

Bioassays of

Piney Point Phosphates, Inc.

Manatee County

NPDES #FL0000124

Sampled February 16, 2004

September 2004

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES #FL0000124. Effluent samples for this facility were collected on February 16, 2004.

Introduction

Piney Point Phosphates previously operated a phosphate fertilizer manufacturing complex in Manatee County Florida. After Piney Point Phosphates declared bankruptcy, a Receiver was appointed to maintain the phosphogypsum stack system to prevent a release of untreated wastewater. In an effort to close the stack system, the FDEP has authorized discharge of wastewater after RO treatment. In order to expedite the closing of the stack system, alternative treatments of wastewater for discharge to surface waters are being explored at the site. These toxicity tests were used to determine whether effluent treated with a two-stage liming process, followed by break-point chlorination, then dechlorination would be adequate for discharge. Wastewater treated in this manner is not currently being discharged pending the results of further testing (facility information provided by Jacquelyn Champion, FDEP, Phosphate Management, Tampa).

Methods

Samples were collected from the NPDES sampling point by Jacquelyn Champion (FDEP Phosphate Management, Tampa) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOP's are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

The toxicity tests discussed in this report were performed following internal DEP SOP's TA07_01, TA07_02, TA07_03, TA07_04, and TA08_01 through TA08_06. EPA Method 2021 was used for the *Daphnia magna* toxicity test. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The salinity of the 100% bioassay sample was adjusted from the apparent initial salinity of 6.2 ppth (parts per thousand) to 7.2 ppth for the *M. beryllina* test and to 12.2 ppth for the *A. bahia* test using 40-Fathoms® artificial sea salts. The sample salinity was adjusted to ensure that the minimum required salinity (based on seawater ions) necessary for each test species was met. Salt controls were prepared from aliquots of artificial sea water (ASW) that were diluted with well water to a salinity of 6.2 ppth then salinity adjusted with 40-Fathoms® artificial sea salts to 7.2 ppth for the *M. beryllina* test and to 12.2 ppth for the *A. bahia* test. The salt controls were utilized to ensure that any noted toxicity was not the result of the sea salt addition. There was 5% mortality in the *A. bahia* salt controls at 96 hours. There was no mortality in the *M. beryllina* salt controls.

The *Daphnia magna* test was performed for informational purposes only.

Toxicity Test Results

Tests were performed February 17 – 21, 2004.

Americamysis bahia 96-hr acute definitive bioassay – LC_{50}=21.0%, 100% mortality in 100% sample at 48 hrs

Menidia beryllina 96-hr acute definitive bioassay – LC_{50}=33.5%, 70% mortality in 100% sample at 96 hrs

Ceriodaphnia dubia 96-hr acute definitive bioassay – LC_{50}=55.5%, 100% mortality in 100% sample at 48 hrs

Cyprinella leedsi 96-hr acute definitive bioassay – LC_{50}=28.5%, 100% mortality in 100% sample at 96 hrs

Daphnia magna 96-hr acute screening bioassay – LC_{50}<100%, 100% mortality in 100% sample at 96 hrs

The four 96-hour acute definitive bioassays indicated acute toxicity with LC_{50} results ranging from 21.0-55% effluent. The 96-hour acute screening bioassay also indicated acute toxicity with a LC_{50} result of <100% effluent.

Due to a drop in the dissolved oxygen in the 25%, 50% and 100% concentrations in the *C. leedsi* test at 48 hours, all replicate test chambers were aerated for the remainder of the test. Similarly, due to a drop in the dissolved oxygen in the 6.25%, 12.5%, 25%, 50% and 100% concentrations in the *M. beryllina* test at 72 hours, all replicate test chambers were aerated for the remainder of the test.

See Table 1 for bioassay bench sheets.

Algal Growth Potential

Algal growth potential samples were not collected.

Chemistry Results

Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected in the bioassay sample at a concentration of 0.172 mg/L. Samples were not collected for chemistry analysis.

Conclusion

The effluent samples collected for this facility on February 16, 2004, showed unacceptable acute toxicity to all five test species during the 96-hour bioassay tests. Previous tests for this facility suggest that ion-imbalance may have attributed to the observed toxicity. The seawater ion-imbalance toxicity testing protocol would need to be performed to confirm ion-imbalance as the sole cause of the toxicity. Samples for chemical analyses were not collected in conjunction with the bioassay samples; therefore, unidentified constituents in the sample cannot be ruled out as contributing to the observed mortality.

Table 1. Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1440	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_03		**Page 1 of 9**	**Reviewer:**	David Whiting

Organism: ***Americamysis bahia*** Life stage: 5 days [A]Feeding: *Artemia*
(0-48 hr) Chamber size: 1000 ml Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected mmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/500	5	5	5	8.3	-	-	24.7	-	-	6.3	-	-	18.9	-
Control B	0/500	5	5	5	-	8.3	-	-	25.6	-	-	6.3	-	-	-
Control C	0/500	5	5	5	-	-	8.1	-	-	24.4	-	-	6.4	-	19.5
Control D	0/500	5	5	5	-	-	-	-	-	-	-	-	-	-	-
Salt Cntl A	0/500	5	5	5	8.4	-	-	24.0	-	-	7.1	-	-	19.2	-
Salt Cntl B	0/500	5	5	5	-	8.4	-	-	24.4	-	-	6.2	-	-	-
Salt Cntl C	0/500	5	5	5	-	-	8.1	-	-	25.0	-	-	5.9	-	20.7
Salt Cntl D	0/500	5	5	5	-	-	-	-	-	-	-	-	-	-	-
6.25% A	31.25/468.75	5	5	5	8.3	-	-	25.5	-	-	6.6	-	-	19.4	-
6.25% B	31.25/468.75	5	5	5	-	8.3	-	-	24.5	-	-	6.3	-	-	-
6.25% C	31.25/468.75	5	5	5	-	-	8.0	-	-	24.2	-	-	6.3	-	21.1
6.25% D	31.25/468.75	5	5	5	-	-	-	-	-	-	-	-	-	-	-
12.5% A	62.5/437.5	5	5	5	8.3	-	-	25.5	-	-	6.8	-	-	19.5	-
12.5% B	62.5/437.5	5	5	5	-	8.3	-	-	24.0	-	-	6.5	-	-	-
12.5% C	62.5/437.5	5	5	5	-	-	8.0	-	-	24.4	-	-	6.1	-	21.3
12.5%D	62.5/437.5	5	5	5	-	-	-	-	-	-	-	-	-	-	-
25% A	125/375	5	5	5	8.4	-	-	25.6	-	-	6.9	-	-	19.4	-
25% B	125/375	5	5	5	-	8.3	-	-	24.6	-	-	6.3	-	-	-
25% C	125/375	5	5	4	-	-	8.0	-	-	24.1	-	-	6.0	-	21.5
25% D	125/375	5	4	4	-	-	-	-	-	-	-	-	-	-	-
50% A	250/250	5	2	0	8.4	-	-	26.0	-	-	7.0	-	-	19.5	-
50% B	250/250	5	4	0	-	8.3	-	-	24.6	-	-	6.2	-	-	-
50% C	250/250	5	0	-	-	-	-	-	-	-	-	-	-	-	-
50% D	250/250	5	5	2	-	-	8.0	-	-	24.1	-	-	6.0	-	20.3
100% A	500/0	5	3	0	8.4	8.4	-	26.0	24.0	-	7.0	6.1	-	19.4	-
100% B	500/0	5	0	-	-	-	-	-	-	-	-	-	-	-	-
100% C	500/0	5	0	-	-	-	-	-	-	-	-	-	-	-	-
100% D	500/0	5	2	0	-	-	-	-	-	-	-	-	-	-	-

[A] Organisms fed prior to test, prior to renewal and daily.
[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 3/09/04
by: Cathy Oaks/James Daniels

Total Residual CL2	**mg/L**	**Method**
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	**Total (mg/L)**
Control water:	<0.034
100% Sample:	0.172

Alk & Hardness	**Alkalinity (mg/L)**	**Hardness (mg/L)**
Control water:	254	-
100% Sample:	248	1427

Salinity[D]	**ppt**
[E]Control water:	~ 12.2
100% sample:	~ 6.2

[D] Salinity based on conductivity and temperature.
[E] Salt control (ASW) was diluted using well water to apparent sample salinity (~ 6.2ppt) then salted to ~ 12.2 ppt with 40 fathoms artificial sea salts.
Sample salinity adjusted to 12.2 ppt with 40 fathoms artificial sea salts per request of District Personnel
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

Table 1. continued Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1440	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_03		**Page 2 of 9**	**Reviewer:**	David Whiting

Organism: ***Americamysis bahia*** Life stage: 5 days [A]Feeding: *Artemia*
(48-96 hr) Chamber size: 1000 ml Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected mmhos/cm	
Concentrations	Volume(mL)	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	96 hr
Control A	0/500	5	5	5	-	-	8.3	-	-	25.2	-	-	7.7	-	21.3
Control B	0/500	5	5	5	-	-	8.3	-	-	25.7	-	-	7.6	-	21.5
Control C	0/500	5	5	5	8.2	-	8.3	25.1	-	25.7	7.0	-	7.6	18.1	21.9
Control D	0/500	5	5	5	-	8.3	8.4	-	25.5	25.6	-	6.4	7.6	-	21.5
Salt Cntl A	0/500	5	5	5	-	-	8.4	-	-	25.0	-	-	7.8	-	21.1
Salt Cntl B	0/500	5	5	4	-	-	8.4	-	-	25.4	-	-	7.8	-	22.2
Salt Cntl C	0/500	5	5	5	8.2	-	8.5	24.3	-	25.3	7.0	-	7.8	19.8	21.7
Salt Cntl D	0/500	5	5	5	-	8.3	8.4	-	24.9	25.3	-	5.6	7.8	-	21.5
6.25% A	31.25/468.75	5	5	5	-	-	8.4	-	-	25.3	-	-	7.6	-	22.2
6.25% B	31.25/468.75	5	5	5	-	-	8.2	-	-	25.5	-	-	7.6	-	21.7
6.25% C	31.25/468.75	5	5	5	8.2	-	8.4	25.1	-	25.4	7.0	-	7.6	19.8	21.6
6.25% D	31.25/468.75	5	5	5	-	8.2	8.3	-	25.0	25.6	-	6.5	7.6	-	21.4
12.5% A	62.5/437.5	5	5	5	-	-	8.4	-	-	25.4	-	-	7.6	-	22.1
12.5% B	62.5/437.5	5	5	5	-	-	8.4	-	-	25.4	-	-	7.6	-	22.0
12.5% C	62.5/437.5	5	5	5	8.2	-	8.3	25.3	-	25.4	7.0	-	7.6	20.2	21.5
12.5%D	62.5/437.5	5	5	5	-	8.1	8.3	-	26.0	25.0	-	6.0	7.6	-	21.4
25% A	125/375	5	5	5	-	-	8.2	-	-	25.0	-	-	7.6	-	21.2
25% B	125/375	5	1	0	-	-	8.2	-	-	25.3	-	-	7.6	-	21.1
25% C	125/375	4	0	-	8.2	-	-	25.4	-	-	7.0	-	-	19.9	-
25% D	125/375	4	0	-	-	7.8	-	-	25.2	-	-	4.0	-	-	-
50% A	250/250	0	-	-	-	-	-	-	-	-	-	-	-	-	-
50% B	250/250	0	-	-	-	-	-	-	-	-	-	-	-	-	-
50% C	250/250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50% D	250/250	2	0	-	8.2	7.8	-	25.0	24.9	-	7.0	4.0	-	19.7	-
100% A	500/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% B	500/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% C	500/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% D	500/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[A] Organisms fed daily.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 3/09/04
by: Cathy Oaks/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	**Total (mg/L)**
Control water:	<0.034
100% Sample:	0.172

Alk & Hardness	**Alkalinity (mg/L)**	**Hardness (mg/L)**
Control water:	254	-
100% Sample:	248	1427

Salinity[D]	ppt
[E]Control water:	~ 12.2
100% sample:	~ 6.2

[D] Salinity based on conductivity and temperature.

[E] Salt control (ASW) was diluted using well water to apparent sample salinity (~ 6.2ppt) then salted to ~ 12.2 ppt with 40 fathoms artificial sea salts.

Sample salinity adjusted to 12.2 ppt with 40 fathoms artificial sea salts per request of District Personnel

Light Intensity during the test was 50-100 foot candles.

Photoperiod during the test was 16 hours of light : 8 hours of dark.

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County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1420	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_04		**Page 3 of 9**	**Reviewer:**	David Whiting

Organism: ***Menidia beryllina*** (0-48 hr) Life stage: 11 days Chamber size: 1000 ml [A]Feeding: *Artemia* Food Batch #: 0194025G

																Conductivity Uncorrected
	Sample/Diluent	**SURVIVAL # Alive**			pH			Temperature[B]			Dissolved Oxygen					mmhos/cm
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour			0 hour	48 hour
Control A	0/500	10	10	10	8.3	-	7.9	24.0	-	24.7	7.3	-	6.6			10.0	10.9
Control B	0/500	10	10	10	-	8.2	-	-	24.0	-	-	6.5	-			-	-
Salt Cntl A	0/500	10	10	10	8.3	-	8.1	24.0	-	24.2	7.5	-	6.0			12.1	13.5
Salt Cntl B	0/500	10	10	10	-	8.2	-	-	24.0	-	-	6.8	-			-	-
6.25% A	31.25/468.75	10	10	10	8.2	-	7.8	24.1	-	25.2	7.3	-	6.5			10.3	11.1
6.25% B	31.25/468.75	10	10	10	-	8.1	-	-	24.0	-	-	6.3	-			-	-
12.5% A	62.5/437.5	10	10	10	8.3	-	7.8	24.0	-	24.8	7.3	-	6.4			10.5	11.4
12.5% B	62.5/437.5	10	10	10	-	8.1	-	-	24.0	-	-	5.9	-			-	-
25% A	125/375	10	10	10	8.3	-	7.8	24.0	-	24.1	7.4	-	6.3			10.9	11.6
25% B	125/375	10	10	10	-	8.2	-	-	24.0	-	-	5.9	-			-	-
50% A	250/250	10	10	10	8.4	-	7.9	24.1	-	25.0	7.4	-	6.1			11.2	12.4
50% B	250/250	10	10	10	-	8.3	-	-	24.0	-	-	5.9	-			-	-
100% A	500/0	10	10	10	8.5	-	8.1	24.0	-	24.6	7.4	-	6.0			12.2	12.9
100% B	500/0	10	10	10	-	8.3	-	-	24.0	-	-	5.8	-			-	-

[A] Organisms fed prior to testing and 2 hours before and after renewal.
[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.
[D] Salinity based on conductivity and temperature.
[E] Salt control (ASW) was diluted using well water to apparent sample salinity (~ 6.2ppt) then salted to ~ 7.2 ppt with 40 fathoms artificial sea salts.
Sample salinity adjusted to 7.2 ppt with 40 fathoms artificial sea salts per request District Personnel.
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LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 4/9/04
by: Cathy Oaks/James Daniels

Total Residual CL2	**mg/L**	**Method**
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	**Total (mg/L)**
Control water:	<0.034
100% Sample:	0.172

Alk & Hardness	**Alkalinity (mg/L)**	**Hardness (mg/L)**
Control water:	254	-
100% Sample:	248	1427

Salinity[D]	**ppt**
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100% sample:	~ 6.2

Table 1. continued

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Test Beginning Date:	2/17/2004 Time: 1440	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004 Time: 0900	FDEP SOP#:	TA07_04		**Page 4 of 9**	**Reviewer:**	David Whiting

Sample replicates put in water bath at 72 hours in order to aerate due to drop in Dissolved Oxygen.

Organism: ***Menidia beryllina*** (48-96 hr) Life stage: 11 days Chamber size: 1000 ml [A]Feeding: *Artemia* Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected mmhos/cm	
Concentrations	Volume(mL)	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	96 hr
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Control B	0/500	10	10	10	-	8.1	8.4	-	24.8	24.9	-	7.3	8.1	-	11.3
Salt Cntl A	0/500	10	10	10	8.2	-	8.5	24.3	-	24.8	7.3	-	8.0	12.5	13.2
Salt Cntl B	0/500	10	10	10	-	8.1	8.5	-	24.0	24.9	-	6.1	8.1	-	13.3
6.25% A	31.25/468.75	10	10	10	8.1	-	8.4	25.1	-	24.9	7.5	-	8.1	10.6	11.5
6.25% B	31.25/468.75	10	10	10	-	7.5	8.3	-	24.8	25.0	-	5.4	8.1	-	11.5
12.5% A	62.5/437.5	10	10	10	8.1	-	7.7	25.1	-	24.8	7.4	-	8.1	10.9	11.5
12.5% B	62.5/437.5	10	10	10	-	7.5	7.7	-	24.2	24.7	-	5.1	8.0	-	11.6
25% A	125/375	10	2	2	8.1	-	7.5	24.9	-	24.7	7.3	-	8.0	11.2	11.8
25% B	125/375	10	7	7	-	6.9	7.5	-	24.6	24.7	-	4.9	8.0	-	11.9
50% A	250/250	10	5	5	8.2	-	4.8	24.7	-	24.6	7.3	-	8.1	11.5	12.5
50% B	250/250	10	5	4	-	6.9	4.8	-	24.5	24.8	-	4.0	8.1	-	12.3
100% A	500/0	10	3	0	8.3	-	6.8	24.2	-	24.8	7.3	-	8.1	12.2	13.3
100% B	500/0	10	8	6	-	7.1	6.8	-	24.4	24.8	-	4.0	8.1	-	13.1

[A] Organisms fed prior to testing and 2 hours before and after renewal.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.
Water bath Temperature range for the test period was 24.0 - 26.0°C.

[D] Salinity based on conductivity and temperature.

[E] Salt control (ASW) was diluted using well water to apparent sample salinity (~ 6.2ppt) then salted to ~ 7.2 ppt with 40 fathoms artificial sea salts.
Sample salinity adjusted to 7.2 ppt with 40 fathoms artificial sea salts per request District Personnel.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 4/9/04
by: Cathy Oaks/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)
Control water:	<0.034
100% Sample:	0.172

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	254	-
100% Sample:	248	1427

Salinity[D]	ppt
[E]Control water:	~ 6.2
100% sample:	~ 6.2

Table 1. continued

Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1400	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_01		**Page 5 of 9**	**Reviewer:**	David Whiting

Organism: ***Ceriodaphnia dubia*** (0-48 hr) Life stage: <24 hours Chamber size: 30 ml [A]Feeding: YCT/Algae Food Batch #: #4/#23

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	pH 24 hour	pH 48 hour	Temperature[B] 0 hour	Temperature[B] 24 hour	Temperature[B] 48 hour	Dissolved Oxygen 0 hour	Dissolved Oxygen 24 hour	Dissolved Oxygen 48 hour	Conductivity Uncorrected µmhos/cm 0 hour	Conductivity Uncorrected µmhos/cm 48 hour
Control A	0/20	5	5	5	8.4	-	7.7	24.0	-	24.1	7.8	-	7.0	0.241	0.247
Control B	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
Control C	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
Control D	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
6.25% A	1.25/18.75	5	5	5	8.3	-	7.7	24.1	-	24.1	7.8	-	7.3	0.901	1.14
6.25% B	1.25/18.75	5	5	5	-	-	-	-	-	-	-	-	-	-	-
6.25% C	1.25/18.75	5	5	5	-	-	-	-	-	-	-	-	-	-	-
6.25% D	1.25/18.75	5	5	5	-	-	-	-	-	-	-	-	-	-	-
12.5% A	2.5/17.5	5	5	5	8.3	-	7.9	24.0	-	24.1	7.8	-	7.3	1.47	2.04
12.5% B	2.5/17.5	5	5	5	-	-	-	-	-	-	-	-	-	-	-
12.5% C	2.5/17.5	5	5	5	-	-	-	-	-	-	-	-	-	-	-
12.5%D	2.5/17.5	5	5	5	-	-	-	-	-	-	-	-	-	-	-
25% A	5/15	5	5	5	8.6	-	7.9	24.0	-	24.0	7.7	-	7.3	2.80	3.50
25% B	5/15	5	5	4	-	-	-	-	-	-	-	-	-	-	-
25% C	5/15	5	5	5	-	-	-	-	-	-	-	-	-	-	-
25% D	5/15	5	5	5	-	-	-	-	-	-	-	-	-	-	-
50% A	10/10	5	5	5	8.6	-	7.9	24.0	-	24.0	7.6	-	7.5	5.47	6.52
50% B	10/10	5	5	4	-	-	-	-	-	-	-	-	-	-	-
50% C	10/10	5	5	4	-	-	-	-	-	-	-	-	-	-	-
50% D	10/10	5	5	3	-	-	-	-	-	-	-	-	-	-	-
100% A	20/0	5	0	-	8.6	8.5	-	24.2	24.0	-	7.5	8.0	-	10.2	-
100% B	20/0	5	0	-	-	8.5	-	-	24.0	-	-	7.9	-	-	-
100% C	20/0	5	0	-	-	8.5	-	-	24.0	-	-	7.8	-	-	-
100% D	20/0	5	0	-	-	8.6	-	-	24.0	-	-	7.8	-	-	-

[A] Organisms prior to testing and 2 hours before and after renewal.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 3/09/04
by: Josh Ayres/James Daniels

Total Residual CL2	**mg/L**	**Method**
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	**Total (mg/L)**
Control water:	<0.017
100% Sample:	0.172

Alk & Hardness	**Alkalinity (mg/L)**	**Hardness (mg/L)**
Control water:	86	77
100% Sample:	248	1427

Salinity[D]	**ppt**
Control water:	<1
100% sample:	~ 6.2

[D] Salinity based on conductivity and temperature.

Light Intensity during the test was 50-100 foot candles.

Photoperiod during the test was 16 hours of light : 8 hours of dark.

Table 1. continued

Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1400	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_01		**Page 6 of 9**	**Reviewer:**	David Whiting

Organism: ***Ceriodaphnia dubia*** Life stage: <24 hours [A]Feeding: YCT/Algae

(48-96 hr) Chamber size: 30 ml Food Batch #: #4/#23

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	96 hr
Control A	0/20	5	5	5	8.2	-	8.2	24.4	-	25.4	7.2	-	7.8	0.175	0.195
Control B	0/20	5	5	5	-	-	8.2	-	-	25.1	-	-	7.8	-	0.210
Control C	0/20	5	5	5	-	-	8.2	-	-	25.0	-	-	7.8	-	0.205
Control D	0/20	5	5	5	-	-	8.2	-	-	25.1	-	-	7.6	-	0.195
6.25% A	1.25/18.75	5	5	5	8.1	-	8.1	24.3	-	25.3	7.4	-	7.8	1.15	1.20
6.25% B	1.25/18.75	5	5	5	-	-	8.0	-	-	25.2	-	-	7.7	-	1.40
6.25% C	1.25/18.75	5	5	5	-	-	8.0	-	-	25.1	-	-	7.8	-	1.32
6.25% D	1.25/18.75	5	5	5	-	-	8.0	-	-	25.1	-	-	7.8	-	1.22
12.5% A	2.5/17.5	5	5	5	8.1	-	7.8	24.4	-	25.3	7.6	-	7.8	1.91	2.04
12.5% B	2.5/17.5	5	5	5	-	-	7.8	-	-	25.3	-	-	7.8	-	2.00
12.5% C	2.5/17.5	5	5	5	-	-	7.8	-	-	25.2	-	-	7.9	-	1.75
12.5%D	2.5/17.5	5	5	5	-	-	7.8	-	-	25.2	-	-	7.9	-	1.54
25% A	5/15	5	5	5	8.2	-	6.6	24.4	-	25.5	7.5	-	7.8	3.60	3.69
25% B	5/15	4	4	4	-	-	6.6	-	-	25.4	-	-	7.8	-	3.36
25% C	5/15	5	5	5	-	-	6.6	-	-	25.3	-	-	7.8	-	2.95
25% D	5/15	5	5	5	-	-	6.6	-	-	25.5	-	-	7.8	-	2.58
50% A	10/10	5	5	5	8.2	-	6.0	24.1	-	25.8	7.8	-	7.8	4.43	4.96
50% B	10/10	4	4	4	-	-	6.0	-	-	25.8	-	-	7.7	-	6.85
50% C	10/10	4	4	4	-	-	5.9	-	-	25.7	-	-	7.7	-	7.88
50% D	10/10	3	0	-	-	-	-	-	-	-	-	-	-	-	-
100% A	20/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% B	20/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% C	20/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% D	20/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[A] Organisms prior to testing and 2 hours before and after renewal.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 3/09/04
by: Josh Ayres/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)
Control water:	<0.017
100% Sample:	0.172

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	86	77
100% Sample:	248	1427

Salinity[D]	ppt
Control water:	<1
100% sample:	~ 6.2

[D] Salinity based on conductivity and temperature.

Light Intensity during the test was 50-100 foot candles.

Photoperiod during the test was 16 hours of light : 8 hours of dark.

Table 1. continued

Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1430	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_02		**Page 7 of 9**	**Reviewer:**	David Whiting

Sample replicates were placed in water bath at 48 hours for remainder of test in order to aerate due to drop in Dissolved Oxygen.

Organism: ***Cyprinella leedsi*** (0-48 hr) Life stage: 13 days Chamber size: 1000 ml [A]Feeding: *Artemia* Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/500	10	10	10	8.0	-	8.0	25.0	-	24.9	7.8	-	7.2	0.302	0.287
Control B	0/500	10	10	10	-	8.1	-	-	24.7	-	-	7.9	-	-	-
6.25% A	31.25/468.75	10	9	9	8.0	-	8.0	25.1	-	24.7	7.8	-	7.3	1.11	1.11
6.25% B	31.25/468.75	10	9	9	-	8.1	-	-	24.8	-	-	7.6	-	-	-
12.5% A	62.5/437.5	10	10	10	8.1	-	8.0	25.1	-	24.8	7.8	-	7.3	1.80	1.86
12.5% B	62.5/437.5	10	9	9	-	8.2	-	-	24.2	-	-	7.7	-	-	-
25% A	125/375	10	10	10	8.3	-	8.0	25.0	-	25.5	7.7	-	4.6	3.30	3.37
25% B	125/375	10	10	10	-	8.2	-	-	24.2	-	-	7.7	-	-	-
50% A	250/250	10	10	0	8.5	-	7.7	25.0	-	25.4	7.7	-	2.1	5.80	5.92
50% B	250/250	10	10	3	-	8.3	-	-	24.9	-	-	7.6	-	-	-
100% A	500/0	10	10	1	8.6	-	7.5	24.9	-	24.7	7.7	-	2.0	10.3	10.1
100% B	500/0	10	10	0	-	8.3	-	-	25.1	-	-	7.5	-	-	-

[A] Organisms fed prior to testing and 2 hours before and after renewal.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 Temperature range for the test period was 24.0 - 25.0°C.
Waterbath Temperature range for the test period was 24.0 - 26.0°C.

[D] Salinity based on conductivity and temperature.

Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 4/09/04
by: Cathy Oaks/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)
Control water:	<0.017
100% Sample:	0.172

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	148	132
100% Sample:	248	1427

Salinity[D]	ppt
Control water:	<1
100% sample:	~ 6.2

Table 1. continued

Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:** Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW			Joshua Ayres
County:	Manatee		Test type:	acute definitive renewal			James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh	Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1430	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor	Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	FDEP SOP#:	TA07_02		**Page 8 of 9**	**Reviewer:** David Whiting

Sample replicates were placed in water bath at 48 hours for remainder of test in order to aerate due to drop in Dissolved Oxygen.

Organism: ***Cyprinella leedsi*** Life stage: 13 days [A]Feeding: *Artemia* Conductivity

(48-96 hr) Chamber size: 1000 ml Food Batch #: 0194025G Uncorrected

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			µmhos/cm	
Concentrations	Volume(mL)	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	72hr	96 hr	48 hr	96 hr
Control A	0/500	10	10	10	7.8	-	8.3	25.1	-	26.3	7.1	-	7.5	0.288	0.310
Control B	0/500	10	10	10	-	8.3	8.4	-	24.5	26.1	-	7.8	7.6	-	0.310
6.25% A	31.25/468.75	9	8	8	7.8	-	8.2	25.2	-	26.5	7.1	-	7.6	0.852	1.05
6.25% B	31.25/468.75	9	9	9	-	7.9	8.2	-	24.7	26.1	-	7.8	7.6	-	1.20
12.5% A	62.5/437.5	10	10	10	7.9	-	8.1	25.1	-	26.2	7.2	-	7.6	1.78	2.16
12.5% B	62.5/437.5	9	9	9	-	7.9	8.1	-	25.0	26.2	-	7.7	7.6	-	2.12
25% A	125/375	10	3	3	8.1	-	7.9	25.1	-	26.2	7.0	-	7.6	4.23	4.84
25% B	125/375	10	10	10	-	7.9	7.9	-	25.0	26.3	-	7.5	7.5	-	2.98
50% A	250/250	0	-	-	-	-	-	-	-	-	-	-	-	-	-
50% B	250/250	3	2	2	8.1	7.7	7.7	25.1	25.0	26.1	6.5	7.6	7.6	5.78	6.56
100% A	500/0	1	0	-	8.2	7.4	-	24.8	-	-	6.2	7.5	-	10.2	-
100% B	500/0	0	-	-	-	-	-	-	25.1	-	-	-	-	-	-

[A] Organisms fed prior to testing and 2 hours before and after renewal.

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 Temperature range for the test period was 24.0 - 25.0°C.
Waterbath Temperature range for the test period was 24.0 - 26.0°C.

[D] Salinity based on conductivity and temperature.

Light Intensity during the test was 50-100 foot candles.

Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 4/09/04
by: Cathy Oaks/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)
Control water:	<0.017
100% Sample:	0.172

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	148	132
100% Sample:	248	1427

Salinity[D]	ppt
Control water:	<1
100% sample:	~ 6.2

Table 1. concluded. Data recorded during the 96-hour acute bioassays of a sample of effluent from Piney Point Phosphates, Inc., 13300 Highway 41 North, Palmetto, Manatee County, Florida, NPDES# FL0000124, performed from 17 to 21 February 2004.

Facility:	**Piney Point Phosphates, Inc.**		**NPDES#:**	**FL0000124**	Facility Type:	**Phosphate Plant**	**Analysts:**	Marshall Faircloth
Location:	13300 Highway 41 North, Palmetto		Contact/District:	J. Champion/SW				Joshua Ayres
County:	Manatee		Test type:	acute screen renewal				James Daniels
Sample Collection Date:	2/16/2004	Time: 1500	# tests:	5	Receiving Water:	Class III fresh		Christa Pierini
Test Beginning Date:	2/17/2004	Time: 1340	Chlorination Type:	dechlorinated		Buckeye Road Ditch to Bishops Harbor		Sarah Prichard
Test Ending Date:	2/21/2004	Time: 0900	EPA method:	2021.0		**Page 9 of 9**	**Reviewer:**	David Whiting

Organism: ***Daphnia magna*** Life stage: <24 hours [A]Feeding: YCT/Algae
(0-48 hr) (water flea) Chamber size: 30 mL Food Batch #: #4/#23

	Sample/Diluent	SURVIVAL # Alive			pH			[B]Temperature (°C)			Diss. Oxygen (mg/L)			[C]Conductivity	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	7.8	-	8.2	24.9	-	24.0	7.5	-	7.3	0.326	0.540
Control B	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
Control C	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
Control D	0/20	5	5	5	-	-	-	-	-	-	-	-	-	-	-
100% A	20/0	5	5	2	8.6	-	8.5	24.0	-	24.0	7.7	-	7.5	10.0	-
100% B	20/0	5	3	1	-	-	-	-	-	-	-	-	-	-	12.2
100% C	20/0	5	5	2	-	-	-	-	-	-	-	-	-	-	-
100% D	20/0	5	4	0	-	-	-	-	-	-	-	-	-	-	-

Organism: ***Daphnia magna*** Life stage: <24 hours [A]Feeding: YCT/Algae
(48-96 hr) (water flea) Chamber size: 30 mL Food Batch #: #4/#23

	Sample/Diluent	SURVIVAL # Alive			pH			[B]Temperature (°C)			Diss. Oxygen (mg/L)			[C]Conductivity	
Concentrations	Volume(mL)	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	96 hr
Control A	0/20	5	5	-	8.3	7.8	-	24.0	24.5	-	7.4	7.3	-	0.360	-
Control B	0/20	5	5	-	-	7.8	-	-	24.6	-	-	7.3	-	-	-
Control C	0/20	5	5	-	-	7.8	-	-	24.6	-	-	7.2	-	-	-
Control D	0/20	5	5	-	-	7.8	-	-	24.6	-	-	7.3	-	-	-
100% A	20/0	2	0	-	8.3	5.8	-	24.1	24.5	-	7.5	7.0	-	10.4	-
100% B	20/0	1	0	-	-	5.7	-	-	24.6	-	-	6.3	-	-	-
100 % C	20/0	2	0	-	-	5.4	-	-	24.5	-	-	6.1	-	-	-
100% D	20/0	0	-	-	-	-	-	-	24.4	-	-	-	-	-	-

[A]Organisms fed prior to testing and 2 hours before and after renewal.
[B]Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
[C]Conductivity value is uncorrected µmhos/cm.
Room Temperature range for the test period was 22.0 - 24.5°C.
Incubator #3 temperature range for the test period was 24.0 - 25.0°C.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS	
Job number:	TLH-2004-02-17-07
sample number:	735653

Data Transcription Verification
date: 3/9/04
by: Josh Ayres/James Daniels

Total Residual CL2	mg/L	Method
Field 100% sample:	not detected	field meter
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)
Control water:	<0.017
100% Sample:	0.172

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	82	96
100% Sample:	248	1427

Salinity[D]	ppt
Control water:	<1
100% sample:	~ 6.2

[D]Salinity based on conductivity and temperature.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

The Bioassay of Piney Point Phosphates, Inc. effluent sampled on 16 February 2004, NPDES #FL0000124.

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



