial Water" (as applicable)* • *Facility name (including name of government body if owned by local government, not required for Industrial)* • *The words "Permit #" followed by last five digits of permit number* • *The words "Outfall #" followed by the actual outfall number* • *The words "Owner Phone" followed by the facility's phone number (not required for Industrial)* • *EPD's name and phone number (i.e. 1-800-241-4113)*	☒	☐	☐

NOTE: In the case of permittees who have been issued a general permit instead of an individual permit, EPD will provide the permittee with a unique 5 digit number to use as a permit number on the sign. The sign is to be posted no later than 12 months after the effective date of this rule and it is to be properly maintained from that point forward. Provided that a good faith effort is made and documented by the person or entity to maintain such sign, the person or entity shall be deemed in compliance with this Rule and the Georgia Water Quality Control Act. The requirement to identify an outfall will not apply if any of the following conditions apply: 1) If the posting of the sign would be inconsistent with any other State or Federal Statute 2) If the outfall to the receiving water is located on private property which is restricted to the public through fencing, patrolling, or posting. If the property access restriction is accomplished by the posting of signs, then in order to qualify under exemption number 2 above the posted signs restricting access must be no more than 100 feet apart along the periphery of the property.

Section U - EFFLUENT/RECEIVING WATERS	NA ☐	Yes	No	NA
8. Is the facility in compliance with Section U above?		☒	☐	

Notes:
Rayonier has not had any violations of discharge limits since their last inspection. Rayonier has not experienced any bypasses or spills since the last inspection. During the inspection there was no evidence of fish kills. Rayonier does not reclaim wastewater for urban reuse or any type of reuse. Color was observed from Rayonier's outfall structures. During the inspection the color mixed into the river with a couple hundred feet. Currently, Rayonier is under Consent Order EPD-WQ-4837 which enforces color limits. Rayonier is in compliance with the consent order color limits.

Section V - OPERATIONS AND MAINTENANCE	Yes	No	NA
1. Are preliminary treatment units (bar screens, comminuters, grit channels, etc.) properly maintained with wastes properly disposed?	☒	☐	☐
2. Is adequate oxygen maintained in aerated treatment systems?	☒	☐	☐
3. Are there any operational problems caused by hydraulic "short-circuiting" in treatment units?	☐	☒	☐
4. Are bio-solids wasting/return rates adequate to maintain system equilibrium?	☐	☐	☒
5. Are O&M Manuals and supporting information organized and maintained for use:			
• Plant O&M Manual	☐	☐	☒
• Equipment manuals	☒	☐	☐
• Plant engineering drawings	☒	☐	☐
• Collection system drawings available or in development	☐	☐	☒
• Maintenance records/costs	☒	☐	☐
6. Has there been a by-pass at the facility since the last inspection?	☐	☒	☐
7. If required, has the facility followed proper spill notification procedures?	☐	☐	☒
8. Is routine and preventive maintenance scheduled and performed on time?	☒	☐	☐
9. Is the amount of maintenance activity and parts back-log acceptable?	☒	☐	☐
10. Are operational problems contributing to plant upsets, excessive odors, effluent violations, etc?	☐	☒	☐
11. Is the level of operator certification as required by the permit?	☒	☐	☐
12. Is auxiliary power available, as required by the permit, and operates the necessary treatment units?	☐	☒	☒
13. Are there alarm systems for power equipment failure?	☒	☐	☐
14. Have treatment control procedures been established for emergencies?	☒	☐	☐
15. Are hydraulic surges handled without excessive solids wash-out or bypasses?	☒	☐	☐
16. Are spare pumps and parts readily available?	☒	☐	☐
17. Does the facility appear to be well operated and maintained?	☒	☐	☐
18. Is the facility in compliance with Section V above?	☒	☐	

Notes:
During the inspection there was no evidence of hydraulic "short-circuiting" of treatment units. A dissolved oxygen test was not performed during the inspection. Rayonier wastes sludge, not biosolids from their clarifier. The returning of solids to maintain system equilibrium in not necessary. The treatment system at Rayonier is a bar screen, clarifier, and treatment ponds. There are no O and M manuals for the treatment system. The facility does have equipment manuals in the maintenance shop files, and there are facility drawings. The facility maintains records of maintenance. Spill notifications have not been received by the Division because Rayonier has not had any bypasses at the facility. Rayonier produces all of their own power for the facility using their power boilers, there is no auxillary power available and is not required by the permit.

Section V - OPERATIONS AND MAINTENANCE	Yes	No	NA

Section W - SLUDGE DISPOSAL	NA ☐	Yes	No	NA
1. Has permittee developed and implemented procedures to insure adequate year-round sludge disposal?		☒	☐	☐
2. Are records maintained and available documenting the quantity of solids removed from the plant?		☒	☐	☐
3. Method of sludge disposal: ☐ Land application ☐ Permitted landfill ☒ Other				
4. What is the total amount of sludge disposed of during the previous 12 months: _____ tons				
5. Is the facility in compliance with Section W above?		☒	☐	

Notes:
Rayonier sends the sludge from their clarifier to one of 6 compost cells that are maintained on-site. After dewatering for an long period of time, the compost cells are reclaimed and Rayonier uses the compost on-site.

Section X - BIO-SOLIDS REPORT	NA ☒	Yes	No	NA
1. Bio-solids annual report • Year of coverage _____ • Date submitted to EPD District Office _____ (submit no later than 31 January) • Date submitted to EPA _____ (submit no later than 19 Feb)				
2. Is the sampling adequate and based on tonnage?		☐	☐	☐
3. Is the facility in compliance with Section X above?		☐	☐	

Notes:

Section Y - SAFETY	NA ☐	Yes	No	NA
1. Are there fire extinguishers present?		☒	☐	☐
2. Are there first-aid kits available?		☒	☐	☐
3. Is there self-contained breathing apparatus or canister masks?		☒	☐	☐
4. Is there a chlorine repair kit?		☐	☐	☒
5. Is there a chlorine gas detector (alarm)?		☐	☐	☒
6. Are there safety signs, painted highlights and other warnings?		☒	☐	☐
7. Is the facility in compliance with Section Y above?		☒	☐	

Notes:
Rayonier maintains safety equipment and first aid kits at the facility. Rayonier does maintain chlorine repair kits and chlorine gas detectors but they are used for the industrial process not for treatment of their wastewater. Chlorine is not used anywhere in the treatment of Rayonier's wastewater.

"Alan Leake"
<Alan.Leake@dnr.state.ga.us
>
04/28/2009 04:53 PM

To Karrie-Jo Shell/R4/USEPA/US@EPA
cc "Dominic Weatherill" <Dominic.Weatherill@dnr.state.ga.us>,
"Jane Hendricks" <Jane.Hendricks@dnr.state.ga.us>
bcc
Subject Re: Rayonier Performance Fibers

Karrie-Jo,
For dioxin, Georgia has a rule under **(5) General Criteria for All Waters** that states an instream concentration limit under long-term averge stream flow conditions. I have attached the specific rule for your convenience. I have also attached the reasonable potential procedures and the WLA sheet that has the 7Q10. If you have additional questions, please let me know.

Alan Leake
Environmental Engineer III
GA EPD - Watershed Protection Branch
404.362.3621

>>> <Shell.Karrie-Jo@epamail.epa.gov> 4/28/2009 12:55 PM >>>
I'm trying to do a reasonable potential ((RP) analysis for the metals. I noticed that you included one for dioxin, in which you used the average flow of the Altamaha river to determine the dilution factor. Why doesn't GA use the 7Q10, which is what most states use to get the dilution under worst case conditions?

Can you send me your RP procedures and the 7Q10 of the river?

Thanks,
Karrie-Jo Robinson-Shell, P.E.

"Dominic Weatherill" <Dominic.Weatherill@dnr.state.ga.us>
04/14/2009 09:53 AM

To Karrie-Jo Shell/R4/USEPA/US@EPA
cc "Alan Leake" <Alan.Leake@dnr.state.ga.us>, "Jane Hendricks" <Jane.Hendricks@dnr.state.ga.us>
Subject Rayonier Performance Fibers

Karrie-Jo:

I have attached our first cut of the NPDES permit for Rayonier. Alan Leake (copied) is the permit engineer and will be happy to assist you with any questions that you have. I believe we already mailed you the application to assist you with your review.

We appreciate your assistance in our permit writing process.

Dominic.

Dominic Weatherill, Manager
Industrial Wastewater Unit
GA Environmental Protection Division
4220 International Parkway, Suite 101
Atlanta, Georgia 30354
Phone: (404) 675-6000
Fax: (404)362-2691
dominic_weatherill@dnr.state.ga.us

[attachment "Rayonier NPDES Permit Draft # 1 2009.pdf" deleted by Karrie-Jo Shell/R4/USEPA/US]

REASONABLE POTENTIAL TRANSMITTAL 10-04-02.doc REASONABLE POTENTIAL TRANSMITTAL 01-13-03.doc

REASONABLE POTENTIAL 2003.doc WLA 7Q10.pdf Dioxin instream rule.pdf Alan Leake8.vcf

Georgia Department of Natural Resources

Environmental Protection Division, Water Protection Branch
4220 International Parkway, Suite 101, Atlanta, Georgia 30354
Alan W. Hallum, Branch Chief
404/675-6232
FAX: 404/675-6247

October 4, 2002

Mr. Jim Giattina, Director
Water Management Division
U.S. EPA, Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303

RE: Reasonable Potential Procedures

Dear Mr. Giattina:

The Environmental Protection Agency (EPA) last approved modifications to Georgia's Reasonable Potential Procedures on July 24, 2001. On August 5, 2002, EPA approved revisions that the Environmental Protection Division (EPD) made to its Rules and Regulations for Water Quality Control - Chapters 391-3-6-.03 "Water Use Classifications and Water Quality Standards" and 391-3-6-.06 "Waste Treatment and Permit Requirements". Some of the revisions made to Chapter 391-3-6-.06 changed the way that EPD determines Reasonable Potential. EPD is therefore submitting a revision of our Reasonable Potential Procedures to EPA for review and approval.

Attached is a line through version of the Reasonable Potential Procedures. New material is underlined, while material being removed has a line drawn through it. A clean version of the Reasonable Potential Procedures is also included, along with a copy of the current document which EPA approved on July 24, 2001. If you have any questions regarding this material, please contact Susan Salter of my staff at (404) 362-2680.

Sincerely,

Alan W. Hallum, Chief
Water Protection Branch

AWH/sbs
Attachments

Georgia Department of Natural Resources
Environmental Protection Division, Water Protection Branch
4220 International Parkway, Suite 101, Atlanta, Georgia 30354
Alan W. Hallum, Branch Chief
404/675-6232
FAX: 404/675-6247

January 13, 2003

Mr. Jim Giattina, Director
Water Management Division
U.S. EPA, Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303

RE: Reasonable Potential Procedures

Dear Mr. Giattina:

The Environmental Protection Division (EPD) sent a proposed revision of our Reasonable Potential Procedures to EPA on October 4, 2002. EPD subsequently received comments from EPA regarding this documents via phone and e-mail. EPA requested that EPD change Part II.B.1.a. and Part II.B.1.b. of the document to clarify that EPD can modify a permit to include an effluent limit if it is determined that one is needed during the term of the permit. The October 2002 version implied that EPD would wait to include the limit when the permit was reissued at the end of its five year cycle. This was not EPD's intent. EPD has modified these paragraphs to provide the requested clarification.

A line through version of the relevant pages of the Reasonable Potential Procedures is attached. These pages show where changes have been made from the October 2002 version. New material is underlined, while material being removed has a line drawn through it. A clean version of the whole Reasonable Potential Procedures is also included. If you have any questions regarding this material, please contact Susan Salter of my staff at (404) 362-2680.

Sincerely,

Alan W. Hallum, Chief
Water Protection Branch

AWH/sbs
Attachments

Georgia Environmental Protection Division
NPDES Reasonable Potential Procedures
January 2003

40 CFR 122.44(d) requires delegated States to develop procedures for determining whether a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative or numeric criteria within a State water. If such reasonable potential is determined to exist, the NPDES permit must contain pollutant effluent limits and/or effluent limits for whole effluent toxicity. Georgia's Reasonable Potential Procedures are based on Georgia's Rules and Regulations for Water Quality Control (Rules), Chapter 391-3-6-.06(4)(d)5. The chemical specific and biomonitoring data and other pertinent information in EPD's files will be considered in accordance with the review procedures specified in the Rules in the evaluation of a permit application and in the evaluation of the reasonable potential for an effluent to cause an exceedence in the numeric or narrative criteria.

Numeric Water Quality Criteria

Priority pollutant scans are required to be submitted as specified in 40 CFR 122.21(g)(7). Publicly Owned Treatment Works will be required to submit the information required by the EPA Application (Form 2A) in accordance with 40 CFR 122.21(j). EPD will review the priority pollutant data in accordance with the procedures specified below and in the Rules to determine the potential that a chemical constituent may exceed its instream criteria.

For the chemical constituents listed in 391-3-6-.03(5)(e)(i)-(vi), the requirements outlined in the Rules under 391-3-6-.06(4)(d)5(ii) will be followed to develop numeric effluent limits. These requirements are summarized below:

I. EPD will review available data for reported concentrations of any of the chemical constituents for which numeric criteria have been established that are measured above detection limits using analytical methods specified in Federal Regulations 40 CFR 136, which establishes guidelines on test procedures for the analysis of pollutants, or that have EPA concurrence.

II. For the chemical constituents identified after completion of (I) above, and/or if other site-specific information available to EPD indicates the presence of one or more of the chemical constituents at levels of concern to EPD (generally above detection limits which are at least as stringent as EPD detection limits), EPD will calculate the instream concentration of the chemical constituents. The instream concentration of a chemical constituent is calculated by dividing the effluent concentration by the appropriate dilution factor. The dilution factor is based upon the permittee's design, permitted or average flow and the critical stream flow as defined in the Rules in Chapter 391-3-6-.06(2)(f). In the case of metals whose instream criteria are in the dissolved form, the dissolved instream concentration is calculated by dividing the total recoverable effluent concentration by the appropriate dilution factor multiplied

by a translation factor. EPD's translation procedure is described in the attachment labeled "Implementation of the Dissolved Instream Criteria for Metals". If the chemical constituent is known to exist in the water upstream from the discharger and if EPD has water quality data that shows what the concentration is, then the instream concentration will be calculated such that the upstream concentration will be accounted for. The instream concentrations will then be compared with the instream criteria. If there is more than one effluent data point available when instream concentrations are calculated, the data points will be averaged together to obtain an average effluent concentration from which an average instream concentration will be calculated. A value of zero will be used for a data point(s) when test results indicate that the concentration of a constituent is below detection limits. The average instream concentration will be compared against the instream criteria. When comparing calculated instream concentrations with the acute criteria, multiple data points will not be averaged together to obtain an average effluent concentration. Instead, the highest effluent data point will be used to calculate the instream concentration and this number will be compared to either the acute criteria or 50% of the acute criteria depending upon whether there are at least 10 data points available as described below.

A. If less than 10 data points are available when the instream concentration is calculated and if the instream concentration is found to be less than 50% of the instream criteria, then the chemical constituent will be considered not to be present at levels of concern. If, however, the instream concentration is found to be greater than or equal to 50% of the instream criteria, then EPD will require the permittee to monitor the chemical constituent once a month for at least 10 months. The monitoring requirement may be placed in the permit, or the permittee may be informed of the monitoring requirement by letter (NPDES Permit boilerplate language allows EPD to require a permittee to monitor parameters not specifically indicated in the permit). The instream concentration will then be recalculated once at least 10 data points are obtained.

B. If at least 10 data points are available when the instream concentration is calculated then EPD will evaluate the data and respond as follows:

1. The need for a permit limit will be determined as follows:

a. Comparison against an acute criterion: If the instream concentration (calculated using the highest concentration of at least 10 samples) is greater than the acute criterion, then an effluent limit(s) for that constituent will be required at permit issuance or through a permit modification. If the instream concentration is less than or equal to the acute criterion, then that constituent will be considered to be present in the effluent below levels of concern and EPD will not include the constituent in the permit. If the constituent had previously

been placed in a permit, EPD may terminate or lessen the monitoring requirement for the constituent based on the fact that the data shows that the constituent is not present at levels of concern. If the constituent also has a chronic criterion and if the data shows that a limit is needed based on the chronic criterion (as described below), then EPD will also include a limit based on the acute criterion.

b. Comparison against other criterion: If the instream concentration (calculated using an average of the data) is found to be greater than or equal to fifty percent of its instream standard, then an effluent limit(s) for that constituent will be required at permit issuance or through a permit modification. If the instream concentration of the constituent is found to be less than fifty percent of its instream standard, then the constituent will be considered to be present in the effluent below levels of concern and EPD will not include the constituent in the permit. If the constituent had previously been placed in a permit, EPD may terminate or lessen the monitoring requirement for the constituent based on the fact that the 10 data points shows that the constituent is not present at levels of concern. If the constituent also has an acute criterion and if the data shows that a limit is needed based on the acute criterion (as described above), then EPD will also include a limit based on the chronic criterion.

2. If it is determined that an effluent limit(s) is required as described above, the permit shall be reissued or modified to include an effluent limit(s) for the chemical constituent calculated as follows:

Effluent limit =	criteria concentration	X	dilution factor	X	translation factor (if necessary)

3. The dilution factor is based upon the permittee's design, permitted or average flow and the critical stream flow as defined in the Rules under 391-3-6-.06(2)(f). Translation factors will be used to calculate total recoverable permit limits for metals when the criteria concentration is written in the dissolved form.

4. The effluent limit may be adjusted to reflect natural ambient water quality or the presence of upstream discharges in accordance with the Rules under 391-3-6-.06(4)(d)5(iv)(a) and (v)(b).

III. If the permit is issued or modified to include effluent limitations for chemical constituents, as in II-B above, the limit shall become effective upon issuance of the permit. If a schedule of compliance is granted by EPD, the schedule shall be contained within the permit.

IV. At the request of the permittee, a schedule to allow for the development of a site-specific effluent limit may be established by EPD. This schedule would be contained in the permit and include the following:

A. A requirement that the permittee document that the effluent does not exhibit chronic toxicity under critical stream flow conditions by passing two definitive chronic WET tests, conducted at least 30 days apart, using a vertebrate and an invertebrate as test organisms and using the methods in "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Third Edition, EPA-600-4-91-002" or "Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Marine and Estuarine Organisms, Second Edition, EPA-600-4-91-003", or the most recent guidance.

B. A requirement for monthly monitoring for all chemical constituents that are being evaluated for site-specific limits.

C. A requirement that the permittee perform site-specific studies, consisting of whole effluent biomonitoring, water-effect ratios, stream studies, or other appropriate studies or calculations. The methodology for these tests will be determined by EPD on a case-by-case basis.

D. A requirement that all data obtained in (A), (B) and (C) above be submitted to EPD for review and approval.

E. No more than two years following initiation of monitoring under II.A above, EPD will use the data to calculate site-specific limitations for each chemical constituent, and will initiate the process to incorporate the limitations(s) into the permit along with requirements for a minimum of annual acute or chronic whole effluent biomonitoring (whichever is appropriate according to its instream wastewater concentration). At any time during the two year period, EPD may, upon its initiative or that of the permittee, review the data that have been submitted and may determine that limits and/or monitoring requirements for one or more chemical constituents may be terminated. All modifications for limits and monitoring requirements will comply with antibacksliding requirements contained in Section 402(o) of the Clean Water Act. Conversely, should EPD determine that adequate data is available before the two year interim monitoring period, it may develop site-specific limitations for the constituent(s) without additional monitoring.

V. For any metals monitored during any portion of the limits determination process, measurement will be by the most appropriate analytical technique approved by the U.S. EPA which provides a measurement of the portion of the metal present which may cause toxicity to aquatic life in the receiving stream. Although the dissolved form of a metal more accurately represents the toxic fraction, measurements of the

total recoverable concentration of metals in the effluent will generally be made. This is partly because permit limits are required to be written in the total recoverable form (40 CFR 122.45(c)) and is also because the concentration of dissolved metal in an effluent can change once the effluent mixes with the receiving stream. It is therefore better to know the concentration of total recoverable metal in an effluent. Translators can then be used to predict how much metal will be in the dissolved form when it enters the receiving stream.

Narrative Water Quality Criteria

For Section 307(a) chemical constituents for which numeric criteria have not been established, whole effluent biomonitoring will be used to develop either a site-specific numeric effluent limit or a Whole Effluent Toxicity (WET) limit. These chemical constituents are listed in 391-3-6-.06(4)(d)5(iii). Historical and permit application WET data may also result in a WET limit. Ammonia and total residual chlorine will be addressed based upon the existing EPD strategies for each of these chemical constituents. Other chemical constituents which are present at levels which may result in toxicity in the receiving stream (and which do not have instream criteria listed 391-3-6-.03(5)(e)(i)-(vi) which can be used to develop effluent limitations to control the toxicity) will be addressed through a monitoring requirement, site-specific numeric effluent limit and/or a WET limit, as appropriate. The following procedures will be followed:

(I) EPD will review available chemical-specific data to determine if any results are greater than their detection limits. The detection limits reported by the permittee must be at least as low as EPD's detection limits for each parameter or they may be lower depending upon the laboratory method used. Laboratory methods used must be those specified in Federal Regulations 40 CFR 136, or that have EPA concurrence.

(II) For Section 307(a) chemical constituents which were detected, the permittee will be required to monitor the specific chemical constituent once a month for at least ten months. The monitoring requirement may be placed in the permit, or the permittee may be informed of the monitoring requirement by letter (NPDES Permit boilerplate language allows EPD to require a permittee to monitor parameters not specifically indicated in the permit). Quarterly chronic or acute biomonitoring may also be required during this period if potential toxicity in the receiving stream is indicated (based upon the permit application, EPD data, historical WET data, etc.). The biomonitoring shall consist of definitive tests, using both a vertebrate and an invertebrate species in the first and second test to determine the most sensitive species for subsequent tests.

(III) If the results of at least ten monthly samples indicate that the chemical constituents are not being detected (at EPD detection limits or lower as described above), and if the quarterly biomonitoring (if conducted) is not showing toxicity (no WET failures as

defined in (IV)(a) below), then EPD may terminate or lessen these monitoring requirements.

(IV) If the results of at least ten monthly samples indicate that the chemical constituents are present at levels of concern (generally above detection limits) or if effluent toxicity has been demonstrated (at least 1 WET test failed), then the permit will be reissued to incorporate a WET limit or a site-specific numeric effluent limit as described below.

(a) If the Instream Wastewater Concentration (IWC) is greater than or equal to 1% effluent, a chronic WET limit will be given. The WET limit will be defined as: "The No Observed Effect Concentration (NOEC) is greater than or equal to the IWC of ___%." The IWC will be based upon the 7Q10 stream flow. If the IWC is less than 1% effluent and a diffuser isn't present, an acute WET limit will be given. The WET limit will be defined as: "The LC50 is greater than or equal to 100% effluent". If a diffuser is present, a chronic WET limit will be given and will be defined as the NOEC is greater than or equal to the IWC of %. The IWC will be based upon the 7Q10 stream flow.

(b) The permittee will be required to perform WET testing once per quarter using definitive tests using both a vertebrate and an invertebrate or using the most sensitive of the two species if EPD gives approval to use a single test species. The permittee will also be required to perform the chemical-specific monitoring once per month.

(c) If the quarterly biomonitoring does not show toxicity for two consecutive quarters (tests performed at least 30 days apart), the biomonitoring frequency and/or the once per month chemical-specific monitoring may be reduced by EPD. In no case will these monitoring frequencies be reduced to less than once per year. If the chemical constituent is not detected for at least 10 months in a row and no WET tests in that time frame are failed, then the WET limit and chemical specific monitoring requirement may be removed.

(V) Historical WET data (5 years old or less) and permit application WET data will be reviewed to determine if any instream toxicity (as defined in (IV)(a) above) was predicted. Minimum WET testing requirements for permittees are detailed in EPD's WET Strategy document. In those instances where there has been a WET test failure, the permit will be issued with a WET limit as defined in (IV)(a) above. The only exceptions to this are if the results of the failed WET tests were determined to be invalid or questionable or if the reason for the failure is known and limits for chemical constituents will provide protection. The permit may contain a compliance schedule to meet the WET limit. The compliance schedule will typically be for 36 months, but at a maximum will not exceed the term of the permit. If a permit is modified to include a WET limit sometime during its five year term and there is less than 36 months remaining in the term of the permit then a 36 month compliance

schedule may be placed in an Order that is issued with the permit. Information about the Order will also be included with the public notice for the permit modification. If the WET test results are questionable, the permittee may be required to conduct additional WET tests before the decision is made as to whether a WET limit is required.

(VI) If the chemical constituents ammonia or total residual chlorine were detected, the existing EPD strategies for each of these pollutants will be implemented. The permit will be issued with site-specific numeric effluent limits for ammonia or total residual chlorine, if applicable, as specified in the respective EPD strategy.

(VII) For other pollutants not otherwise mentioned in these procedures, where the pollutant is present at levels of concern after complete mix in the receiving stream, the permit will be issued with chemical-specific monitoring and/or short-term biomonitoring.

RULES AND REGULATIONS FOR WATER QUALITY CONTROL

CHAPTER 391-3-6

REVISED – November 2005

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
2 MARTIN LUTHER KING JR DRIVE, SE
FLOYD TOWERS EAST
ATLANTA, GEORGIA 30334-9000

69.	Indeno(1,2,3-cd)Pyrene	0.049 µg/l
70.	Isophorone	2600 µg/l
71.	Lindane [Hexachlorocyclohexane (g-BHC-Gamma)]	0.063 µg/l
72.	Methyl Bromide (Bromomethane)	4000 µg/l
73.	Methyl Chloride (Chloromethane)	**
74.	Methylene Chloride	1600 µg/l
75.	2-Methyl-4,6-Dinitrophenol	765 µg/l
76.	3-Methyl-4-Chlorophenol	**
77.	Nitrobenzene	1900 µg/l
78.	N-Nitrosodimethylamine	8.1 µg/l
79.	N-Nitrosodi-n-Propylamine	1.4 µg/l
80.	N-Nitrosodiphenylamine	16 µg/l
81.	PCBs	0.00017 µg/l
82.	Pentachlorophenol	8.2 µg/l
83.	Phenanthrene	**
84.	Phenol	4,600,000 µg/l
85.	Pyrene	11,000 µg/l
86.	1,1,2,2-Tetrachloroethane	11 µg/l
87.	Tetrachloroethylene	8.85 µg/l
88.	Thallium	6.3 µg/l
89.	Toluene	200000 µg/l
90.	Toxaphene	0.00075 µg/l
91.	1,2-Trans-Dichloroethylene	140000
92.	1,1,2-Trichloroethane	42 µg/l
93.	Trichloroethylene	81 µg/l
94.	2,4,6-Trichlorophenol	6.5 µg/l
95.	1,2,4-Trichlorobenzene	940 µg/l
96.	Vinyl Chloride	525 µg/l

** These pollutants are addressed in 391-3-6-.06.

(v) Site specific criteria for the following chemical constituents will be developed on an as-needed basis through toxic pollutant monitoring efforts at new or existing discharges that are suspected to be a source of the pollutant at levels sufficient to interfere with designated uses:

1. Asbestos

(vi) Instream concentrations of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) must not exceed 0.0000012 µg/l under long-term average stream flow conditions.

(vii) Mercury: For the protection of human health, total mercury concentrations bioaccumulating in a waterbody, in a representative population of fish, shellfish and/or other seafood representing different trophic levels, shall not exceed a total mercury concentration in edible tissues of 0.3 mg/kg wet weight. This standard is in accord with the USEPA *Water Quality Criterion for the Protection of Human Health: Methylmercury*, (January 2001, EPA-823-R-01-001), and because nearly 100% of the mercury in fish tissue is methylmercury, adoption of the standard as total mercury is an additional conservative measure. The representative fish tissue total mercury concentration for a waterbody is determined by calculating a Trophic-Weighted Residue Value, as described by the Georgia EPD Protocol (October 19, 2001).

(f) Applicable State and Federal requirements and regulations for the discharge of radioactive substances shall be met at all times.

(g) The dissolved oxygen criteria as specified in individual water use classifications shall be applicable at a depth of one meter below the water surface; in those instances where depth is less than two meters, the dissolved oxygen criterion shall be applied at a mid-depth. On a case specific basis, alternative depths may be specified.

(6) **Specific Criteria for Classified Water Usage.** In addition to the general criteria, the following criteria are deemed necessary and shall be required for the specific water usage as shown:

(a) Drinking Water Supplies: Those waters approved as a source for public drinking water systems permitted or to be permitted by the Environmental Protection Division. Waters classified for drinking water supplies will also support the fishing use and any other use requiring water of a lower quality.

(i) Bacteria: For the months of May through October, when water contact recreation activities are expected to occur, fecal coliform not to exceed a geometric mean of 200 per 100 ml based on at least four samples collected from a given sampling site over a 30-

Rayonier

Performance Fibers

Jesup Mill

July 29, 2008

Dominic Weatherill
GA DNR EPD
Industrial Wastewater Unit Coordinator
4220 International Parkway, Suite 101
Atlanta, Georgia 30354

Sir,

Please find attached Rayonier's 2008 revision of its October 2005 NPDES Permit renewal application. As requested this revision contains revised part 2C information and analytical data for each industrial effluent discharge point except outfall 003 which is the facility's designated emergency storm water outfall. Revised Supplemental Information reflecting the facility's current operations and proposed BAT are included along with proposed permit language. The additional information identified within section IX of the Supplemental Information was supplied with the 2005 Application and has not been included in this submittal. The capital spending plan for color control projects as required by Consent Order EPD-WQ-4837 is included.

Please contact me as needed.

Respectfully,

Gerald DeWitt
Manager, Environmental Affairs
Rayonier Performance Fibers, Jesup Mill
Phone 912-427-5280

RECEIVED
APR 2 0 2009
Environmental Protection
Agency, WPD

Please type or print in the unshaded areas only	EPA ID Number *(Copy from Item 1 of Form 1)* **GA0003620**	*Form Approved* *OMB No. 2040-0086* *Approval expires 7-31-88*

Form **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number *(list)*	Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Receiving Water *(name)*
001	*31*	*39*	*29*	*81*	*49*	*53*	*Altamaha River*
002	*31*	*39*	*04*	*81*	*49*	*06*	*Altamaha River*
003	*31*	*38*	*55*	*81*	*49*	*27*	*Altamaha Rivey (intermittent storm water outfall, Part 2C characterizations not required.)r*

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION *(list)*	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	*1. process water associated with the production of dissolving and bleached market kraft pulp. (excluding bleaching operations)*	*5.25 MGD*	*This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells*	*1G*, 1U, 2D ,2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T*	** flocculent may be used as a settling aid.*

 CONTINUED ON REVERSE

001	2. sanitary waste	0.02 MGD	This effluent receives primary clarification, neutralization and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells	1U, 2D ,2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T	
001	3. process water associated with the bleaching of the above listed pulp	4.75 MGD	As above without primary clarification.	2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T	
001	4. surface runoff	0.22 MGD	As above.	1U, 3B, 4A, 5B	
002	1. process water associated with the production of dissolving and bleached market kraft pulp. (excluding bleaching operations)	24.53 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells	1G*, 1U, 2D ,2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T	* flocculent may be used as a settling aid.
002	2. sanitary waste	0.09 MGD	This effluent receives primary clarification, neutralization, and aerated stabilization prior to being discharged to receiving water. Primary clarification sludge is sent to wet anaerobic composting cells	1U, 2D ,2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T	

 CONTINUED ON REVERSE

002	3. process water associated with the bleaching of the above listed pulp	21.41 MGD	As above without primary clarification.	2K, 3B,3C, 3G, 4A, 5B, 5G,5P, 5T	
002	4. surface runoff	1.28 MGD	As above.	1U, 3B, 4A, 5B	
002	5. supernate from sludge composting operations utilizing parttime flocculation.	2.38 MGD	aerated stabilization prior to being discharged to receiving water.	3B, 4A	
003	1. surface runoff from non-process areas.	1.10 MGD	This effluent receives settling before being discharged to receiving water.	1U, 4A	
003	2. surface runoff from process areas associated with the production of dissolving and bleached market kraft pulp.	0.18 MGD	This effluent receives settling before being discharged to receiving water.	1U, 4A	
001	5. collected MACT pulping condensates per Title V permit condition no. 3.3.25	2.8 MGD	aerated stabilization prior to being discharged to receiving water.	2B, 3B, 3C, 3G, 4A, 5B	

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ YES *(complete the following table)* ☒ NO *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK *(specify average)*	b. MONTHS PER YEAR *(specify average)*	a. FLOW RATE *(in mgd)*		b. TOTAL VOLUME *(specify with units*		c. DURATION *(in days)*
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ YES *(complete Item III-B)* ☐ NO *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☒ YES *(complete Item III-C)* ☐ NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS *(list outfall numbers)*
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	
1819.5	*gross air dried metric ton per operating day*	*Manufacturer of bleached market kraft and dissolving. pulp by the kraft and prehydrolyzed kraft processes, respectively.*	*001 & 002*

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☒ YES *(complete the following table)* ☐ NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED
GA EPD Consent Order No. EPD-WQ-4837	*001 & 002*	*plant-wide operations*	*effluent color reduction capital plan attached*	*03/06/ 2016*	*03/06/ 2016*

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☒ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED

 CONTINUED ON PAGE 3

CONTINUED FROM PAGE 2

EPA ID Number *(Copy from Item 1 of Form 1)*
GA0003620

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables or each outfall - Annotate the outfall number in the space provided. **NOTE:** Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
asbestos	*present in insulation used in the pulp mill, although not detected in mill effluent it is potentially present.*		
acetaldehyde	*incidental to the pulping process and may be found in the mill effluent on occasion*		
carbon disulfide	*incidental to the pulping process and may be found in the mill effluent on occasion*		
cresol	*incidental to the pulping process and may be found in the mill effluent on occasion*		
methylmercaptan	*incidental to the pulping process and may be found in the mill effluent on occasion*		
furfural	*incidental to the pulping process and may be found in the mill effluent on occasion*		
strontium	*trace contaminant in raw materials, maybe detected in effluent on occasion*		
vanadium	*trace contaminant in raw materials, maybe detected in effluent on occasion*		
zirconium	*trace contaminant in raw materials, maybe detected in effluent on occasion*		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **YES** *(list all such pollutants below)* ☒ **NO** *(go to Item VI-B)*

 CONTINUED ON REVERSE

Outfall 003 ; Per instructions Alan Leake, GA EPD, Part 2C characterization is not required for intermittent storm water outfalls.

 CONTINUED ON REVERSE

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES *(identify the test(s) and describe their purpose below)* ☐ NO *(go to Section VIII)*

Whole Effluent Toxicity test
multi-concentration chronic toxicity testing using the water flea, Ceriodaphnia dubia, and fathead minnow, Pimephales promelas, on outfall effluent samples collected the week of July 17-22, 2005. As instructed, the 2005 test series is being submitted. A test is now in progress at MACTEC.

MACTEC BioTox Lab
3200 Town Pointe Drive NW, Suite 100
Kennesaw, GA 30144
phone: (770) 421-7027t

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ NO *(go to Section IX)*

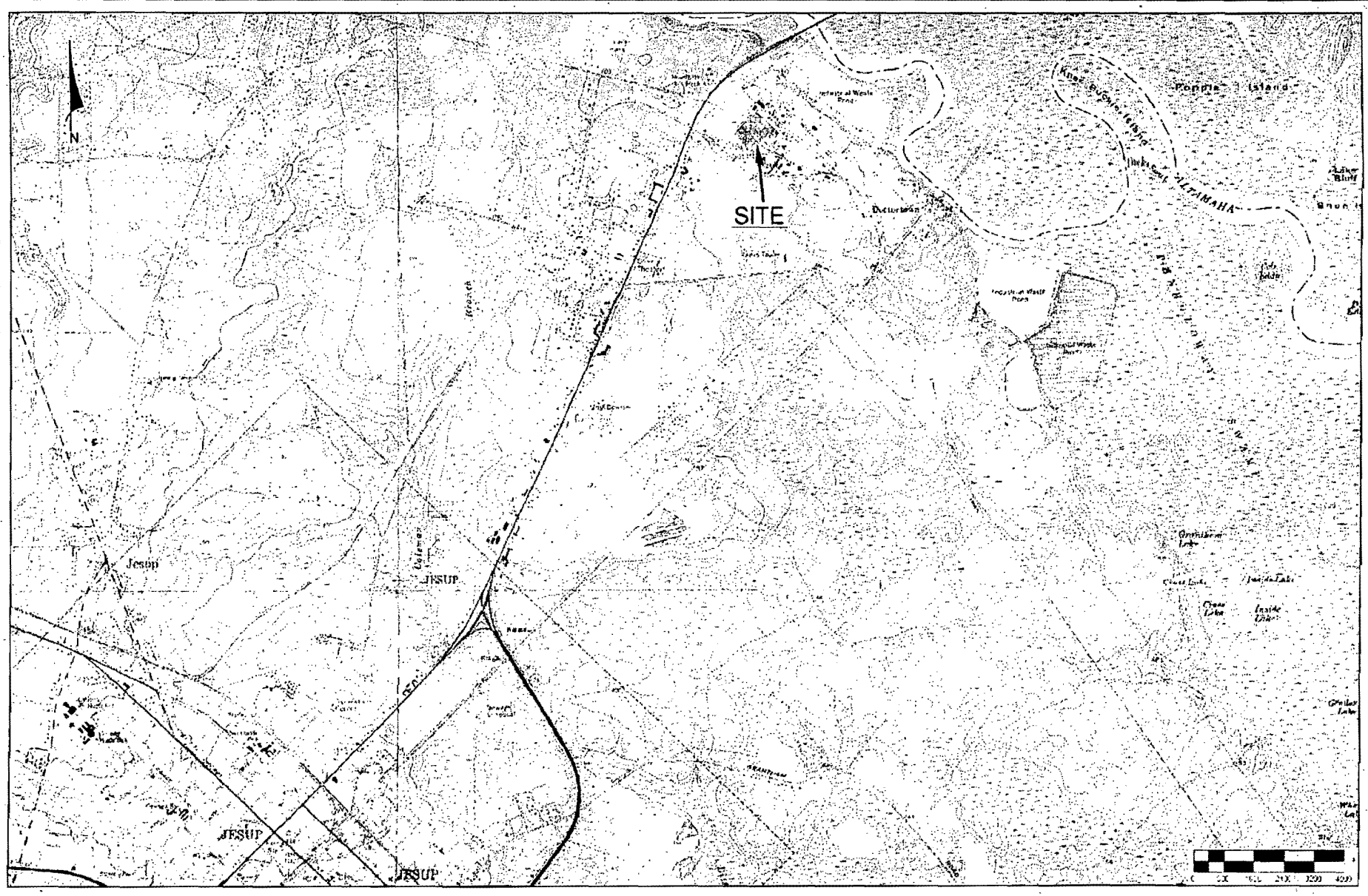
A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
		( )	
Test America-Sacramento	*880 Riverside Parkway Sacramento, CA 95605*	*(916) 373-5600*	*2,3,7,8 TCDD*
Columbia Analytical	*9143 Philips Highway, Suite 200 Jacksonville, FL 32256*	*(904) 739-2277*	*TOC, nitrate/nitrite, oil & grease, sulfide, phosphorus, sulfate, volatiles, acids, base/neutrals, metals, MBAS, pesticides, fecal coliform, cyanide,total organic nitrogen,, sulfite. general chemistry*
EMSL Analytical	*5125 Adamson Street, Suite 900 Orlando,FL 32804*	*(407) 599-5887*	*asbestos*
Environmental Conservation Laboratory	*10775 Central Port Drive Orlando, FL 32824*	*(407) 826-5314*	*total phenols*
Columbia Analytical	*1317 South 13th Street Kelso, WA 98626*	*(360) 577-7222*	*formaldehyde*
Florida Radiochemistry Services	*5456 Hoffner Ave. Suite 201 Orlando, FL 32812*	*(407) 382-7733*	*radiation chemistry*
Columbia Analytical	*2655 Park Center Dr. Suite A Simi Valley, CA 93065*	*(805) 526-7161*	*methyl mercaptan*
		( )	

		( )	
		( )	
		( )	
		( )	
		( )	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Mike Burch, Vice-President and General Manager	(912) 427 5383
C. SIGNATURE	D. DATE SIGNED
	5/27/08



REFERENCE: Base plan for this drawing was taken from USGS 7.5 Minute Quad, Doctortown, GA, 1988

Schnabel
Schnabel Engineering

RAYONIER PERFORMANCE FIBERS
JESUP MILL,
WAYNE COUNTY, GEORGIA

SITE LOCATION MAP

PROJECT NO. 999079.00-17
FIGURE 1

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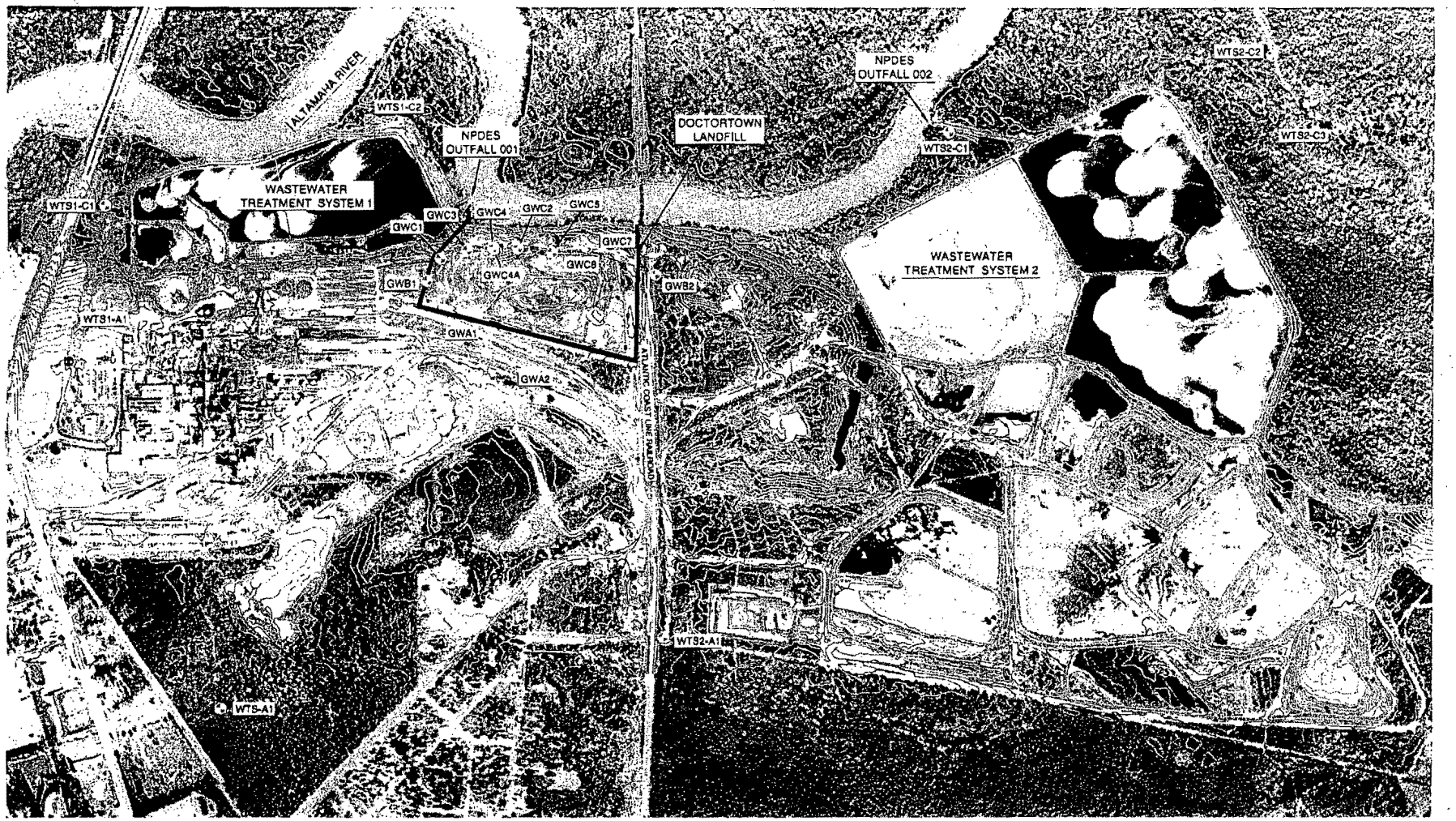
11/27/07 G:\Projects\Active\1999\Rayonier\Drawings\2007 Dwgs\SiteLocationMap2007.dwg



TOPOGRAPHY LEGEND

- MONITORING WELL LOCATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR

CONTOUR INTERVAL = 2'

GRAPHIC SCALE

0 500 1000

1 inch = 1000 ft.

Schnabel

Schnabel Engineering

WASTEWATER TREATMENT SYSTEM
RAYONIER PERFORMANCE FIBERS
JESUP, GEORGIA

SITE MAP

PROJECT NO. 999079.00-17

FIGURE 2

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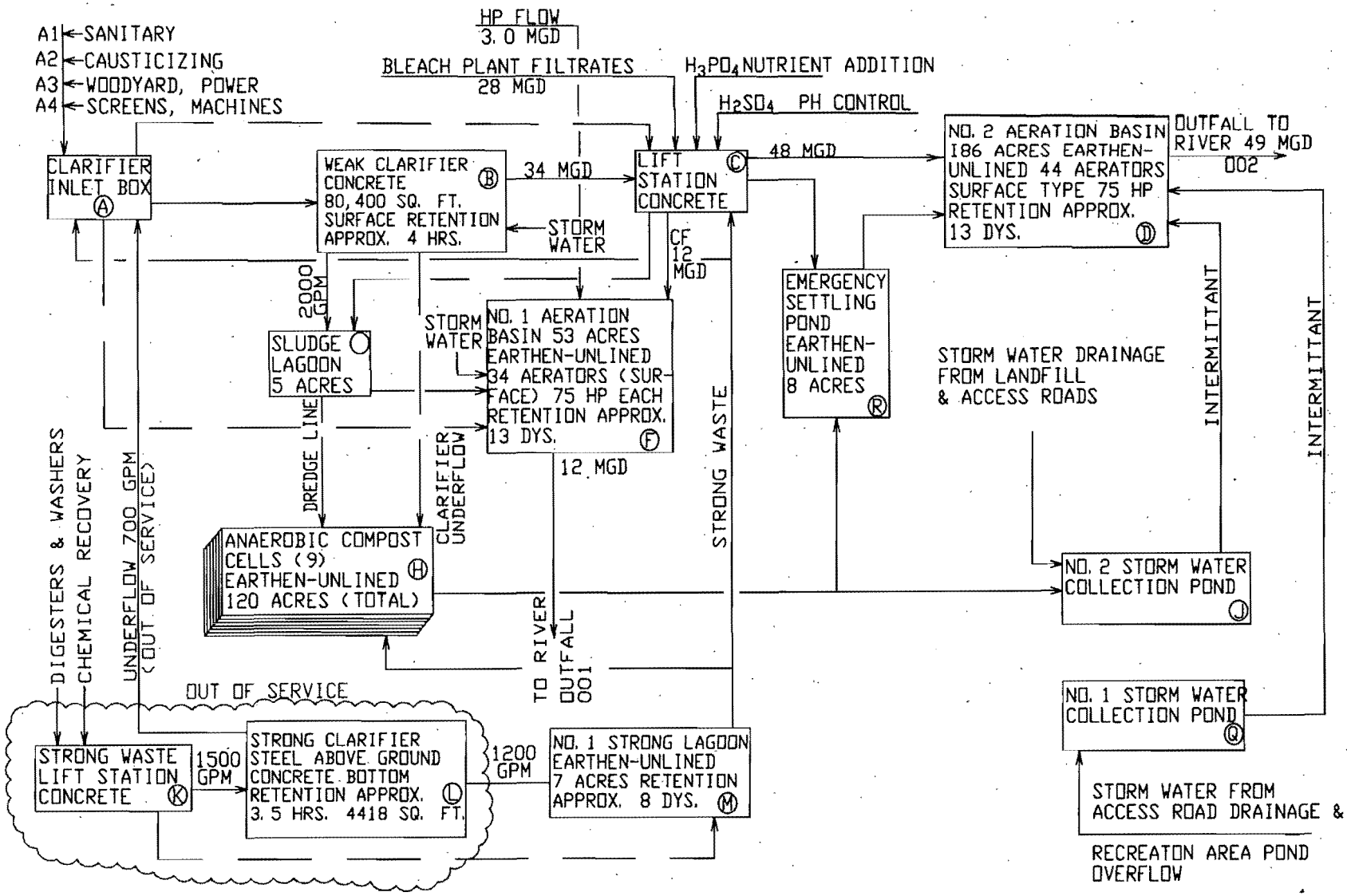
11/27/07 G:\1999 Projects\999079 Rayonier\Drawings\Dwg\Site Map AUGUST 2007.dwg



NOTE:

ALL PROCESS WATER IS SUPPLIED BY GROUND WATER DEEP WELLS. AVG. WELL FLOW IS 62 MGD.

——— NORMAL
——— BYPASS

2	GENERAL REVISIONS		
1	GENERAL REVISIONS		

JAL 06-30-95

Rayonier

EFFLUENT DISPOSAL (13)

WASTE WATER TREATMENT SYSTEM

NTS

J13P24-2

Effluent Color - Project Completion Timeline

Begin	End	Sump 1	Sump 2	No. 2 ASB Diffuser Study	No. 1 ASB Diffuser Study	5B-BSW	Sump 3	Sump 4	Sump 5	Sump 6	Sump 7	Sump 8	4C-BSW Eng. Complete for Appropriation	4C-BSW Order Placed	4C-BSW Construction Complete	4C-BSW	BL Spill Systems Operational & Op's. Trained	C-O2 Delign. Eng. Complete for Appropriation	C-O2 Delign. Order Placed	C-O2 Delign. Construction Complete	C-Mill O2 Delign.	5A-BSW Eng. Complete for Appropriation	5A-BSW Order Placed	Pulping Liquor BMP Review/Update	5A-BSW Site Prep/Construction Begun	Evaluate Additional Color Control Opportunities	5A-BSW Construction Complete	5A-BSW	C-Screen Room Closed
3/6/2008	12/6/2008			X		X																							
12/6/2008	9/6/2009	X	X		X								X	X															
9/6/2009	6/6/2010						X	X	X																				
6/6/2010	3/6/2011									X	X	X			X														
3/6/2011	12/6/2011															X		X	X										
12/6/2011	9/6/2012																X												
9/6/2012	6/6/2013																			X	X	X	X						
6/6/2013	3/6/2014																							X					
3/6/2014	12/6/2014																								X	X	X		
12/6/2014	9/9/2015																											X	X

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
GA0003620

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCEN-TRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	138	7.02	103	5.24	62	2.69	366	mg/L	tpd			
b. Chemical Oxygen Demand *(COD)*	882	47.64	701	33.21	547	23.66	229	mg/L	tpd			
c. Total Organic Carbon *(TOC)*	140	5.31					2	mg/L	tpd			
d. Total Suspended Solids *(TSS)*	222	10.34	142	5.73	88	3.80	365	mg/L	tpd			
e. Ammonia *(as N)*	4.0	0.42	2.67	0.14	1.9	0.08	21	mg/L	tpd			
f. Flow	Value 25.0		Value 12.18		Value 10.33		366	MGD	NA	Value		
g. Temperature *(winter)*	Value 31.3		Value 31.3		Value 24.8		152	°C		Value		
h. Temperature *(summer)*	Value 36.2		Value 36.2		Value 31.8		214	°C		Value		
i. pH	Minimum 7.6	Maximum 8.4	Minimum 7.9	Maximum 8.1			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCEN-TRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☒	☐	0.40	30.36					2	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						2					
c. Color	☒	☐	1998	166.90	1540	68.92	1230	55.19	350	CPU	tpd			
d. Fecal Coliform	☐	☒	ND						2					
e. Fluoride (16984-48-8)	☒	☐	0.41	29.75					2	mg/l	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.16	12.14					2	mg/L	ppd			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSIS	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	☒	☐	3.22	233.64					2	mg/L	ppd			
h. Oil and Grease	☒	☐	ND						2					
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	0.88	63.85					2	mg/L	ppd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND						2					
(2) Bets, Total	☐	☒	ND						2					
(3) Radium, Total	☐	☒	ND						2					
(4) Radium 226, Total	☐	☒	ND						2					
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	920	34.91					2	mg/L	tpd			
l. Sulfide (as S)	☐	☒	ND						2					
m. Sulfite (as SO_3)(14265-45-3)	☐	☒	ND						2					
n. Surfactants	☒	☐	1.4	106.25					2	mg/L	ppd			
o. Aluminum, Total (7429-90-5)	☒	☐	710	53.88					2	ug/L	ppd			
p. Barium, Total (7440-39-3)	☒	☐	202	14.66					2	ug/L	ppd			
q. Boron, Total (7440-42-8)	☐	☒	ND						2					
r. Cobalt, Total (7440-48-4)	☐	☒	ND						2					
s. Iron, Total (7439-89-4)	☒	☐	390	28.30					2	ug/L	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	16000	1160.93					2	ug/L	ppd			
u. Molybdenum, Total (7439-98-7)	☐	☒	ND						2					
v. Manganese, Total (7439-96-5)	☒	☐	434	31.49					2	ug/L	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						2					
x. Titanium, Total (7440-32-6)	☒	☐	134	9.72					2	ug/L	ppd			

 CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	*001*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☒	☐	☐	ND						2					
2M. Arsenic, Total (7440-38-2)	☐	☐	☐	1.3	0.1					2	ug/l	ppd			
3M. Beryllium, Total (7440-41-7)	☒	☐	☐	ND						2					
4M. Cadmium, Total (7440-43-9)	☒	☐	☐	ND						2					
5M Chromium, Total (7440-47-3)	☐	☐	☐	3.0	0.23					2	ug/l	ppd			
6M Copper, Total (7440-50-8)	☐	☐	☐	3.7	0.28					2	ug/l	ppd			
7M lead, Total (7439-92-1)	☐	☐	☐	2.2	0.16					2	ug/l	ppd			
8M Mercury, Total (7439-97-6)	☒	☐	☐	ND						2					
9M Nickel, Total (7440-02-0)	☐	☐	☐	12	0.87					2	ug/l	ppd			
10M Selenium, Total (7782-49-2)	☒	☐	☐	ND						2					
11M Silver, Total (7440-22-4)	☒	☐	☐	ND						2					
12M Thallium, Total (7440-28-0)	☒	☐	☐	ND						2					
13M Zinc, Total (7440-66-6)	☒	☐	☐	27	2.05					2	ug/L	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☐	ND						2					
15M Phenols, Total	☒	☐	☐	0.08	6.07					2	mg/L	ppd			
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764--01-6)	☐	☐	☐	DESCRIBE RESULTS *Is not detected at an average of < 0.0000054 ug/L on 4 flow proportioned samples of outfall 001 & 002*											

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☒	☐	☐	ND						2					
2V Acrylonitrile (107-13-1)	☒	☐	☐	ND						2					
3V Benzene (71-43-2)	☒	☐	☐	ND						2					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☐	ND						2					
5V Bromoform (75-25-2)	☒	☐	☐	ND						2					
6V Carbon Tetrachloride (56-23-5)	☒	☐	☐	ND						2					
7V Chlorobenzene (108-90-7)	☒	☐	☐	ND						2					
8V Chlorodibromomethane (124-48-1)	☒	☐	☐	ND						2					
9V Chloroethane (75-00-3)	☒	☐	☐	ND						2					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☐	ND						2					
11V Chloroform (67-66-3)	☒	☐	☐	ND						2					
12V Dichlorobromoethane (75-71-8)	☒	☐	☐	ND						2					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☐	ND						2					
14V 1,1-Dichloroethane (75-34-3)	☒	☐	☐	ND						2					
15V 1,2-Dichloroethane (107-06-2)	☒	☐	☐	ND						2					
16V 1,1-Dichloroethylene (75335-4)	☒	☐	☐	ND						2					
17V 1,2-Dichloropropane (78-87-5)	☒	☐	☐	ND						2					
18V 1,3-Dichloropropylene (542-76-6)	☒	☐	☐	ND						2					
19V Ethylbenzene (100-41-4)	☒	☐	☐	ND						2					
20V Methyl Bromide (74-83-9)	☒	☐	☐	ND						2					
21V Methyl Chloride (74-87-3)	☒	☐	☐	ND						2					

 CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22 V Methylene Chloride (75-09-2)	☒	☐	☐	ND						2					
23V 1,1,2,2-Tetra-Chloroethane (79-34-5)	☒	☐	☐	ND						2					
24V Tetrachloro-ethylene (127-18-4)	☒	☐	☐	ND						2					
25V Toluene (108-88-3)	☒	☐	☐	ND						2					
26V 1,2-Trans-Dichloroethylene (156-60-5)	☒	☐	☐	ND						2					
27V 1,1,1-Tri-chloroethane (71-55-6)	☒	☐	☐	ND						2					
28V 1,1,2-Tri-chloroethane (79-00-5)	☒	☐	☐	ND						2					
29V Trichloro-ethylene (79-01-6)	☒	☐	☐	ND						2					
30V Trichloro-fluoromethane (75-69-4)	☒	☐	☐	ND						2					
31V Vinyl Chloride (75-01-4)	☒	☐	☐	ND						2					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☐	☐	ND						2					
2A 2,4-Dichloro-phenol (120-83-2)	☒	☐	☐	ND						2					
3A 2,4-Dimethyl-phenol (105-67-9)	☒	☐	☐	ND						2					
4A 4,6-Dinitro-O-cresol (534-52-1)	☒	☐	☐	ND						2					
5A 2,4-Dinitro-phenol (51-28-5)	☒	☐	☐	ND						2					
6A 2-Nitro-phenol (88-75-5)	☒	☐	☐	ND						2					
7A 4-Nitro-phenol (100-02-7)	☒	☐	☐	ND						2					
8A P-Chloro-M-Cresol (59-50-7)	☒	☐	☐	ND						2					
9A Penta-chlorophenol (87-86-5)	☒	☐	☐	ND						2					
10A Phenol (10/-95-2)	☒	☐	☐	ND						2					
11A 2,4,6-Tri-chlorophenol (88-06-2)	☒	☐	☐	ND						2					

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☒	☐	☐	ND						2					
2B Acenaphtylene (208-96-8)	☒	☐	☐	ND						2					
3B Anthracene (120-12-7)	☒	☐	☐	ND						2					
4B Benzidine (92-87-5)	☒	☐	☐	ND						2					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☐	ND						2					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☐	ND						2					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☐	ND						2					
8B Benzo *(ghi)* Perylene (191-24-2)	☒	☐	☐	ND						2					
9B Benzo *(k)* Fluoranthene (207-08-9)	☒	☐	☐	ND						2					
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☒	☐	☐	ND						2					
11B Bis *(2-Chloro-ethyl)* Ether (111-44-4)	☒	☐	☐	ND						2					
12B Bis *(2-Chloroisepropyl)* Ether (102-60-1	☒	☐	☐	ND						2					
13B Bis*(2-Ethyl-hexyl)* Phthalate (117-81-7)	☒	☐	☐	ND						2					
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☒	☐	☐	ND						2					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☐	ND						2					
16B 2-Chloro-naphthalene (91-68-7)	☒	☐	☐	ND						2					
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☒	☐	☐	ND						2					
18B Chrysene (218-01-9)	☒	☐	☐	ND						2					
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☒	☐	☐	ND						2					
20B 1,2-Dichloro-benzene (95-50-1)	☒	☐	☐	ND						2					
21B 1,3-Dichloro-benzene (541-73-1)	☒	☐	☐	ND						2					

 CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS (continued)															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☐	☐	ND						2					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☐	☐	ND						2					
24B Diethyl Phthalate (84-66-2)	☒	☐	☐	ND						2					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☐	ND						2					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☐	ND						2					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☐	ND						2					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☐	ND						2					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☐	ND						2					
30B 1,2-Diphenylhydrazine (as Azo-benzene) (122-66-7)	☒	☐	☐	ND						2					
31B Fluoranthene (206-44-0)	☒	☐	☐	ND						2					
32B Fluorene (86-73-7)	☒	☐	☐	ND						2					
33B Hexachlorobenzene (118-74-1)	☒	☐	☐	ND						2					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☐	ND						2					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☐	ND						2					
36B Hexachloroethane (67-72-1)	☒	☐	☐	ND						2					
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☒	☐	☐	ND						2					
38B Isophorone (78-59-1)	☒	☐	☐	ND						2					
39B Napthalene (91-20-3)	☒	☐	☐	ND						2					
40B Nitrobenzene (98-95-3)	☒	☐	☐	ND						2					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☐	ND						2					
42B N-Nitrosodi-N-Propylamine (621-64-7)	☒	☐	☐	ND						2					

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☐	ND						2					
44B Phenanthrene (85-01-/	☒	☐	☐	ND						2					
45B Pyrene (129-00-0)	☒	☐	☐	ND						2					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☐	☐	ND						2					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☐	ND						2					
2P β-Bhc (319-85-7)	☒	☐	☐	ND						2					
4P γ-BHC (58-89-9)	☒	☐	☐	ND						2					
5P δ-BHC (319-86-8)	☒	☐	☐	ND						2					
6P Chlordane (57-74-9)	☒	☐	☐	ND						2					
7P 4,4'-DDT (50-29-3)	☒	☐	☐	ND						2					
8P 4,4'-DDE (72-55-9)	☒	☐	☐	ND						2					
9P 4,4'-DDD (72-54-8)	☒	☐	☐	ND						2					
10P Dieldrin (60-57-1)	☒	☐	☐	ND						2					
11P α-Endosulfan (115-29-7)	☒	☐	☐	ND						2					
12P β-Endosulfan (115-29-7	☒	☐	☐	ND						2					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☐	ND						2					
14P Endrin (72-20-8)	☒	☐	☐	ND						2					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☐	ND						2					
16P Heptachlor (76-44-8)	☒	☐	☐	ND						2					

 CONTINUE ON PAGE V-9

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	001

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES (continued)															
17P Heptachlor Expxide (1024-57-3)	☒	☐	☐	ND						2					
18P PCB-1242 (53469-21-9)	☒	☐	☐	ND						2					
19P PCB-1254 (11097-69-1)	☒	☐	☐	ND						2					
20P PCB-1221 (11104-28-2)	☒	☐	☐	ND						2					
21P PCB-1232 (11141-16-5)	☒	☐	☐	ND						2					
22P PCB-1248 (12672-29-6)	☒	☐	☐	ND						2					
23P PCB-1260 (11096-82-5)	☒	☐	☐	ND						2					
24P PCB-1016 (12674-11-2)	☒	☐	☐	ND						2					
25P Toxaphene (8001-35-2)	☒	☐	☐	ND						2					

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
GA0003620

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	67	12.01	24	4.40	16	3.11	366	mg/L	tpd			
b. Chemical Oxygen Demand *(COD)*	749	152.7	532	97.78	431	83.43	227	mg/L	tpd			
c. Total Organic Carbon *(TOC)*	230	44.12					2	mg/L	tpd			
d. Total Suspended Solids *(TSS)*	216	21.89	27	6.23	21	4.17	366	mg/L	tpd			
e. Ammonia *(as N)*	2.4	64.9	2.4	55.2	1.27	46.82	19	mg/L	tpd			
f. Flow	Value 64.9		Value 55.21		Value 46.82		366	MGD	NA	Value		
g. Temperature *(winter)*	Value 28.7		Value 28.7		Value 22.0		152	°C		Value		
h. Temperature *(summer)*	Value 34.3		Value 34.3		Value 28.8		214	°C		Value		
i. pH	Minimum 7.6	Maximum 8.4	Minimum 7.9	Maximum 8.1			366	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSIS	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	☐	☐	0.45	172.64					2	mg/l	ppd			
b. Chlorine, Total Residual	☐	☒	ND						2					
c. Color	☒	☐	2452	525.02	2000	390.50	1578	317.12	350	CPU	tpd			
d. Fecal Coliform	☒	☐	2						2	CFU/ 100ml				
e. Fluoride (16984-48-8)	☒	☐	0.50	191.82					2	mg/l	ppd			
f. Nitrate-Nitrite *(as N)*	☒	☐	0.15	57.55					2	mg/l	ppd			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	☒	☐	1.45	556.28					2	mg/L	ppd			
h. Oil and Grease	☒	☐	ND						2					
i. Phosphorus (as P), Total (7723-14-0)	☒	☐	1.4	537.096					2	mg/L	ppd			
j. Radioactivity														
(1) Alpha, Total	☐	☒	ND						2					
(2) Bets, Total	☐	☒	ND						2					
(3) Radium, Total	☐	☒	ND						2					
(4) Radium 226, Total	☐	☒	ND						2					
k. Sulfate (as SO_4) (14808-79-8)	☒	☐	970	198.2					2	mg/L	tpd			
l. Sulfide (as S)	☐	☒	ND						2					
m. Sulfite (as SO_3)(14265-45-3)	☐	☒	ND						2					
n. Surfactants	☒	☐	1.2	490.39					2	mg/L	ppd			
o. Aluminum, Total (7429-90-5)	☒	☐	1200	490.39					2	ug/L	ppd			
p. Barium, Total (7440-39-3)	☒	☐	262	107.07					2	ug/L	ppd			
q. Boron, Total (7440-42-8)	☒	☐	ND						2					
r. Cobalt, Total (7440-48-4)	☒	☒	1.1	0.45					2	ug/L	ppd			
s. Iron, Total (7439-89-4)	☒	☐	560	228.85					2	ug/L	ppd			
t. Magnesium, Total (7439-95-4)	☒	☐	22000	4.50					2	ug/L	tpd			
u. Molybdenum, Total (7439-98-7)	☒	☐	2.4	0.92					2	ug/L	ppd			
v. Manganese, Total (7439-96-5)	☒	☐	656	268.08					2	ug/L	ppd			
w. Tin, Total (7440-31-5)	☐	☒	ND						2					
x. Titanium, Total (7440-32-6)	☒	☐	150	61.30					2	ug/L	ppd			

 CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
GA0003620	*002*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☒	☐	☐	ND						2					
2M. Arsenic, Total (7440-38-2)	☒	☐	☐	1.4	0.57					2	ug/L	ppd			
3M. Beryllium, Total (7440-41-7)	☒	☐	☐	ND						2					
4M. Cadmium, Total (7440-43-9)	☒	☐	☐	ND						2					
5M Chromium, Total (7440-47-3)	☒	☐	☐	4.1	1.68					2	ug/L	ppd			
6M Copper, Total (7440-50-8)	☒	☐	☐	1.1	0.45					2	ug/L	ppd			
7M lead, Total (7439-92-1)	☒	☐	☐	3.3	1.27					2	ug/L	ppd			
8M Mercury, Total (7439-97-6)	☒	☐	☐	ND						2					
9M Nickel, Total (7440-02-0)	☒	☐	☐	18	7.36					2	ug/L	ppd			
10M Selenium, Total (7782-49-2)	☒	☐	☐	ND						2					
11M Silver, Total (7440-22-4)	☒	☐	☐	ND						2					
12M Thallium, Total (7440-28-0)	☒	☐	☐	ND						2					
13M Zinc, Total (7440-66-6)	☒	☐	☐	47	19.21					2	ug/L	ppd			
14M Cyanide, Total (57-12-5)	☒	☐	☐	ND						2					
15M Phenols, Total	☒	☐	☐	0.02	8.17					2	mg/L	ppd			
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☒	☐	☐	DESCRIBE RESULTS *Is not detected at an average of < 0.0000054 ug/L on 4 flow proportioned samples of outfall 001 & 002*											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☒	☐	☐	ND						2					
2V Acrylonitrile (107-13-1)	☒	☐	☐	ND						2					
3V Benzene (71-43-2)	☒	☐	☐	ND						2					
4V Bis (Chloromethyl) Ether (542-88-1)	☒	☐	☐	ND						2					
5V Bromoform (75-25-2)	☒	☐	☐	ND						2					
6V Carbon Tetrachloride (56-23-5)	☒	☐	☐	ND						2					
7V Chlorobenzene (108-90-7)	☒	☐	☐	ND						2					
8V Chlorodibromomethane (124-48-1)	☒	☐	☐	ND						2					
9V Chloroethane (75-00-3)	☒	☐	☐	ND						2					
10V 2-Chloroethylvinyl Ether (110-75-8)	☒	☐	☐	ND						2					
11V Chloroform (67-66-3)	☒	☐	☐	ND						2					
12V Dichlorobromoethane (75-71-8)	☒	☐	☐	ND						2					
13V Dichlorodifluoromethane (75-71-8)	☒	☐	☐	ND						2					
14V 1,1-Dichloroethane (75-34-3)	☒	☐	☐	ND						2					
15V 1,2-Dichloroethane (107-06-2)	☒	☐	☐	ND						2					
16V 1,1-Dichloroethylene (75335-4)	☒	☐	☐	ND						2					
17V 1,2-Dichloropropane (78-87-5)	☒	☐	☐	ND						2					
18V 1,3-Dichloropropylene (542-76-6)	☒	☐	☐	ND						2					
19V Ethylbenzene (100-41-4)	☒	☐	☐	ND						2					
20V Methyl Bromide (74-83-9)	☒	☐	☐	ND						2					
21V Methyl Chloride (74-87-3)	☒	☐	☐	2.4	1.0					2	ug/L	ppd			

 CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS (continued)															
22 V Methylene Chloride (75-09-2)	☒	☐	☐	ND						2					
23V 1,1,2,2-Tetra-Chloroethane (79-34-5)	☒	☐	☐	ND						2					
24V Tetrachloro-ethylene (127-18-4)	☒	☐	☐	ND						2					
25V Toluene (108-88-3)	☒	☐	☐	ND						2					
26V 1,2-Trans-Dichloroethylene (156-60-5)	☒	☐	☐	ND						2					
27V 1,1,1-Tri-chloroethane (71-55-6)	☒	☐	☐	ND						2					
28V 1,1,2-Tri-chloroethane (79-00-5)	☒	☐	☐	ND						2					
29V Trichloro-ethylene (79-01-6)	☒	☐	☐	ND						2					
30V Trichloro-fluoromethane (75-69-4)	☒	☐	☐	ND						2					
31V Vinyl Chloride (75-01-4)	☒	☐	☐	ND						2					
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☒	☐	☐	ND						2					
2A 2,4-Dichloro-phenol (120-83-2)	☒	☐	☐	ND						2					
3A 2,4-Dimethyl-phenol (105-67-9)	☒	☐	☐	ND						2					
4A 4,6-Dintro-O-cresol (534-52-1)	☒	☐	☐	ND						2					
5A 2,4-Dintro-phenol (51-28-5)	☒	☐	☐	ND						2					
6A 2-Nitro-phenol (88-75-5)	☒	☐	☐	ND						2					
7A 4-Ntro-phenol (100-02-7)	☒	☐	☐	ND						2					
8A P-Chloro-M-Cresol (59-50-7)	☒	☐	☐	ND						2					
9A Penta-chlorophenol (87-86-5)	☒	☐	☐	ND						2					
10A Phenol (10/-95-2)	☒	☐	☐	ND						2					
11A 2,4,6-Tri-chlorophenol (88-06-2)	☒	☐	☐	ND						2					

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☒	☐	☐	ND						2					
2B Acenaphtylene (208-96-8)	☒	☐	☐	ND						2					
3B Anthracene (120-12-7)	☒	☐	☐	ND						2					
4B Benzidine (92-87-5)	☒	☐	☐	ND						2					
5B Benzo (a) Anthracene (56-55-3)	☒	☐	☐	ND						2					
6B Benzo (a) Pyrene (50-32-8)	☒	☐	☐	ND						2					
7B 3,4-Benzo-fluoranthene (205-99-2)	☒	☐	☐	ND						2					
8B Benzo *(ghi)* Perylene (191-24-2)	☒	☐	☐	ND						2					
9B Benzo *(k)* Fluoranthene (207-08-9)	☒	☐	☐	ND						2					
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☒	☐	☐	ND						2					
11B Bis *(2-Chloro-ethyl)* Ether (111-44-4)	☒	☐	☐	ND						2					
12B Bis *(2-Chloroisepropyl)* Ether (102-60-1	☒	☐	☐	ND						2					
13B Bis*(2-Ethyl-hexyl)* Phthalate (117-81-7)	☒	☐	☐	ND						2					
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☒	☐	☐	ND						2					
15B Butyl Benzyl Phthalate (85-68-7)	☒	☐	☐	ND						2					
16B 2-Chloro-naphthalene (91-68-7)	☒	☐	☐	ND						2					
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☒	☐	☐	ND						2					
18B Chrysene (218-01-9)	☒	☐	☐	ND						2					
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☒	☐	☐	ND						2					
20B 1,2-Dichloro-benzene (95-50-1)	☒	☐	☐	ND						2					
21B 1,3-Dichloro-benzene (541-73-1)	☒	☐	☐	ND						2					

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CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☒	☐	☐	ND						2					
23B 3,3'-Dichlorobenzidine (91-94-1)	☒	☐	☐	ND						2					
24B Diethyl Phthalate (84-66-2)	☒	☐	☐	ND						2					
25B Dimethyl Phthalate (131-11-3)	☒	☐	☐	ND						2					
26B Di-N-Butyl Phthalate (131-11-3)	☒	☐	☐	ND						2					
27B 2,4-Dinitrotoluene (121-14-2)	☒	☐	☐	ND						2					
28B 2,6-Dinitrotoluene (606-20-2)	☒	☐	☐	ND						2					
29B Di-N-Octyl Phthalate (117-84-0)	☒	☐	☐	ND						2					
30B 1,2-Diphenylhydrazine (as *Azo-benzene*) (122-66-7)	☒	☐	☐	ND						2					
31B Fluoranthene (206-44-0)	☒	☐	☐	ND						2					
32B Fluorene (86-73-7)	☒	☐	☐	ND						2					
33B Hexachlorobenzene (118-74-1)	☒	☐	☐	ND						2					
34B Hexachlorobutadiene (87-68-3)	☒	☐	☐	ND						2					
35B Hexachlorocyclopentadiene (77-47-4)	☒	☐	☐	ND						2					
36B Hexachloroethane (67-72-1)	☒	☐	☐	ND						2					
37B Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☒	☐	☐	ND						2					
38B Isophorone (78-59-1)	☒	☐	☐	ND						2					
39B Napthalene (91-20-3)	☒	☐	☐	ND						2					
40B Nitrobenzene (98-95-3)	☒	☐	☐	ND						2					
41B N-Nitrosodimethylamine (62-75-9)	☒	☐	☐	ND						2					
42B N-Nitrosdi-N-Propylamine (621-64-7)	☒	☐	☐	ND						2					

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☒	☐	☐	*ND*						2					
44B Phenanthrene (85-01-/	☒	☐	☐	*ND*						2					
45B Pyrene (129-00-0)	☒	☐	☐	*ND*						2					
46B 1,2,4-Trichlorobenzene (120-82-1)	☒	☐	☐	*ND*						2					
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☒	☐	☐	*ND*						2					
2P β-Bhc (319-85-7)	☒	☐	☐	*ND*						2					
4P γ-BHC (58-89-9)	☒	☐	☐	*ND*						2					
5P δ-BHC (319-86-8)	☒	☐	☐	*ND*						2					
6P Chlordane (57-74-9)	☒	☐	☐	*ND*						2					
7P 4,4'-DDT (50-29-3)	☒	☐	☐	*ND*						2					
8P 4,4'-DDE (72-55-9)	☒	☐	☐	*ND*						2					
9P 4,4'-DDD (72-54-8)	☒	☐	☐	*ND*						2					
10P Dieldrin (60-57-1)	☒	☐	☐	*ND*						2					
11P α-Endosulfan (115-29-7)	☒	☐	☐	*ND*						2					
12P β-Endosulfan (115-29-7	☒	☐	☐	*ND*						2					
13P Endosulfan Sulfate (1031-07-8)	☒	☐	☐	*ND*						2					
14P Endrin (72-20-8)	☒	☐	☐	*ND*						2					
15P Endrin Aldehyde (7421-93-4)	☒	☐	☐	*ND*						2					
16P Heptachlor (76-44-8)	☒	☐	☐	*ND*						1					

 CONTINUE ON PAGE V-9

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
GA0003620	002

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'			2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES (continued)															
17P Heptachlor Expxide (1024-57-3)	☒	☐	☐	ND						2					
18P PCB-1242 (53469-21-9)	☒	☐	☐	ND						2					
19P PCB-1254 (11097-69-1)	☒	☐	☐	ND						2					
20P PCB-1221 (11104-28-2)	☒	☐	☐	ND						2					
21P PCB-1232 (11141-16-5)	☒	☐	☐	ND						2					
22P PCB-1248 (12672-29-6)	☒	☐	☐	ND						2					
23P PCB-1260 (11096-82-5)	☒	☐	☐	ND						2					
24P PCB-1016 (12674-11-2)	☒	☐	☐	ND						2					
25P Toxaphene (8001-35-2)	☒	☐	☐	ND						2					

Rayonier Performance Fibers – Jesup Mill
Mill Operating and Wastewater Information

Note: All responses are for CY 2012 unless otherwise noted.

1. Production Avg. ADMT/d:
1612 ADMT/d

2. Production Avg. ODMT/d:
1451 ODMT/d

3. Production MT/d?
See questions 1 & 2.

4. Percent Hardwood and Softwood per line (2012).
A Mill: 66% hardwood / 34% softwood
B Mill: 100% hardwood
C Mill: 100% softwood

5. Avg.Color and specific conductivity for each area (2012):

We do not measure the color of effluent generated in each of the areas listed below, but rather in the different "combined" sewers entering the treatment plant. These include the combined bleach plant filtrate sewer, the strong sewer, the weak clarifier (strong & weak sewers combined) and the total influent to the lift station (weak & strong & filtrate sewer flows).

We apply knowledge of the sewer conductivity trends, the production events that occurred during the week, and historical estimates of color performance, to estimate color losses from each section of the mill.

Wood handling: no monitoring or data (insignificant color contributors)
Digesters: 0.3 tons/d color
Knotters: n/a
Brown stock washers: 8.0 tons/d color
Screening: A Mill: 36 t/d B Mill: 33 t/d C: Mill: closed screen room
Bleaching: 114 tons/d color (normal operation)
Pulp Machines: no monitoring or data (insignificant color contributors)
D/E Evaporators: 1.6 tons/d color
Blow Heat Evaporators: 1.9 tons/d color
Baseline strong sewer: 2.9 tons/d color

Conductivities:
Weak sewer conductivities do not reflect color losses. However, strong sewer conductivity measurements are related to color losses. The 2012 annual average strong sewer conductivity was 1750 uMHOs. Average strong sewer flow was 1350 gpm. Average strong sewer color was 2500 ppm.

6. Avg. chip thickness and age:
50-60 percent of chips 4-8 mm

Chip Age
Pine 7-10 days, hardwood 14-21 days

7. Total soda makeup, lbs Na2O/ton (2012)
Total soda makeup: 0.068 tonnes Na2O/tonne pulp

8. Number of knotters per line
A Mill: 2
B Mill: 3
C Mill: 2

9. Number of washing stages per line
A Mill: 4 washers and 1 rewasher
B Mill: 4 washers + 1 wash press +1 rewasher
C Mill: 3 washers + 1 wash press + 1 washer

10. Dilution factor, m3 liquid / ton pulp
Proprietary

11. Washable sodium loss (kg/ODST soda carry-over into screen room)
Averages approximately 7 kg/ODST depending on grade

12. Total soda loss, # Na2SO4 / ton pulp
Strong sewer soda loss: 1.4 kg/ODST as Na2SO4.
Total carryover + sewer soda loss = 7.0 +1.4 = 8.4 kg/ODST or 18.5 lb/ODST

13. Is COD measured in sewers for brown stock washers, bleach plant and paper machine?
No.

14. Question deleted.

15.a. Liquor heating value BTU/# BL solids:
Higher heating value is 6100 BTU/lb dry solids

15.b. Question deleted

15.c. **RB steam generation, # steam/# BL solids:**
3.5 lb steam / lb BL solids.

16. How is excess saltcake handled?
No excess saltcake is produced. A small amount of saltcake is purged from the east side of the precipitator on No. 6 Recovery Furnace to control chlorides in the liquor.

17. Waste water treatment plant. Info for each outfall:

a. Avg. flow MGD:

- Total basin influent in 2012: 50.3 million gal/d
  (ABI 47.6 million gal/d + Hard Pipe 2.7 million gal/d)
- No.1 ASB Outfall: 4.2 million gal/d
- No. 2 ASB Outfall: 46.1 million gal/d

b. Influent color:
Total from the mill in 2012: 226 tons/day

c. Percent removal for TSS and color:
We don't measure TSS entering the treatment system.

It is not possible to accurately calculate color removal percent due to a long retention time and the variability of flow and color entering the system.

<u>In 2012:</u>

No. 1 ASB Outfall:	31.3 tons/d color
	2.2 tons/d TSS
No. 2 ASB Outfall:	222.9 tons/d color
	5.5 tons/d TSS

18. Spill control

a. Number of intentional bypasses since January 2010:
No bypasses of the treatment system.

b. Number of unintentional bypasses since January 2010:

No bypasses of the treatment system.

19. Condensates: Average color and conductivity in the sewers?

No data.

20. Most recent balances:

a. Water

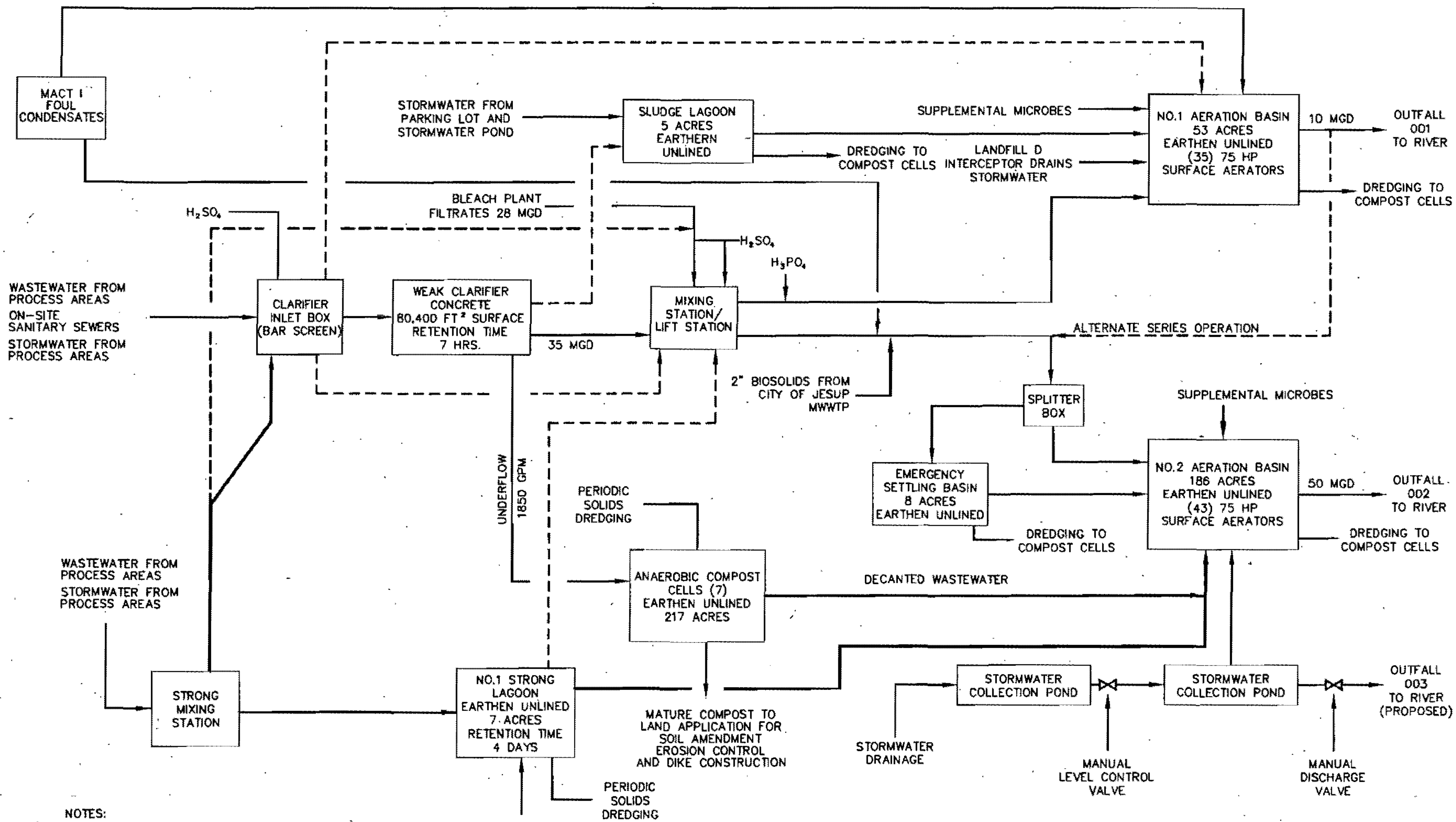
See attached effluent treatment system schematic that includes typical flows.

b. Color

	2012 Average t/d
Strong Sewer	21
Strong Sewer to Weak Clarifier	19
Strong sewer to #1 Strong Lagoon	2
#1 Strong Lagoon Out to Aeration Basin Influent lift station	0
Weak Clarifier Out	96
Weak Clarifier underflow	8
Combined Filtrate Sewer	110
Aeration Basin Influent (Strong + Weak + Filtrate)	216
Total Outfall	254
Compost Cells to ASB No. 2	17
Total from the Mill	221
Total Outfall rolling 12-month average	254

c. Sodium

DAILY 2012 AVERAGE INVENTORY	(tonnes Na2O)
Total Calculated	2993
WL	1545
GL	229
Weak Wash	15
Weak BL	324
50% BL	389
65% BL	386
Hemicaustic	43
Saltcake	63



NOTES:

1. ALL PROCESS WATER IS SUPPLIED BY GROUNDWATER DEEP WELLS PERMITTED WELL FLOW IS 68.0 MGD ANNUAL AVERAGE
2. ALL PROCESS OR DISCHARGE FLOWRATES ARE NOMINAL VALUES AND NOT INDICATIVE OF ANY PERMIT LIMITS

1	CHANGE CONFIGURATION OF PIPING	TMO	BTM	DP	032113		
TMO	WOH	DP	Rayonier	WASTEWATER TREATMENT SYSTEM FLOW DIAGRAM	SCALE NONE	J13P35	
070212	070212	070212	13				

Mill Visit Confirmation

Debra Lane [debra.lane@rayonier.com]
Sent: Tuesday, March 05, 2013 10:46 AM
To: Shell, Karrie-Jo; Glen Behrend [glen.behrend@dnr.state.ga.us]; Alan Leake [Alan.Leake@dnr.state.ga.us]

Karrie-Jo, Glen, and Alan,

Thanks again for taking time this morning to discuss plans for the upcoming mill visit. We'll expect you all at 1:00 pm on Monday, April 1.
We'l have an overview meeting and safety orientation, and then begin the mill tour. As needed, we'll plan to complete the mill tour on Tuesday, April 2.

Karrie-Jo, my contact information is included below.

Best regards,

Debra

Debra D. Lane
Rayonier
Senior Environmental Manager, Manufacturing
PO Box 1278
Jesup, GA 31598
office: 912-588-8117
mobile: 904-710-6243

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/06/01
Ending Date YR/MO/DA 11/06/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	57.6	44	10.65	54	13.0	7.9	1434			
2	56.5	47	10.96	57	13.5	7.8	1433			
3	54.7	42	9.55	54	12.4	7.8	1497			
4	53.7	43	9.54	49	11.1	8.0	1522			
5	55.8	38	8.73	57	13.2	8.0	1525			
6	56.0	39	9.16	57	13.3	7.9	1504			
7	59.8	42	10.46	61	15.2	8.0	1601			
8	58.8	34	8.27	62	15.1	7.9	1594			
9	55.1	35	7.95	56	12.9	7.8	1589			
10	54.7	33	7.50	53	12.1	7.9	1599			
11	54.0	29	6.61	62	14.0	7.8	1593			
12	53.5	39	8.76	63	14.0	7.8	1604			
13	50.8	41	8.60	66	13.9	7.8	1619			
14	49.5	34	7.01	56	11.5	7.8	1608	<0.0000081	209,577	
15	50.2	35	7.26	65	13.6	8.0	1587			
16	56.5	38	8.85	65	15.3	7.8	1541			
17	54.6	33	7.59	66	15.1	7.8	1533			
18	57.0	31	7.26	56	13.3	7.9	1558			
19	57.1	21	5.08	61	14.6	8.1	1612			
20	55.2	31	7.12	64	14.8	7.9	1577			
21	52.1	32	6.98	46	9.9	7.8	1537			
22	49.8	36	7.39	53	11.1	7.8	1507			
23	54.1	36	8.19	56	12.5	7.8	1512			
24	52.3	26	5.65	43	9.5	7.8	1444			
25	52.3	28	6.10	53	11.5	7.9	1449			
26	55.6	27	6.33	48	11.2	7.9	1417			
27	55.9	31	7.18	52	12.2	7.8	1418			
28	52.4	31	6.69	51	11.1	7.9	1404			
29	47.8	26	5.26	51	10.2	7.9	1378			
30	48.6	29	5.96	55	11.1	7.9	1382			
Number of Samples	30	30	30	30	30	30	30	1	1	
Average value	54.0	34	7.754	56.4	12.734	7.9	1519	-	209,577	
Maximum value	59.8	47	10.956	66.2	15.306	8.1	1619	-	-	
Minimum value	47.8	21	5.077	43.4	9.468	7.8	1378	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	07/06/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/07/01
Ending Date YR/MO/DA 11/07/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	49.8	31	6.51	55	11.3	7.9	1372			
2	53.4	31	6.81	49	11.0	7.9	1401			
3	54.1	32	7.26	60	13.5	7.9	1464			
4	55.8	28	6.59	59	13.7	7.9	1434			
5	54.5	29	6.50	60	13.6	8.0	1428			
6	54.1	16	3.65	52	11.7	8.0	1424			
7	57.5	28	6.70	56	13.5	8.0	1407			
8	56.4	33	7.73	52	12.2	8.0	1411			
9	55.5	27	6.26	51	11.8	8.1	1386			
10	53.0	32	7.02	55	12.3	7.9	1399			
11	50.6	27	5.61	55	11.6	7.8	1410			
12	52.2	32	7.04	57	12.5	7.8	1443			
13	48.3	29	5.79	53	10.7	7.8	1480			
14	49.2	35	7.22	57	11.7	7.8	1456		235,303	
15	50.7	32	6.69	51	10.8	7.9	1468			
16	52.7	32	7.09	47	10.4	8.1	1489			
17	57.3	28	6.76	57	13.5	8.1	1483			
18	57.8	18	4.25	43	10.5	8.0	1456			
19	55.0	26	6.02	45	10.3	7.8	1442			
20	57.9	38	9.25	52	12.5	7.9	1413			
21	57.2	29	6.97	49	11.7	8.0	1376			
22	52.6	33	7.14	56	12.4	8.0	1356			
23	52.5	30	6.50	58	12.8	8.0	1316			
24	50.4	34	7.23	58	12.1	7.9	1282			
25	51.8	31	6.78	58	12.4	7.9	1265			
26	53.4	29	6.39	54	12.1	7.8	1265			
27	52.2	23	5.10	48	10.5	7.8	1255			
28	49.1	25	5.07	47	9.7	7.8	1322			
29	52.5	25	5.46	46	10.0	7.8	1344			
30	54.3	26	5.84	46	10.5	7.9	1293			
31	55.6	25	5.78	52	12.2	7.9	1264			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	53.5	29	6.419	52.9	11.777	7.9	1387	-	235,303	
Maximum value	57.9	38	9.254	59.9	13.670	8.1	1489	-	-	
Minimum value	48.3	16	3.648	43.5	9.694	7.8	1255	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	08/08/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/08/01
Ending Date YR/MO/DA 11/08/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	64.3	23	6.29	54	14.6	7.9	1232			
2	62.3	25	6.43	48	12.3	7.9	1236			
3	59.3	22	5.48	51	12.6	7.9	1175			
4	54.7	24	5.56	52	11.9	7.9	1193			
5	55.1	25	5.77	50	11.4	8.0	1205			
6	55.2	22	5.12	75	17.3	7.9	1225			
7	61.2	23	5.82	58	14.7	7.9	1197			
8	62.8	24	6.30	52	13.7	7.9	1209			
9	58.9	24	5.90	48	11.8	7.9	1207			
10	52.4	23	4.99	50	11.0	7.9	1216			
11	57.6	27	6.43	53	12.7	8.0	1203			
12	53.3	26	5.81	49	10.9	7.9	1236			
13	54.1	34	7.62	50	11.2	8.0	1208			
14	54.9	30	6.82	51	11.6	8.0	1140		433,850	
15	54.4	27	6.13	54	12.3	7.9	1144			
16	51.9	28	6.06	53	11.4	7.9	1122			
17	58.3	25	6.12	53	12.9	7.9	1118			
18	59.6	26	6.46	54	13.5	7.9	1107			
19	61.3	24	6.21	56	14.2	7.9	1120			
20	30.6	22	2.85	42	5.3	7.9	1111			
21	46.8	26	5.05	47	9.1	7.9	1120			
22	55.8	25	5.73	46	10.8	7.9	1155			
23	60.4	24	5.97	55	13.7	7.9	1164			
24	59.1	28	6.79	52	12.7	7.9	1213			
25	58.1	23	5.45	55	13.2	7.9	1215			
26	53.8	24	5.48	42	9.5	7.9	1274			
27	56.2	22	5.20	41	9.5	7.9	1228			
28	58.1	25	5.95	45	10.9	7.9	1305			
29	56.4	24	5.59	50	11.7	7.9	1337			
30	57.7	25	6.01	53	12.7	8.0	1354			
31	56.5	29	6.88	52	12.3	7.9	1372			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	56.2	25	5.880	51.2	12.043	7.9	1204	-	433,850	
Maximum value	64.3	34	7.618	74.9	17.258	8.0	1372	-	-	
Minimum value	30.6	22	2.852	40.6	5.311	7.9	1107	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	09/06/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/09/01
Ending Date YR/MO/DA 11/09/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	56.8	30	7.10	52	12.4	7.9	1395			
2	53.3	31	6.94	54	12.0	7.9	1379			
3	53.9	28	6.30	48	10.9	7.9	1399			
4	54.3	28	6.41	46	10.4	7.9	1408			
5	58.6	24	5.77	48	11.7	8.0	1433			
6	57.0	26	6.21	50	11.9	7.9	1429			
7	54.6	29	6.53	53	12.0	8.0	1424			
8	52.6	27	6.01	45	9.9	7.9	1435			
9	51.1	27	5.76	50	10.7	7.9	1396			
10	51.1	29	6.10	56	11.9	7.9	1332			
11	56.8	32	7.64	52	12.3	7.9	1291			
12	58.8	37	8.96	62	15.2	8.0	1250			
13	57.7	37	8.79	65	15.6	8.1	1203			
14	57.6	37	8.80	65	15.5	8.1	1172	<0.0000039	356,207	
15	50.5	40	8.53	61	13.0	8.1	1147			
16	59.6	33	8.17	52	12.9	8.0	1177			
17	62.3	34	8.83	62	16.1	8.0	1196			
18	63.1	35	9.24	59	15.4	8.0	1223			
19	65.2	34	9.30	61	16.7	8.0	1301			
20	6.6	55	1.52	173	4.8	8.0	1060			
21	10.6	39	1.74	128	5.7	8.1	1168			
22	58.4	28	6.81	53	12.9	8.0	1276			
23	76.2	25	8.07	52	16.6	8.1	1273			
24	83.4	25	8.57	68	23.5	8.1	1261			
25	81.2	31	10.66	69	23.4	8.0	1238			
26	72.6	27	8.33	59	18.0	7.9	1289			
27	69.8	32	9.26	61	17.6	7.9	1294			
28	66.1	37	10.11	59	16.4	7.9	1324			
29	58.2	35	8.39	65	15.9	7.9	1293			
30	54.5	32	7.16	64	14.5	7.9	1356			
Number of Samples	30	30	30	30	30	30	30	1	1	
Average value	57.1	32	7.400	63.1	13.858	8.0	1294	-	356,207	
Maximum value	83.4	55	10.660	173.0	23.527	8.1	1435	-	-	
Minimum value	6.6	24	1.516	45.2	4.769	7.9	1060	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	1010/2011 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/10/01
Ending Date YR/MO/DA 11/10/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0			0.000153		
Date			mex. 16.725		max. 38.8	max. 9.0					Comments
1	56.1	28	6.59	58	13.5	7.9	1360	318.0			
2	58.0	29	7.06	62	15.0	7.9	1357	328.2			
3	58.2	33	8.03	61	14.8	7.8	1374	333.4			
4	54.4	35	8.04	62	14.2	7.9	1329	301.3			
5	51.6	33	7.09	61	13.1	7.8	1341	288.6			
6	46.2	32	6.12	73	14.0	7.8	1349	260.0			
7	45.3	33	6.20	66	12.5	7.8	1400	264.2			
8	48.1	35	6.97	70	14.1	7.9	1442	289.2			
9	55.3	32	7.41	65	14.9	7.9	1485	342.3			
10	55.0	34	7.74	57	13.1	7.8	1377	315.7			
11	71.9	34	10.16	48	14.3	7.8	1364	409.4			
12	6.3	69	1.81	216	5.7	7.9	1417	37.1			
13	69.8	29	8.44	53	15.5	7.8	1371	399.4			
14	71.1	25	7.34	49	14.4	7.9	1342	397.7		437,787	
15	70.1	30	8.66	54	15.7	7.8	1328	388.2			
16	68.8	35	10.02	54	15.6	7.8	1326	380.2			
17	60.5	35	8.96	63	15.8	7.9	1326	334.7			
18	60.1	34	8.60	61	15.2	7.8	1282	321.5			
19	58.4	31	7.60	54	13.1	7.8	1266	308.2			
20	55.7	33	7.67	51	11.7	7.9	1315	305.3			
21	53.8	33	7.30	57	12.9	7.8	1247	279.9			
22	53.1	44	9.75	59	13.0	7.9	1222	270.7			
23	55.4	48	10.98	72	16.7	8.0	1146	264.9			
24	48.5	47	9.43	76	15.3	8.0	1175	237.7			
25	49.4	47	9.69	80	16.5	7.8	1179	242.9			
26	49.5	43	8.83	77	15.9	7.9	1149	237.0			
27	50.5	46	9.75	73	15.4	7.8	1160	244.2			
28	48.1	43	8.69	70	14.1	7.8	1174	235.7			
29	53.0	44	9.69	69	15.3	7.9	1182	261.1			
30	56.2	51	12.02	62	14.5	7.9	1218	285.3			
31	54.8	51	11.54	67	15.4	7.9	1254	286.3			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	54.6	38	8.328	67.7	14.230	7.9	1299	295.8	-	437,787	
Maximum value	71.9	69	12.017	215.9	16.665	8.0	1485	409.4	-	-	
Minimum value	6.3	25	1.809	47.5	5.660	7.8	1146	37.1	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	11/07/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/11/01
Ending Date YR/MO/DA 11/11/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	54.7	52	11.80	63	14.3	7.9	1268	289.5			
2	54.1	53	11.99	63	14.2	8.0	1299	293.1			
3	52.6	50	10.89	66	14.4	8.0	1339	293.9			
4	50.7	51	10.85	56	11.8	8.1	1392	294.3			
5	54.2	46	10.39	57	12.8	8.2	1379	311.8			
6	54.1	47	10.51	65	14.7	8.0	1361	306.8			
7	51.8	55	11.88	78	16.8	8.0	1420	306.8			
8	50.1	53	10.98	79	16.6	8.1	1408	294.2			
9	51.9	67	14.42	89	19.2	8.0	1465	316.8			
10	53.6	58	12.95	74	16.6	8.0	1451	324.5			
11	53.0	55	12.23	75	16.5	8.0	1430	316.0			
12	54.9	52	11.83	66	15.0	8.0	1443	330.1			
13	54.8	53	12.17	72	16.5	7.9	1449	331.0			
14	56.5	53	12.52	65	15.2	7.9	1435	338.1		327,020	
15	55.8	47	10.82	63	14.7	7.9	1466	340.9			
16	55.9	41	9.60	64	14.9	7.8	1404	327.4			
17	55.7	38	8.89	62	14.5	7.9	1403	326.1			
18	54.4	28	6.39	68	15.4	7.9	1402	318.1			
19	57.1	37	8.71	56	13.4	7.9	1414	336.6			
20	57.7	29	6.99	52	12.5	8.0	1344	323.5			
21	49.6	30	6.20	48	9.9	7.9	1317	272.4			
22	48.7	30	6.07	50	10.3	7.9	1269	257.9			
23	46.9	29	5.57	40	7.8	7.9	1244	243.1			
24	48.3	23	4.69	41	8.2	7.9	1243	250.0			
25	47.8	26	5.14	43	8.5	7.9	1200	238.9			
26	48.4	26	5.21	42	8.5	7.8	1251	252.3			
27	48.1	24	4.81	43	8.7	7.8	1229	246.6			
28	45.9	23	4.32	37	7.1	7.9	1241	237.6			
29	49.4	26	5.34	38	7.8	7.9	1250	257.8			
30	56.1	28	6.54	39	9.1	7.8	1281	299.4			
Number of Samples	30	30	30	30	30	30	30	30	0	1	
Average value	52.4	40.9	9.024	58.4	12.863	7.9	1350	295.8	-	327,020	
Maximum value	57.7	66.7	14.421	88.7	19.183	8.2	1466	340.9	-	-	
Minimum value	45.9	22.6	4.325	36.9	7.055	7.8	1200	237.6	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	12/07/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/12/01
Ending Date YR/MO/DA 11/12/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	57.2	24	5.83	28	6.6	7.8	1259	300.5			
2	56.0	26	6.12	36	8.4	7.8	1279	298.6			
3	56.9	27	6.48	35	8.2	7.8	1359	322.5			
4	61.6	29	7.33	41	10.6	7.8	1327	340.7			
5	58.3	23	5.51	38	9.2	7.8	1350	328.3			
6	57.5	23	5.48	40	9.7	7.8	1353	324.4			
7	56.9	23	5.49	39	9.2	7.8	1331	315.8			
8	55.2	30	6.80	39	9.0	7.8	1313	302.5			
9	51.8	23	5.01	35	7.6	7.8	1364	294.9			
10	52.4	24	5.29	35	7.6	7.8	1336	291.8			
11	54.4	30	6.80	43	9.7	7.8	1340	304.1			
12	51.7	30	6.38	38	8.2	7.8	1312	282.6			
13	52.7	25	5.53	35	7.6	7.8	1300	285.6			
14	50.1	27	5.58	40	8.4	7.8	1320	275.7	<0.0000017	214,801	
15	50.6	25	5.28	46	9.8	7.8	1325	279.7			
16	48.5	25	5.05	44	8.9	7.8	1322	267.0			
17	49.6	27	5.59	46	9.5	7.8	1284	265.7			
18	52.6	30	6.49	52	11.5	7.9	1296	284.4			
19	53.2	29	6.34	50	11.2	7.7	1270	281.8			
20	53.4	28	6.15	56	12.5	7.7	1274	283.9			
21	53.3	29	6.51	62	13.7	7.7	1240	275.8			
22	50.5	33	6.94	54	11.4	7.7	1265	266.2			
23	50.8	34	7.20	57	12.1	7.7	1247	264.4			
24	53.8	36	8.17	56	12.5	7.7	1241	278.5			
25	53.4	42	9.36	56	12.4	7.7	1233	274.6			
26	57.5	45	10.80	63	15.2	7.7	1285	308.2			
27	55.0	45	10.41	63	14.4	7.8	1282	294.3			
28	55.8	45	10.55	62	14.4	7.8	1319	307.2			
29	55.0	47	10.82	64	14.6	7.8	1320	303.0			
30	54.2	48	10.80	63	14.4	7.9	1364	308.4			
31	55.6	46	10.58	65	15.1	7.9	1339	310.4			
Number of Samples	31	31	31	31	31	31	31	31	1	1	
Average value	54.1	32	7.119	47.8	10.766	7.8	1305	294	-	214,801	
Maximum value	61.6	48	10.822	65.0	15.224	7.9	1364	341	-	-	
Minimum value	48.5	23	5.014	27.8	6.644	7.7	1233	264	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date		
Perrett, J	General Manager	01/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.	Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill P. O. Box 2070 Jesup, GA 31598	Permit No. GA0003620 Beginning Date YR/MO/DA 12/01/01 Ending Date YR/MO/DA 12/01/31	LOCATION DESCRIPTION 001- No. 1 Aerated Stabilization Basin Effluent 002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	55.6	42	9.81	68	15.8	7.8	1364	316.5			
2	52.7	39	8.58	61	13.4	7.9	1370	301.0			
3	52.5	42	9.11	81	17.8	7.8	1383	302.7			
4	58.4	34	8.28	57	14.0	7.9	1354	330.0			
5	54.3	34	7.75	52	11.7	7.9	1342	304.1			
6	53.8	35	7.87	54	12.2	7.9	1315	295.2			
7	55.5	36	8.44	56	13.1	7.9	1288	298.4			
8	57.3	49	11.78	60	14.3	8.0	1302	311.0			
9	53.2	59	12.99	69	15.4	8.2	1318	292.2			
10	52.1	55	11.89	56	12.1	8.3	1331	289.3			
11	52.2	56	12.27	75	16.4	8.4	1315	286.3			
12	47.1	58	11.49	66	13.0	8.3	1315	258.3			
13	46.6	57	11.05	60	11.6	8.2	1372	266.9			
14	47.8	61	12.19	61	12.2	8.0	1407	280.6		370,064	
15	49.7	57	11.75	39	8.0	7.9	1411	292.7			
16	46.5	56	10.88	63	12.2	7.8	1413	273.8			
17	47.9	55	11.02	60	12.0	7.8	1433	286.1			
18	47.1	56	11.10	60	11.8	7.9	1467	288.5			
19	51.5	49	10.61	59	12.7	7.8	1450	311.2			
20	50.4	47	9.80	59	12.4	7.8	1460	306.8			
21	49.9	42	8.64	60	12.4	7.8	1455	302.5			
22	52.6	38	8.26	54	12.0	7.8	1449	317.9			
23	49.4	34	7.11	55	11.3	7.8	1428	294.4			
24	50.6	34	7.07	60	12.7	7.8	1418	299.1			
25	49.1	36	7.45	62	12.7	7.8	1452	297.2			
26	48.2	34	6.84	62	12.4	7.8	1461	293.8			
27	51.0	28	5.99	56	11.8	7.7	1559	331.7			
28	50.6	32	6.80	60	12.7	7.8	1498	316.4			
29	50.6	29	6.13	55	11.6	7.8	1471	310.3			
30	45.0	31	5.82	50	9.3	7.8	1422	266.9			
31	45.1	32	6.07	47	8.9	7.7	1385	260.3			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	50.8	44	9.188	59.3	12.568	7.9	1400	296	-	370,064	
Maximum value	58.4	61	12.986	81.5	17.833	8.4	1559	332	-	-	
Minimum value	45.0	28	5.821	38.5	7.996	7.7	1288	258	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date		
Perrett, J	General Manager	02/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.	Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/02/01
Ending Date YR/MO/DA 12/02/29

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	46.4	31	5.96	50	9.7	7.8	1394	270.1			
2	46.9	28	5.51	43	8.4	7.8	1342	262.6			
3	45.0	23	4.34	36	6.7	7.7	1303	244.5			
4	46.1	20	3.84	33	6.3	7.8	1296	248.9			
5	46.4	19	3.67	23	4.5	7.8	1268	245.5			
6	45.0	18	3.30	29	5.4	7.9	1248	234.0			
7	46.7	19	3.62	29	5.6	7.8	1274	248.2			
8	45.9	21	4.03	24	4.6	7.8	1271	243.4			
9	44.3	18	3.35	27	5.1	7.8	1280	236.5			
10	42.4	16	2.85	31	5.5	7.8	1242	219.6			
11	48.0	24	4.87	46	9.3	7.8	1291	258.3			Grab Sample at #2 Outfall
12	47.0	30	5.82	56	11.0	7.8	1327	260.0			
13	45.1	21	3.92	51	9.5	7.8	1301	244.4			
14	44.8	21	3.93	48	9.0	7.8	1308	244.2		402,298	
15	48.3	29	5.90	52	10.5	7.8	1263	254.1			
16	50.4	26	5.40	50	10.6	7.8	1194	250.9			Grab Sample at #2 Outfall
17	49.9	28	5.78	47	9.7	7.8	1204	250.5			
18	51.6	23	4.86	42	9.0	7.9	1214	261.5			
19	55.2	19	4.47	42	9.7	7.9	1252	288.0			
20	56.8	22	5.15	45	10.7	7.8	1206	285.4			
21	57.0	21	5.08	47	11.1	7.9	1175	279.4			
22	59.2	23	5.76	54	13.4	7.9	1219	301.1			
23	57.3	24	5.74	53	12.6	7.9	1246	298.0			
24	58.4	25	6.03	53	13.0	7.9	1265	308.0			
25	60.1	22	5.43	47	11.7	7.9	1261	316.1			
26	58.5	23	5.54	46	11.3	7.9	1273	310.3			
27	53.2	22	4.97	44	9.8	7.9	1252	277.6			
28	56.7	20	4.84	36	8.6	7.9	1275	301.4			
29	54.7	19	4.36	35	7.9	7.8	1275	290.9			
Number of Samples	29	29	29	29	29	29	29	29	0	1	
Average value	50.6	23	4.770	42.0	8.967	7.8	1266	267	-	402,298	
Maximum value	60.1	31	6.033	56.1	13.443	7.9	1394	316	-	-	
Minimum value	42.4	16	2.848	23.0	4.455	7.7	1175	220	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	03/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/03/01
Ending Date YR/MO/DA 12/03/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	55.8	19	4.42	36	8.4	7.8	1252	291.6			
2	55.2	18	4.09	30	6.9	7.9	1248	287.4			
3	58.7	18	4.38	34	8.4	8.0	1231	301.2			
4	59.8	18	4.49	41	10.2	8.0	1214	303.0			
5	63.7	17	4.57	44	11.7	7.9	1236	328.3			
6	66.8	19	5.32	45	12.6	8.0	1184	330.0			
7	67.2	21	5.96	44	12.4	7.9	1128	316.0			
8	67.1	21	5.89	47	13.1	7.9	1156	323.4			
9	64.0	24	6.32	40	10.8	7.9	1114	297.3			
10	62.3	24	6.16	41	10.5	7.9	1105	287.1			
11	67.3	26	7.28	48	13.5	7.8	1107	310.7			
12	59.9	23	5.68	44	11.0	7.8	1122	280.2			
13	49.4	15	3.08	33	6.9	7.8	1159	238.8			
14	12.5	21	1.12	66	3.4	7.8	1441	75.4	<0.0000039	529,732	Annual Shutdown
15	8.8	21	0.78	74	2.7	7.8	1585	58.2			Annual Shutdown
16	6.6	23	0.64	76	2.1	7.9	1740	48.2			Annual Shutdown
17	6.7	20	0.56	53	1.5	8.0	1690	47.5			Annual Shutdown
18	3.4	12	0.17	31	0.4	8.0	1670	23.6			Annual Shutdown
19	1.5	13	0.08	23	0.1	7.9	1700	10.7			Annual Shutdown
20	1.5	9	0.06	14	0.1	8.3	1660	10.4			Annual Shutdown
21	2.5	8	0.08	17	0.2	8.3	1670	17.5			Annual Shutdown
22	2.4	13	0.13	18	0.2	8.3	1710	17.1			Annual Shutdown
23	2.3	10	0.10	23	0.2	8.3	1660	16.1			Annual Shutdown
24	2.7	8	0.09	12	0.1	8.4	1630	18.5			Annual Shutdown
25	13.8	11	0.63	14	0.8	8.2	1490	85.7			Annual Shutdown
26	68.8	12	3.40	17	4.8	8.6	1282	367.8			
27	59.0	15	3.73	15	3.7	8.2	1270	312.5			
28	47.7	14	2.72	23	4.5	8.2	1268	251.9			
29	39.0	11	1.85	17	2.8	8.2	1210	196.6			
30	36.6	18	2.70	17	2.7	8.2	1224	187.0			
31	26.0	15	1.63	16	1.7	8.3	1298	140.6			
Number of Samples	31	31	31	31	31	31	31	31	1	1	
Average value	36.7	17	2.842	34.0	5.434	8.0	1370	186	-	529,732	
Maximum value	68.8	26	7.278	76.0	13.502	8.6	1740	368	-	-	
Minimum value	1.5	8	0.056	12.0	0.088	7.8	1105	10	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	04/09/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/04/01
Ending Date YR/MO/DA 12/04/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	24.8	14	1.41	13	1.3	8.2	1172	121.4			
2	24.5	15	1.57	8	0.9	8.1	1160	118.7			
3	38.7	16	2.62	10	1.7	8.1	1073	173.4			
4	47.0	15	3.00	10	2.0	8.1	1048	205.3			
5	47.0	16	3.05	14	2.7	8.1	1082	212.2			
6	48.1	12	2.34	12	2.3	8.1	1084	217.5			
7	50.5	9	1.88	13	2.7	8.1	1077	227.0			
8	56.0	10	2.32	12	2.8	8.0	1039	242.5			
9	60.1	11	2.77	14	3.6	7.9	1023	256.4			
10	59.6	13	3.18	17	4.1	7.9	1013	251.9			
11	59.6	18	4.40	19	4.7	8.0	1016	252.6			
12	55.6	28	6.40	26	6.1	8.0	1061	246.0			
13	57.3	34	8.12	28	6.8	8.0	1095	261.6			
14	57.9	39	9.42	35	8.5	8.1	1079	260.7		430,001	
15	59.6	39	9.58	39	9.8	8.1	1223	304.2			
16	53.2	36	8.02	37	8.3	7.9	1164	258.2			
17	54.6	33	7.63	39	9.0	8.0	1150	262.1			
18	55.4	33	7.58	41	9.5	8.0	1165	268.9			
19	58.0	32	7.66	42	10.1	8.0	1175	284.3			
20	57.5	33	7.88	38	9.2	7.9	1202	288.2			
21	56.8	29	6.90	38	9.0	8.0	1245	294.6			
22	59.3	30	7.39	47	11.7	7.9	1221	302.0			
23	49.9	28	5.87	30	6.1	7.9	1289	268.1			
24	47.3	22	4.28	24	4.8	8.0	1305	257.3			
25	46.2	21	4.01	23	4.4	7.9	1331	256.7			
26	48.3	20	4.04	20	4.1	7.8	1326	267.1			*Due to flowmeter malfuntction, flow data for 001 on 4/27 was assumed as the average of 4/26 and 4/28 flow data*
27	46.9	18	3.46	22	4.3	7.8	1338	261.7			
28	53.0	19	4.25	24	5.2	7.9	1326	292.9			
29	55.4	21	4.76	25	5.7	7.8	1306	301.6			
30	60.3	20	5.15	20	4.9	7.8	1286	323.1			
Number of Samples	30	30	30	30	30	30	30	30	0	1	
Average value	51.6	23	5.032	24.7	5.542	8.0	1169	251	-	430,001	
Maximum value	60.3	39	9.580	47.1	11.650	8.2	1338	323	-	- -	
Minimum value	24.5	9	1.414	8.3	0.853	7.8	1013	119	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	05/07/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/05/01
Ending Date YR/MO/DA 12/05/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	61.9	21	5.33	23	5.9	7.8	1268	327.1			
2	60.8	23	5.78	23	5.9	7.9	1276	323.3			
3	56.4	22	5.08	24	5.8	7.9	1513	355.6			
4	59.0	22	5.51	19	4.8	8.0	1298	319.5			
5	46.8	21	4.18	20	4.0	8.0	1334	260.4			
6	52.6	21	4.55	27	6.0	8.0	1366	299.3			
7	52.9	22	4.76	26	5.7	7.9	1392	306.9			
8	51.9	23	5.05	25	5.4	7.9	1357	293.5			
9	49.1	21	4.33	26	5.4	8.0	1373	281.2			
10	48.9	19	3.81	28	5.6	7.9	1408	287.3			
11	50.4	20	4.15	29	6.1	8.0	1395	293.3			
12	52.1	19	4.18	30	6.6	8.0	1396	303.3			
13	51.4	19	3.98	30	6.5	8.0	1425	305.7			
14	51.1	20	4.26	32	6.9	8.0	1436	305.8		504,572	
15	51.7	24	5.15	36	7.8	8.0	1435	309.2			
16	51.4	23	4.86	41	8.9	7.9	1438	308.1			
17	53.6	21	4.69	47	10.5	7.9	1376	307.4			
18	59.6	21	5.15	39	9.7	7.9	1346	334.6			
19	59.7	20	4.90	33	8.3	8.0	1332	331.9			
20	60.5	20	5.11	36	9.1	8.0	1362	343.5			
21	56.0	19	4.41	27	6.2	8.1	1273	297.0			
22	56.4	24	5.56	27	6.4	8.0	1279	300.8			
23	57.7	25	6.05	32	7.8	8.0	1255	302.1			
24	55.1	32	7.35	38	8.8	8.0	1203	276.2			
25	53.7	38	8.48	32	7.2	8.1	1167	261.1			
26	53.9	38	8.51	40	8.9	8.1	1175	264.2			
27	59.1	35	8.64	44	10.8	8.1	1172	289.1			
28	66.1	33	8.98	44	12.1	8.1	1153	318.1			
29	65.0	29	7.84	38	10.3	8.0	1139	308.7			
30	66.8	26	7.21	38	10.5	8.0	1120	312.1			
31	61.5	24	6.04	37	9.5	7.9	1100	282.2			
Number of Samples	31	31	31	31	31	31	31	31	0	4	
Average value	55.9	24	5.608	32.0	7.519	8.0	1308	304	-	504,572	
Maximum value	66.8	38	8.979	47.1	12.054	8.1	1513	356	-	-	
Minimum value	46.8	19	3.808	19.4	3.998	7.8	1100	260	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, J	General Manager	06/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/06/01
Ending Date YR/MO/DA 12/06/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	54.6	21	4.78	30	6.9	7.9	1094	248.9			
2	58.4	20	4.95	31	7.5	8.0	1108	269.7			
3	61.2	22	5.61	35	9.0	8.0	1098	280.2			
4	52.5	25	5.49	36	7.8	7.9	1114	244.1			
5	52.8	22	4.94	28	6.2	7.9	1124	247.5			
6	50.6	23	4.94	31	6.5	7.9	1144	241.5			
7	50.6	26	5.48	30	6.3	7.8	1155	243.8			
8	45.6	23	4.41	35	6.6	7.9	1122	213.5			
9	48.4	22	4.46	30	6.0	7.9	1128	227.5			
10	49.8	20	4.15	30	6.3	7.9	1126	233.7			
11	59.0	18	4.48	34	8.4	7.9	1153	283.9			
12	65.4	21	5.63	32	8.6	8.0	1155	315.0			
13	63.9	24	6.41	30	8.0	7.9	1169	311.4			
14	61.4	29	7.49	32	8.1	7.9	1184	303.5	<0.0000008	443,059	
15	53.9	33	7.38	34	7.7	7.9	1184	266.3			
16	57.1	31	7.30	32	7.6	8.0	1221	290.8			
17	57.4	30	7.11	42	10.1	8.0	1254	300.2			
18	48.8	25	5.19	30	6.2	7.9	1238	251.9			
19	48.6	25	4.99	26	5.3	7.9	1244	252.3			
20	48.1	25	5.02	27	5.5	7.9	1284	257.8			
21	48.6	26	5.32	25	5.1	7.9	1289	260.9			
22	47.4	18	3.62	25	5.0	8.0	1312	259.6			
23	49.1	20	4.15	27	5.5	7.9	1287	263.6			
24	49.1	18	3.68	29	6.0	7.9	1295	265.2			
25	49.1	16	3.34	29	5.9	7.9	1275	261.0			
26	50.6	18	3.71	28	6.0	7.9	1218	256.7			
27	51.8	17	3.74	31	6.7	7.9	1188	256.6			
28	50.4	15	3.17	33	6.9	7.8	1239	260.1			
29	50.0	19	3.99	31	6.5	8.1	1207	251.8			
30	51.7	27	5.72	35	7.6	8.0	1271	274.2			
31											
Number of Samples	30	30	30	30	30	30	30	30	1	1	
Average value	52.9	23	5.022	31.0	6.860	7.9	1196	263	-	443,059	
Maximum value	65.4	33	7.486	42.2	10.092	8.1	1312	315	-	-	
Minimum value	45.6	15	3.168	25.1	4.964	7.8	1094	214	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	07/09/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/07/01
Ending Date YR/MO/DA 12/07/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	54.6	34	7.73	40	9.1	7.8	1070	243.8			
2	51.5	37	7.95	38	8.2	7.9	1027	220.7			
3	51.5	39	8.36	39	8.4	7.9	1025	220.1			
4	53.5	36	8.10	39	8.7	7.9	1083	241.9			
5	51.8	36	7.82	42	9.1	8.0	1074	232.0			
6	48.3	41	8.33	41	8.4	8.0	1092	220.0			
7	51.1	30	6.43	41	8.8	8.0	1061	226.0			
8	53.9	27	6.15	40	9.1	8.0	1092	245.6			
9	51.0	30	6.43	43	9.2	8.0	1141	242.8			
10	49.7	29	6.02	42	8.7	8.0	1179	244.4			
11	52.4	39	8.55	43	9.4	8.0	1211	264.7			
12	49.7	28	5.85	40	8.3	8.0	1221	253.3			
13	50.0	25	5.29	40	8.4	8.1	1231	256.8			
14	49.8	22	4.65	38	7.9	8.1	1298	269.4		530,974	
15	51.2	21	4.57	32	6.7	8.1	1228	262.1			
16	49.6	18	3.81	31	6.5	8.0	1276	264.0			
17	51.1	19	4.14	31	6.7	8.0	1258	268.0			
18	46.4	18	3.55	35	6.7	8.0	1297	251.0			
19	46.2	17	3.35	32	6.2	8.0	1348	259.7			
20	45.8	16	3.04	35	6.6	8.0	1334	254.9			
21	50.0	14	2.93	29	5.9	7.9	1296	270.1			
22	54.6	18	4.09	30	6.8	7.9	1266	288.2			
23	56.3	23	5.34	40	9.5	7.9	1307	307.1			
24	56.6	20	4.84	39	9.3	7.9	1358	320.5			
25	57.3	23	5.61	41	9.8	7.9	1356	323.9			
26	54.3	27	6.07	38	8.6	7.9	1388	314.6			
27	53.9	16	3.66	32	7.1	8.0	1381	310.3			
28	54.1	22	5.01	32	7.3	8.1	1460	329.1			
29	53.9	20	4.49	31	6.9	8.2	1447	325.1			
30	46.1	22	4.16	30	5.8	8.0	1408	270.7			
31	46.5	24	4.60	32	6.2	7.9	1406	272.6			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	51.4	26	5.513	36.7	7.882	8.0	1246	267	-	530,974	
Maximum value	57.3	41	8.551	43.1	9.803	8.2	1460	329	-	-	
Minimum value	45.8	14	2.926	28.5	5.839	7.8	1025	220	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	08/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

59.11

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/08/01
Ending Date YR/MO/DA 12/08/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	46.4	21	4.00	34	6.5	7.9	1396	270.0			
2	46.7	24	4.58	32	6.3	7.9	1354	263.7			
3	49.1	24	4.96	35	7.2	7.9	1333	272.9			
4	53.3	25	5.61	33	7.2	7.9	1303	289.7			
5	58.4	26	6.35	30	7.3	7.9	1322	321.9			
6	56.6	27	6.34	27	6.3	7.9	1449	342.2			
7	66.8	29	8.00	43	12.0	8.0	1367	380.5			
8	69.3	29	8.27	40	11.6	8.0	1222	353.0			
9	69.5	27	7.72	43	12.4	7.9	1286	372.8			
10	57.5	23	5.41	36	8.6	8.1	1302	312.3			
11	61.2	25	6.38	46	11.8	7.9	1305	332.8			
12	57.1	23	5.42	32	7.5	8.1	1202	286.3			
13	48.8	21	4.19	33	6.7	8.0	1202	244.3			
14	48.6	24	4.85	35	7.0	7.9	1202	243.4		327,387	
15	50.7	30	6.29	36	7.6	7.9	1360	287.4			
16	49.1	25	5.03	35	7.1	7.9	1273	260.7			
17	48.2	27	5.47	35	7.0	7.9	1171	235.3			
18	49.9	26	5.45	47	9.8	7.9	1161	241.5			
19	50.2	29	6.12	41	8.6	7.9	1161	243.2			
20	47.9	32	6.43	41	8.2	7.9	1101	220.1			
21	47.6	38	7.56	45	8.9	7.9	1081	214.7			
22	48.8	45	9.17	46	9.3	8.0	1032	210.1			
23	50.6	46	9.74	50	10.6	7.9	1004	211.9			
24	56.1	45	10.56	50	11.7	7.9	1056	247.2			
25	59.5	41	10.18	50	12.5	8.0	1086	269.6			
26	61.8	37	9.65	53	13.6	8.0	997	256.8			
27	59.7	37	9.27	43	10.6	8.0	947	235.6			
28	61.9	34	8.87	42	11.0	8.0	966	249.6			
29	56.9	27	6.48	40	9.6	8.0	986	233.8			
30	52.9	25	5.56	42	9.2	7.9	969	213.8			
31	54.4	23	5.23	45	10.1	7.9	958	217.4			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	54.7	30	6.747	40.0	9.170	7.9	1179	269	-	327,387	
Maximum value	69.5	46	10.562	52.6	13.559	8.1	1449	381	-	-	
Minimum value	46.4	21	3.997	26.8	6.310	7.9	947	210	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	09/06/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/09/01
Ending Date YR/MO/DA 12/09/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	55.3	24	5.56	41	9.5	7.9	972	224.2			
2	56.0	23	5.37	39	9.1	7.9	981	229.2			
3	50.7	21	4.44	36	7.5	7.9	1004	212.3			
4	48.0	23	4.64	30	6.0	7.9	1002	200.6			
5	50.5	20	4.25	36	7.5	7.9	992	209.0			
6	50.3	26	5.49	34	7.1	7.9	992	208.1			
7	48.6	21	4.29	25	5.0	7.9	1061	215.0			
8	49.7	22	4.60	30	6.2	7.9	1011	209.5			
9	53.1	22	4.93	26	5.7	8.1	1071	237.4			
10	53.3	17	3.83	25	5.5	7.9	1091	242.7			
11	53.5	21	4.75	23	5.1	7.9	1101	245.6			
12	50.7	14	3.02	27	5.7	7.9	1101	233.0			
13	45.0	15	2.86	21	3.9	7.9	1121	210.1			
14	47.4	23	4.52	23	4.5	7.9	1107	218.9	<0.00000027	294,815	
15	48.8	25	5.10	24	4.9	7.9	1118	227.6			
16	56.2	23	5.28	25	5.9	7.9	1107	259.2			
17	59.6	25	6.12	24	6.1	7.9	1114	276.6			
18	57.0	25	6.04	22	5.3	7.9	1153	274.0			
19	52.0	29	6.19	22	4.7	7.9	1191	258.3			
20	47.9	27	5.30	22	4.4	7.9	1201	239.8			
21	46.8	-----	-----	20	3.9	8.0	1191	232.2		* see footnote	
22	48.0	22	4.48	22	4.4	8.0	1241	248.3			
23	50.6	24	5.15	20	4.2	8.0	1211	255.3			
24	49.1	24	4.98	22	4.5	7.9	1231	251.9			
25	48.4	34	6.89	28	5.6	7.9	1201	242.5			
26	42.0	34	6.00	28	4.9	8.1	1201	210.6			
27	42.7	29	5.21	27	4.8	8.0	1152	205.2			
28	44.2	30	5.57	27	4.9	8.1	1073	197.6			
29	48.9	29	5.96	25	5.0	8.0	1043	212.6			
30	51.5	27	5.85	27	5.7	7.9	1103	236.6			
Number of Samples	30	29	29	30	30	30	30	30	0	1	
Average value	50.2	24	5.058	26.6	5.583	7.9	1105	231	-	294,815	
Maximum value	59.6	34	6.890	41.3	9.529	8.1	1241	277	-	-	
Minimum value	42.0	14	2.864	19.9	3.906	7.9	972	198	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	10/08/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

* no valid data for this date oxygen depletion rate in river water used for seed/dilution caused BOD data to be invalid

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/10/01
Ending Date YR/MO/DA 12/10/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	49.9	27	5.66	32	6.6	8.1	1093	227.3			
2	51.0	27	5.79	31	6.5	7.9	1102	234.6			
3	50.1	29	6.10	31	6.4	7.9	1082	226.2			
4	50.9	31	6.62	34	7.1	7.9	1163	246.8			
5	50.7	33	6.99	36	7.5	7.9	1043	220.5			
6	52.8	33	7.29	33	7.4	8.0	1023	225.5			
7	55.2	34	7.85	34	7.9	7.9	1063	244.7			
8	47.9	33	6.61	36	7.1	7.8	1073	214.3			
9	48.6	31	6.30	36	7.2	7.8	1092	221.2			
10	48.3	28	5.68	31	6.2	7.8	1064	214.2			
11	47.7	29	5.82	34	6.7	7.8	1173	233.6			
12	45.7	25	4.80	29	5.5	7.8	1153	219.5			
13	46.6	25	4.90	31	6.0	7.8	1143	222.2			
14	49.7	26	5.43	30	6.2	7.9	1133	234.8		378,139	
15	49.9	25	5.24	36	7.4	7.9	1064	221.2			
16	54.2	25	5.70	34	7.6	7.8	1133	255.8			
17	47.3	26	5.17	39	7.6	7.8	1143	225.4			
18	51.1	29	6.22	40	8.4	7.9	1173	249.7			
19	45.7	31	5.95	36	6.8	7.8	1073	204.5			
20	44.3	27	4.99	37	6.9	7.8	1154	213.4			
21	45.3	26	4.95	33	6.2	7.8	1163	219.4			
22	39.8	24	4.03	31	5.2	7.8	1173	194.9			
23	37.3	19	3.00	30	4.7	7.8	1114	173.3			
24	38.6	21	3.44	26	4.2	7.8	1084	174.6			
25	43.5	20	3.69	32	5.9	7.8	1103	200.2			
26	46.6	23	4.53	26	5.1	7.8	1201	233.7			
27	46.0	22	4.29	59	11.3	7.8	1222	234.4			
28	49.3	24	5.02	26	5.4	7.9	1094	225.1			
29	48.2	28	5.68	34	6.9	7.8	1104	221.8			
30	48.6	28	5.73	31	6.3	7.7	1093	221.6			
31	49.6	37	7.70	35	7.3	7.7	1083	224.1			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	47.8	28	5.521	33.6	6.696	7.8	1115	222	-	378,139	
Maximum value	55.2	37	7.851	58.9	11.299	8.1	1222	256	-	-	
Minimum value	37.3	19	3.000	26.3	4.249	7.7	1023	173	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	11/07/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/11/01
Ending Date YR/MO/DA 12/11/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous.	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0			0.000153		
Date			max. 16.725		max. 38.8	max. 9.0					Comments
1	35	35	7.09	37	7.5	7.7	1094	219.8			
2	47	47	9.32	39	7.8	7.7	1054	208.4			
3	50	50	10.53	42	8.9	7.7	1073	225.6			
4	54	54	11.38	42	8.9	7.7	1093	230.2			* see footnote
5	41	41	8.05	44	8.7	7.8	1133	221.6			
6	48	48	9.02	34	6.4	7.8	1072	200.5			
7	44	44	8.10	39	7.2	7.8	1073	196.3			
8	42	44	8.14	44	8.5	7.8	1113	217.6			
9	45	43	9.74	44	9.7	7.8	1068	232.1			
10	43	44	10.08	45	10.4	7.8	1085	252.8			
11	44	45	11.20	50	12.7	7.9	1082	272.6			
12	53	52	12.04	55	12.6	7.8	1109	253.0			
13	44	45	10.37	51	11.9	7.8	1099	256.4			
14	45	46	8.91	39	7.9	7.8	1084	216.5			
15	36	36	7.04	41	8.2	7.9	1084	213.1			
16	38	39	7.58	42	8.4	7.8	1062	214.1			
17	38	39	8.04	43	8.9	7.8	1071	224.1			
18	34	34	7.53	39	8.6	7.8	1115	245.1			
19	37	44	8.08	38	8.1	7.8	1092	236.5			
20	27	28	6.05	35	7.8	7.8	1140	257.2			
21	26	27	5.70	27	5.8	7.8	1090	235.1		174,313	
22	26	27	5.81	28	6.3	7.8	1187	264.0			
23	27	26	6.01	30	6.7	7.8	1147	256.3			
24	28	24	6.22	33	7.5	7.9	1196	270.0			
25	29	31	6.68	27	6.2	7.9	1228	282.8			
26	34	32	7.90	39	9.0	7.8	1320	306.7			
27	31	31	7.02	38	8.8	7.8	1299	297.0			
28	33	33	7.32	41	9.0	7.8	1286	284.1			
29	36	35	7.84	42	9.3	7.8	1245	274.8			
30	33	34	7.66	40	9.1	7.8	1256	287.9			
Number of Samples	30	59	30	30	30	30	30	30	0	1	
Average value	38.3	39	8.215	39.6	8.549	7.8	1135	245	-	0	
Maximum value	54.0	54	12.044	55.2	12.714	7.9	1320	307	-	-	
Minimum value	26.1	24	5.696	26.7	5.806	7.7	1054	196	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	12/13/12 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

* no valid data for this date oxygen depletion rate in river water used for seed/dilution caused BOD data to be invalid, the average of 11/3 and 11/5 sample concentration was used for this day.

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 12/12/01
Ending Date YR/MO/DA 12/12/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	54.1	26	5.89	40	9.1	7.8	1230	277.4			
2	56.2	27	6.44	37	8.7	7.8	1225	287.1			
3	53.0	26	5.74	34	7.6	7.8	1190	263.3			
4	48.7	21	4.29	27	5.4	7.8	1164	236.5			* see footnote
5	48.2	22	4.45	27	5.5	7.9	1193	239.7			
6	50.2	20	4.20	27	5.6	7.9	1163	243.6			
7	49.5	26	5.40	29	6.0	8.3	1165	240.4			
8	53.8	25	5.53	40	8.9	8.0	1243	278.7			
9	55.3	27	6.15	35	8.1	8.0	1237	285.2			
10	54.5	25	5.67	39	8.8	7.9	1240	281.6			
11	49.5	24	5.00	34	7.1	7.9	1208	249.3			
12	47.0	21	4.17	30	5.8	7.9	1195	234.3			
13	44.3	21	3.89	30	5.6	7.9	1201	222.0			
14	43.2	21	3.79	29	5.2	7.9	1161	209.0			
15	44.4	23	4.27	32	5.9	7.9	1151	213.2			
16	47.7	27	5.37	34	6.8	7.9	1181	234.6			
17	48.2	25	5.03	35	7.1	7.9	1231	247.5			
18	50.8	24	5.09	32	6.8	7.9	1231	260.7			
19	49.5	23	4.75	37	7.7	8.0	1231	254.0			
20	48.0	29	5.81	37	7.4	7.9	1221	244.2			
21	47.9	27	5.41	36	7.2	7.8	1231	246.0	<0.00000097	321,645	
22	46.4	27	5.23	37	7.2	7.8	1291	249.8			
23	48.2	29	5.84	32	6.4	7.8	1221	245.4			
24	47.4	28	5.54	51	10.1	7.8	1201	237.3			
25	46.9	28	5.48	39	7.6	7.8	1201	234.8			
26	51.6	27	5.81	41	8.8	7.9	1211	260.3			
27	47.6	26	5.17	38	7.6	7.8	1211	240.5			
28	56.7	25	5.91	34	8.1	7.8	1201	283.7			
29	55.0	22	5.05	32	7.4	7.8	1191	273.1			
30	54.4	30	6.82	34	7.7	7.7	1161	263.5			
31	46.4	25	4.85	34	6.6	7.7	1211	234.4			
Number of Samples	31	59	31	31	31	31	31	31	1	1	
Average value	49.8	25	5.227	34.7	7.219	7.9	1206	251	-	0	
Maximum value	56.7	30	6.815	51.1	10.097	8.3	1291	287	-	-	
Minimum value	43.2	20	3.786	26.6	5.245	7.7	1151	209	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	01/09/13 MO/DA/YR	I certify that I em familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

* no valid data for this date oxygen depletion rate in river water used for seed/dilution caused BOD data to be invalid, the average of 11/3 and 11/5 sample concentration was used for this day.

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 13/01/01
Ending Date YR/MO/DA 13/01/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	45.1	28	5.28	32	6.04	7.7	1211	227.9			
2	48.6	30	6.04	39	7.91	7.7	1291	261.4			
3	45.0	27	5.04	39	7.37	7.7	1274	238.8			
4	41.8	27	4.71	28	4.90	7.7	1241	216.4			
5	43.6	26	4.73	42	7.64	7.8	1221	221.8			
6	44.9	27	5.07	29	5.46	7.8	1141	213.7			
7	46.4	21	4.07	21	4.08	7.7	1211	234.1			
8	47.6	23	4.57	27	5.38	7.7	1241	246.3			
9	45.3	23	4.35	26	4.93	7.7	1201	226.8			
10	45.7	21	4.01	22	4.22	7.8	1191	227.2			
11	46.7	19	3.71	27	5.28	7.8	1221	237.9			
12	48.2	22	4.43	26	5.25	7.8	1181	237.2			
13	52.7	18	3.97	26	5.74	7.8	1151	253.0			
14	52.9	19	4.20	27	5.98	7.8	1181	260.6		238,693	
15	50.1	17	3.56	19	3.99	7.8	1171	244.5			
16	50.7	17	3.60	33	7.00	7.8	1151	243.3			
17	51.6	18	3.89	19	4.11	7.9	1171	252.1			
18	46.1	21	4.05	16	3.10	7.8	1101	211.6			
19	47.2	16	3.16	20	3.95	8.0	1211	238.2			
20	49.7	16	3.33	21	4.38	8.0	1181	244.8			
21	40.4	16	2.71	24	4.07	7.8	1201	202.3			
22	44.2	23	4.25	20	3.71	7.8	1221	225.2			
23	42.5	19	3.37	25	4.45	7.8	1201	212.7			
24	42.2	18	3.17	14	2.48	7.8	1191	209.3			
25	39.8	21	3.49	20	3.33	7.7	1181	195.7			
26	46.3	21	4.07	20	3.89	7.8	1141	220.1			
27	49.7	23	4.78	20	4.17	7.7	1211	250.9			
28	50.7	23	4.87	25	5.30	7.8	1181	249.7			
29	50.8	20	4.24	26	5.53	7.8	1191	252.3			
30	50.5	20	4.22	28	5.92	7.8	1200	253.0			
31	52.2	17	3.71	25	5.46	7.8	1171	254.8			
Number of Samples	31	31	31	31	31	31	31	31	0	1	
Average value	47.1	21	4.149	25.5	5.001	7.8	1194	234	-	238,693	
Maximum value	52.9	30	6.041	42.1	7.912	8.0	1291	261	-	-	
Minimum value	39.8	16	2.705	14.1	2.481	7.7	1101	196	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	02/06/13 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Performance Fibers LLC
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 13/02/01
Ending Date YR/MO/DA 13/02/28

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	TPD	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Daily	Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0			0.000153		
Date			max. 24.00		max. 38.8	max. 9.0					Comments
1	49.4	17	3.51	22	4.5	7.8	1161	239.1			
2	49.3	15	3.09	21	4.3	7.7	1211	249.0			
3	49.7	19	3.95	27	5.6	7.8	1201	249.0			
4	48.0	20	4.01	32	6.4	7.7	1161	232.1			
5	46.9	25	4.90	29	5.7	7.7	1211	237.0			
6	46.1	28	5.39	30	5.8	7.6	1231	236.8			
7	47.1	25	4.92	34	6.7	7.6	1201	236.1			
8	49.2	24	4.92	36	7.4	7.7	1171	240.1			
9	52.2	27	5.88	37	8.1	7.7	1171	255.1			
10	59.8	29	7.23	55	13.7	7.7	1151	286.7			
11	60.8	37	9.50	43	10.9	7.7	1219	309.0			
12	62.5	36	9.41	54	14.1	7.7	1185	308.9			
13	58.1	37	8.93	43	10.5	7.7	1176	284.7			
14	55.4	39	9.08	48	11.0	7.6	1184	273.4		298,954	
15	50.8	34	7.24	47	9.9	7.7	1136	240.7			
16	47.3	33	6.53	45	8.9	7.7	1194	235.6			
17	51.4	29	6.12	42	8.9	8.1	1205	258.3			
18	44.1	26	4.77	43	7.9	7.7	1092	200.6			
19	42.8	21	3.70	30	5.4	7.8	1022	182.3			
20	43.5	20	3.65	28	5.1	7.7	1043	189.3			
21	44.1	20	3.58	26	4.7	7.7	1054	193.6			
22	43.9	20	3.67	29	5.3	7.6	999	182.9			
23	46.5	21	4.16	30	5.9	7.7	1034	200.3			
24	50.5	20	4.26	28	6.0	7.7	1053	221.9			
25	48.7	20	4.13	26	5.3	7.7	1042	211.5			
26	55.0	25	5.82	35	7.9	7.7	1032	236.6			
27	65.5	27	7.28	34	9.4	7.7	1082	295.6			
28	61.1	23	5.89	33	8.4	7.7	1088	277.3			
Number of Samples	28	28	28	28	28	28	28	28	0	1	
Average value	51.1	26	5.555	35.3	7.636	7.7	1132	242	-	298,954	
Maximum value	65.5	39	9.502	55.0	14.113	8.1	1231	309	-	-	
Minimum value	42.8	15	3.092	21.1	4.338	7.6	999	182	-	-	
Number of times Max exceeded			0		0	0			0		

	Title of Officer	Date	
Perrett, Fred J.	General Manager	03/06/13 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

Jan 10

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/01/01
Ending Date YR/MO/DA 10/01/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	59.1	34	8.5	40.3	9.9	7.9	1202			
2	60.7	36	9.1	72.7	18.4	7.8	1180			
3	62.0	40	10.3	63.0	16.3	7.8	1035			
4	61.3	47	12.1	60.4	15.4	7.8	1288			
5	59.3	47	11.6	59.3	14.7	7.9	1132			
6	57.0	49	11.7	50.1	11.9	7.9	1167			
7	55.5	47	10.8	38.4	8.9	7.9	950			
8	59.8	41	10.2	43.9	11.0	7.9	1122			
9	59.2	39	9.7	47.1	11.6	7.9	1239			
10	57.8	44	10.6	61.5	14.8	7.9	1222			
11	59.3	42	10.3	46.7	11.5	7.9	1097			
12	53.6	37	8.3	46.6	10.4	7.9	1197			
13	50.8	35	7.5	39.4	8.3	7.8	1136			
14	51.6	33	7.2	43.5	9.4	7.8	1079		196,792	
15	50.5	31	6.5	35.6	7.5	7.8	1083			
16	48.3	27	5.4	30.5	6.2	7.9	1063			
17	54.1	28	6.2	37.4	8.4	7.9	1168			
18	59.0	25	6.2	31.9	7.9	8.0	1110			
19	63.2	25	6.5	34.4	9.1	7.9	1054			
20	61.8	23	5.9	33.1	8.5	7.9	1035			
21	60.0	24	6.0	33.3	8.3	7.9	1094			
22	63.5	23	6.1	29.4	7.8	7.8	998			
23	63.2	26	6.9	16.5	4.4	7.8	1036			
24	60.1	21	5.3	15.6	3.9	7.8	1046			
25	59.3	21	5.1	16.5	4.1	7.8	950			
26	59.0	21	5.2	19.6	4.8	7.8	1017			
27	58.5	22	5.4	18.7	4.6	7.9	1015			
28	59.2	24	5.9	27.1	6.7	7.9	1018			
29	56.5	24	5.7	15.7	3.7	7.9	1023			
30	58.1	23	5.6	16.3	4.0	7.9	1030			
31	66.7	24	6.7	30.3	8.4	7.8	1013			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	58.3	32	7.698	37.3	9.056	7.9	1090	-	196,792	
Maximum value	66.7	49	12.125	72.7	18.419	8.0	1288	-	-	
Minimum value	48.3	21	5.100	15.6	3.697	7.5	950	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Burch, M.	V.P & General Manager	02/08/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/02/01
Ending Date YR/MO/DA 10/02/28

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	58.8	28.2	6.9	26.3	6.4	7.8	990			
2	58.1	29.6	7.2	27.4	6.6	7.8	1017			
3	58.1	33.7	8.2	25.8	6.2	7.8	1001			
4	56.6	35.3	8.3	29.9	7.1	7.8	921			
5	55.9	37.9	8.8	30.2	7.0	7.8	1005			
6	59.7	38.6	9.6	31.3	7.8	7.8	956			
7	59.0	41.0	10.1	29.3	7.2	7.8	1188			
8	58.5	42.7	10.4	30.7	7.5	7.8	939			
9	59.2	40.3	9.9	25.1	6.2	7.9	1014			
10	59.0	36.2	8.9	28.0	6.9	7.8	1113			
11	59.7	36.6	9.1	23.3	5.8	7.8	1111			
12	58.8	35.8	8.8	19.2	4.7	7.8	1052			
13	62.9	34.1	8.9	23.9	6.3	7.9	933			
14	63.3	34.2	9.0	33.8	8.9	7.8	1119		446,717	
15	60.7	30.6	7.7	31.3	7.9	7.8	1106			
16	59.7	28.6	7.1	30.9	7.7	7.8	890			
17	57.7	20.1	4.8	19.4	4.7	7.8	898			
18	56.6	22.4	5.3	22.0	5.2	7.9	1037			Grab sample at #2 Outfall
19	56.4	22.6	5.3	23.3	5.5	7.8	951			
20	54.7	23.0	5.2	20.0	4.6	7.8	1031			
21	52.6	23.3	5.1	20.0	4.4	7.8	950			
22	49.0	25.4	5.2	22.8	4.7	7.8	958			
23	50.8	24.5	5.2	19.4	4.1	7.8	1109			
24	51.1	23.9	5.1	14.9	3.2	7.8	1023			
25	49.9	27.2	5.7	19.7	4.1	7.8	1039			
26	48.8	23.0	4.7	22.0	4.5	7.9	1151			
27	50.7	27.4	5.8	22.3	4.7	7.8	1049			
28	53.2	28.9	6.4	26.3	5.8	7.8	1110			
Number of Samples	28	28	28	28	28	28	28	0	1	
Average value	56.4	31	7.247	24.9	5.915	7.8	1024	-	446,717	
Maximum value	63.3	43	10.431	33.8	8.918	7.9	1188	-	-	
Minimum value	48.8	20	4.672	14.9	3.171	7.8	890	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Burch, M.	V.P & General Manager	03/08/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/03/01
Ending Date YR/MO/DA 10/03/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	56.0	31.2	7.3	36.8	8.6	7.7	1058			
2	59.7	33.5	8.3	31.9	7.9	7.8	947			
3	58.9	31.5	7.7	33.4	8.2	7.8	1167			
4	56.6	32.0	7.5	32.8	7.7	7.8	1131			
5	51.7	32.0	6.9	34.9	7.5	7.8	1282			
6	51.9	33.8	7.3	27.8	6.0	7.7	1086			
7	51.7	33.2	7.1	34.6	7.5	7.7	1135			
8	50.5	33.7	7.1	33.7	7.1	7.8	1096			
9	50.9	34.7	7.4	28.3	6.0	7.8	1138			
10	51.0	33.3	7.1	32.3	6.9	7.7	1158			
11	51.2	36.2	7.7	32.7	7.0	7.8	1109			
12	55.8	37.4	8.7	28.3	6.6	7.8	1102			
13	57.9	39.2	9.4	22.0	5.3	7.8	1148			
14	61.0	47.4	12.0	36.2	9.2	7.8	1009	<0.0000038	399,283	
15	59.4	48.5	12.0	37.6	9.3	7.9	891			
16	57.2	48.9	11.6	33.8	8.1	7.9	1121			
17	55.8	56.8	13.2	30.9	7.2	7.9	962			
18	58.0	50.7	12.3	29.8	7.2	7.9	1169			
19	57.5	49.6	11.9	28.7	6.9	7.9	1208			
20	57.2	48.6	11.6	29.5	7.0	7.8	1023			
21	56.5	48.5	11.4	28.6	6.7	7.9	1149			
22	55.4	44.3	10.2	27.0	6.2	7.9	1205			
23	54.8	40.3	9.2	26.9	6.2	7.9	1191			
24	51.4	39.0	8.4	25.6	5.5	7.9	1216			
25	52.1	32.0	7.0	25.1	5.4	7.9	989			
26	51.4	41.9	9.0	21.1	4.5	7.9	1205			
27	54.3	39.1	8.9	20.4	4.6	7.7	1275			
28	55.5	38.5	8.9	31.8	7.4	8.0	1283			
29	57.4	39.7	9.5	28.4	6.8	8.0	1245			
30	58.4	39.4	9.6	32.9	8.0	8.0	1227			
31	59.1	41.0	10.1	32.4	8.0	7.9	1199			
Number of Samples	31	31	31	31	31	31	31	1	1	
Average value	55.4	40	9.243	30.2	6.987	7.8	1133	-	399,283	
Maximum value	61.0	57	13.215	37.6	9.316	8.0	1283	-	-	
Minimum value	50.5	31	6.897	20.4	4.526	7.7	891	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Kriesel, J	V.P & General Manager	04/06/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/04/01
Ending Date YR/MO/DA 10/04/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	56.8	40.2	9.5	27.0	6.4	7.9	1238			
2	57.4	42.7	10.2	27.6	6.6	7.9	1333			
3	55.7	46.2	10.7	26.5	6.1	7.9	1354			
4	59.6	49.4	12.3	28.0	7.0	7.9	1279			
5	54.1	52.8	11.9	26.5	6.0	8.0	1231			
6	53.9	50.6	11.4	27.0	6.1	8.0	1305			
7	54.2	53.3	12.0	26.8	6.1	8.0	1274			
8	54.5	51.3	11.7	31.2	7.1	8.1	1309			
9	53.5	46.4	10.4	32.3	7.2	8.2	1137			
10	54.9	47.5	10.9	21.8	5.0	8.0	1225			
11	57.0	45.8	10.9	28.6	6.8	8.3	1197			
12	54.2	46.4	10.5	28.5	6.5	8.0	1396			
13	53.6	45.8	10.2	33.0	7.4	7.9	1308			
14	53.7	44.8	10.0	26.1	5.8	7.9	1235		77,297	
15	53.3	46.6	10.4	28.7	6.4	8.0	1322			
16	52.2	44.2	9.6	28.6	6.2	8.0	1287			
17	46.7	41.8	8.1	27.7	5.4	7.9	1259			
18	35.7	40.0	6.0	29.6	4.4	7.9	1360			
19	4.2	30.0	0.5	37.0	0.6	7.9	1350			
20	2.0	24.0	0.2	36.0	0.3	8.0	1400			
21	0.7	16.0	0.04	23.0	0.1	8.1	1170			
22	0.4	15.0	0.03	20.0	0.0	8.2	1400			
23	0.5	11.9	0.03	14.0	0.0	8.1	1410			
24	1.9	9.0	0.1	17.0	0.1	8.2	1010			
25	0.9	6.1	0.02	13.0	0.1	8.1	1410			
26	4.9	9.0	0.2	14.0	0.3	8.0	1370			
27	13.7	9.0	0.5	19.0	1.1	8.0	1180			
28	20.8	17.3	1.5	15.7	1.4	7.9	1219			
29	19.1	15.5	1.2	23.4	1.9	8.1	1212			
30	23.1	17.6	1.7	35.5	3.4	8.0	1307			
Number of Samples	30	30	30	30	30	30	30	0	1	
Average value	35.1	34	6.425	25.8	4.054	8.0	1283	-	77,297	
Maximum value	59.6	53	12.279	37.0	7.380	8.3	1410	-	-	
Minimum value	0.4	6	0.024	13.0	0.030	7.9	1010	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	05/06/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill P. O. Box 2070 Jesup, GA 31598	Permit No. GA0003620 Beginning Date YR/MO/DA 10/05/01 Ending Date YR/MO/DA 10/05/31	LOCATION DESCRIPTION 001- No. 1 Aerated Stabilization Basin Effluent 002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	23.4	16.0	1.6	29.2	2.9	8.0	1384			
2	22.6	15.9	1.5	25.7	2.4	8.0	1474			
3	22.7	14.4	1.4	26.0	2.5	8.0	1411			
4	31.9	12.6	1.7	19.9	2.6	8.0	1428			
5	45.0	13.6	2.6	15.5	2.9	7.8	1403			
6	47.9	10.4	2.1	16.8	3.3	8.0	1367			
7	45.8	10.5	2.0	22.0	4.2	7.9	1340			
8	51.9	7.9	1.7	15.9	3.4	8.0	1246			
9	51.0	9.8	2.1	16.3	3.5	8.0	1240			
10	50.7	10.6	2.2	17.3	3.7	8.0	1248			
11	49.5	13.6	2.8	18.9	3.9	8.2	1204			
12	54.7	16.6	3.8	25.8	5.9	7.9	1118			
13	55.5	24.2	5.6	23.8	5.5	7.9	1071			
14	60.2	27.8	7.0	28.2	7.1	7.8	1127		411,107	
15	65.2	32.4	8.8	19.4	5.3	7.9	1261			
16	69.1	36.3	10.5	30.2	8.7	7.9	1168			
17	69.3	38.2	11.0	35.0	10.1	7.9	1165			
18	61.6	37.1	9.5	36.7	9.4	7.9	1215			
19	61.7	33.0	8.5	34.2	8.8	8.1	1189			
20	54.9	32.0	7.3	33.8	7.7	8.0	1284			
21	53.5	30.3	6.8	33.2	7.4	8.0	1196			
22	35.6	29.5	4.4	34.4	5.1	7.9	1226			
23	56.9	31.2	7.4	36.9	8.8	7.9	1158			
24	48.3	27.3	5.5	37.7	7.6	8.1	1230			
25	59.7	27.8	6.9	38.1	9.5	7.9	1179			
26	61.9	30.8	8.0	45.0	11.6	8.1	1175			
27	55.0	33.9	7.8	43.9	10.1	7.9	1187			
28	52.2	37.1	8.1	38.8	8.5	8.1	1018			
29	55.6	37.4	8.7	37.8	8.8	8.1	1074			
30	61.3	38.2	9.8	47.2	12.1	7.9	1182			
31	72.6	41.9	12.7	52.8	16.0	8.1	1282			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	51.9	25.1	5.790	30.2	6.746	8.0	1233.9	-	411,107	
Maximum value	72.6	41.9	12.698	52.8	15.976	8.2	1474.0	-	-	
Minimum value	22.6	7.9	1.367	15.5	2.421	7.8	1018.1	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	06/07/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/06/01
Ending Date YR/MO/DA 10/06/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	73.5	41.7	12.8	54.8	16.8	7.9	1313			Grab Sample at #2 Outfall
2	68.4	42.5	12.1	57.4	16.4	8.0	1305			
3	58.8	40.2	9.9	46.9	11.5	7.9	1277			Grab Sample at #2 Outfall
4	64.1	40.1	10.7	52.1	13.9	7.9	1202			
5	61.3	38.0	9.7	49.5	12.7	8.0	1276			Grab Sample at #2 Outfall
6	54.1	36.2	8.2	52.8	11.9	7.9	1302			
7	55.8	37.2	8.7	47.8	11.1	8.1	1317			
8	54.4	35.3	8.0	51.7	11.7	7.9	1289			
9	52.0	35.3	7.7	48.5	10.5	8.0	1320			Grab Sample at #2 Outfall
10	52.2	32.6	7.1	46.6	10.1	8.0	1236			
11	56.9	32.6	7.7	33.4	7.9	8.1	1208			
12	58.2	35.9	8.7	47.1	11.4	8.2	1096			
13	60.1	36.9	9.2	51.4	12.9	7.9	1173			
14	50.7	38.7	8.2	46.9	9.9	8.0	1202	<0.0000053	478,548	
15	54.8	36.7	8.4	47.9	11.0	8.0	1222			Grab Sample at #2 Outfall
16	63.4	37.0	9.8	53.4	14.1	8.0	1205			
17	58.6	41.5	10.2	49.0	12.0	8.2	1236			
18	57.7	30.3	7.3	50.5	12.2	8.0	1162			
19	56.6	29.6	7.0	49.9	11.8	8.0	1168			
20	56.4	28.9	6.8	44.3	10.4	8.0	1171			
21	53.4	27.9	6.2	43.9	9.8	8.0	1209			
22	51.4	29.9	6.4	43.6	9.3	8.0	1197			
23	56.2	28.1	6.6	42.9	10.1	7.8	1229			
24	57.6	24.6	5.9	36.0	8.6	7.9	1180			
25	59.0	28.5	7.0	34.5	8.5	8.0	1238			
26	61.7	25.6	6.6	35.3	9.1	8.0	1293			
27	75.4	26.2	8.2	46.9	14.7	8.2	1324			
28	68.0	25.9	7.3	35.9	10.2	8.0	1248			
29	60.0	24.5	6.1	40.5	10.1	8.0	1316			
30	59.6	24.9	6.2	37.0	9.2	8.0	1272			
Number of Samples	30	30	30	30	30	30	30	1	1	
Average value	59.0	33.1	8.155	46.0	11.330	8.0	1239.5	-	478,548	
Maximum value	75.4	42.5	12.783	57.4	16.796	8.2	1324.5	-	-	
Minimum value	50.7	24.5	5.916	33.4	7.938	7.8	1096.4	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	07/06/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/07/01
Ending Date YR/MO/DA 10/07/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	60.0	27.5	6.9	42.6	10.7	8.0	1261			
2	65.4	25.9	7.1	37.2	10.2	8.0	1236			
3	56.9	29.5	7.0	42.2	10.0	8.1	1288			
4	48.1	27.5	5.5	38.3	7.7	8.0	1240			
5	47.7	27.6	5.5	34.9	6.9	8.0	1236			
6	53.5	24.1	5.4	35.4	7.9	8.0	1249			
7	48.8	28.5	5.8	37.3	7.6	8.1	1240			
8	55.0	27.0	6.2	36.8	8.4	8.0	1246			
9	53.1	31.3	6.9	44.5	9.9	8.2	1285			
10	54.7	27.9	6.4	38.6	8.8	8.2	1349			
11	61.0	28.8	7.3	36.0	9.2	8.3	1256			
12	67.6	30.4	8.6	44.7	12.6	7.9	1252			
13	65.8	28.0	7.7	42.1	11.6	7.9	1233			
14	53.2	25.7	5.7	39.5	8.8	8.0	1237		206,720	
15	50.6	20.9	4.4	35.9	7.6	7.9	1217			
16	49.7	24.2	5.0	36.1	7.5	8.2	1242			
17	51.6	20.5	4.4	35.6	7.7	7.9	1277			
18	52.7	23.6	5.2	40.9	9.0	7.9	1273			
19	51.3	20.7	4.4	37.5	8.0	7.9	1303			
20	50.3	23.3	4.9	41.5	8.7	8.2	1268			
21	49.0	24.6	5.0	40.7	8.3	8.2	1299			
22	52.4	20.8	4.5	40.4	8.8	7.9	1326			
23	50.7	24.9	5.3	39.1	8.3	7.9	1304			
24	54.2	20.6	4.7	34.0	7.7	7.9	1297			
25	56.2	15.4	3.6	39.0	9.1	7.9	1316			
26	50.7	19.9	4.2	35.9	7.6	8.1	1237			
27	44.9	19.2	3.6	37.1	6.9	8.0	1286			
28	41.4	18.5	3.2	32.8	5.7	8.1	1226			
29	43.4	17.2	3.1	35.1	6.4	8.1	1274			
30	47.7	23.5	4.7	39.0	7.8	8.1	1231			
31	58.8	24.9	6.1	43.9	10.8	8.0	1221			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	53.1	24.3	5.427	38.5	8.578	8.0	1264.8	-	206,720	
Maximum value	67.6	31.3	8.579	44.7	12.601	8.3	1348.6	-	-	
Minimum value	41.4	15.4	3.115	32.8	5.669	7.9	1217.4	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	08/09/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/08/01
Ending Date YR/MO/DA 10/08/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	60.3	30.0	7.5	39.8	10.0	8.0	1098			
2	60.2	31.0	7.8	44.5	11.2	8.0	1058			
3	60.4	26.5	6.7	35.9	9.1	8.1	1134			
4	56.6	22.1	5.2	35.1	8.3	8.0	1368			
5	56.3	17.3	4.1	33.1	7.8	7.9	1240			
6	50.2	19.0	4.0	30.9	6.5	7.8	1093			
7	49.3	14.7	3.0	29.5	6.1	8.0	1272			
8	50.5	14.8	3.1	34.3	7.2	8.0	1364			
9	49.3	16.0	3.3	30.1	6.2	8.0	1320			
10	52.9	15.6	3.4	38.6	8.5	8.0	1318			
11	62.0	16.9	4.4	36.3	9.4	8.0	1284			
12	60.4	16.9	4.3	35.6	9.0	7.9	1231			
13	55.2	17.7	4.1	34.2	7.9	7.9	1225			
14	53.4	17.9	4.0	33.9	7.6	7.9	1252		285,579	
15	52.4	18.8	4.1	31.2	6.8	8.0	1164			
16	57.1	17.6	4.2	31.3	7.4	8.0	1178			
17	65.4	13.5	3.7	28.5	7.8	8.0	1211			
18	60.4	11.1	2.8	28.5	7.2	8.1	1154			
19	62.8	13.5	3.5	28.3	7.4	8.1	1169			
20	56.7	17.8	4.2	25.8	6.1	8.0	1201			
21	49.8	18.9	3.9	30.8	6.4	7.9	1163			
22	62.8	19.0	5.0	35.1	9.2	7.9	1217			
23	51.4	20.9	4.5	36.7	7.9	8.1	1169			
24	50.7	20.3	4.3	36.1	7.6	8.1	1176			
25	50.3	20.2	4.2	39.0	8.2	8.1	1200			
26	49.4	25.1	5.2	34.3	7.1	8.0	1233			
27	53.8	20.9	4.7	35.8	8.0	7.9	1231			
28	59.3	23.3	5.8	43.0	10.6	7.9	1216			
29	63.4	21.0	5.6	38.3	10.1	8.0	1258			
30	56.1	21.7	5.1	37.1	8.7	8.1	1204			
31	54.6	22.3	5.1	35.4	8.1	7.9	1217			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	55.9	19.4	4.534	34.4	8.037	8.0	1213.4	-	285,579	
Maximum value	65.4	31.0	7.781	44.5	11.185	8.1	1368.1	-	-	
Minimum value	49.3	11.1	2.784	25.8	6.056	7.8	1057.6	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	09/08/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/09/01
Ending Date YR/MO/DA 10/09/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	48.6	22.2	4.5	31.7	6.4	7.9	1045			
2	44.3	19.4	3.6	31.0	5.7	8.1	1081			
3	45.0	18.1	3.4	28.1	5.3	7.9	1071			
4	46.6	21.0	4.1	32.4	6.3	8.0	1077			
5	49.7	23.8	4.9	42.8	8.9	8.0	1095			
6	60.7	27.6	7.0	41.0	10.4	8.0	1071			
7	55.0	29.7	6.8	50.1	11.5	8.0	1070			
8	58.1	34.0	8.2	49.7	12.0	8.0	1070			
9	50.8	25.2	5.3	45.0	9.5	8.1	1080			
10	49.5	24.0	5.0	39.8	8.2	8.2	1123			
11	54.4	22.6	5.1	40.8	9.2	8.2	1101			
12	58.9	18.5	4.6	37.8	9.3	8.0	1091			
13	59.9	16.0	4.0	33.7	8.4	8.2	1097			
14	60.0	15.4	3.9	35.8	9.0	8.3	1098	<0.0000026	201,913	
15	58.9	16.6	4.1	37.2	9.1	8.2	1142			
16	58.2	19.8	4.8	41.3	10.0	8.3	1165			
17	55.4	19.6	4.5	38.3	8.9	8.1	1209			
18	57.6	23.0	5.5	42.8	10.3	8.0	1266			
19	61.6	19.7	5.1	38.8	10.0	8.0	1235			
20	53.1	22.1	4.9	43.5	9.6	8.2	1237			
21	53.1	22.1	4.9	39.9	8.8	8.0	1254			
22	48.9	21.7	4.4	46.6	9.5	8.1	1233			
23	53.6	24.1	5.4	45.3	10.1	8.0	1246			
24	50.2	24.3	5.1	45.2	9.5	8.1	1275			
25	50.2	27.0	5.7	43.5	9.1	8.0	1262			
26	51.8	28.6	6.2	47.6	10.3	8.0	1302			
27	52.2	28.0	6.1	43.0	9.3	8.1	1281			
28	55.5	29.0	6.7	43.2	10.0	8.1	1287			
29	57.0	28.8	6.8	41.9	10.0	8.1	1265			
30	57.8	25.7	6.2	43.8	10.6	8.0	1259			
Number of Samples	30	30	30	30	30	30	30	1	1	
Average value	53.9	23.3	5.224	40.7	9.174	8.1	1169.5	-	201,913	
Maximum value	61.6	34.0	8.236	50.1	12.042	8.3	1301.8	-	-	
Minimum value	44.3	15.4	3.391	28.1	5.279	7.9	1044.8	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	10/06/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate. Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/10/01
Ending Date YR/MO/DA 10/10/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits		-	avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	54.2	24	5.43	40	9.0	7.9	1242			
2	53.1	31	6.77	31	6.8	8.0	1069			
3	55.5	23	5.30	33	7.6	8.1	1216			
4	53.1	26	5.73	27	6.1	8.0	1206			
5	55.5	30	6.90	37	8.5	7.8	1188			
6	55.8	32	7.50	39	9.0	7.8	1168			
7	57.0	33	7.85	37	8.7	7.9	1171			
8	55.3	24	5.62	34	7.7	7.8	1145			
9	54.9	28	6.33	40	9.2	7.8	1120			
10	56.2	34	7.93	38	9.0	7.8	1111			
11	55.2	29	6.74	33	7.5	7.8	1133			
12	56.2	26	6.08	35	8.1	8.0	1169			
13	57.3	27	6.56	34	8.1	7.9	1186			
14	55.9	28	6.62	32	7.5	8.0	1158		209,571	
15	54.8	28	6.39	29	6.6	8.0	1168			
16	58.5	37	9.03	33	8.0	7.9	1149			
17	60.0	28	6.97	23	5.8	7.9	1250			
18	55.3	33	7.66	33	7.6	7.9	1248			
19	55.5	28	6.50	33	7.5	7.8	1269			
20	50.1	24	4.99	29	6.0	7.9	1273			
21	50.4	20	4.22	31	6.5	7.8	1318			
22	48.9	18	3.69	30	6.1	7.9	1255			
23	49.8	22	4.50	30	6.3	7.8	1256			
24	53.2	23	5.04	30	6.7	7.8	1253			
25	56.9	22	5.26	35	8.4	7.8	1231			
26	54.5	25	5.60	38	8.7	8.0	1177			
27	54.2	21	4.83	34	7.6	7.8	1143			
28	53.7	20	4.58	26	5.8	7.7	1153			
29	54.4	22	5.02	33	7.4	7.8	1153			
30	55.5	27	6.20	39	9.0	7.8	1156			
31	57.3	28	6.67	40	9.4	7.8	1174			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	54.8	26.5	6.081	33.3	7.619	7.9	1190.6	-	209,571	
Maximum value	60.0	37.0	9.029	40.3	9.443	8.1	1317.6	-	-	
Minimum value	48.9	18.1	3.689	23.3	5.829	7.7	1069.0	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	11/08/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/11/01
Ending Date YR/MO/DA 10/11/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.15		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	59.9	26	6.44	32	7.9	7.8	1148			
2	62.3	29	7.45	45	11.6	7.8	1157			
3	64.2	31	8.41	50	13.3	7.8	1192			
4	63.0	31	8.15	45	11.8	8.0	1220			
5	58.0	26	6.35	43	10.4	8.0	1260			
6	58.9	27	6.64	39	9.7	7.9	1212			
7	59.8	28	7.03	39	9.8	7.9	1286			
8	56.4	31	7.32	50	11.8	8.0	1227			
9	56.3	36	8.41	62	14.4	7.7	1248			
10	55.8	42	9.73	78	18.2	7.7	1265			
11	55.6	40	9.23	63	14.7	7.7	1252			
12	50.7	39	8.19	69	14.6	7.7	1221			Grab sample at #1 Outfall
13	53.7	41	9.24	81	18.2	7.7	1218			
14	53.5	44	9.78	68	15.2	7.8	1192		491,745	
15	52.9	43	9.41	62	13.7	7.7	1245			
16	53.7	36	8.07	67	15.0	7.7	1227			
17	54.1	40	8.95	58	13.1	7.8	1254			
18	54.8	37	8.39	69	15.7	7.8	1255			
19	52.0	39	8.52	52	11.3	7.8	1255			
20	55.0	36	8.19	46	10.6	7.8	1217			
21	56.5	36	8.44	51	12.0	7.8	1169			
22	53.5	33	7.43	56	12.5	7.8	1133			
23	52.8	37	8.18	54	11.9	7.8	1122			
24	54.2	34	7.65	59	13.3	7.8	1140			
25	55.3	37	8.46	67	15.5	7.8	1203			
26	56.9	37	8.76	55	13.1	7.8	1159			
27	56.3	37	8.65	54	12.7	7.8	1146			
28	54.3	39	8.90	56	12.6	7.7	1180			
29	49.5	42	8.75	69	14.3	7.8	1230			
30	52.8	43	9.47	59	12.9	7.7	1257			
Number of Samples	30	30	30	30	30	30	30	0	1	
Average value	55.8	35.9	8.286	56.6	13.056	7.8	1209.6	-	491,745	
Maximum value	64.2	43.8	9.775	81.3	18.202	8.0	1285.7	-	-	
Minimum value	49.5	25.8	6.351	31.7	7.931	7.7	1122.5	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	12/07/10 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 10/12/01
Ending Date YR/MO/DA 10/12/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.0		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.0		max. 38.8	max. 9.0				Comments
1	55.5	39	9.05	67	15.6	7.7	1244			
2	54.4	38	8.72	57	12.8	7.8	1228			
3	52.1	36	7.80	51	11.1	7.7	1317			
4	53.3	38	8.38	53	11.9	7.7	1316			
5	54.8	42	9.63	63	14.3	7.9	1288			
6	68.4	43	12.22	51	14.5	7.7	1207			
7	59.7	45	11.08	61	15.1	7.7	1222			
8	58.0	49	11.74	56	13.7	7.7	1190			
9	54.8	54	12.31	60	13.8	7.8	1212			
10	37.1	53	8.16	69	10.7	7.8	1249			
11	52.9	48	10.55	60	13.2	7.8	1164			
12	53.8	49	11.01	55	12.4	7.8	1174			
13	56.0	57	13.30	80	18.7	7.8	1177			
14	55.2	45	10.41	68	15.7	7.8	1202	<0.0000011	250,906	
15	55.4	40	9.21	58	13.4	8.0	1153			
16	62.1	37	9.50	65	16.9	7.8	1151			
17	50.8	34	7.11	50	10.6	7.8	1168			
18	52.6	30	6.48	63	13.9	7.8	1161			
19	54.9	30	6.93	44	10.2	7.8	1139			
20	54.6	31	6.99	40	9.1	7.8	1175			
21	59.2	31	7.66	51	12.7	7.8	1129			
22	62.5	34	8.93	46	11.9	7.8	1196			
23	59.2	28	6.89	38	9.4	7.8	1167			
24	61.1	31	7.87	43	10.9	7.8	1139			
25	65.2	32	8.79	48	13.1	7.8	1127			
26	32.3	48	6.51	78	10.5	7.8	1478			
27	44.9	39	7.28	59	11.1	7.8	1217			
28	58.4	30	7.31	44	10.6	7.8	1093			
29	55.6	30	7.02	47	10.8	7.8	1097			
30	51.8	35	7.56	55	11.8	7.8	1182			
31	50.8	32	6.81	61	13.0	7.8	1265			
Number of Samples	31	31	31	31	31	31	31	1	1	
Average value	54.8	38.9	8.813	56.2	12.687	7.8	1200.9	-	250,906	
Maximum value	68.4	56.9	13.296	80.2	18.730	8.0	1478.4	-	-	
Minimum value	32.3	27.9	6.478	38.0	9.073	7.7	1093.2	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J.	General Manager	01/06/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/01/01
Ending Date YR/MO/DA 11/01/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	50.5	34	7.09	64	13.5	7.7	1286			
2	55.9	30	7.10	57	13.4	7.8	1224			
3	54.1	28	6.41	53	12.0	7.8	1231			
4	50.1	31	6.38	51	10.7	7.8	1263			
5	50.6	29	6.10	46	9.7	7.8	1240			
6	52.2	28	6.14	41	9.0	7.8	1203			
7	49.8	33	6.82	55	11.5	7.9	1363			
8	49.3	38	7.71	37	7.5	7.9	1402			
9	53.3	40	8.79	41	9.1	7.7	1175			
10	54.8	44	9.98	40	9.2	7.8	1134			
11	57.9	44	10.72	42	10.2	7.7	1159			
12	58.9	45	11.04	66	16.1	7.7	1193			
13	61.7	47	11.99	56	14.3	7.7	1199			
14	59.1	53	13.01	50	12.4	7.7	1220		475,191	
15	57.8	52	12.51	39	9.5	7.9	1192			
16	58.6	49	11.98	39	9.6	7.9	1186			
17	58.3	48	11.66	42	10.2	7.7	1167			
18	59.8	44	11.06	48	11.9	7.7	1144			
19	59.6	42	10.49	40	10.0	7.7	1104			
20	57.4	41	9.89	43	10.4	7.7	1071			
21	55.9	34	7.96	38	8.9	7.9	1052			
22	59.3	37	9.14	41	10.1	7.7	1031			
23	59.2	36	8.88	41	10.1	7.7	1062			
24	55.0	31	7.19	37	8.6	7.7	1078			
25	79.1	29	9.67	35	11.4	7.4	1065			
26	61.0	27	6.85	35	8.8	7.8	1163			
27	54.0	27	6.11	33	7.5	7.8	1240			
28	56.8	26	6.15	37	8.8	7.7	1221			
29	62.1	26	6.66	32	8.2	7.7	1213			
30	64.1	23	6.20	35	9.4	7.7	1206			
31	59.8	25	6.34	47	11.7	7.7	1204			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	57.3	36	8.646	44.0	10.442	7.7	1184	-	475,191	
Maximum value	79.1	53	13.015	65.6	16.120	7.9	1402	-	-	
Minimum value	49.3	23	6.096	31.6	7.538	7.4	1031	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	02/07/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/02/01
Ending Date YR/MO/DA 11/02/28

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	36.0	27	4.01	42	6.312	7.7	1306			
2	63.1	22	5.70	35	9.232	7.7	1152			
3	59.6	23	5.60	35	8.714	7.7	1117			
4	62.3	26	6.63	43	11.132	7.6	1083			
5	65.4	27	7.48	43	11.815	7.7	1067			
6	67.2	31	8.58	52	14.575	7.7	1141			
7	60.9	39	9.89	55	13.905	7.7	1096			
8	61.6	40	10.29	58	14.852	7.7	1105			
9	59.6	45	11.06	67	16.584	7.6	1107			
10	58.5	44	10.67	80	19.537	7.7	1106			
11	54.9	44	10.08	45	10.242	8.1	1104			
12	54.5	43	9.79	54	12.332	7.9	1258			
13	56.4	44	10.37	93	21.836	7.6	1129			
14	48.9	44	9.05	82	16.653	7.7	1098		293,421	
15	48.3	42	8.47	60	12.027	7.7	1202			
16	48.9	43	8.70	64	13.050	7.7	1266			
17	51.3	42	8.94	65	13.918	7.7	1304			
18	52.2	38	8.16	61	13.219	7.7	1325			
19	56.5	38	8.87	56	13.162	7.7	1307			
20	59.1	37	9.17	57	14.073	7.7	1301			
21	61.1	24	6.09	52	13.302	7.7	1287			
22	54.5	38	8.60	47	10.607	7.7	1262			
23	54.2	28	6.22	36	8.159	7.7	1231			
24	55.3	29	6.62	34	7.928	7.7	1246			
25	55.0	30	6.77	34	7.854	7.7	1281			
26	57.5	29	6.96	36	8.656	7.8	1287			
27	59.2	31	7.59	39	9.579	7.8	1281			
28	55.1	33	7.50	38	8.666	7.7	1279			
Number of Samples	28	28	28	28	28	28	28	0	1	
Average value	56.3	35	8.14	52.2	12.211	7.7	1205	-	293,421	
Maximum value	67.2	45	11.06	92.8	21.836	8.1	1325	-	-	
Minimum value	36.0	22	4.01	34.2	6.312	7.6	1067	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	03/07/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/03/01
Ending Date YR/MO/DA 11/03/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	59.7	32	7.97	39	9.6	7.7	1279			
2	57.4	34	8.12	39	9.3	7.8	1285			
3	56.3	32	7.47	41	9.6	7.7	1312			
4	52.2	29	6.38	37	8.1	7.7	1284			
5	54.9	26	5.91	35	7.9	7.8	1262			
6	55.3	26	6.03	33	7.7	7.7	1265			
7	53.6	23	5.08	31	7.0	7.7	1274			
8	53.7	26	5.88	36	8.0	7.7	1272			
9	52.1	30	6.60	44	9.6	7.7	1282			
10	56.5	32	7.49	42	10.0	7.7	1285			
11	56.4	36	8.47	39	9.1	7.7	1222			
12	56.2	39	9.19	37	8.7	7.7	1254			
13	59.7	39	9.78	41	10.3	7.7	1244			
14	50.8	41	8.62	42	8.9	7.6	1199	<.0000090	515,496	
15	47.7	36	7.15	48	9.6	7.6	1193			
16	47.9	35	7.07	55	11.0	7.6	1179			
17	47.6	33	6.60	39	7.7	7.7	1198			
18	50.3	30	6.36	44	9.3	7.7	1183			
19	53.7	27	6.04	41	9.1	7.7	1222			
20	54.7	29	6.59	44	10.0	7.7	1211			
21	54.5	32	7.29	46	10.4	7.7	1221			
22	53.1	29	6.41	42	9.2	7.7	1221			
23	52.8	29	6.39	43	9.6	7.8	1268			
24	53.8	36	8.09	50	11.3	7.7	1312			
25	54.4	35	7.85	44	10.1	7.7	1308			
26	59.8	39	9.66	52	13.0	7.9	1312			
27	60.2	35	8.68	45	11.3	7.9	1338			
28	51.0	33	7.11	47	9.9	7.7	1321			
29	35.5	34	4.97	44	6.5	7.7	1362			
30	31.9	28	3.71	36	4.7	7.6	1318			
31	28.1	25	2.99	34	3.9	7.7	1317			
Number of Samples	31	31	31	31	31	31	31	1	1	
Average value	52.0	32	6.97	41.6	9.044	7.7	1265	-	515,496	
Maximum value	60.2	41	9.78	55.2	12.989	7.9	1362	-	-	
Minimum value	28.1	23	2.99	31.4	3.939	7.6	1179	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	04/08/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/05/01
Ending Date YR/MO/DA 11/05/31

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 11.150		avg. 21.005	min. 6.0		0.000153		
Date			max. 16.725		max. 38.8	max. 9.0				Comments
1	64.3	32	8.62	44	11.7	7.9	1363			Grab Sample at #1 Outfall
2	61.1	33	8.42	45	11.4	7.8	1337			
3	60.3	31	7.76	40	10.0	7.8	1361			Grab Sample at #1 Outfall
4	58.2	29	6.93	37	9.0	7.9	1403			
5	48.5	28	5.56	38	7.7	7.8	1437			
6	46.3	20	3.92	25	4.7	7.8	1487			
7	48.5	18	3.70	27	5.5	7.7	1417			
8	50.3	19	3.96	14	2.9	8.0	1441			
9	57.8	24	5.89	36	8.8	7.9	1439			
10	56.4	25	5.90	34	8.0	7.8	1449			
11	52.3	23	5.00	36	7.9	7.8	1463			
12	50.0	20	4.19	34	7.0	7.8	1440			
13	52.9	21	4.72	35	7.7	7.8	1435			
14	55.2	23	5.23	38	8.8	7.8	1432		387,200	
15	60.4	22	5.52	38	9.5	7.8	1465			
16	54.2	23	5.16	39	8.8	7.8	1493			
17	54.1	27	6.10	40	9.0	7.8	1655			
18	55.1	25	5.80	32	7.3	8.0	1678			
19	54.9	29	6.57	36	8.2	7.7	1508			
20	53.4	30	6.68	39	8.7	7.9	1568			Grab Sample at #1 Outfall
21	54.7	27	6.18	39	8.8	8.0	1618			Grab Sample at #1 Outfall
22	56.1	32	7.41	46	10.8	7.8	1423			
23	50.5	31	6.51	51	10.8	7.8	1387			
24	51.0	28	5.90	53	11.2	7.7	1380			
25	53.0	34	7.48	51	11.3	7.8	1417			
26	50.1	35	7.37	52	10.8	7.8	1424			
27	48.4	30	6.12	53	10.7	7.8	1451			
28	54.2	32	7.31	47	10.6	7.8	1432			
29	56.8	32	7.66	52	12.3	7.8	1427			
30	57.9	31	7.42	54	13.0	7.8	1433			
31	59.5	38	9.39	54	13.4	7.8	1430			
Number of Samples	31	31	31	31	31	31	31	0	1	
Average value	54.4	27	6.269	40.5	9.235	7.8	1455	-	387,200	
Maximum value	64.3	38	9.391	54.0	13.383	8.0	1678	-	-	
Minimum value	46.3	18	3.698	13.7	2.883	7.7	1337	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date	
Perrett, J	General Manager	06/06/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

Signature of Principal Officer or Authorized Agent

OPERATION MONITORING REPORT

Rayonier Jesup Mill
P. O. Box 2070
Jesup, GA 31598

Permit No. GA0003620
Beginning Date YR/MO/DA 11/04/01
Ending Date YR/MO/DA 11/04/30

LOCATION DESCRIPTION
001- No. 1 Aerated Stabilization Basin Effluent
002- No. 2 Aerated Stabilization Basin Effluent

Location Code	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002	001 & 002		
Parameter Code	50050	310	310	530	530	400	80		Primary	
Parameter Name	Flow	BOD5	BOD5	TSS	TSS	pH	Color	2,3,7,8 TCDD	sludge	
Parameter Units	MGD	mg/L	TPD	mg/L	TPD	Std. Units	NCASI units	ug/L	lbs/day	
Type of Sample	Instru.	24 hr Comp.	24 hr Comp.	24 hr Comp.	24 hr Comp.	Grab	24 hr Comp.	24 hr Comp.		
Frequency of Analysis	Continuous	Daily	Daily	Daily	Daily	Daily		Quarterly		
Limits			avg. 16.00		avg. 21.005	min. 6.0		0.000153		
Date			max. 24.00		max. 38.8	max. 9.0				Comments
1	10.5	24	1.05	34	1.5	7.6	1449			
2	3.2	25	0.33	33	0.4	7.8	1650			
3	1.9	19	0.15	24	0.2	7.8	1600			
4	1.8	20	0.15	27	0.2	7.8	1570			
5	1.7	17	0.12	26	0.2	8.0	1570			
6	1.7	13	0.09	19	0.1	7.8	1540			
7	1.6	12	0.08	24	0.2	8.0	1500			
8	1.6	7	0.05	22	0.1	8.2	1529			
9	28.9	17	2.05	28	3.4	8.0	1402			
10	31.7	16	2.13	21	2.8	8.2	1389			
11	35.6	14	2.10	22	3.2	8.0	1382			
12	46.8	13	2.57	22	4.2	8.0	1368			
13	48.3	12	2.33	17	3.4	8.0	1352			
14	48.5	13	2.54	25	5.1	8.1	1173		161,887	
15	59.1	14	3.45	28	6.9	7.8	1101			
16	58.1	20	4.84	29	7.1	7.8	1099			
17	58.3	18	4.30	32	7.7	7.7	1083			
18	49.3	17	3.48	33	6.9	7.8	1064			
19	55.9	18	4.17	33	7.6	7.7	1042			
20	50.8	18	3.82	35	7.4	7.7	1063			
21	54.3	20	4.53	37	8.5	7.7	1069			
22	49.7	27	5.54	41	8.5	7.7	1246	-		
23	54.5	28	6.43	38	8.7	7.7	1113			
24	52.9	29	6.50	40	8.7	7.8	1210			
25	53.2	31	6.96	46	10.1	7.7	1230			
26	46.7	28	5.42	43	8.4	7.8	1258			
27	52.0	25	5.49	40	8.7	7.8	1262			
28	56.0	24	5.68	39	9.1	7.8	1289			
29	61.8	26	6.61	43	11.1	7.8	1323			
30	66.4	29	7.94	43	12.0	7.8	1389			
Number of Samples	30	30	30	30	30	30	30	0	1	
Average value	38.1	20	3.36	31.5	5.418	7.8	1311	-	161,887	
Maximum value	66.4	31	7.94	45.6	11.990	8.2	1650	-	-	
Minimum value	1.6	7	0.05	16.6	0.136	7.6	1042	-	-	
Number of times Max exceeded			0		0	0		0		

	Title of Officer	Date		
Perrett, J	General Manager	05/06/11 MO/DA/YR	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.	Signature of Principal Officer or Authorized Agent

Rayonier Performance Fibers, LLC
Jesup Mill

Investigation and Implementation of Effluent Color Reduction Technologies

October 2012

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Executive Summary

The Rayonier Performance Fibers, LLC – Jesup Mill has achieved a significant reduction in the color of treated effluent discharged to the Altamaha River. Effluent color is presently about 275 tons per day, annual average, compared to an annual average of 516 tons per day in 2005 – a reduction of 47 percent. The mill has also committed to completion of several additional capital projects for color reduction by March, 2015, and is continuing to study the suitability of other existing or developing technologies to determine whether even greater reductions can be achieved.

This report describes the effluent color reduction measures successfully implemented and additional planned improvements. In addition, alternative color reduction technologies which have been studied but were found to be technically or operationally infeasible for this facility are reviewed.

Introduction

A. WHAT IS COLOR, AND HOW IS IT MEASURED?

Color in wastewater from the kraft pulping process is generally attributable to lignin that is removed from wood by two mill processes: pulping and bleaching. Lignin is a naturally-occurring constituent of trees that is released when trees decompose. In fact, "blackwater" swamps and streams get their color from the tannins naturally released from decomposing wood and from other decomposing vegetation. These same naturally-occurring materials are present in pulping process wastewaters.

Color is actually a wastewater characteristic rather than a quantity of pollutant. Color is often measured by spectrophotometry, using a standard solution of platinum and cobalt salts for comparison. Color measured this way is expressed in platinum cobalt color units (PCU). A PCU is the color produced by 1 mg platinum/liter in the form of the chloroplatinate ion. For color control purposes in industrial operations like pulp mills, however, it is useful to be able to conduct "color balances" in different processes in the same way that mass balances are conducted, so mills use the weight of water, the total water flow, and the measured color concentration in PCU (expressed as mg/liter) to calculate color in terms of a "mass" unit such as tons. It is important to understand, though, that color expressed as "tons" is not equivalent to mass tons (2,000 pounds) of colored constituents. Still, describing color on a "ton" basis provides the best tool for understanding relative color loadings and developing control strategies.

B. BASICS OF COLOR CONTROL IN PULPING PROCESSES

Colored particles in pulping process wastewaters tend to be very tiny and well-dispersed. These colloidal color bodies are very difficult to remove because they do

not settle out and are too small to filter using conventional technologies. For that reason, in-process technologies that prevent the introduction of color into the wastewater stream, combined with best management practices (BMPs), are preferred throughout the industry. Lignin removed during pulping is a valuable fuel burned in recovery furnaces to provide energy for the mill. Mills work to recover as much of this lignin as possible from the digesters, knotters, brown stock washers, evaporators and recovery storage areas.

Lignin removed during bleaching is generally not suitable for burning in recovery furnaces, because of the equipment corrosion and potential for fouling/plugging of the recovery furnace that would result from chlorides in bleach plant effluent. Instead, bleach plant effluents are normally routed to wastewater treatment systems. There are a few technologies that have been demonstrated to remove color from treated effluents in bench-scale and pilot-scale trials, but most of these have not had sustained, long-term success in larger scale operations and they are generally considered feasible only on small volume waste streams with high color loadings.

C. CONSIDERATIONS FOR CELLULOSE SPECIALTIES PULP MANUFACTURING

The Rayonier Jesup mill employs unique technology to produce Cellulose Specialty products, a technically demanding, high-purity type of dissolving pulp, using the prehydrolyzed kraft pulping process. What starts as simple wood chips is transformed into high-value Cellulose Specialties used as chemical feedstock in the manufacture of flat-panel televisions, computer screens, impact-resistant plastics, filters, tires, paint, food, pharmaceuticals, and many other consumer products. The Jesup mill operates three pulping lines: A-mill, B-mill, and C-mill. The A- and B-mills produce Cellulose Specialty products. The C-mill currently produces primarily fluff pulp, a commodity product similar to paper pulp, for baby diapers and other absorbent products; however, a project is underway to convert this line to the production of Cellulose Specialties. Following completion of this project in mid-2013, the Jesup mill will produce only Cellulose Specialties.

Rayonier's high-purity Cellulose Specialties manufacturing process is not the same as that of a traditional pulp and paper mill. The technical challenge in Cellulose Specialties production is to isolate the natural cellulose polymers in wood. These polymers are nature's most abundant, versatile plastic. Unlike commodity papergrade pulp, which can contain lignin, hemicellulose, and extractives in quantities of fifteen percent or more, Cellulose Specialties are highly purified, often to levels of ninety-eight percent cellulose or more. The pulping process is similar in some ways to the typical kraft pulping process but requires a number of additional proprietary steps.

While papergrade pulp is used mainly for its physical properties in papers for printing, packaging, and tissue, Cellulose Specialties are used almost exclusively for their chemical properties. Demanding specifications for cellulose purity, molecular

weight, structure and physical properties must be met in order for the product to react properly in subsequent manufacturing steps and to yield the required end product performance. For many applications it is not Rayonier's customers who make the end product; instead, they convert Rayonier's Cellulose Specialties products into raw materials for additional processing by end use customers in the product chain. The Jesup mill's Cellulose Specialties products are customized to meet each customer's specifications. In many cases, based upon final end product requirements, the Jesup mill is the only producer of a feedstock for a customer who is the only producer of a given product.

Pulp quality deviations may create operating or product quality issues for the immediate customer, or may not become evident until several steps along the supply chain. For example, a customer uses Rayonier product to produce an acetate fiber and then uses a spinneret to spin the acetate fiber into a filament that is only one-fifth the diameter of a human hair. Any impurities in the specialty cellulose pulp can build up in the spinneret, causing flaws in the filament and problems for the customer's manufacturing process.

Another customer converts the Rayonier specialty cellulose pulp into flakes in their process, and the flakes are then converted in a high-temperature process to create plastics. Changes in the Jesup mill's process may result in higher levels of impurities in the pulp, which for some customers would not be detectable. For some producers, however, these impurities can cause the final product to develop unacceptable clarity or performance characteristics. They can lead to defects in cellulose triacetate film used in LCD panels, which in turn can produce dead pixels in LCD panels. In extruded cellulose diacetate plastic films (for example tape applications) impurities can lead to film defects that result in poor adherence of coating layers and defects in those layers.

Since the unique Cellulose Specialties pulp produced by the Jesup mill must meet very demanding customer quality specifications, some color reduction technologies that have been implemented in typical papergrade kraft mills cannot be used at the Jesup mill.

D. HOW DO WE EVALUATE COLOR REDUCTION TECHNOLOGIES?

Color reduction technologies that could potentially be applied at the Jesup mill are identified through literature reviews, especially industry publications, as well as other external sources such as vendors' marketing information and consultant recommendations. We also have many Rayonier scientists, engineers and managers who have direct experience with color reduction technologies used at papergrade kraft mills, and understand both the potential and the complexity of these systems. Additionally, Rayonier's leading chemical and environmental engineers work to develop innovative technologies designed to work with our specialized manufacturing processes.

Color reduction technologies are evaluated based on the following criteria:

- Industry experience: Our engineers consider whether a proposed technology has been successfully implemented in the pulping industry and what level of color reduction has been demonstrated. They also evaluate similarities and differences between the operation of the other facilities and the Jesup mill's Cellulose Specialties process.

- Operational impacts: An assessment of the impacts of the proposed technology on the Jesup mill's product quality is made, and potential equipment reliability impacts such as plugging and corrosion are evaluated.

- Other environmental impacts: Consideration of environmental trade-offs is important in technology selection. Our engineers evaluate the potential of a proposed process to increase other pollutants in the wastewater discharge, such as biochemical oxygen demand (BOD), or increased risk of toxicity to microorganisms in the treatment system or final effluent toxicity. If the process will create a new solid waste stream, they must consider all possible impacts and evaluate options for managing that waste stream. All regulatory and permitting requirements that apply to the proposed process are also identified.

- Economics: For projects that look promising, capital and operating costs are estimated. Technical and operational concerns are the primary drivers in technology selection, but cost is necessarily considered especially when more than one option is available.

- Laboratory and pilot-scale trials: For some technologies that appear promising, small-scale trials are conducted to gauge the effectiveness of the process for color reduction, identify risks for a full-scale operation such as toxicity, and determine what operational considerations need to be made in designing a full-scale trial.

- Full-scale mill trial: Depending on the results of small-scale trials, full-scale trials may be conducted. These trials help us determine whether the technology is effective for color reduction on a full scale and whether the process is stable and reliable. They can also suggest whether any color reductions achieved are sustainable, or if the color could be re-released into the system (e.g. from degradation of sludges, etc.). If the proposed color technology involves changes to the production process, customer trials and qualifications may also be required, in order to verify that product quality specifications can be met.

E. LITERATURE REVIEW

The National Council for Air and Steam Improvement (NCASI) is an independent, non-profit research institute which is widely recognized as the leading source of

reliable data on environmental issues relevant to the forest products industry. NCASI prepared a comprehensive review of color reduction technologies in its "Review of Color Control Technologies and their Applicability to Modern Kraft Pulp Mill Wastewater" (NCASI Technical Bulletin No. 919, August 2006). Color control technologies addressed in this report include in-process methods as well as external color methods (end-of-pipe). Both successful and unsuccessful technologies are described.

As discussed above, the Jesup mill is a high-purity dissolving pulp mill, not a conventional kraft pulp mill. However, since certain stages of the Cellulose Specialties manufacturing process are similar to the papergrade kraft pulping process, Rayonier evaluated the color control technologies described by NCASI to identify those that could be applied at the Jesup mill.

F. WHAT COLOR REDUCTION TECHNOLOGIES HAVE WE TRIED?

Rayonier has carefully reviewed the technologies described by NCASI, and several recommended by vendors or developed by our engineers. Specific technologies considered for the Jesup mill include:

<u>In-Process Technologies</u>

- Pulp to a lower "Kappa number"
- Color tracking
- Operator training
- Spill collection systems
- Conductivity probes and alarms
- Best management practices (BMP): inspections and maintenance
- Shutdown execution
- Evaporator capacity increase and control
- Improved brown stock washing
- Knot filtrate recovery
- Brown stock filtrate treatment
- Oxygen delignification
- Bleaching technology

<u>Waste Water Stream Color Treatment Technologies</u>

- Chemical coagulation
- Biological color reduction technologies
- Membrane filtration of extraction stage filtrate
- Nanofiltration and ozone treatment
- Nanofiltration and solids disposal

The remainder of this report describes the various color reduction technologies and summarizes the results of Rayonier's evaluation of their feasibility for the Jesup mill's operations.

In-Process Technologies

The best way to control color is to keep lignin in the process and burn it in the recovery furnace to produce steam for the mill. This section describes the in-process technologies evaluated.

A. PULP TO A LOWER KAPPA NUMBER

The Kappa number indicates the amount of lignin remaining in pulp after pulping. Pulping to a lower Kappa number increases the amount of lignin that is captured and burned in the recovery furnace and reduces the amount of lignin entering the bleach plant and subsequently being sewered in the bleach plant effluent. In papergrade pulping, Kappa targets are usually determined by the type of product being made and pulp yield optimization.

Pulping to a Low Kappa number is designed into the dissolving pulp process. In the dissolving pulp process, the goal is to remove as much lignin as possible in the pulping process, before the pulp is sent to the bleaching operation, in order to maximize the purity of the final pulp product. While Rayonier does not adjust Kappa targets specifically for the purpose of color control, the Cellulose Specialties process results in significantly lower Kappa numbers than usually targeted in papergrade pulp mills. This means that more of the lignin can be collected and burned in the recovery boilers instead of entering the bleach plant wastewater stream.

B. COLOR TRACKING

It is essential for color control to establish an in-mill color balance as detailed as possible to understand the color sources. This allows a mill to set up an appropriate color measurement and monitoring system so that color sources can be monitored on a sufficiently frequent basis.

An essential part of the color monitoring is to monitor spills and spill handling systems. Monitoring for control of black liquor spills and of washing losses and other regular black liquor originated sources is also part of the color monitoring system.

Rayonier has implemented this control technique. The Jesup mill has implemented an extensive in-mill monitoring system to manage and detect black liquor and bleach filtrate losses. The monitoring system includes:

- daily monitoring of color in waste water streams going to the mill treatment system;
- alarms for sewer conductivity, liquor tank level, and filtrate tank level;
- overflow alarms for black liquor and spill containment sumps;
- real time sewer conductivity for mill sewers available at process operator control stations;
- weekly process control trend charts for color in mill sewers and wastewater treatment;
- daily communication of color levels and trends throughout the facility via electronic bulletin boards, intranet, and newsletters.

C. OPERATOR TRAINING

Another key factor in achieving effluent color control is providing training to operators on general awareness of the color issue and specific operating procedures for minimizing color loadings.

Rayonier has implemented this control technique. In the Jesup mill, operators receive training through "SkillsNOW" training system, which also makes the information readily available at their operating consoles. This training is developed specifically for each job in the mill. The training includes specific task identification, training on task execution and extensive data and equipment information. Most recently, operators completed training on operation of the spill collection sumps that have been installed to minimize releases of highly-colored pulping liquors to the sewers.

D. SPILL COLLECTION SYSTEMS

Spent pulping liquor, commonly called black liquor, contains large amounts of lignin, which adds significant color loading when discharged to the wastewater treatment system. Rather than attempting to remove this color after it is diluted in the wastewater stream, it is preferable to keep the black liquor in the process where the lignin constituent can be burned for energy recovery, and pulping chemicals contained in the black liquor can be recycled.

While some losses are unavoidable, spills associated with mechanical failures and other incidental causes can be collected and returned to the process. Spill collection systems typically consist of drains, sumps, and recovery pumps that are activated automatically when sensors indicate the presence of significant amounts of black liquor.

Rayonier has implemented this color control technology. In the Jesup mill, eight new spill collection systems have been installed since 2008. These systems are located throughout the mill in areas with the greatest risk of significant discharges of black liquor to the wastewater treatment system.

E. CONDUCTIVITY PROBES AND ALARMS

In the pulping process, streams with high color content generally have high conductivity. Real-time measurement of conductivity is therefore the preferred technology for identifying when spills occur. This type of monitoring allows spill control systems to be activated automatically, and can provide warning to operators and maintenance personnel so that they can promptly address the cause of the spill.

Rayonier has implemented this color control technology. Conductivity probes have been installed in the Jesup mill. The mill monitors more than 100 conductivity probes in color-related process streams, and 36 conductivity probes in process wastewater streams throughout the mill. Process alarms and process control systems have been implemented to detect spills and divert highly colored streams back to the process and away from wastewater streams. For example, if an agitator or pump seal begins to leak, the black liquor spilled will be collected in a spill collection sump. The conductivity probe will sense a high conductivity, indicative of black liquor content in the sump liquid. Then the control system will divert the pumped liquid back to the black liquor recovery system. The high conductivity will set off an alarm to notify the mill to investigate the likely equipment failure so that maintenance can take place.

F. BEST MANAGEMENT PRACTICES: INSPECTIONS AND MAINTENANCE

Mills perform daily rounds to inspect the condition of equipment, including pumps and piping, for black liquor leaks that increase effluent color. Operations and maintenance personnel are trained to detect these leaks as soon as they occur and quickly repair equipment.

Rayonier has implemented this strategy. Plant reliability is a major focus for the mill, as equipment reliability ensures steady operating conditions and production, which minimize process upset-related spills. Frequent equipment inspection is a key part of the mill's reliability program. Operations and maintenance personnel inspect equipment daily for black liquor leaks that increase effluent color. Critical instruments, including conductivity and pH probes, are inspected and calibrated frequently. Equipment failures that may cause color loading are highlighted, and given high priority for quick repair.

G. SHUTDOWN EXECUTION

During maintenance shutdowns, some equipment must be drained for cleaning, inspection, and repairs and most mills experience increased color loading to the wastewater treatment system as a result. Through careful shutdown planning and execution, black liquor losses to the sewers can be reduced, thereby reducing the color loading. Significant liquor losses can also occur when starting up after a

maintenance shutdown due to imbalances in the process. Here, too, careful planning and monitoring can help reduce color loading.

Rayonier has implemented this strategy. During the planning for annual shutdowns, procedures are developed to minimize loss of black liquor to the sewer during equipment drainage and cleaning needed for maintenance activities, as well as during startup activities. During the mill shutdown and startup, color loadings and performance are tracked. The spill collection systems discussed above also help reduce loadings during startup. In between major annual shutdowns, some pieces of equipment may be taken out of service for more frequent maintenance. Similar procedures are followed to minimize liquor losses during these outages.

H. EVAPORATOR CAPACITY INCREASE AND CONTROL

Evaporators remove water from the lignin-containing spent pulping liquor so that the concentrated liquor may be burned in the recovery furnace to produce energy and to recover pulping chemicals for recycling. As mills minimize black liquor losses to the wastewater treatment system, more liquor needs to be processed through the evaporators where capacity is often limited. Increasing evaporation capacity, therefore, allows mills to collect more color-containing black liquor that might otherwise have to be sent to the wastewater treatment system.

Additionally, improvements to evaporation cleaning systems helps control color. Evaporator surfaces scale up, so they need to be regularly cleaned to achieve the needed heat transfer. Color-containing liquor losses can occur if the cleaning procedures are not carefully managed. The unit to be washed is first drained to liquor storage. The wash and rinse liquids can be fully recovered or recovered until a set conductivity value is reached, after which the rinse liquids may be sent to the wastewater treatment system.

Rayonier is implementing this color control technology. Rayonier is constructing a new evaporator line which will be commissioned in 2013. This new evaporator will increase the mill's capacity to process recovered black liquor by 15 percent. The mill has already improved evaporator cleaning procedures to reduce loss of color to the sewer. Improved color retention methods have been developed for equipment drainage before and after outages. Pump seals and similar equipment are checked regularly for leaks.

I. IMPROVED BROWN STOCK WASHING

Brown stock washers remove spent color-containing liquor from the pulp before the pulp enters the bleaching process. Ineffective washing allows more black liquor to remain in the pulp. That liquor must then be removed in the first stage of bleaching, which increases the color of the bleach plant filtrate. This stream is not suitable for processing through the liquor recovery cycle due to the presence of chlorides which

will cause plugging of the recovery furnace. It is preferable, then, to capture the black liquor in the washing process. Good brown stock washing maximizes the amount of liquor captured.

Rayonier has implemented this color control technology on two pulping lines and has planned improvements on the third line. Additional brown stock washing stages have been added to the B and C mills, decreasing carryover by about 30 percent. More color is washed out of the pulp and captured in the filtrate which is then evaporated and burned in the recovery boilers. Improved process control methods including dilution factor control have also been applied. The mill's washing efficiency meets EPA guidelines.

Some additional improvements in brown stock washing on C mill were made in 2012 and are currently being optimized. Rayonier will also complete engineering for an additional brown stock washer on the A mill in 2013 and the new washer will be commissioned in 2015.

J. KNOT FILTRATE RECOVERY

The term "knots" describes fiber that did not get pulped, as well as the point where a branch is connected the tree trunk. Pulp is screened after cooking to remove knots, which can be handled in different ways. Most often, the knots are recooked, landfilled or burned. Knots are saturated with black liquor, so it is important that they are handled without losing black liquor to the sewer. When the knots are returned to the digester(s) they are dewatered and the dewatering liquor returned to the washing line, so there is normally no effluent from the knot handling in those cases. Knots are also dewatered before being sent to the landfill or burned, and the black liquor can be collected and returned to the process to prevent color discharges to the wastewater treatment system.

Rayonier has implemented this color control technology. Rayonier targets full capture of color-containing liquor from knots by recovering liquor from knot drainage into the process. Knot filtrates are returned to chemical recovery for energy recovery and recycling.

K. BROWN STOCK FILTRATE TREATMENT

Although the dissolving pulp process generates and removes most of the color-containing lignin in the pulping stage, as explained previously, due to the high chloride content and potential quality impact of recyling processes, Rayonier has developed a new proprietary color control technology for several brown stock filtrate streams. Conventional water treatment chemicals and solid-liquid separation processes are used. This technology is being implemented in B and C mills where wood species and pulping conditions allow it to be effective in color reduction. The brown stock filtrate color reduction system includes feed tanks, chemical addition systems, dissolved air flotation units, and screw presses to produce a dewatered sludge that can be burned for energy recovery or landfilled. The technology was

demonstrated in onsite pilot plants, and engineering has been completed. It is being installed and will be operational in 2013.

L. OXYGEN DELIGNIFICATION

Oxygen delignification is the use of oxygen to remove lignin from pulp just prior to bleaching. This technology is the most widely used method of lowering the kappa number in papergrade kraft mills, since it produces higher pulp yields and maintains fiber strength better than does cooking to the same kappa target. In Cellulose Specialties manufacturing, the objective is cellulose purity rather than pulp yields or fiber strength, so extended cooking is the preferred method for reducing the kappa number before bleaching.

Oxygen delignification technology is not appropriate for the Jesup mill's operation. Oxygen delignification is appropriate for pulp with significant lignin content, such as the softwood pulp used to produce fluff pulp. For this pulp grade, it can significantly reduce color released in the bleach plant. An oxygen delignification system was engineered for C mill when it was producing fluff pulp, and Rayonier planned to install it. However, Rayonier made a strategic business decision to exit the fluff pulp market and focus on its core high-purity dissolving pulp business. The Cellulose Specialties Expansion (CSE) project was approved, and the C mill is being converted to produce hardwood-based dissolving pulp instead of softwood-based fluff pulp. Hardwood dissolving pulp is cooked to a very low kappa number thus the pulp going to the bleaching stages has little lignin content. Therefore, the oxygen delignification process is no longer appropriate as a color reduction technology. Although the C Mill oxygen delignification project was canceled, another color reduction process was developed for brown stock filtrate treatment that is better suited to the Jesup mill's post-CSE dissolving pulp operation, as described above.

M. BLEACHING TECHNOLOGY

Either chlorine or chlorine dioxide may be used to remove lignin from pulp in kraft bleaching. Chlorine dioxide is more effective at destroying color-causing parts of lignin than chlorine. Most kraft pulp mills have converted to elemental chlorine free (ECF) bleaching, and have seen an associated reduction in color in the bleach plant filtrates. However, chlorine is more effective at preserving the cellulose characteristics that are essential to some of Rayonier's customers.

Rayonier has partially implemented this color control technology and is continuing efforts to develop technology for producing all of the Jesup mill's products with ECF bleaching. The mill has significantly increased its use of chlorine dioxide in bleaching over the past several years, which results in less color generation. Hydrogen peroxide reinforced extraction is also used by Rayonier to also reduce color generation. Because of the highly specialized usage of the mill's products, any changes in bleaching chemicals and technology require extensive trials with the mill's

customers and often with our customers' customers. A number of additional ECF trials are planned, with a goal of converting all of the mill's products to ECF bleaching. Ultimately, success will depend on whether our customers, and their customers, can use our ECF pulps.

External Color Reduction Technologies

In-process control of color is more efficient than treatment of it as a waste water stream. However, a number of color control technologies have been developed for treatment plant applications, and these have been evaluated by the Jesup mill.

A. CHEMICAL COAGULATION

Chemical addition to wastewater can separate color from wastewater streams. Pulp mill color consists of anionic colloids containing lignin, one of the major components in wood. These anionic colloids can be coagulated and settled by addition of cationic compounds such as alum or polymers. A significant problem is how to dispose of the chemical sludge produced by these processes. The flocculated color bodies, which are fragile, can re-disperse with changing environments, and the potential for chemical carryover and toxicity in the final effluent is also a concern with the very large quantities of coagulant that would be required to treat the entire wastewater stream.

Numerous chemical coagulation systems have been evaluated in laboratory studies as well as full scale trials. Lab and full-scale color removal trials resulting in 30 - 90% color reduction were conducted on various wastewater streams. However, if applied mill-wide this treatment would create large volumes of chemical sludge which would accumulate in the aerated stabilization basins (ASBs). This would impede the ability of the wastewater treatment system to remove other pollutants, potentially causing an unacceptable increase in the biochemical oxygen demand (BOD) concentration in the final effluent. To date, no solution to the technical problems of ultimate disposal or destruction of the chemical sludge produced by these processes has been presented, nor have the questions of re-release of color from the sludge in the ASBs and the potential for toxicity of the effluent caused by the coagulant been resolved. ***Therefore, this technology is currently not technically or operationally feasible for mill-wide application.***

However, coagulation, flocculation and settling of color is practiced on some wastewater streams at the Jesup mill when high color loadings occur. As previously described, the mill has implemented systems and procedures to minimize releases of color-containing black liquor to the sewers. Since it is not possible to avoid all discharges, though, the mill has also designed a system to segregate specific wastewater streams if their color loads are unusually high. These streams can then be treated with polymer to remove high color spikes which would otherwise adversely

impact color performance. Relatively small amounts of settled color bodies mix with other sludge in a basin area. Good spill control in the mill limits the need to run this system but it is an effective back-up control measure.

B. BIOLOGICAL COLOR REDUCTION TECHNOLOGIES

Some studies have shown that white rot fungus can degrade lignin under certain conditions. Several researchers have developed laboratory scale fungal reactors using white rot. In all cases, the fungus requires an energy source, so feeding the system with a sugar, and sometimes nitrogen and phosphorous as well, is necessary. These researchers have reported significant color removal, on the order of 70 percent, with this technology. However, a significant concern with larger scale operation would be the increased BOD loading generated by the addition of sugar for the process.

The Jesup mill conducted laboratory, pilot and full-scale trials of a biological color reduction system using white rot fungus. One vendor provided supplemental bacteria, fungi and yeast that were added to the aeration basins to enhance color removal. While small-scale results were promising, full-scale trials were not effective. There were many variables that could not be controlled that evidently affected the microbial population in the full-scale system. Other biological color reduction trials were conducted using the compost cells that are part of the wastewater treatment system. Again, promising small-scale results could not be duplicated in full-scale systems, likely due to natural variability. These biological color control methods were therefore judged to be unreliable. ***Rayonier has determined that this technology is not technically or operationally feasible for a full-scale operation.***

C. MEMBRANE FILTRATION OF EXTRACTION STAGE FILTRATE

Much of the lignin remaining in the pulp entering the bleach plant is removed in the extraction stage of bleaching. This wastewater is highly colored but cannot be recycled and burned in the chemical recovery system because it contains chlorides that would cause corrosion and plugging. Therefore extraction stage filtrates are sent to wastewater treatment and contribute to effluent color. The Jesup mill, as well as others in the industry, have conducted color reduction studies on extraction stage filtrate. One papergrade mill implemented a recycle system and a separate chloride removal system.

Recycling the extraction stage filtrate can cause a build up of impurities in the system. Due to the exacting pulp quality requirements of the Jesup mill's Cellulose Specialties products, these impurities cannot be tolerated and so recycling of this filtrate is not possible. The mill has, however, conducted significant research on treating the extraction stage filtrate before sewering, using a fiber filter, ultrafiltration membrane, and then nanofiltration membrane. The high molecular weight color bodies were retained in the ultrafiltration and nanofiltration concentrate or retentate.

Various ways to destroy or dispose of this color were evaluated in laboratory and pilot scale studies but no effective solutions were found. As noted earlier, due to the chloride content of bleach plant filtrates, burning in the recovery boiler is not an option because of corrosion and plugging risks. ***This technology is not technically or operationally feasible for the Jesup mill.***

D. NANOFILTRATION AND OZONE TREATMENT

Ozone treatment to destroy the color bodies in the extraction stage concentrate was evaluated in lab studies. Results indicated that color could be destroyed in this way. However, there remain concerns about the toxicity of this treated stream in subsequent biological treatment and in the effluent to the river. Technology risks including membrane fouling, ozone and ozone by-product aquatic toxicity were judged to be unacceptable compared to other color reduction technologies. ***Therefore this technology was judged to be both technically and operationally infeasible.***

E. NANOFILTRATION AND SOLIDS DISPOSAL

Another option was explored with the color concentrated extraction stage stream. The highly alkaline stream could be neutralized with sulfuric acid, coagulated with polymers, and filtered over drum filters using diatomaceous earth substrate. The color bodies would then be sent for disposal in a solid waste landfill. Technology risks included the potential for captured color bodies to disperse during the filtration system, transportation, and in the landfill. Environmentally, creating a solid waste disposal problem was unfavorable. ***Therefore this technology was judged to be technically and operationally infeasible.***

Conclusion

Both in-process and external color reduction technologies have been studied extensively at the Jesup mill. Except for limited applications, the external technologies present significant issues related to effectiveness and reliability, increased environmental impacts from solid waste generation, and potential effluent toxicity. Additionally, recycle technologies cannot be used due to pulp quality requirements.

Overall, in-process technologies were found to provide better control by limiting the amount of colored material introduced to the wastewater stream. Several of these technologies have already been implemented, and additional improvements are planned through 2015. The mill has also developed a proprietary new technology specific to its unique process that will be implemented in 2013.

Using these technologies, the mill has already achieved an effluent color reduction of 47 percent since 2005, and is on track to achieve a sustained color target of 250 tons/day or less by 2015.

Rayonier Performance Fibers – Jesup Mill
Wastewater Fact Sheet

General Information

- Three fiber lines (A mill, B mill & C mill)
- Producing specialty cellulose in A and B mills, and fluff pulp in C mill from wood chips
- Conversion of C mill from fluff pulp production to specialty cellulose production, the Cellulose Expansion (CSE) Project, will be completed by mid-year
- Prehydrolyzed kraft pulping process
- Products include acetate, high value ethers, high strength viscose other specialty high value dissolving pulp products.
- Permitted to produce up to 616,656 air dried metric tons per any twelve consecutive months
- Uses approximately 60 million gallons per day of ground water
- Evaporative losses reduce the volume of water entering the effluent treatment plant to approximately 52 million gallons per day

Wood Handling

- Hardwood and softwood chips delivered by trucks and rail cars
- No debarking, chipping, wet log handling, or wet log storage
- Conveyors bring the chips to the chip thickness screen room where oversized chips are refined into smaller chips
- Fines are separated and sent to be burned in the three biomass-fired power boilers
- Accept chips routed to chip bins at the three pulp mills

Digestion

rehydr = steam

- 28 batch digesters
- Pulping chemicals are mixture of sodium sulfide and sodium hydroxide
- A prehydrolysis step and extended kraft cooking results in removal of significantly more hemicellulose and lignin from the chips than traditional kraft pulping
- Resulting Kappa numbers are inherently low
- Once the cook is complete, pressurized pulp is released into blow tanks
- Steam goes from the blow tanks to the accumulators and condensers where methanol and other condensable compounds are collected
- Collected condensates are sent via a "hardpipe" to a submerged point in Aerated Stabilization Basin No. 1
- Non-condensable gases are routed to an alkaline scrubber to remove total reduced sulfur and then to an incinerator.

Knotters

- Knots are removed from the pulp by primary and secondary knotters
- Knots from A and B mills are stored until they can be fed into C mill for pulping into fluff pulp
- C mill has a knot press that squeezes black liquor out of the knots and recycles it into the liquor system
- Once C mill converts to 100% specialty cellulose in June 2013, knots from all mills will be sent to a drainage pad before being landfilled
- Liquor is collected from all knot drainage pads and recycled into the liquor system

Brownstock Washing

- Four vacuum brownstock washers in A mill
- Four vacuum brownstock washers and one wash press in B mill
- Three vacuum brownstock washers and one wash press in C mill
- Counter-current washing with hot water or evaporator condensate; also able to use cold water on C mill
- Filtrate from washers is captured and recovered in the weak black liquor system

Screening

- After leaving the last brownstock washer, the pulp is screened to remove clumps of fibers (shives), then routed to the bleach plant
- Dissolved air flotation systems are currently being installed in B mill and C mill to reduce color discharged to the sewer
- Captured color bodies and fiber will be dewatered and can be burned for energy recovery or landfilled

Bleaching

- Bleaching chemicals include chlorine dioxide and chlorine
- Filtrates from the first and second bleaching stages are sewered due to the high cellulose purity needs of our customers
- Filtrates from the remaining bleaching stages are recycled
- The mill has completed extensive product development trials with all customers for Elemental Chlorine Free (ECF) grades
- All customers have now qualified ECF pulp with one exception
  - One grade for one customer has been conditionally approved based on successful laboratory, pilot, and commercial scale trials; however, full qualification will not be certain until several months of full scale commercial operation have been completed
  - Rayonier is the sole producer of pulp for this application
  - After the completion of the CSE project in June 2013 all products manufactured at Jesup will be ECF with the possible exception of this unique grade

Pulp Machines

- Pulp is drained, dried and rolled on three pulp machines then either cut into pallets or wound into smaller rolls for shipment to customers around the world
- Pulp machine white water is recycled

Recovery Furnaces

- Two recovery furnaces, RF#5 built in 1971 and RF#6 built in 1982 reduce the spent pulping chemicals in the black liquor to smelt while burning the lignin to produce steam and electricity for the mill
- The mill is permitted to burn a total of 8.49 million pounds of black liquor solids per day (rolling annual average)
- The mill is capable of receiving black liquor from off-site but has not done so since 2010
- Each recovery furnace has an electrostatic precipitator which captures and routes saltcake fly ash (sodium sulfate) into the heavy liquor system
- Chemical make-up is received in the form of purchased sulfuric acid and a saltcake slurry received from the mill's chlorine dioxide plant.

Evaporators

- Two sets of six long tube vertical evaporators boil-off water from the weak black liquor
- two sets of two concentrators and two finishers bring the liquor to a concentration of 65% solids, which is the target firing concentration
- A new set of evaporators is currently being installed to handle the increased load associated with new spill collection systems as well as the volume of black liquor that will be generated when producing dissolving pulp on C mill

Residuals / Recycle of By-products

- Grits and dregs are sent to a staging area on the mill site where they are mixed with rocks, dirt and sand to create road-building material; none goes to landfill
- Lime mud slurries are occasionally sewered during upsets; solids settle out of the effluent in the bar screen pit and in the weak clarifier then routed to the compost cells
- Excess green liquor is stored and eventually processed at the causticizing plant; none of it is intentionally sewered or sold off-site

Wastewater Treatment

- Strong sewer
  - Pulping, washing, liquor storage and handling, evaporators, and recovery
  - When the conductivity/color is low, the strong sewer is routed to the bar screen where it blends with the weak sewer flow

  - If the conductivity/color is high, then the flow is diverted to the strong lagoon, where it is treated with polymer and coagulant before being routed to the No. 2 aerated stabilization basin

- Weak sewer
  - Pulp machines, causticizing area, yard storm water run-off collection sewers
  - Flow passes across a bar screen where large solids are settled and screened before entering the weak clarifier that removes settleable solids, then enters the mixing station/lift station

- Filtrate sewer
  - Bleach plants
  - This flow enters the mixing station/lift station where it is blended with the flow from the weak clarifier

- Foul condensate pipe
  - Condensates produced during the pulping process
  - This flow is added to the No. 1 aerated stabilization basin via a submerged "hard pipe"
  - Average flow rate 1800 gals/minute at a concentration of typically 1200 mg/L (methanol)

- Utilities
  - Boiler wet air pollution control equipment and bottom ash sluiced to treatment system
  - Ash settles in bar screen and in the weak clarifier

- Storm water
  - Storm water from all process areas enters weak sewers and is routed to the treatment system
  - Non-process area storm water collects in three holding ponds where it evaporates or is absorbed into the ground

- Chemical addition:
  - Sulfuric acid used to neutralize the blended influents
  - Phosphoric acid (40%) is added to ASB No. 1 at a rate of approximately 300 ml per minute
  - Nitrogen is added on an as-needed basis in the form of bags of urea.

- Primary clarifier
  - Primary clarifier underflow is pumped to a compost cell for dewatering
  - Supernatant overflows to ASB No. 2 for treatment

- ASB No. 1 - treats foul 35,75-HP aer
  - Influent BOD approximately 31,000 lbs/day (2012 average)
  - BOD loading in 2012 was 812 lb/acre/day
  - BOD removal rate approximately 96% (2012 average)
  - Discharge of 2,200 lbs/day (2012 average)
  - Retention time is 7-10 days
  - Effluent from the No. 1 ASB discharges to the Altamaha River through permitted outfall 001
    - has curtain/baffles to prevent short circuit
- ASB No. 2 - most mill WW
  - Influent BOD approximately 97,600 lbs/day (2012 average)
  - BOD loading in 2012 was 525 lb/acre/day
  - BOD removal rate approximately 92%
  - Discharge of 9,600 lbs/day (2012 average)
  - Retention time is 10-14 days
  - Effluent from the No. 2 ASB discharges through a multi-port diffuser to the Altamaha River through permitted outfall 002
    - has dike to prevent short circuiting

    - 43,75-HP aerators
    - diffuser
- Daily color measurement:
  - Influent Composite
  - ASB No. 1 Outfall Composite
  - ASB No. 1 Midpoint Grab
  - ASB No. 2 Outfall Composite
  - ASB No. 2 Midpoint Grab
  - Strong Sewer Influent Composite
  - Strong Lagoon Out Composite
  - Compost Cell Composite
  - Weak Clarifier Composite
  - Filtrate Sewer Composite

Spill Control

- Capture as much color-containing flow as possible using the sumps and brownstock washer spill collection systems and by optimizing brownstock washer performance
- Conductivity meters detect elevated color in strategic sewer locations and automatically trigger diversion from the sumps that do not continually pump streams to the black liquor system
- Mill personnel review color losses on a daily basis, while trained operators react in real-time to spills and conductivity alarms

Sanitary Wastewater

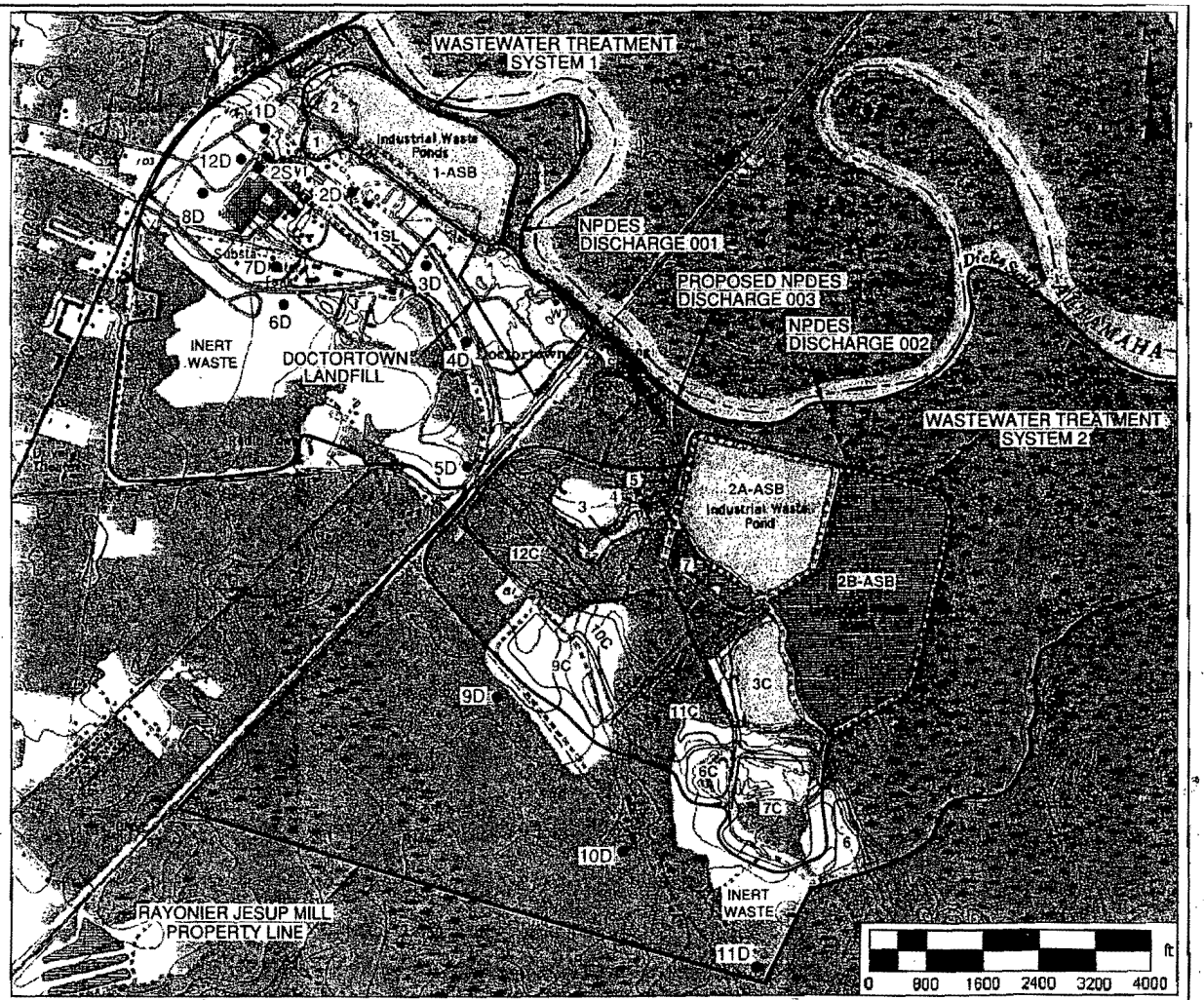
- Sanitary wastewater from sites across the mill flows directly into the process sewer where it is routed to the effluent treatment system
- Approximately 150,000 gallons per day sanitary wastewater; less than 0.5 % of total effluent flow

IMPOUNDMENT NUMBER	IMPOUNDMENT NAME	IMPOUNDMENT USE
1	Weak clarifier	Primary solids removal
2	Sludge lagoon	Storage for weak clarifier solids
3	No. 1 Rayonier Lake	Storm water rentention
4	No. 2 Rayonier Lake	Storm water rentention
5	No. 3 Rayonier Lake	Storm water rentention
6	Fish Pond	Storm water rentention
1-ASB	No. 1 ASB	Aeration basin
2A-ASB	No. 2A ASB	Aeration basin
2B-ASB	No. 2B ASB	Aeration basin
1SL	No. 1 SL	Strong waste
7	No. 7 ESB	Emergency settling basin
3C	No. 3 Compost	Clarifier/Dredging solids composting
6C	No. 6 Compost	Clarifier/Dredging solids composting
7C	No. 7 Compost	Clarifier/Dredging solids composting
9C	No. 9 Compost	Clarifier/Dredging solids composting
10C	No. 10 Compost	Clarifier/Dredging solids composting
11C	No. 11 Compost	Clarifier/Dredging solids composting
12C	No. 12 Compost	Proposed Clarifier/Dredging solids composting

ASB = Aeration Stabilization Basin
ESB = Emergency Settling Basin
SL = Strong Lagoon
C = Compost

LEGEND

- DEEP GROUNDWATER WELLS (11)
- DRINKING WATER WELL (2)



Source for Base Map: USGS 7.5 Minute Quad, Doctortown, GA, 1988

Schnabel ENGINEERING

RAYONIER
PERFORMANCE FIBERS
JESUP,
WAYNE COUNTY, GEORGIA

WASTEWATER TREATMENT SYSTEM COMPONENTS

PROJECT NO. 999079.00

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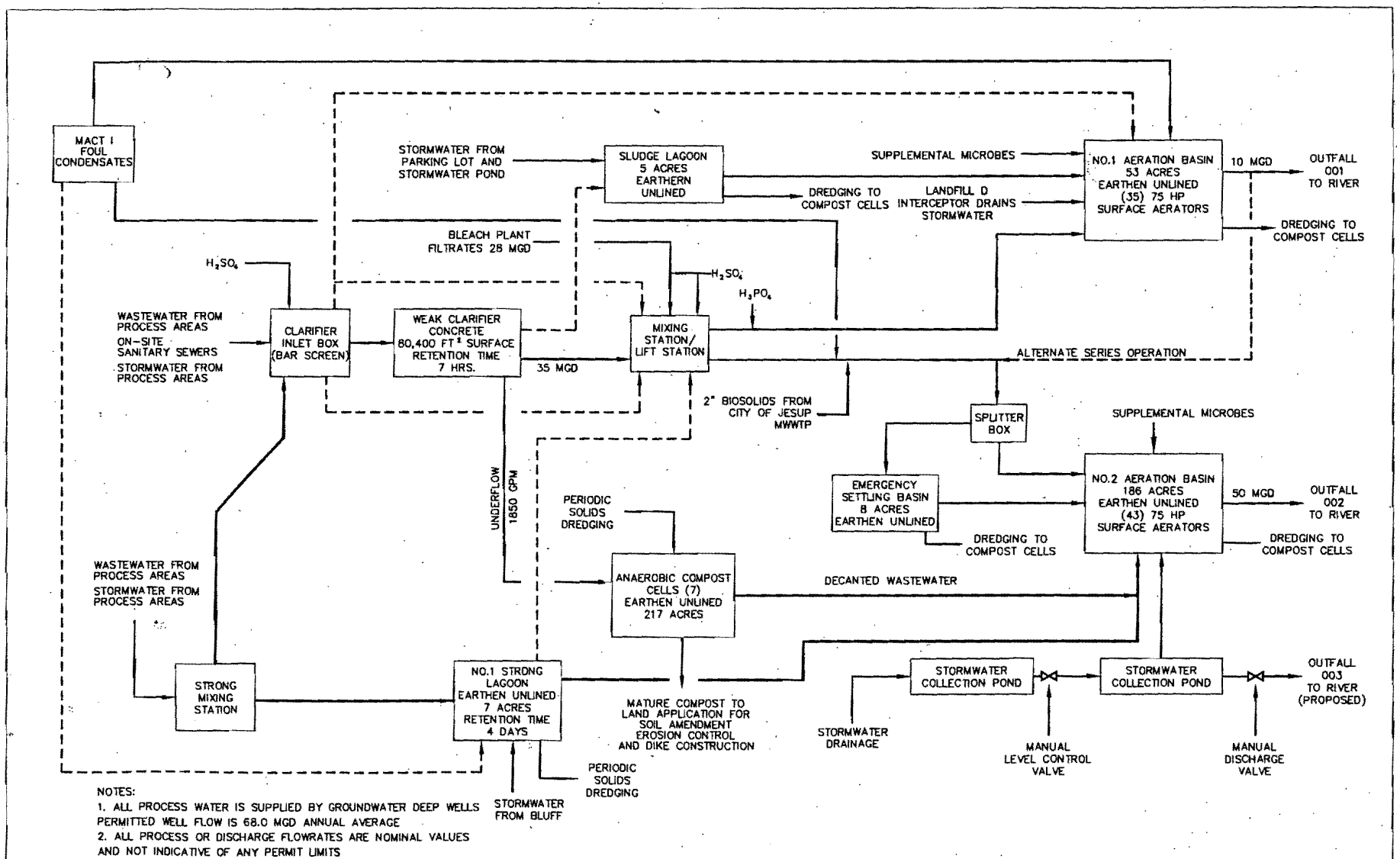
MACT I FOUL CONDENSATES
STORMWATER FROM PARKING LOT AND STORMWATER POND
SLUDGE LAGOON 5 ACRES EARTHERN UNLINED
SUPPLEMENTAL MICROBES
DREDGING TO COMPOST CELLS
LANDFILL D INTERCEPTOR DRAINS STORMWATER
NO.1 AERATION BASIN 53 ACRES EARTHEN UNLINED (35) 75 HP SURFACE AERATORS
10 MGD
OUTFALL 001 TO RIVER
DREDGING TO COMPOST CELLS
BLEACH PLANT FILTRATES 28 MGD
H_2SO_4
H_2SO_4
H_3PO_4
WASTEWATER FROM PROCESS AREAS
ON-SITE SANITARY SEWERS
STORMWATER FROM PROCESS AREAS
CLARIFIER INLET BOX (BAR SCREEN)
WEAK CLARIFIER CONCRETE 80,400 FT² SURFACE RETENTION TIME 7 HRS.
MIXING STATION/ LIFT STATION
ALTERNATE SERIES OPERATION
35 MGD
2" BIOSOLIDS FROM CITY OF JESUP MWWTP
SPLITTER BOX
SUPPLEMENTAL MICROBES
UNDERFLOW 1850 GPM
PERIODIC SOLIDS DREDGING
EMERGENCY SETTLING BASIN 8 ACRES EARTHEN UNLINED
DREDGING TO COMPOST CELLS
NO.2 AERATION BASIN 186 ACRES EARTHEN UNLINED (43) 75 HP SURFACE AERATORS
50 MGD
OUTFALL 002 TO RIVER
DREDGING TO COMPOST CELLS
WASTEWATER FROM PROCESS AREAS
STORMWATER FROM PROCESS AREAS
ANAEROBIC COMPOST CELLS (7) EARTHEN UNLINED 217 ACRES
DECANTED WASTEWATER
STRONG MIXING STATION
NO.1 STRONG LAGOON EARTHEN UNLINED 7 ACRES RETENTION TIME 4 DAYS
MATURE COMPOST TO LAND APPLICATION FOR SOIL AMENDMENT EROSION CONTROL AND DIKE CONSTRUCTION
STORMWATER COLLECTION POND
STORMWATER COLLECTION POND
OUTFALL 003 TO RIVER (PROPOSED)
STORMWATER DRAINAGE
MANUAL LEVEL CONTROL VALVE
MANUAL DISCHARGE VALVE
PERIODIC SOLIDS DREDGING
STORMWATER FROM BLUFF
NOTES:
1. ALL PROCESS WATER IS SUPPLIED BY GROUNDWATER DEEP WELLS PERMITTED WELL FLOW IS 68.0 MGD ANNUAL AVERAGE
2. ALL PROCESS OR DISCHARGE FLOWRATES ARE NOMINAL VALUES AND NOT INDICATIVE OF ANY PERMIT LIMITS
Rayonier
WASTEWATER TREATMENT SYSTEM FLOW DIAGRAM
J13P35