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DEQ Northwest Water Quality Division
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City, State, ZIP+4 Portland, OR 97201-4987 CLAYTON

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SCOEPA00026003

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DEQ Northwest Water Quality Division
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

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Jim Claxton [redacted]
Siltronic Corporation
7200 NW Front Avenue M/S 30
Portland, OR 97210-3676

24

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Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

Mr. Dennis Jurries
Oregon Department of Environmental Quality
Northwest Water Quality Division
2020 SW 4th Avenue, Suite 400
Portland, Oregon 97201-4987

ER: 048.JWC

2004-07-13

Annual Stormwater monitoring data for July 1, 2003 to June 30, 2004

Dear Mr. Jurries,

I have enclosed the stormwater monitoring data as required by Siltronic's NPDES Stormwater Discharge Permit number 1200-Z issued October 1, 2002. Sampling was conducted November 18, 2003 and May 26, 2004 meeting the requirement of conducting two monitoring events per sample point between July 1, 2003 and June 30, 2004.

All parameters were below benchmarks with the exception of the TSS sample taken May 26, 2004 at the North sample point. The TSS was 142 mg/L and the benchmark is 130 mg/L. Another sample could not be taken to confirm this result because of lack of rain.

We have reviewed the Stormwater Pollution Control Plan and feel that no changes are required at this time. We believe that the difficulties in collecting a sample at the North site are the reason for the high TSS value.

Sampling at the North sample site is difficult. Siltronic staff has had problems at this sample point in the past. For water year 2004-2005 the following changes are being considered:

1. Change sample date to earlier in the year. The samples from the North site are collected by "dipping" for sample in an 18" diameter pipe using a 6-foot pole with a collection cup at the end. In May the stormwater level in the pipe is very low making the collection of sample very difficult without "stirring up" the catch basin sediments. Reviewing TSS sample data from the North site for November shows that since 1997, samples taken in November have measured from 4 to 27 mg/L TSS. The historical average rainfall for November is 5" (136mm). The historical average rainfall for May is 2" (52mm). The volume of rainwater passing though the system is much greater in November. February and March historically average 4" (90mm). So we are considering changing our sampling to February or March. This should provide the increased sample flow and depth to improve sampling.

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2. Change sampling technique: The current sampling method is difficult. We are looking at installing a sampling pipe in the North site that can be connected to a pump. The level of water at the sample point may still be a problem in May, but it may be less problematic in February or March

3. Change the sample point. There might be another point that could reduce the sampling difficulties. We are investigating a new sample point.

A summary of the results for 2003-2004 are listed in the following table:

PARAMETER	Sample date	North results	South results	East results	BENCH MARK	Units	Detection limit	Method & Comments
Copper	11/18/2003	0.03	<0.03	0.04	0.1	mg/L	0.03	EPA 200.7
	5/26/2004	**0.07**	**0.05**	**<0.03**				
Lead	11/18/2003	<0.005	<0.005	<0.005	0.4	mg/L	0.005	EPA 239.2
	5/26/2004	**0.018**	**<0.005**	**<0.005**				
Zinc	11/18/2003	0.24	0.08	0.33	0.6	mg/L	0.05	EPA 200.7
	5/26/2004	**0.47**	**0.40**	**0.35**				
pH	11/18/2003	6.5	7.3	6.5	5.5-9	pH units	0.1	Standards Methods 1998, 20th ed, Section 4500-H^+
	5/26/2004	**6.2**	**6.1**	**6.4**				
TSS	11/18/2003	23	4	12	130	mg/L	0.1	Standards Methods 1998, 20th ed, Section 2540 D
	5/26/2004	**142**	**28**	**4**				
Oil and Grease	11/18/2003	<3.0	<3.0	<3.0	10	mg/L	3	EPA 1664
	5/26/2004	**<3.0**	**<3.0**	**<3.0**				

If you have any questions or comments, please contact me at 503-219-7313.

Best regards,

Siltronic Corporation

J. Claxton

Jim Claxton
Environmental Engineer

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: **SILTRONIC CORP**

Site Address: **7200 NW FRONT AVE, PORTLAND, OR**

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
November 18, 2003	North, South and East
May 26, 2004	North, South and East

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

☐ **Monitoring Waiver Reduction Notification:**
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

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 ensure 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.

Signature: Kim Clanton

Title: ENVIRONMENTAL ENGINEER

Date: 7/12/04

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	July 31st, 2003 Di	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No Rain	No Rain	No Rain
Oil and Grease Sheen*	No visible sheen	Yes or No	No Rain	No Rain	No Rain

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	August 31st 2003	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No Rain	No Rain	No Rain
Oil and Grease Sheen*	No visible sheen	Yes or No	No Rain	No Rain	No Rain

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	9/15/03	Di
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	10-15-03	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	November 18, 20	2003
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE: 11-18-03	11-18-03	11-20-03
			North	East	South
Total Copper	0.1	mg/L	0.03	0.04	<0.03
Total Lead	0.4	mg/L	<0.005	~~<0.005~~ ~~0.30~~	<0.005
Total Zinc	0.6	mg/L	0.24	0.33	0.08
pH	5.5-9	Su	6.5	6.3	7.3
TSS	130	mg/L	23	~~29~~ 12-11-3.9	~~5.2~~
Oil and Grease	10	mg/L	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

(1) 3QR 12 Jul 2004

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	12-30-03 DT	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	1.30.04	D1
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	2/24/04	Di
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	2/24/04	
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
pH	5.5-9	Su	6.00		
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Siltronic Corporation Storm Water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	3-24-04	DI
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
PH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

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Siltronic Corporation Storm Water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	April	2004
			North	East	South
Floating Solids	No visible discharge	Yes or No	no rainfall ①		
Oil and Grease Sheen*	No visible sheen	Yes or No	no rainfall ①		

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

STORM WATER SAMPLING – Semiannual: ① no rainfall coincided with personel availability D1

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
PH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

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Siltronic Corporation Storm Water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	5/26/04	DI
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	5/26/04	DI
			North	East	South
Total Copper	0.1	mg/L	0.07	<0.03	0.05
Total Lead	0.4	mg/L	0.018	<0.005	<0.005
Total Zinc	0.6	mg/L	0.47	0.35	0.4
PH	5.5-9	Su	6.17	6.43	6.13
TSS	130	mg/L	142.25 ①	4	28
Oil and Grease	10	mg/L	<3	<3	<3

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

① will resample asap. DI

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Siltronic Corporation Storm Water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	30 Jun	2004
			North	East	South
Floating Solids	No visible discharge	Yes or No	Insufficient		
Oil and Grease Sheen*	No visible sheen	Yes or No	Rainfall		3yR

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	East	South
Total Copper	0.1	mg/L			
Total Lead	0.4	mg/L			
Total Zinc	0.6	mg/L			
PH	5.5-9	Su			
TSS	130	mg/L			
Oil and Grease	10	mg/L			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

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Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	November 18, 20, 2003	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE: 11-18-03	11-18-03	11-20-03
			North	East	South
Total Copper	0.1	mg/L	0.03	0.04	<0.03
Total Lead	0.4	mg/L	<0.005	~~<0.005~~ ~~0.3~~ <3.0	<0.005
Total Zinc	0.6	mg/L	0.24	0.33	0.08
pH	5.5-9	Su	6.5	6.3	7.3
TSS	130	mg/L	23	~~29~~ 12 (1) 3.9	~~5.2~~
Oil and Grease	10	mg/L	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

(1) 3gR 12 Jul 2004

SCOEPA00026021

RECEIVED DEC 15 2003

Report Date: December 9, 2003
Job Number: A31120AS
PO Number: 4500075102
Project No: None Provided
Project Name: Stormwater Fall 2003

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 11/20/03 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A31120AS-1	03-131-SW-N	Storm Water	11/18/03	1345
A31120AS-2	03-133-SW-E	Storm Water	11/18/03	1505

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

John A. Guild

Technical Services

TS /atc

SCOEPA00026022

Analytical Data

Wacker Siltronic

Job Number: A31120AS

Lab Sample ID: A31120AS-1
Field ID: 03-131-SW-N NORTH
Date/Time: 11/18/03 1345
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L
Copper	EPA 200.7	0.03	0.03	mg/L
Zinc	EPA 200.7	0.05	0.24	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

SCOEPA00026023

Analytical Data

Wacker Siltronic

Job Number: A31120AS
Page Number: 3 of 3

Lab Sample ID: A31120AS-2
Field ID: 03-133-SW-E
Date/Time: 11/18/03 1505
Matrix: Storm Water

EAST

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L
Copper	EPA 200.7	0.03	0.04	mg/L
Zinc	EPA 200.7	0.05	0.33	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

SCOEPA00026024

Report Date: 12/18/2003
Job Number: A31121AR
PWSID:
PO Number: 4500075102
Project No.: None Provided
Project Name: Storm Water Fall 2003

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

Sample Information

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A31121AR-1	03-132-SW-S	Waste Water	11/20/2003	1410

Analytical results are on the following page(s).

Sincerely,

Technical Services

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

TS/atc

Sample Identification

Lab Sample ID#: A31121AR-1 03-132-SW-S South

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	MAJ
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CV
Total Oil & Grease	ND mg/L	EPA 1664	3. mg/L	NAC
Zinc	0.08 mg/L	EPA 200.7	0.05 mg/L	MAJ

ND means none detected at or above the detection limit listed.

SCOEPA00026026

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11.19.03 (11.20.03) Oven Temp: 104 C Analyst: ~~DI~~

Date In: ~~11.19~~ DI Time In/Out: 1115 / 1300

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank		0.0870	0.0870	
6	03-131-W	500	0.0993	0.0881	~~DI 12~~ 22.4
7	03-131-W	500	0.0995	0.0877	~~DI 18~~ 23.6
				Average TSS	~~DI 15~~ 23
8	03-133-E	200	0.0892	0.0870	~~22~~ 11
9	03-133-E	200	0.0904	0.0878	~~26~~ 13
				Average TSS	~~24~~ 12
10 @	03-132-S	500	0.0894	0.0877	~~17~~ 3.4
11	03-132-S	500	0.0898	0.0876	~~22~~ 4.4
				Average TSS	~~19.5~~ 3.9

SDR 12-4-03

Notes: Storm Water Samples.

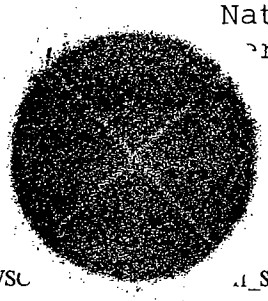
@ 03-132-S was sampled on 11/20/03.

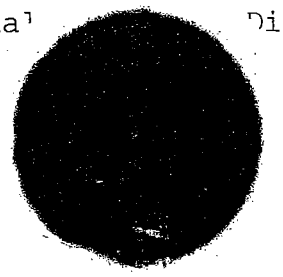
Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

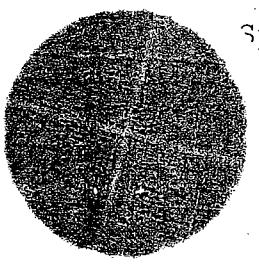
Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.
POTW permit: daily max 350 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.

National ...rmit ...Discharge ...System







TJH
DEI ...evised

\\WSC ...I_SERVER\RADATA\... ...LAB\WWTP\BENCH\TSSSWB.DOC

North East South

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave.
Portland, Oregon 97210
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Storm Water FALL 2003
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: Di

FOR LABORATORY USE ONLY — Page ___ of ___
Job Number:
Custody: Y/N
VISA / M/C Cardholder:
Card #: Exp:
Cash / Check / CC $:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS HAND CLIENT MAIL AIR

Sample ID	Lab ID	Collection Date / Time	Media	Analysis Requested	Test Profile
03-132-SW-S		11.20.03 1410		Oil+Grease (EPA 1664) Cu, Pb, Zn (EPA 200.8)	

Sampled By: Tom Rothschild, Koreen Laird
AUTHORIZED CUSTOMER SIGNATURE: Dianne Lush DATE: 11/21/03

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Lush	11/21/03	1115	Kate Williams	11-21-03	1115
				CAL		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00026028

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Oregon 97210
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Storm Water - Fall 2003
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: DI

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY — Page ___ of ___
Job Number:
Cust Abbr: NEW
VISA MC Cardholder:
Card #: Exp:
Cash/Check/CC $:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc	ID		Collection Date	Time	Media	Analysis Requested	Test Profile
03-131-SW-N				11-18-03	1345		Oil & Grease (1664) Cu, Pb, Zn (200.8)	
~~03-132-SW-S~~ DI							~~Oil & Grease (1664) Cu, Pb, Zn (200.8)~~	
03-133-SW-E				11-18-03	1505		Oil & Grease (1664) Cu, Pb, Zn (200.8	

Sampled By: Dianne Lush
AUTHORIZED CUSTOMER SIGNATURE: Dianne Lush DATE: 11/20/03

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Lush	11/20/03	1110	Peter Williams	11-2003	1170
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00026029

Siltronic Corporation Storm Water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	5/26/04	DI
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	5/26/04	DI
			North	East	South
Total Copper	0.1	mg/L	0.07	<0.03	0.05
Total Lead	0.4	mg/L	0.018	<0.005	<0.005
Total Zinc	0.6	mg/L	0.47	0.35	0.4
PH	5.5-9	Su	6.17	6.43	6.13
TSS	130	mg/L	142.25①	4	28
Oil and Grease	10	mg/L	<3	<3	<3

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

① will resample asap. DI

N:\ENVIRONMENTAL\FACLAB\WWTP\LOG\STORMWATER.DOC

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/26/04 Oven Temp: 104 C Analyst: Di

Date In: 5/26/04 Time In/Out: 1500 / 0915 (5/27/04

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank		0.0888	0.0888	
2	04-28-N	200	0.1172	0.0883	144.5 ✓
3	04-28-N	200	0.1165	0.0885	140 ✓
				Average TSS	142.25 ✓ NORTH
4	04-29-E	200	0.0904	0.0896	4 ✓
5	04-29-E	200	0.0898	0.0890	4 ✓
				Average TSS	4 ✓ EAST
7	04-30-S	200	0.0939	0.0883	28 ✓
8	04-30-S	200	0.0927	0.0871	28 ✓
				Average TSS	28 ✓ SOUTH

Notes: Storm Water Samples

Cal mg/L g - Tare Wt
= Sample,

No m /L, dail
dai

Refer andard Me e Examinati d
Wastewater, n Edition, Sect.
page 2-57.

2. National Pollution Discharge Elimination System Permit #101128.

TJR 21 Mar 1987
DEI 12 Nov 2003 Revised

SCOEPA00026031

RECEIVED JUN 18 2004
3&R

Report Date: June 14, 2004
Job Number: A40527N
PO Number: 4500075102
Project No: 28-29-30
Project Name: Stormwater Spring 2004

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 05/27/04 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A40527N-1	04-28-SW-N	Stormwater	05/26/04	1435
A40527N-2	04-29-SW-E	Stormwater	05/26/04	1515
A40527N-3	04-30-SW-S	Stormwater	05/26/04	1445

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Technical Services

TS /atc

Analytical Data

Wacker Siltronic

Job Number: A40527N

Lab Sample ID: A40527N-1
Field ID: 04-28-SW-N
Date/Time: 05/26/04 1435
Matrix: Storm Water

NORTH

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	0.07	mg/L
Zinc	EPA 200.7	0.05	0.47	mg/L
Lead	EPA 239.2	0.005	0.018	mg/L

ND means none detected at or above the detection limit listed.

SCOEPA00026033

Analytical Data

Wacker Siltronic

Job Number: A40527N

Lab Sample ID: A40527N-2
Field ID: 04-29-SW-E
Date/Time: 05/26/04 1515
Matrix: Storm Water

EAST

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.35	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A40527N
Page Number: 4 of 4

Lab Sample ID: A40527N-3
Field ID: 04-30-SW-S
Date/Time: 05/26/04 1445
Matrix: Storm Water

SOUTH

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	0.05	mg/L
Zinc	EPA 200.7	0.05	0.4	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

COFFEY LAB RATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Siltronic
Mailing Address: 7200 N W Front Ave
Portland, Oregon
Phone: (503) 219-7274 FAX: (503) 417-4141

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number: 28-29-30
Project Name: Stormwater-Spring-2004
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: [illegible]

Reporting Request
- [ ] State Compliance Format
- [x] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ___ of ___
Job Number:
Custabbr: NEW
VISA M/C Cardholder:
Card #: Exp:
Cash / Check / CC $ #
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIRT

Sample ID	Loc	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test Profile
04-28-SW-N				5/26/04	1435		Oil & Grease-1664, Cu, Pb, Zn 200.8	
04-29-SW-E				5/26/04	1515		"	
04-30-SW-S				5/26/04	1445		"	

Sampled By: Tom Rothschild + Frank Thrasher
AUTHORIZED CUSTOMER SIGNATURE Dianne Irish DATE: 5/27/04

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Irish	5/27/04	1030	[illegible]	5-27-04	1030
				LAB		

te Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

BMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR RVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00026036

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: **SILTRONIC CORP**

Site Address: **7200 NW FRONT AVE, PORTLAND, OR**

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
11/18/03	NORTH & EAST
11/20/03	SOUTH
5/26/04	NORTH, EAST & SOUTH

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

❑ **Monitoring Waiver Reduction Notification**:
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

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 ensure 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.

Signature: Jim Claxton

Title: ENVIRONMENTAL ENGINEER

Date: 7/13/04

WACKER SILTRONIC

JIM CLAXTON
ENVIRONMENTAL ENGINEER

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland OR 97210-3676, USA
Tel. (503) 219-7313
Fax (503) 219-7599
jim_claxton@siltronic.com

Wacker Siltronic Corporation
7200 NW Front Avenue, Portland OR 97210-3676, USA

Mr. Dennis Jurries
Department of Environmental Quality Northwest Water Quality Division
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

ER:026.JWC

2003-June-26

Annual Storm water monitoring data for July 1, 2002 to June 30, 2003

Dear Mr. Jurries,

Enclosed is the storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. Sampling was conducted November 12, 2002 and June 15, 2003 meeting the requirement of conducting two monitoring events per sample point between July 1, 2002 and June 30, 2003.

Enclosed are copies of the monitoring results (including lab report and chain of custody) and copies of Monthly Visual Monitoring Reports. All results are well below the benchmark guideline concentrations.

If you have any questions, please contact Jim Claxton at 503-219-7313.

Best regards,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

cc: Tom Rothschild
Industrial Stormwater Program, City of Portland BES
SW Report 2003 File

Bureau of Environmental Services

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: Wacker Siltronic Corporation

Site Address: 7200 NW Front Avenue, Portland, OR 97210-3676

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
11/12/02	North, East and South
5/15/03	North, East and South

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

☐ **Monitoring Waiver Reduction Notification**:
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

☐ **No Exposure Certification**:
Check the box if your facility is required to have a NPDES 1200-Z permit, but monitoring is not required due to no exposure of stormwater to industrial activities. This no exposure certification is outlined in Schedule B.3.b, and the facility meets the requirements of Schedule B.1.e. Note: This does not exclude your facility from notifying DEQ.

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 ensure 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.

Signature: Thomas C McCue

Title: Thomas McCue, Environmental Manager

Date: 6/26/03

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	11-12-02	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

11/12/02 SAMPLING

PARAMETER	BENCHMARK[1]	UM	DATE:	11-12-02	
			North	East	South
Total Copper	0.1	Mg/l	0.03	<0.03	<0.03
Total Lead	0.4	Mg/l	<0.005	<0.005	<0.005
Total Zinc	0.6	Mg/l	0.18	0.24	0.09
pH	5.5-9	Su	6.4	6.6	7.1
TSS	130	Mg/l	6.9	7.5	3.3
Oil and Grease	10	Mg/l	4.0	4.0	< 3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026040

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (outfall) Sample ID#: 02-138-N

Date: 11/12/02 Time: 1320 Sampled by: Tom Rothschuler & Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 26.6 F-, mg/L: 0.32 pH: 6.4

TSS, mg/L: 6.9 Nitrate, mg/L: 0.44

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: 4 (1)

Metals (EPA 200.8), mg/L:

Copper: 0.03 (1) Lead: <0.005 (1) Zinc: 0.18 (1)

Notes:
(1) SJR 6 Dec 2002

DEM 10 Oct 96
DEI 10 May 2000 Revised

L:\COMMON\FACLAB\WWTP\LOG\STORWATL.DOC

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/12/02 Oven Temp: 104 C Analyst: DJ

Date In: 11/12/02 Time In/Out: 1400 / 1400 11/13/02

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0885	0.0885	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
28. North	500	0.0917	0.0883	6.8
38. North	500	0.0918	0.0883	7
		Average TSS		6.9

Comments: Storm Water North

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.

[redacted]tional Pollution Discharge Elimination System
[redacted]mit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 11/12/02 Sample Date: 11/12/02 Analyst: DI

COD Reactor Temperature: 150 C

Time In / Out: 1400 / 1600 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)

4. ~~CE~~ North (composite): 26.6 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water North

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026043

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 11/12/02 Sample Date: 11/12/02 Analyst: Di

Slope: -56.1 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2143 Date Opened: 10-31-02

10.0 mg/L: Lot #: A2175 Date Opened: 10-31-02

Data:

Sample	Fluoride, mg/L
CE FAB 1 North	
~~CE FAB-2~~	0.32

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	North
After Spike Concentration:	____ mg/L	____ mg/L	2.2 mg/L
Recovery:	____ %	____ %	94 %

Comments: Storm Water North.

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 11-12-02 Sample Date: 11-12-02 Analyst: DJ

Data:

Sample	Nitrate Nitrogen(N)	x Dilution	x 4.4* =	Nitrate, mg/L
North	0.1	x N/A	x 4.4 =	0.44
		x	x 4.4 =	
		x	x 4.4 =	
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	~~Ct~~		
After Spike Concentration:	1.0 mg/L	mg/L	mg/L
Recovery:	90 %	%	%

Notes: Storm Water North -

Waste is to be disposed in satellite Cadmium Waste container

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 23 Apr 2002 Revised

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Analytical Data

Wacker Siltronic

Job Number: A21114AE
Page Number: 2 of 4

Lab Sample ID: A21114AE-1
Field ID: 02-138-N
Date/Time: 11/12/02 1320
Matrix: Storm Water NORTH

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	4.	mg/L
Copper	EPA 200.7	0.03	0.03	mg/L
Zinc	EPA 200.7	0.05	0.18	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

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Dec 06 02 01:51p
p.2
SCOEPA00026046

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East Sample ID#: 02-139-E

Date: 11/12/02 Time: 1345 Sampled by: JR + JD

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: X Floating Solids: yes:___ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 35.1 F-, mg/L: 0.31 pH: 6.6

TSS, mg/L: 7.5 Nitrate, mg/L: 0.44

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: 4 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.005 (1) Zinc: 0.24 (1)

Notes:
(1) JR 6 Dec 2002

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/12/02 Oven Temp: 104 C Analyst: DJ

Date In: 11/12/02 Time In/Out: 1400 / 1400 11/13/02

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA			
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
8. East	500ml	0.0929	0.0893	7.2
9. East	500ml	0.0926	0.0887	7.8
		Average TSS		7.5

Comments: _____

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: ermit: monthly avg. 23 mg/L, daily max. 61 mg/L.

R[redacted] dard Methods for the Examination of Water and ewater, 1998, 20th Edition, Section 2540 D, 2-57.

onal Pollution Discharge Elimination System nit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 11.12.02 Sample Date: 11.12.02 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1400 / 1600 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite)~~ East: 35.1 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Stormwater East -

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026049

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 11·12·02 Sample Date: 11·12·02 Analyst: DE

Slope: ~56.1 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2143 Date Opened: 10·31·02

10.0 mg/L: Lot #: A2175 Date Opened: 10·31·02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
~~North~~ East	0.31

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	East
After Spike Concentration:	____ mg/L	____ mg/L	2.1 mg/L
Recovery:	____ %	____ %	89.5 %

Comments: Stormwater East

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

SCOEPA00026050

BENCHSHEET

NITRATE ANALYSIS

Test Date: 11·12·02 Sample Date: 11·12·02 Analyst: DJ

Data:

Sample	Nitrate Nitrogen(N)	x Dilution	x 4.4* =	Nitrate, mg/L
East	0.1	x N/A	x 4.4 =	0.44
		x	x 4.4 =	
		x	x 4.4 =	
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

	Sample: East		
After Spike Concentration:	0.9 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Notes: Storm) water East

Waste is to be disposed in satellite Cadmium Waste container

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI · 23 Apr 2002 Revised

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SCOEPA00026051

Analytical Data

Wacker Siltronic

Job Number: A21114AE

Lab Sample ID: A21114AE-2
Field ID: 02-139-E
Date/Time: 11/12/02 1345
Matrix: Storm Water

EAST

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	4.	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.24	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

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Dec 06 02 01:51p

SCOEPA00026052

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South Sample ID#: 02-140-S

Date: 11/12/02 Time: 1335 Sampled by: Tom Rothschild
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 24.1 F-, mg/L: 5.1 pH: 7.1

TSS, mg/L: 3.3 Nitrate, mg/L: 9.21

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.005 (1) Zinc: 0.09 (1)

Notes:
(1) JJR 6Dec2002

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 11/12/02 Sample Date: 11/12/02 Analyst: DM

Slope: -56.1 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2143 Date Opened: 10-31-02

10.0 mg/L: Lot #: A2175 Date Opened: 10-31-02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
02-140-S	5.1

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	02-140-S
After Spike Concentration:	____ mg/L	____ mg/L	7.1 mg/L
Recovery:	____ %	____ %	100 %

Comments: Storm Water South

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026054

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 11/12/02 Sample Date: 11/12/02 Analyst: DJ

COD Reactor Temperature: 150 C

Time In / Out: 1400 / 1600 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)
4. ~~CE~~ South (composite): 24.1 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water South

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026055

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/12/02 Oven Temp: 104 C Analyst: DJ

Date In: 11/12/02 Time In/Out: 1400 / 1400 11/13/02

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0885	0.0885	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
8. South	500ml	0.0878	0.0896	3.6
9. South	500 ml	0.0886	0.0901	3
		Average TSS		3.3

Comments: Storm Water South

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wa[redacted] 1998, 20th Edition, Section 2540 D,

2. [redacted] ion Discharge Elimination System

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 11/12/02 Sample Date: 11/12/02 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*	=	Nitrate, mg/L
South	2.1	x	N/A	x	4.4	=	9.21
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	South		
After Spike Concentration:	3.1 mg/L	mg/L	mg/L
Recovery:	100 %	%	%

Notes: Storm Water South

Waste is to be disposed in satellite Cadmium Waste container

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI . 12 Nov 2002 Revised

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SCOEPA00026057

Analytical Data

Wacker Siltronic

Job Number: A21114AE
Page Number: 4 of 4

Lab Sample ID: A21114AE-3
Field ID: 02-140-S
Date/Time: 11/12/02 1335
Matrix: Storm Water

SOUTH

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.09	mg/L
Lead	EPA 239.2	0.005	ND	mg/L

ND means none detected at or above the detection limit listed.

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Dec 06 02 01:52p
p.4
SCOEPA00026058

RECEIVED DEC 6 2002

Report Date: December 6, 2002
Job Number: A21114AE
PO Number: 4500075102
Project No: None Provided
Project Name: Stormwater Fall 2002

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 11/14/02 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A21114AE-1	02-138-N	Storm Water	11/12/02	1320
A21114AE-2	02-139-E	Storm Water	11/12/02	1345
A21114AE-3	02-140-S	Storm Water	11/12/02	1335

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Mark W. Tadl

Technical Services

TS /atc

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Dec 06 02 01:51p

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SCOEPA00026059

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Storm Water Fall-02
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: DT

Reporting Request
- [ ] State Compliance Format
- [x] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐ NEW
☐ VISA ☐ M/C Cardholder:
Card #: Expt: / /
Cash / Check / CC: $ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
02-138-N				11/12/02	1320		Oil & Grease (EPA 1664) Cu, Pb, Zn (EPA 200.8)	
02-139-E				11/12/02	1345		Oil & Grease (EPA 1664) Cu, Pb, Zn (EPA 200.8)	
02-140-S				11/12/02	1335		Oil & Grease (EPA 1664) Cu, Pb, Zn (EPA 200.8)	

Sampled By: Tom Rothschild & Justin Darr
AUTHORIZED CUSTOMER SIGNATURE: Dianne Irish DATE: 11/12/02

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Irish	11/14/02	0830		11/14/02	1105
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00026060

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	5/15/03	Di
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

5/15/03 SAMPLING

PARAMETER	BENCHMARK[1]	UM	DATE:	5/15/03	Di
			North	East	South
Total Copper	0.1	Mg/l	<0.03	<0.03	<0.03
Total Lead	0.4	Mg/l	<0.005	<0.005	<0.005
Total Zinc	0.6	Mg/l	~~X~~ 0.26	0.17	0.23
pH	5.5-9	Su	7.12	6.46	7.12
TSS	130	Mg/l	5.5	14.7	105.6
Oil and Grease	10	Mg/l	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Sample ID#: 03-59-N

Date: 5/15/03 Time: 1010 Sampled by: JR + MS

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 23.1 F-, mg/L: 0.3 pH: 7.12

TSS, mg/L: 5.5 Nitrate, mg/L: 1.32

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: ~~<0.003~~ Di <0.03 Lead: <0.005 Zinc: 0.26

Notes: North @ Outfall

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5/15/03 Sample Date: 5/15/03 Analyst: Di

Slope: -58.9 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2301 Date Opened: 4/24/03

10.0 mg/L: Lot #: A2267 Date Opened: 4/17/03

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
03-59	0.3

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1209153

	CE FAB-1	CE FAB-2	03-59
After Spike Concentration:	mg/L	mg/L	2.1 mg/L
Recovery:	%	%	90 %

Comments: Storm water North #03-59

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026063

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/15/03 Oven Temp: 104 C Analyst: DI

Date In: 5/15/03 Time In/Out: 1145 / 1425

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank		0.0870	0.0870	
				Average TSS	
2	03-59	500	0.0892	0.0866	5.2
3	03-59	500	0.0893	0.0864	5.8
				Average TSS	5.5
4	03-60	500	0.0943	0.0871	14.4
5	03-60	500	0.0949	0.0874	15
				Average TSS	~~5.88~~ DI 14.7
6	03-61	500	0.0879	0.0866	2.6
7	03-61	500	0.0882	0.0871	2.2
				Average TSS	2.4

Notes: Storm water North # 03-59
Storm water East #03-60
Storm water South #03-61

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: [redacted]erating Procedure, Total Suspended

TJR 21 Mar 1987
DEM 12 Sep 1997 Revised

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SCOEPA00026064

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/15/03 Sample Date: 5/15/03 Analyst: ~~AJ~~

COD Reactor Temperature: 150 C

Time In / Out: 1100 / 1300 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)

4. ~~CB (composite)~~ 03-59: 29Di 23.1 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water North #03-59

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026065

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5/15/03 Sample Date: 5/15/03 Analyst: DJ

Data:

Sample	Nitrate Nitrogen(N)		Dilution		4.4* =	Nitrate, mg/L
03-59	0.3	x	N/A	x	4.4 =	1.320
		x		x	4.4 =	
		x		x	4.4 =	
		x		x	4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: Hach
Lot Number: A1361

Sample:	03-59		
After Spike Concentration:	1.2 mg/L	mg/L	mg/L
Recovery:	%	%	%

Notes: Stormwater North # 03-59

Waste is to be disposed in satellite Cadmium Waste container

References: 1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Mid Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 1996
DEI • 12 Nov 2002 Revised

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Sample Identification

Lab Sample ID#: A30516AJ-1 03-59-N

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	MAJ
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CV
Total Oil & Grease	ND mg/L	EPA 1664	3. mg/L	NAC
Zinc	0.26 mg/L	EPA 200.7	0.05 mg/L	MAJ

ND means none detected at or above the detection limit listed.

SCOEPA00026067

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East Sample ID#: 03-60-E

Date: 5/15/03 Time: 1030 Sampled by: JR MS

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 32.8 F-, mg/L: 0.18 pH: 6.46

TSS, mg/L: 14.7 Nitrate, mg/L: 0.88

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3.0

Metals(EPA 200.8), mg/L:

Copper: <0.03 Lead: <0.005 Zinc: 0.17

Notes: East @ Bus in between administration bldg. & FAB 1. Small oil sheen in Fab 1 Parking Lot noted by Environmental Dept./Myron Barr. JR

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET EAST

FLUORIDE ANALYSIS

Test Date: 5/15/03 Sample Date: 5/15/03 Analyst: DJ

Slope: 58.9 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2301 Date Opened: 4/24/03

10.0 mg/L: Lot #: A2267 Date Opened: 4/17/03

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#03-60	0.18

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1209153

	CE FAB-1	CE FAB-2	#03-60
After Spike Concentration:	____ mg/L	____ mg/L	1.9 mg/L
Recovery:	____ %	____ %	86 %

Comments: Storm water East - # 03-60

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026069

EAST

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/15/03 Sample Date: 5/15/03 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1100 / 1300 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite)~~ 03-6: 32.8 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm water Sample East # 0360

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026070

EAST

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5/15/03 Sample Date: 5/15/03 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*	=	Nitrate, mg/L
03-60	0.2	x	N/A	x	4.4	=	0.880
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	0360		
After Spike Concentration:	1.0 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Notes: Storm water East - #03-60

Waste is to be disposed in satellite Cadmium Waste container

References: 1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Mid Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 1996
DEI . 12 Nov 2002 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS) EAST

Sample Date: 5/15/03 Oven Temp: 104 C Analyst: Di

Date In: 5/15/03 Time In/Out: 1145 / 1425

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank		0.0870	0.0870	
				Average TSS	
2	03-59	500	0.0892	0.0866	5.2
3	03-59	500	0.0893	0.0864	5.8
				Average TSS	5.5
4	03-60	500	0.0943	0.0871	14.4
5	03-60	500	0.0949	0.0874	15
				Average TSS	~~5.8~~ Di 14.7
6	03-61	500	0.0879	0.0866	2.6
7	03-61	500	0.0882	0.0871	2.2
				Average TSS	2.4

Notes: Storm water North # 03-59
Storm water East #03-60
Storm water South # 03-61

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference [redacted] Operating Procedure, Total Suspended [illegible]).

TJR 21 Mar 1987
DEM 12 Sep 1997 Revised

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Sample Identification

Lab Sample ID#: A30516AJ-2 03-60-E

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	MAJ
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CV
Total Oil & Grease	ND mg/L	EPA 1664	3. mg/L	NAC
Zinc	0.17 mg/L	EPA 200.7	0.05 mg/L	MAJ

ND means none detected at or above the detection limit listed.

SCOEPA00026073

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South Sample ID#: 03-61-S

Date: 5/15/03 Time: 1000 Sampled by: JR & MS

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 20.6 F-, mg/L: 5.7 pH: 7.12

TSS, mg/L: 2.4 Nitrate, mg/L: 105.6

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: <0.03 Lead: <0.005 Zinc: 0.23

Notes: South @ Manhole by NOx

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

South

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/15/03 Oven Temp: 104 C Analyst: Di

Date In: 5/15/03 Time In/Out: 1145 / 1425

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank		0.0870	0.0870	
				Average TSS	
2	03-59	500	0.0892	0.0866	5.2
3	03-59	500	0.0893	0.0864	5.8
				Average TSS	5.5
4	03-60	500	0.0943	0.0871	14.4
5	03-60	500	0.0949	0.0874	15
				Average TSS	~~5.88~~ Di 14.7
6	03-61	500	0.0879	0.0866	2.6
7	03-61	500	0.0882	0.0871	2.2
				Average TSS	2.4

Notes: Storm water North # 03-59
Storm water East #03-60
Storm water South # 03-61

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Refere [illegible] perating Procedure, Total Suspended [illegible]).

TJR 21 Mar 1987
DEM 12 Sep 1997 Revised

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South

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5-15-03 Sample Date: 5-15-03 Analyst: Di

Slope: 58.9 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A2301 Date Opened: 4/24/03

10.0 mg/L: Lot #: A2267 Date Opened: 4/17/03

Data:

Sample		Fluoride, mg/L
CE FAB 1		
CE FAB-2	03-61	5.7

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1209153

	CE FAB-1	CE FAB-2	03-61
After Spike Concentration:	____ mg/L	____ mg/L	7.4 mg/L
Recovery:	____ %	____ %	85 %

Comments: Storm water South #03-61

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026076

South

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/15/03 Sample Date: 5/15/03 Analyst: DJ

COD Reactor Temperature: 150 C

Time In / Out: 1100 / 1300 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite):~~ 03-61 20.6 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm water South #03-61

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026077

South

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5/15/03 Sample Date: 5-15-03 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*		Nitrate, mg/L
03-61	2.4	x	(1:10)	x	4.4	=	105.6
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: Hach
Lot Number: A1361

Sample:	03-61		
After Spike Concentration:	3.3 mg/L	mg/L	mg/L
Recovery:	90 %	%	%

Notes: Storm water South - 03-61

Waste is to be disposed in satellite Cadmium Waste container

References: 1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Mid Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 1996
DEI • 12 Nov 2002 Revised

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Sample Identification

Lab Sample ID#: A30516AJ-3 03-61-S

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	MAJ
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CV
Total Oil & Grease	ND mg/L	EPA 1664	3. mg/L	NAC
Zinc	0.23 mg/L	EPA 200.7	0.05 mg/L	MAJ

ND means none detected at or above the detection limit listed.

SCOEPA00026079

Report Date: 06/02/2003
Job Number: A30516AJ
PWSID:
PO Number: 4500075102
Project No.: None Provided
Project Name: 2003 Stormwater Spring

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

Sample Information

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A30516AJ-1	03-59-N	Storm Water	05/15/2003	1010
A30516AJ-2	03-60-E	Storm Water	05/15/2003	1030
A30516AJ-3	03-61-S	Storm Water	05/15/2003	1000

Analytical results are on the following page(s).

Sincerely,

Technical Services

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

TS/atc

SCOEPA00026080

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 NW Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: 2003 Storm Water Spring
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [X] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [X] FAX Results - Preliminary
- [X] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: DS

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
03-59-N				5/15/03	1010		Oil & Grease - EPA 1664 Total Pb+Zn+Cu EPA 200.8	
03-60-E				5/15/03	1030		Oil & Grease EPA 1664, Total Pb, Zn, Cu EPA 200.8	
03-61-S				5/15/03	1000		Oil & Grease EPA 1664, Total Pb, Zn, Cu EPA 200.8	

Sampled By: Dianne Lusk
AUTHORIZED CUSTOMER SIGNATURE: Dianne Lusk DATE: 5/15/03

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Lusk	5/15/03	1045	D. L. Z	5/15/03	1045
				LAB		

White Copy-Laboratory Yellow Copy -Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging): VISUAL INSPECTIONS 7/02 - 6/03

PARAMETER	BENCHMARK[1]	UM	DATE:	7/18/02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

* See *

PARAMETER	BENCHMARK[1]	UM	DATE:	8-31-02	Below
			North	South	East
Floating Solids	No visible discharge	Yes or No			
Oil and Grease Sheen*	No visible sheen	Yes or No			

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

* Monthly visual observations not done due to insufficient rainfall. JH

SCOEPA00026083

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	9.30.02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026084

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	10-31-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	(1)	(1)	(1)
Oil and Grease Sheen*	No visible sheen	Yes or No			

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

(1) monthly visual observations not done due to insufficient rainfall DJ

SCOEPA00026085

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	11-12-02	
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	11-12-02	
			North	East	South
Total Copper	0.1	Mg/l	0.03	<0.03	<0.03
Total Lead	0.4	Mg/l	<0.005	<0.005	<0.005
Total Zinc	0.6	Mg/l	0.18	0.24	0.09
pH	5.5-9	Su	6.4	6.6	7.1
TSS	130	Mg/l	6.9	7.5	3.3
Oil and Grease	10	Mg/l	4.0	4.0	< 3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	12-26-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026087

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	1-22-03	
			North	South	East
Floating Solids	No visible discharge	Yes or No	NO	NO	NO
Oil and Grease Sheen*	No visible sheen	Yes or No	NO	NO	NO

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026088

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	2/28/03	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	3/27/03	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	2/1/03	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	30 Apr 2003	JJR
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026092

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	5/15/03	Di
			North	East	South
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	5/15/03	Di
			North	East	South
Total Copper	0.1	Mg/l	<0.03	<0.03	<0.03
Total Lead	0.4	Mg/l	<0.005	<0.005	<0.005
Total Zinc	0.6	Mg/l	0.26	0.17	0.23
pH	5.5-9	Su	7.12	6.46	7.12
TSS	130	Mg/l	5.5	14.7	105.5
Oil and Grease	10	Mg/l	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Jim Claxton in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Jim Claxton.

SCOEPA00026093

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JUN 26 2003

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1. Article Addressed to:

Mr. Dennis Jurries
Oregon Department of
Environmental Quality
Northwest Water Quality Division
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

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JUN 27 2002

DEQ/NWR

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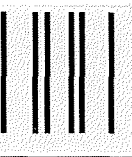

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Jim Claxton
Environmental Engineer
Wacker Siltronic Corp.
7200 NW Front Avenue, Mail Stop 30
Portland, OR 97210-3676

WACKER
Wacker Siltronic Corporation

June 25, 2002 ER023:JWC

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Water Quality Division
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

RE: Annual Storm water monitoring data for July 1, 2001 toJune 30, 2002

Dear Mr. Jeurries,

Enclosed is the storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. Sampling was conducted October 23, 2001 and May 13, 2002 meeting the requirement of conducting two monitoring events per sample point between July 1, 2001 and June 30, 2002.

Enclosed are copies of the monitoring results (including lab report and chain of custody) and copies of Monthly Visual Monitoring Reports. All results are well below the benchmark guideline concentrations.

If you have any questions, please contact Jim Claxton at 503-219-7313.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C McCue

Thomas C. McCue
Environmental Manager

cc: Tom Rothschild
Industrial Stormwater Program, City of Portland BES
SW Report 2002 File

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

A QS-9000 and ISO 14001 Certified Corporation

Bureau of Environmental Services

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: Wacker Siltronic Corp.

Site Address: 7200 NW Front Avenue, Portland, OR 97210-3676

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
10/23/01	North, East & South
5/13/02	North, East & South

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

❑ **Monitoring Waiver Reduction Notification:**
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

❑ **No Exposure Certification:**
Check the box if your facility is required to have a NPDES 1200-Z permit, but monitoring is not required due to no exposure of stormwater to industrial activities. This no exposure certification is outlined in Schedule B.3.b, and the facility meets the requirements of Schedule B.1.e. Note: This does not exclude your facility from notifying DEQ.

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 ensure 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.

Signature: Thomas C McCue

Title: Thomas C. McCue, Environmental Manager

Date: 6/25/02

Stormwater Report Summary
2001/2002
(covering the sampling period from July 1, 2001 to June 30, 2002)

Total Copper mg/l	**10/23/01**	**5/13/02**
North	<0.03	0.07
South	<0.003	0.05
East	<0.03	<.03
Benchmark & Sample Date	0.1	0.1

Total Lead mg/l	**10/23/01**	**5/13/02**
North	<0.001	0.005
South	<0.001	0.005
East	<0.001	<.005
Benchmark & Sample Date	0.4	0.4

Total Zinc mg/l	**10/23/01**	**5/13/02**
North	0.16	0.48
South	0.18	0.49
East	0.35	0.31
Benchmark & Sample Date	0.6	0.6

pH S.U.	**10/23/01**	**5/13/02**
North	6.47	6.12
South	6.77	6.30
East	6.76	6.42
Lower Benchmark & Sample Date	5.5	5.5
Upper Benchmark & Sample Date	9.0	9.0

TSS mg/l	**10/23/01**	**5/13/02**
North	6.88	29.3
South	3.88	32.5
East	3.5	14.5
Benchmark & Sample Date	130	130

Oil and Grease mg/l	**10/23/01**	**5/13/02**
North	<3.0	<3.0
South	<3.0	<3.0
East	<3.0	<3.0
Benchmark & Sample Date	10	10

SCOEPA00026099

RECEIVED NOV 19 2001

Report Date: November 13, 2001
Job Number: A11025Q
PO Number: 4500075102
Project No: None Provided
Project Name: Stormwater - Fall - 2001

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 10/25/01 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A11025Q-1	01-116 Stormwater - North	Storm Water	10/23/01	0920
A11025Q-2	01-117 Stormwater - East	Storm Water	10/23/01	0945
A11025Q-3	01-118 Stormwater - South	Storm Water	10/23/01	0925

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Technical Services

TS /atc

SCOEPA00026100

Analytical Data

Wacker Siltronic

Job Number: A11025Q

Lab Sample ID: A11025Q-1
Field ID: 01-116 NORTH
Date/Time: 10/23/01 0920
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.16	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A11025Q
Page Number: 3 of 4

Lab Sample ID: A11025Q-2
Field ID: 01-117 East
Date/Time: 10/23/01 0945
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.35	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A11025Q
Page Number: 4 of 4

Lab Sample ID: A11025Q-3
Field ID: 01-118 South
Date/Time: 10/23/01 0925
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.18	mg/L
Lead	EPA 239.2	0.001	ND	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (Wox) Sample ID#: # 01-118

Date: 10-23-01 Time: 0925 Sampled by: Tom Roths child
Justin Durr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 22.1 F-, mg/L: 5.81 pH: 6.7

TSS, mg/L: 3.88 Nitrate, mg/L: 272.8

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.18 (1)

Notes:
(1) Coffey Laboratories; WSC# 01-118.

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10.23.01 Oven Temp: 104 C Analyst: DJ

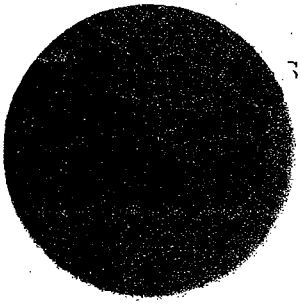
Date In: 10.23.01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
6. #01-118	400	0.0937 ~~0.0941~~/DC	0.0920	4.25
7. #01-118	400	0.0942	0.0928	3.5
			Average TSS	3.88

Comments: Storm water South.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.



Standard Methods for the Examination of Water and
stewater, 1998, 20th Edition, Section 2540 D,
ge 2-57.
NPDES Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026105

BENCHSHEET

NITRATE ANALYSIS

Test Date: 10.23.01 Sample Date: 10.23.01 Analyst: DI

Data:

Sample	Nitrate Nitrogen(N)		Dilution		4.4*	=	Nitrate, mg/L
#01-118	12.4	x	1:5	x	4.4	=	272.8
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 48151

Sample:	401-118		
After Spike Concentration:	13.2 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Comments: Stormwater sample South

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10.23.01 Sample Date: 10.23.01 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)

4. ~~CE (composite)~~ #01-118: 22.1 65Di mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm water sample South.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10.23.01 Sample Date: 10.23.01 Analyst: DI

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9/20/01

10.0 mg/L: Lot #: A1078 Date Opened: 9/20/01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01-118	5.81

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#01-118
After Spike Concentration:	____ mg/L	____ mg/L	7.95 mg/L
Recovery:	____ %	____ %	107 %

Comments: Storm water south

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Outfall Sample ID#: 01-116

Date: 10-23-01 Time: 0920 Sampled by: ~~Dan~~ Tom Rothschild
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 6.5 F-, mg/L: 0.147 pH: 6.47

TSS, mg/L: 6.88 Nitrate, mg/L: 3.08

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.16 (1)

Notes:
Coffey Laboratories; WSC # 01-116

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-23-01 Oven Temp: 104 C Analyst: DI

Date In: 10-23-01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
2 8. #01-116	400	0.0941	0.0915	6.5
3 8. #01-116	400	0.0951	0.0922	7.25
		Average TSS		6.88

Comments: Storm Water North #01-116

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, Page 2-57.
PDES Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10-23-01 Sample Date: 10-23-01 Analyst: _____

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: _____mg/L (Range: 28 - 32 mg/L)

4. ~~CE~~ #01-116 (composite): 6.5 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Stormwater North - #01-116

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 10-23-01 Sample Date: 10-23-01 Analyst: DI

Data:

Sample	Nitrate Nitrogen(N)	x Dilution	x 4.4* =	Nitrate, mg/L
#01-116	0.7	x N/A	x 4.4 =	3.08
		x	x 4.4 =	
		x	x 4.4 =	
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 48131

Sample:	#01-116		
After Spike Concentration:	1.5 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Comments: Storm Water North #01-116

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10.23.01 Sample Date: 10.23.01 Analyst: DC

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9/20/01

10.0 mg/L: Lot #: A1078 Date Opened: 9/20/01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01-116	0.147

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#01-116
After Spike Concentration:	mg/L	mg/L	1.91 mg/L
Recovery:	%	%	88.2 %

Comments: Stormwater North #01-116

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East (Riverbank) Sample ID#: 01.117

Date: 10.23.01 Time: ~~0920~~ Di 0945 Sampled by: Jon Rothschild Dustin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 8.3 F-, mg/L: 0.196 pH: 6.76

TSS, mg/L: 3.5 Nitrate, mg/L: 1.76

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3 (1)

Metals (EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.35 (1)

Notes:
(1) Coffey Laboratories; WSC #01117

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-23-01 Oven Temp: 104 C Analyst: DI

Date In: 10-23-01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
4S. 01-117	400	0.0932	0.0917	3.75
5S. 01-117	400	0.0953	0.0940	3.25
		Average TSS		3.5

Comments: Stormwater East

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: [redacted]rmit: monthly avg. 23 mg/L, daily max. 61 mg/L.

R[redacted]ırd Methods for the Examination of Water and [redacted]ıter, 1998, 20th Edition, Section 2540 D, [redacted]-57.
[redacted]S Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10-23-01 Sample Date: 10-23-01 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: _____mg/L (Range: 28 - 32 mg/L)
4. ~~CE~~ #01-117 (~~composite~~): 8.3 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Stormwater #01-117.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 10·23·01 Sample Date: 10·23·01 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*		Nitrate, mg/L
#01.117	0.4	x	N/R	x	4.4	=	1.76
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 48131

Sample:	#01.117		
After Spike Concentration:	1.4 mg/L	mg/L	mg/L
Recovery:	100 %	%	%

Comments: Stormwater East.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10.23-01 Sample Date: 10.23.01 Analyst: DJ

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9.20.01

10.0 mg/L: Lot #: A1078 Date Opened: 9.20.01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01.117	0.196

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106 406

	CE FAB-1	CE FAB-2	#01.117
After Spike Concentration:	mg/L	mg/L	2.18 mg/L
Recovery:	%	%	99.2 %

Comments: Storm water sample East.

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

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COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Or.
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Stormwater - Fall - 2001
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: DR

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
01-116				10.23.01	0920		oil+grease-EPA·1664 Copper, Lead, Zinc - EPA·200.8	
01·117				10.23.01	0945		oil+grease EPA·1664 copper, lead, zinc - EPA·200.8	
01-118				10.23.01	0925		oil+grease - EPA·1664 Copper, Lead, Zinc - EPA·200.8	

Sampled By: ~~Dr~~ Tom Rothschild, Gary Kent
AUTHORIZED CUSTOMER SIGNATURE: Dianne Lush DATE: 10.25.01

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Lush	10.25.01	0900	DLZ	10/25	1055
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

Report Date: 06/03/2002
Job Number: A20515AQ
PWSID:
PO Number: 45000751002
Project No.: 02-39-41
Project Name: Spring Stormwater 2002

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

Sample Information

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A20515AQ-1	02-39 North	Storm Water	05/13/2002	1345
A20515AQ-2	02-40 East	Storm Water	05/13/2002	1415
A20515AQ-3	02-41 South	Storm Water	05/13/2002	1400

Analytical results are on the following page(s).

Sincerely,

Technical Services

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

TS/atc

SCOEPA00026120

Sample Identification

Lab Sample ID#: A20515AQ-1 02-39 North

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	0.07 mg/L	EPA 200.7	0.03 mg/L	CV
Lead	0.005 mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.48 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

Sample Identification

Lab Sample ID#: A20515AQ-2 02-40 East

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	CV
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.31 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

Sample Identification

Lab Sample ID#: A20515AQ-3

02-41 South

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	0.05 mg/L	EPA 200.7	0.03 mg/L	CV
Lead	0.005 mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.49 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (river) Sample ID#: 02.39

Date: 5.13.02 Time: 1345 Sampled by: Tom Roths child
Justin Derr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 41.4 F-, mg/L: 0.240 pH: 6.12

TSS, mg/L: 29.25 Nitrate, mg/L: 1.76

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3.0

Metals(EPA 200.8), mg/L:

Copper: 0.07 Lead: 0.005 Zinc: 0.48

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/13/02 Oven Temp: 105 C Analyst: D.

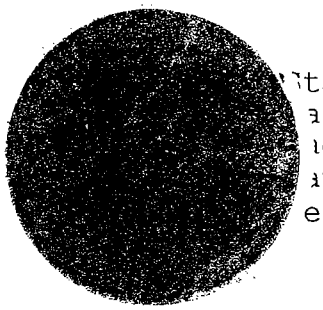
Date In: 5.14.02 Time In/Out: 0830 / 1438

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
2 8. 02.39	200	0.0932	0.0873	29.5
3 9. 02.39	200	0.0942	0.0884	29
		Average TSS		29.25

Comments: Storm Water North.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.



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ermit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5.13.02 Sample Date: 5.13.02 Analyst: DL

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	0
02.39	0.240

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	0239
After Spike Concentration:	____ mg/L	0 mg/L	2.20 mg/L
Recovery:	____ %	____ %	98 %

Comments: Storm Water North -

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 5.13.02 Sample Date: 5.13.02 Analyst: Di

Data:

Sample	Nitrate Nitrogen(N)		Dilution		4.4*		Nitrate, mg/L
#02-39	0.4	x	N/A	x	4.4	=	1.76
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	02-39		
After Spike Concentration:	1.3 mg/L	mg/L	mg/L
Recovery:	90 %	%	%

Comments: Storm Water North

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/13/02 Sample Date: 5-13-02 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)

4. ~~CE (composite)~~ 02.39 grab: 41.4 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water North

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East (river) Sample ID#: 02-40

Date: 5/13/02 Time: 1415 Sampled by: Tom Rothschuld
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 44.7 F-, mg/L: 0.194 pH: 6.42

TSS, mg/L: 14.5 Nitrate, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: <0.03 Lead: <0.005 Zinc: 0.31

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5-13-02 Oven Temp: 105 C Analyst: DT

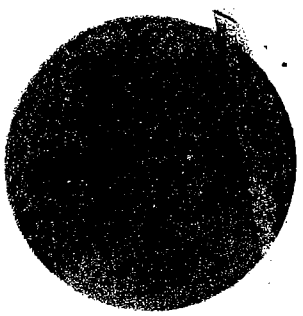
Date In: 5-14-02 Time In/Out: 0830 / 1430

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
48. 02-40	200	0.0896	0.0867	14.5
59. 02-40	200	0.0903	0.0874	14.5
		Average TSS		14.5

Comments: Storm Water East.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.



. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
National Pollution Discharge Elimination System Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5-13-02 Sample Date: 5-13-02 Analyst: Di

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
02510	0.174

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#02-40
After Spike Concentration:	____ mg/L	____ mg/L	2.04 mg/L
Recovery:	____ %	____ %	93.3 %

Comments: Storm Water East.

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026131

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5-13-02 Sample Date: 5-13-02 Analyst: _____

Data:

Sample	Nitrate Nitrogen (N)	x Dilution	x 4.4* =	Nitrate, mg/L
#02-40	0.0	x N/A	x 4.4 =	0
		x	x 4.4 =	
		x	x 4.4 =	
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	#02-40		
After Spike Concentration:	0.9 mg/L	mg/L	mg/L
Recovery:	90%	%	%

Comments: Storm Water East -

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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SCOEPA00026132

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/13/02 Sample Date: 5/13/02 Analyst: DV

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite)~~ 02·40: 44.7 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water East.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (NOx) Sample ID#: 02-41

Date: 5-13-02 Time: 1400 Sampled by: Jon Rothschild
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 44.4 F-, mg/L: 0,302 pH: 6.3

TSS, mg/L: 32.5 Nitrate, mg/L: 11

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: 0.05 Lead: 0.005 Zinc: 0.49

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5.13.02 Oven Temp: 105 C Analyst: DV

Date In: 5.14.02 Time In/Out: 0830 / 1430

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
6 8. 02-41	200	0.0940	0.0877	31.5
7 9. 02-41	200	0.0950	0.0883	33.5
		Average TSS		32.5

Comments: Storm water South

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Refe[redacted] Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, Page 2-57.
[redacted]ional Pollution Discharge Elimination System [redacted]mit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5·13·02 Sample Date: 5·13·02 Analyst: D.

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#02-41	0.302

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#02-41
After Spike Concentration:	____ mg/L	____ mg/L	2.24 mg/L
Recovery:	____ %	____ %	96.9 %

Comments: Storm Water South

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026136

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5.13.02 Sample Date: 5.13.02 Analyst: DI

Data:

Sample	Nitrate Nitrogen(N)	x Dilution	x 4.4* =	Nitrate, mg/L
#02-41	0.5	x 1:5	x 4.4 =	11
		x	x 4.4 =	
		x	x 4.4 =	
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	#02-41		
After Spike Concentration:	1.8 mg/L	mg/L	mg/L
Recovery:	130 %	%	%

Comments: Storm Water Sample South.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5.13.02 Sample Date: 5.13.02 Analyst: DJ

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)

4. 02.41 ~~CE~~ (~~composite~~ grab): 44.4 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water South.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075702
Project Number: 02-39-41
Project Name: Spring Storm Water - 2002
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [X] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [X] FAX Results - Preliminary
- [X] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: Dn

FOR LABORATORY USE ONLY Page ____ of ____
Job Number: ____
Custabbr: ____ ☐NE
☐ VISA ☐ M/C Cardholder: ____
Card #: ____ Exp: ____
Cash / Check / CC: $ ____ #: ____
Billing Codes: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test Profi
02-39-North				5/13/02	1345		Oil/Grease - EPA 1664 Total Cu, Pb, Zn EPA-200.8	
02-40-East				5/13/02	1415		Oil/Grease - EPA-1664 Total Cu, Pb, Zn EPA-200.8	
02-41-South				5/13/02	1400		Oil/Grease EPA-1664 Total Cu, Pb, Zn EPA-200.8	

Sampled By: Justin Darr, Tom Rothschild
AUTHORIZED CUSTOMER SIGNATURE: Dianne Irish DATE: 5-15-02

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Irish	5-15-02	0930	[signature]	5/15/02	0955
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

May 15 02 12:42p

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	31 July	2001
			North	South	East
Floating Solids	No visible discharge	Yes or No	(1)	(1)	(1)
Oil and Grease Sheen*	No visible sheen	Yes or No	(1)	(1)	(1)

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

(1) Monthly visual inspection not done. Insufficient rainfall.
JJR

SCOEPA00026140

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	31 August 2001	
			North	South	East
Floating Solids	No visible discharge	Yes or No	(1)	(1)	(1)
Oil and Grease Sheen*	No visible sheen	Yes or No	(1)	(1)	(1)

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

(1) monthly visual inspection not done. Insufficient rainfall. JJR

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	9/25/01	
			North	South	East
Floating Solids	No visible discharge	Yes or No	no	no	no
Oil and Grease Sheen*	No visible sheen	Yes or No	no	no	no

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	10-23-01	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	10.23-01	
			North	South	East
Total Copper	0.1	Mg/l	<0.03	<0.03	<0.03
Total Lead	0.4	Mg/l	<0.001	<0.001	<0.001
Total Zinc	0.6	Mg/l	0.16	0.18	0.35
pH	5.5-9	Su	6.47	6.77	6.76
TSS	130	Mg/l	6.88	3.88	3.5
Oil and Grease	10	Mg/l	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE: 19 Nov 2001		
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

3yr

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	12-31-07	
			North	South	East
Floating Solids	No visible discharge	Yes or No	no	no	no
Oil and Grease Sheen*	No visible sheen	Yes or No	no	no	no

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	1-21-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	2/21/02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	3-11-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	April	2002
			North	South	East
Floating Solids	No visible discharge	Yes or No	See note below		
Oil and Grease Sheen*	No visible sheen	Yes or No			

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Note * The monthly visuals were not done in April. This was due to waiting to coordinate with our semi-annual sampling, a lack of rain & timing made this impossible. DH

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	5-13-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	5-13-02	
			North	South	East
Total Copper	0.1	Mg/l	0.07	0.05	<0.03
Total Lead	0.4	Mg/l	0.005	0.005	<0.005
Total Zinc	0.6	Mg/l	0.48	0.49	0.31
pH	5.5-9	Su	6.12	6.3	6.42
TSS	130	Mg/l	29.25	32.5	14.5
Oil and Grease	10	Mg/l	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	6-17-02	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:		
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l			
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

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Dennis Jeurries, DEQ, State of OR, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

PS Form 3800, January 2001 — See Reverse for Instructions

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Dennis Jeurries
DEQ
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-5884

COMPLETE THIS SECTION ON DELIVERY

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X DEQ/NWR ☐ Agent ☐ Addressee

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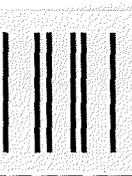

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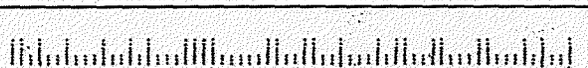
Jim Claxton
Environmental Engineer
Wacker Siltronic Corp.
7200 NW Front Avenue, Mail Stop 30
Portland, OR 97210-3676

24



WACKER
Wacker Siltronic Corporation

June 25, 2002 ER024:JWC

Industrial Stormwater City of Portland
Industrial Stormwater Program
Department of Environmental Quality
6543 N Burlington Avenue
Portland, Oregon 97203-5452

RE: Annual Storm water monitoring data for July 1, 2001 to June 30, 2002

Dear Industrial Stormwater

Enclosed is the storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. Sampling was conducted October 23, 2001 and May 13, 2002 meeting the requirement of conducting two monitoring events per sample point between July 1, 2001 and June 30, 2002.

Enclosed are copies of the monitoring results (including lab report and chain of custody). All results are well below the benchmark guideline concentrations.

If you have any questions, please contact Jim Claxton at 503-219-7313.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

cc: Tom Rothschild
Department of Environmental Quality
SW Report 2002 File

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

SCOEPA00026155

Bureau of Environmental Services

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: Wacker Siltronic Corp.

Site Address: 7200 NW Front Avenue, Portland, OR 97210-3676

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
10/23/01	North, East & South
5/13/02	North, East & South

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

☐ **Monitoring Waiver Reduction Notification**:
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

☐ **No Exposure Certification**:
Check the box if your facility is required to have a NPDES 1200-Z permit, but monitoring is not required due to no exposure of stormwater to industrial activities. This no exposure certification is outlined in Schedule B.3.b, and the facility meets the requirements of Schedule B.1.e. Note: This does not exclude your facility from notifying DEQ.

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 ensure 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.

Signature: Thomas C McCue

Title: Thomas C. McCue, Environmental Manager

Date: 6/25/02

Stormwater Report Summary
2001/2002
(covering the sampling period from July 1, 2001 to June 30, 2002)

Total Copper mg/l	**10/23/01**	**5/13/02**
North	<0.03	0.07
South	<0.003	0.05
East	<0.03	<.03
Benchmark & Sample Date	0.1	0.1

Total Lead mg/l	**10/23/01**	**5/13/02**
North	<0.001	0.005
South	<0.001	0.005
East	<0.001	<.005
Benchmark & Sample Date	0.4	0.4

Total Zinc mg/l	**10/23/01**	**5/13/02**
North	0.16	0.48
South	0.18	0.49
East	0.35	0.31
Benchmark & Sample Date	0.6	0.6

pH S.U.	**10/23/01**	**5/13/02**
North	6.47	6.12
South	6.77	6.30
East	6.76	6.42
Lower Benchmark & Sample Date	5.5	5.5
Upper Benchmark & Sample Date	9.0	9.0

TSS mg/l	**10/23/01**	**5/13/02**
North	6.88	29.3
South	3.88	32.5
East	3.5	14.5
Benchmark & Sample Date	130	130

Oil and Grease mg/l	**10/23/01**	**5/13/02**
North	<3.0	<3.0
South	<3.0	<3.0
East	<3.0	<3.0
Benchmark & Sample Date	10	10

SCOEPA00026157

RECEIVED NOV 19 2001

Report Date: November 13, 2001
Job Number: A11025Q
PO Number: 4500075102
Project No: None Provided
Project Name: Stormwater - Fall - 2001

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 10/25/01 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A11025Q-1	01-116 Stormwater - North	Storm Water	10/23/01	0920
A11025Q-2	01-117 Stormwater - East	Storm Water	10/23/01	0945
A11025Q-3	01-118 Stormwater - South	Storm Water	10/23/01	0925

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Linda Bay

Technical Services

TS /atc

SCOEPA00026158

Analytical Data

Wacker Siltronic

Job Number: A11025Q

Lab Sample ID: A11025Q-1
Field ID: 01-116 NORTH
Date/Time: 10/23/01 0920
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.16	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A11025Q
Page Number: 3 of 4

Lab Sample ID: A11025Q-2
Field ID: 01-117 East
Date/Time: 10/23/01 0945
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.35	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A11025Q
Page Number: 4 of 4

Lab Sample ID: A11025Q-3
Field ID: 01-118 South
Date/Time: 10/23/01 0925
Matrix: Storm Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664A	3.	ND	mg/L
Copper	EPA 200.7	0.03	ND	mg/L
Zinc	EPA 200.7	0.05	0.18	mg/L
Lead	EPA 239.2	0.001	ND	mg/L
Lead	EPA 239.2	0.001	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (Nox) Sample ID#: # 01-118

Date: 10-23-01 Time: 0925 Sampled by: Tom Rothschild
Justin Dunn

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: X Floating Solids: yes: ____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 22.1 F-, mg/L: 5.81 pH: 6.77

TSS, mg/L: 3.88 Nitrate, mg/L: 272.8

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.18 (1)

Notes:
(1) Coffey Laboratories; WSC# 01-118.

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10.23.01 Oven Temp: 104 C Analyst: DJ

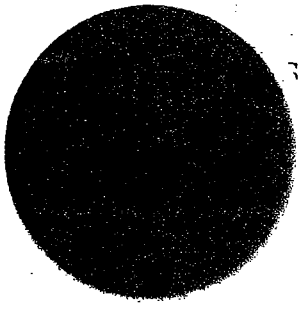
Date In: 10.23.01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
6. #01-118	400	0.0937 ~~0.0941~~	0.0920	4.25
7. #01-118	400	0.0942	0.0928	3.5
			Average TSS	3.88

Comments: Storm water South.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.



Standard Methods for the Examination of Water and stewater, 1998, 20th Edition, Section 2540 D, ge 2-57.
NPDES Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026163

BENCHSHEET

NITRATE ANALYSIS

Test Date: 10-23-01 Sample Date: 10-23-01 Analyst: DE

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*	=	Nitrate, mg/L
#01-118	12.4	x	1:5	x	4.4	=	272.8
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 48131

Sample:	401-118		
After Spike Concentration:	13.2 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Comments: Stormwater sample South

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10.23.01 Sample Date: 10.23.01 Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 29.8 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite)~~ #01-118: 22.1 650 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm water sample South.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10.23.01 Sample Date: 10.23.01 Analyst: DW

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9/20/01

10.0 mg/L: Lot #: A1078 Date Opened: 9/20/01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01-118	5.81

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#01-118
After Spike Concentration:	mg/L	mg/L	7.95 mg/L
Recovery:	%	%	107 %

Comments: Storm water south

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

SCOEPA00026166

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Outfall Sample ID#: 01-116

Date: 10-23-01 Time: 0920 Sampled by: ~~Dan~~ Tom Rothschild
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 6.5 F-, mg/L: 0.147 pH: 6.47

TSS, mg/L: 6.88 Nitrate, mg/L: 3.08

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3 (1)

Metals(EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.16 (1)

Notes:
Coffey Laboratories; WSC # 01-116

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-23-01 Oven Temp: 104 C Analyst: DL

Date In: 10-23-01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
28. #01-116	400	0.0941	0.0915	6.5
38. #01-116	400	0.0951	0.0922	7.25
		Average TSS		6.88

Comments: Storm Water North #01-116

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, Page 2-57.
2. NPDES Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026168

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10-23-01 Sample Date: 10-23-01 Analyst: _____

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: _____mg/L (Range: 28 - 32 mg/L)

4. ~~CE~~ #01-116 (composite): 6.5 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Stormwater North - #01-116

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026169

BENCHSHEET

NITRATE ANALYSIS

Test Date: 10-23-01 Sample Date: 10-23-01 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4* =	Nitrate, mg/L
#01-116	0.7	x	N/A	x 4.4 =		3.08
		x		x 4.4 =		
		x		x 4.4 =		
		x		x 4.4 =		

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 48131

Sample:	#01-116		
After Spike Concentration:	1.5 mg/L	mg/L	mg/L
Recovery:	80 %	%	%

Comments: Storm Water North #01-116

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10-23-01 Sample Date: 10-23-01 Analyst: DC

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9/20/01

10.0 mg/L: Lot #: A1078 Date Opened: 9/20/01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01-116	0.147

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#01-116
After Spike Concentration:	mg/L	mg/L	1.91 mg/L
Recovery:	%	%	88.2 %

Comments: Stormwater North #01-116

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

SCOEPA00026171

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East (Riverbank) Sample ID#: 01.117

Date: 10.23.01 Time: ~~0920~~ 0945 Sampled by: Tom Rothschild Dustin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 8.3 F-, mg/L: 0.196 pH: 6.76

TSS, mg/L: 3.5 Nitrate, mg/L: 1.76

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3 (1)

Metals (EPA 200.8), mg/L:

Copper: <0.03 (1) Lead: <0.001 (1) Zinc: 0.35 (1)

Notes:
(1) Coffey Laboratories; WSC #0147

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-23-01 Oven Temp: 104 C Analyst: DJ

Date In: 10-23-01 Time In/Out: 1055 / 1414

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0921	0.0921	
2. CE FAB-1	200			
3. CE FAB-1	200			
			Average CE FAB-1 TSS	
4. CE FAB-2				
5. CE FAB-2				
			Average CE FAB-2 TSS	
6. OWW	50			
7. OWW	50			
			Average OWW TSS	
4 Ø. 01.117	400	0.0932	0.0917	3.75
5 Ø. 01.117	400	0.0953	0.0940	3.25
			Average TSS	3.5

Comments: Stormwater East

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: ...rmit: monthly avg. 23 mg/L, daily max. 61 mg/L.

R... ...ard Methods for the Examination of Water and ...ter, 1998, 20th Edition, Section 2540 D, ...-57.
...S Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 10-23-01 Sample Date: 10-23-01 Analyst: DI

COD Reactor Temperature: 150 C

Time In / Out: 1005 / 1205 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: _____mg/L (Range: 28 - 32 mg/L)
4. ~~CE~~ #01-117 (~~composite~~): 8.3 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Stormwater #01-117.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 10·23·01 Sample Date: 10·23·01 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*		Nitrate, mg/L
#01.117	0.4	x	N/A	x	4.4	=	1.76
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: U81 31

Sample:	#01.117		
After Spike Concentration:	1.4 mg/L	mg/L	mg/L
Recovery:	100 %	%	%

Comments: Stormwater East.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10.23-01 Sample Date: 10.23.01 Analyst: DJ

Slope: -59.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1012 Date Opened: 9.20.01

10.0 mg/L: Lot #: A1078 Date Opened: 9.20.01

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#01.117	0.196

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106 406

	CE FAB-1	CE FAB-2	#01.117
After Spike Concentration:	____ mg/L	____ mg/L	2.18 mg/L
Recovery:	____ %	____ %	99.2 %

Comments: Stormwater sample East.

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 JAN 2000 Revised

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SCOEPA00026176

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Or.
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Stormwater - Fall - 2001
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: DR

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐ NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC: $ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
01-116				10.23.01	0920		oil+grease - EPA · 1664 Copper, Lead, Zinc - EPA · 200.8	
01-117				10.23.01	0945		oil+grease EPA · 1664 copper, lead, zinc - EPA · 200.8	
01-118				10.23.01	0925		oil+grease - EPA · 1664 Copper, Lead, Zinc - EPA · 200.8	

Sampled By: ~~DR~~ Tom Rothschild, Gary Kent
AUTHORIZED CUSTOMER SIGNATURE: Dianne Lust DATE: 10.25.01

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne Lust	10.25.01	0900	DLZ	10/25	1055
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

Report Date: 06/03/2002
Job Number: A20515AQ
PWSID:
PO Number: 45000751002
Project No.: 02-39-41
Project Name: Spring Stormwater 2002

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

Sample Information

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A20515AQ-1	02-39 North	Storm Water	05/13/2002	1345
A20515AQ-2	02-40 East	Storm Water	05/13/2002	1415
A20515AQ-3	02-41 South	Storm Water	05/13/2002	1400

Analytical results are on the following page(s).

Sincerely,

Technical Services

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

TS/atc

SCOEPA00026178

Sample Identification

Lab Sample ID#: A20515AQ-1 02-39 North

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	0.07 mg/L	EPA 200.7	0.03 mg/L	CV
Lead	0.005 mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.48 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

Sample Identification

Lab Sample ID#: A20515AQ-2 02-40 East

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	ND mg/L	EPA 200.7	0.03 mg/L	CV
Lead	ND mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.31 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

Sample Identification

Lab Sample ID#: A20515AQ-3 02-41 South

Inorganic Chemicals

Contaminant	Analysis	Method	Detection Limit	Analyst
Copper	0.05 mg/L	EPA 200.7	0.03 mg/L	CV
Lead	0.005 mg/L	EPA 239.2	0.005 mg/L	CFS
Total Oil & Grease	ND mg/L	EPA 1664A	3. mg/L	BAB
Zinc	0.49 mg/L	EPA 200.7	0.05 mg/L	CV

ND means none detected at or above the detection limit listed.

6/3/02

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (river) Sample ID#: 02.39

Date: 5.13.02 Time: 1345 Sampled by: Tom Roths child
Justin Derr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 41.4 F-, mg/L: 0.240 pH: 6.12

TSS, mg/L: 29.25 Nitrate, mg/L: 1.79

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3.0

Metals(EPA 200.8), mg/L:

Copper: 0.07 Lead: 0.005 Zinc: 0.48

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/13/02 Oven Temp: 105 C Analyst: D.

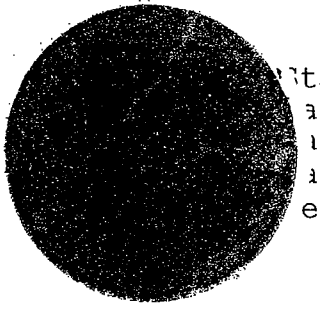
Date In: 5/14/02 Time In/Out: 0830 / 1430

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
2 8. 02-39	200	0.0932	0.0873	29.5
3 9. 02-39	200	0.0942	0.0884	29
		Average TSS		29.25

Comments: Storm Water North.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.



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astewater, 1998, 20th Edition, Section 2540 D,
ıge 2-57.
ıtional Pollution Discharge Elimination System
ermit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026183

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5.13.02 Sample Date: 5.13.02 Analyst: DJ

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	0
02-39	0.240

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	0239
After Spike Concentration:	____ mg/L	0 mg/L	2.20 mg/L
Recovery:	____ %	____ %	98 %

Comments: Storm Water North -

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026184

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5-13-02 Sample Date: 5-13-02 Analyst: DI

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*		Nitrate, mg/L
#02-39	0.4	x	N/A	x	4.4	=	1.76
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	02-39		
After Spike Concentration:	1.3 mg/L	mg/L	mg/L
Recovery:	90 %	%	%

Comments: Storm Water North.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/13/02 Sample Date: 5-13-02 Analyst: Di

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)

02·39 grab
4. ~~CE (composite)~~: 41.4 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water North

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East (river) Sample ID#: 02-40

Date: 5/13/02 Time: 1415 Sampled by: Tom Rothschuler
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 44.7 F-, mg/L: 0.194 pH: 6.42

TSS, mg/L: 145 Nitrate, mg/L: 0

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: <0.03 Lead: <0.005 Zinc: 0.31

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5-13-02 Oven Temp: 105 C Analyst: DT

Date In: 5-14-02 Time In/Out: 0830 / 1430

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
4S. 02-40	200	0.0896	0.0867	14.5
5S. 02-40	200	0.0903	0.0874	14.5
		Average TSS		14.5

Comments: Storm Water East.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
National Pollution Discharge Elimination System Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5·13·02 Sample Date: 5·13·02 Analyst: Di

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
02410	0.174

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#02-40
After Spike Concentration:	____ mg/L	____ mg/L	2.04 mg/L
Recovery:	____ %	____ %	93.3 %

Comments: Storm Water East.

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 5-13-02 Sample Date: 5-13-02 Analyst: _____

Data:

Sample	Nitrate Nitrogen (N)		Dilution		4.4*	=	Nitrate, mg/L
#02-40	0.0	x	N/A	x	4.4	=	Ø
		x		x	4.4	=	
		x		x	4.4	=	
		x		x	4.4	=	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	#02-40	_____	_____
After Spike Concentration:	0.9 mg/L	_____ mg/L	_____ mg/L
Recovery:	90%	_____ %	_____ %

Comments: Storm Water East -

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/13/02 Sample Date: 5/13/02 Analyst: DV

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)
4. ~~CE (composite)~~ 02.40: 44.7 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water East.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (NOx) Sample ID#: 02-41

Date: 5-13-02 Time: 1400 Sampled by: Jon Rothschilds
Justin Darr

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: X Floating Solids: yes:___ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: 44.4 F-, mg/L: 0,302 pH: 6.3

TSS, mg/L: 32.5 Nitrate, mg/L: 11

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: 0.05 Lead: 0.005 Zinc: 0.49

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5.13.02 Oven Temp: 105 C Analyst: DV

Date In: 5.14.02 Time In/Out: 0830 / 1430

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0888	0.0888	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
6 8. 02-41	200	0.0940	0.0877	31.5
7 9. 02-41	200	0.0950	0.0883	33.5
		Average TSS		32.5

Comments: Storm water South

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Refe[redacted] Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, Page 2-57.
ional Pollution Discharge Elimination System
nit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5/13/02 Sample Date: 5/13/02 Analyst: D.

Slope: -59.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: A1242 Date Opened: 5/9/02

10.0 mg/L: Lot #: A1198 Date Opened: 5/9/02

Data:

Sample	Fluoride, mg/L
CE FAB 1	
CE FAB-2	
#02-41	0.302

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: 1106406

	CE FAB-1	CE FAB-2	#02-41
After Spike Concentration:	____ mg/L	____ mg/L	2.24 mg/L
Recovery:	____ %	____ %	96.9 %

Comments: Storm Water South

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1998 20th Edition, Section 4500-F C, page 4-81.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026194

BENCHSHEET

NITRATE ANALYSIS

Test Date: 5.13.02 Sample Date: 5.13.02 Analyst: DI

Data:

Sample	Nitrate Nitrogen(N)	x	Dilution	x 4.4* =	Nitrate, mg/L
#02-41	0.5	x	1:5	x 4.4 =	11
		x		x 4.4 =	
		x		x 4.4 =	
		x		x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate Nitrogen (N) concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: A1361

Sample:	#02-41		
After Spike Concentration:	1.8 mg/L	mg/L	mg/L
Recovery:	130 %	%	%

Comments: Storm Water Sample South.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1998, 20th Edition, Section 4500-N03-E, page 4-117.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8039, High Range:0-30.0 mg/L Cadmium Reduction Method. HACH Program 2530.

TJR/JB 27 Jun 1996
DEI 20 Sept 2001 Revised

L:\FACLAB\WWTP\BENCH\NITRATE4000B.DOC

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5.13.02 Sample Date: 5.13.02 Analyst: DJ

COD Reactor Temperature: 150 C

Time In / Out: 1430 / 1630 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.0 mg/L (Range: 28 - 32 mg/L)

4. ~~CE~~ (~~composite~~) 02.41 grab: 44.4 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water South.

TJR 31 Dec 91
DEM 12 Sep 97 Revised

L:\FACLAB\WWTP\BENCH\CODULRB.DOC

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144
Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075702
Project Number: 02-39-41
Project Name: Spring Storm Water - 2002
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: DR

Reporting Request
- [ ] State Compliance Format
- [x] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbrt: ☐N
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC#: #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AI

Sample ID	Loc.	ID	#	Collection Date / Time	Media	Analysis Requested	To Pro
02-39-North				5/13/02 1345		Oil/Grease-EPA 1664 Total Cu, Pb, Zn EPA-200.8	
02-40-East				5/13/02 1415		Oil/Grease-EPA-1664 Total Cu, Pb, Zn EPA-200.8	
02-41-South				5/13/02 1400		Oil/Grease EPA-1664 Total Cu, Pb, Zn EPA-200.8	

Sampled By: Justin Darr, Tom Rothschild
AUTHORIZED CUSTOMER SIGNATURE: Dianna Irish DATE: 5-15-02

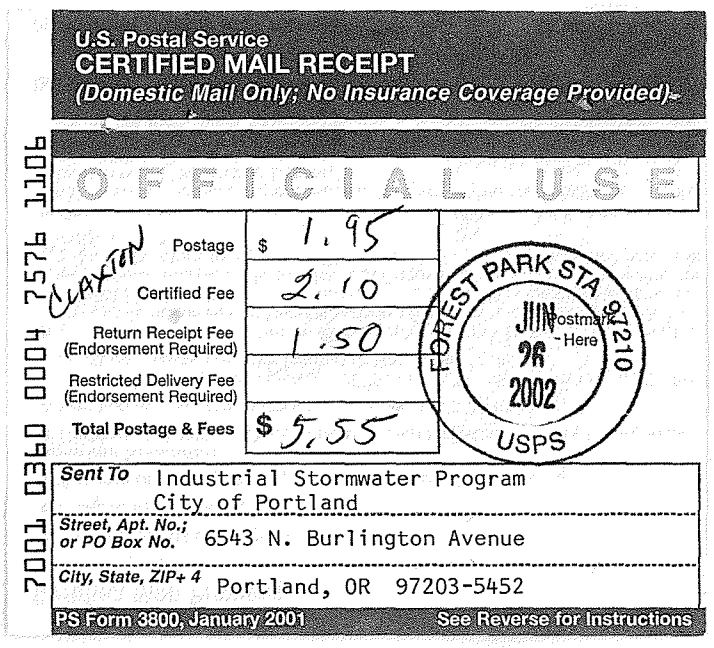
Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Tim
	Dianna Irish	5-15-02	0930	[illegible]	5/15/02	095
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

May 15 02 12:42p



U.S. Postal Service
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7001 0360 0004 7574 1106

CLAXTON

Postage	$ 1.95
Certified Fee	2.10
Return Receipt Fee (Endorsement Required)	1.50
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.55

FOREST PARK STA 97210
JUN 26 2002
Postmark Here
USPS

Sent To: Industrial Stormwater Program
City of Portland

Street, Apt. No.; or PO Box No.: 6543 N. Burlington Avenue

City, State, ZIP+ 4: Portland, OR 97203-5452

PS Form 3800, January 2001 See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Industrial Stormwater
Industrial Stormwater Program
City of Portland
6543 N. Burlington Avenue
Portland, OR 97203-5452

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* A. PESCHKE

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7001 0360 0004 7576 1106

PS Form 3811, August 2001 Domestic Return Receipt 102595-01-M-2509

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Jim Claxton
Environmental Engineer
Wacker Siltronic Corp.
7200 NW Front Avenue, Mail Stop 30
Portland, OR 97210-3676

97210+3676

WACKER
Wacker Siltronic Corporation

June 29, 2001 ER030:PH

Dennis Jeurries
Dept. of Environmental Quality
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201

RE: Annual Stormwater Monitoring Data, October 2000 and April 2001

Dear Mr. Jeurries:

Enclosed is the storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit 1200-Z, issued December 23, 1997. Sampling was conducted on November 29, 2000 and April 20, 2001, meeting the requirement of conducting two monitoring events per sample point between July 1 and June 30.

All results were well below the benchmark guideline concentrations, with the exception of TSS, at the North sample point, on April 20, 2001. TSS was re-sampled as soon as possible, on April 30, 2001, resulting in a TSS concentration of 58 mg/L, well below the TSS benchmark of 130 mg/L.

Although we believe this was an isolated incident, we have included this excursion in the Environmental Corrective Action System and have taken actions to help assure compliance with the TSS benchmark. We are also reviewing our Storm Water Pollution Control Plan. Any revisions will be submitted to you and John Holtrop.

Per our June 20, 2000 telephone conversation with John Holtrop of the City of Portland, we have submitted the summarized sampling results, analytical reports, QA/QC data, bench sheets, and chain of custody forms.

If you have any questions, please contact Petra Hoy at (503) 219-4469.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C McCue

Thomas C. McCue,
Environmental Manager

c: John Holtrop – BES, City of Portland
Tom Rothschild – Facilities Chemist, Wacker Siltronic Corp.
SW Report 2000 File

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 219-7532
Fax (503) 219-7599

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Petra Hoy
Environmental Engineer
Wacker Siltronic Corp.
7200 NW Front Avenue, Mail Stop 30
Portland, OR 97210-3676

97210-3676 24

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dennis Jeurries
DEQ
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-5884

DEQ/NWR

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* | B. Date of Delivery

C. Signature

X

DEQ/NWR

☐ Agent
☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

PORTLAND, OR - UNIVERSITY STA
JUL 13 2001
USPS

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☑ Yes

2. Article Number *(Copy from service label)* 7000 0520 0024 3444 43

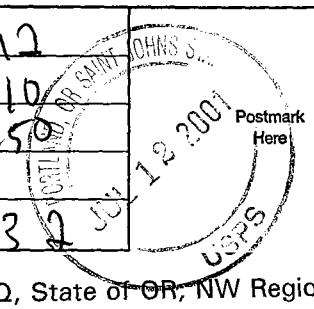
PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

ms 30

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7000 0520 0024 3443 4304

Postage	$ 1.72
Certified Fee	2.10
Return Receipt Fee (Endorsement Required)	3.50
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 7.32



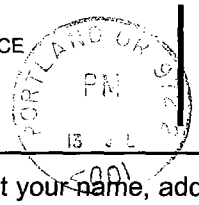
Postmark Here

Dennis Jeurries, DEQ, State of OR, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

PS Form 3800, February 2000 — See Reverse for Instructions

SCOEPA00026204

UNITED STATES POSTAL SERVICE



First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Petra Hoy
Environmental Engineer
Wacker Siltronic Corp.
7200 NW Front Avenue, Mail Stop 30
Portland, OR 97210-3676

97210-3676

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

John Holtrop
Industrial Stormwater Program
Bureau of Environmental Services
City of Portland
6543 N. Burlington Avenue
Portland, OR 97203-5452

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* P. Abrams

B. Date of Delivery 7-13-01

C. Signature

X [signature]

☐ Agent
☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* 7000 0520 0024 3444 4298

PS Form 3811, July 1999 Domestic Return Receipt MS 30 102595-00-M-0952

SCOEPA00026206

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7000 0520 0024 3444 4298

Postage	$ 1.49
Certified Fee	2.10
Return Receipt Fee (Endorsement Required)	3.50
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$7.09

Postmark Here

Recipient's Name *(Please Print Clearly) (To be completed by mailer)*
John Holtrop, City of Portland, Enviro Services

Street, Apt. No.; or PO Box No.
6543 N. Burlington Avenue

City, State, ZIP+ 4
Portland, OR 97203-5452

PS Form 3800, February 2000 — See Reverse for Instructions

SCOEPA00026207

Certified Mail Provides:

- A mailing receipt
- A unique identifier for your mailpiece
- A signature upon delivery
- A record of delivery kept by the Postal Service for two years

Important Reminders:

- Certified Mail may ONLY be combined with First-Class Mail or Priority Mail.
- Certified Mail is not available for any class of international mail.
- NO INSURANCE COVERAGE IS PROVIDED with Certified Mail. For valuables, please consider Insured or Registered Mail.
- For an additional fee, a Return Receipt may be requested to provide proof of delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the fee. Endorse mailpiece "Return Receipt Requested". To receive a fee waiver for a duplicate return receipt, a USPS postmark on your Certified Mail receipt is required.
- For an additional fee, delivery may be restricted to the addressee or addressee's authorized agent. Advise the clerk or mark the mailpiece with the endorsement "Restricted Delivery".
- If a postmark on the Certified Mail receipt is desired, please present the article at the post office for postmarking. If a postmark on the Certified Mail receipt is not needed, detach and affix label with postage and mail.

IMPORTANT: Save this receipt and present it when making an inquiry.

PS Form 3800, February 2000 (Reverse) **102595-00-M-1489**

SCOEPA00026208

Bureau of Environmental Services

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: Wacker Siltronic Corp.

Site Address: 7200 NW Front Avenue, Portland, OR 97210-3676

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
November 29, 2000	North, South, East
April 20, 2001	North, South, East

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

☐ **Monitoring Waiver Reduction Notification:**
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

☐ **No Exposure Certification:**
Check the box if your facility is required to have a NPDES 1200-Z permit, but monitoring is not required due to no exposure of stormwater to industrial activities. This no exposure certification is outlined in Schedule B.3.b, and the facility meets the requirements of Schedule B.1.e. Note: This does not exclude your facility from notifying DEQ.

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 ensure 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.

Signature: Thomas C McCue

Thomas C. McCue

Title: Environmental Manager

Date: 7/9/01

SCOEPA00026209

Total Copper mg/l

	11/29/00	4/20/01
North	<0.05	0.05
South	<0.05	<0.05
East	<0.05	0.03
Benchmark & Sample Date	0.1	0.1

Total Lead mg/l

	11/29/00	4/20/01
North	<0.005	0.007
South	<0.005	<0.005
East	<0.005	<0.005
Benchmark & Sample Date	0.4	0.4

Total Zinc mg/l

	11/29/00	4/20/01
North	0.33	0.39
South	0.30	0.29
East	0.33	0.26
Benchmark & Sample Date	0.6	0.6

pH S.U.

	11/29/00	4/20/01
North	6.97	6.4
South	6.95	6.3
East	6.97	6.4
Lower Benchmark & Sample Date	5.5	5.5
Upper Benchmark & Sample Date	9	9

TSS mg/l

	11/29/00	4/20/01	4/30/01
North	6.88	207	58
South	4.38	19	
East	3	10	
Benchmark & Sample Date	130	130	130

Oil and Grease mg/l

	11/29/00	4/20/01
North	<3.0	<3.0
South	<3.0	<3.0
East	<3.0	<3.0
Benchmark & Sample Date	10	10

SCOEPA00026210

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (outfall) Sample ID#: 00.125

Date: 11/29/00 Time: 0815 Sampled by: Dianne Irish

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: X Floating Solids: yes:___ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: _____ F-, mg/L: _____ pH: 6.97

TSS, mg/L: 6.88 Nitrate, mg/L: _____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3 mg/L (1)

Metals (EPA 200.8), mg/L:

Copper: < 0.05 (1) Lead: < 0.005 (1) Zinc: 0.33 (1)

Notes:
(1) & Coffey Laboratories, Inc.

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/29/00 Oven Temp: 105 C Analyst: DO

Date In: 12/01/00 Time In/Out: 1100 / 1500

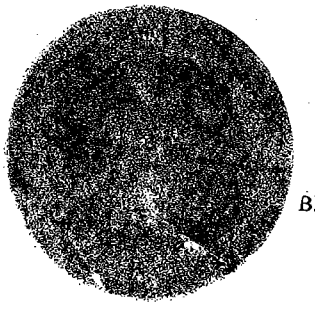
Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0916	0.0916	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
8. 00.125	400	0.0943	0.0919	6
9. 00.125	400	0.0935	0.0904	7.75
		Average TSS		6.88

Comments: Storm water sample Month # 00.125

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
2. NPDES Permit #101128.



B.DOC

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (Wax) Sample ID#: 00-126

Date: 11/29/00 Time: 0930 Sampled by: JR, GK

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: X Floating Solids: yes:___ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: _____ F-, mg/L: _____ pH: 6.95

TSS, mg/L: 4.38 Nitrate, mg/L: _____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3 (1)

Metals(EPA 200.8), mg/L:

Copper: < 0.05 (1) Lead: <0.005 (1) Zinc: 0.3 (1)

Notes:
(1) Coffey Laboratories, Inc.

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11-29-00 Oven Temp: 105 C Analyst: DJ

Date In: 12-01-00 Time In/Out: 1100 / 1500

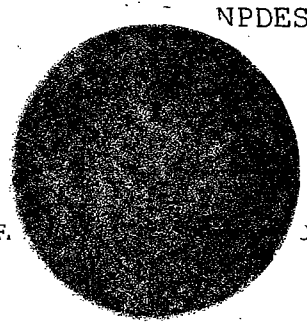
Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0916	0.0916	
2. CE FAB-1	200			
3. CE FAB-1	200			
			Average CE FAB-1 TSS	
4. CE FAB-2				
5. CE FAB-2				
			Average CE FAB-2 TSS	
6. OWW	50			
7. OWW	50			
			Average OWW TSS	
8. 00.126	400	0.0934	0.0915	4.75
9. 00.126	400	0.0926	0.0910	4
			Average TSS	4.38

Comments: Storm water South # 00.126

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
NPDES Permit #101128.



L.F. JC

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East (River) Sample ID#: 00.127

Date: 11/29/00 Time: 0945 Sampled by: Jom Rothschild, Gary Kent

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ~~X~~ No: X Floating Solids: yes: ____ No: X

IN HOUSE ANALYTICAL DATA:

COD, mg/L: ____ F-, mg/L: ____ pH: 6.97

TSS, mg/L: 3 Nitrate, mg/L: ____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3 (1)

Metals(EPA 200.8), mg/L:

Copper: < 0.05 (1) Lead: < 0.005 (1) Zinc: 0.33 (1)

Notes:
(1) Coffey Laboratories, Inc.

DEM 10 Oct 96
DEI 10 May 2000 Revised

L:\COMMON\FACLAB\WWTP\LOG\STORWATL.DOC

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/29/00 Oven Temp: 105 C Analyst: DO

Date In: 12/01/00 Time In/Out: 1100 / 1500

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0916	0.0916	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
8. 00.127	400	0.0925	0.0912	3.25
9. 00.127	400	0.0917	0.0906	2.75
		Average TSS		3

Comments: Storm Water East #00.127

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
2. NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

L:\FACLAB\

SCOEPA00026216

RECEIVED DEC 1 3 2000
3y12

Report Date: December 11, 2000
Job Number: A01130AK
PO Number: 4500075102
Project Name: Stormwater Fall 2000

Tom Rothschild
Wacker Siltronic
P.O. Box 83180
Portland, OR 97283

Analytical Narrative

The sample was received on 11/30/00 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A01130AK-1	00-125 North	Storm Water	11/29/00	0815
A01130AK-2	00-126 South	Storm Water	11/29/00	0930
A01130AK-3	00-127 EAST	Storm Water	11/29/00	0945

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Technical Services

TS /atc

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland. OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-1
Field ID: 00-125
Date/Time: 11/29/00 0815
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-1
Field ID: 00-125
Date/Time: 11/29/00 0815
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 220.1	0.05	ND	mg/L
Lead	EPA 239.2	0.005	ND	mg/L
Zinc	EPA 289.1	0.02	0.33	mg/L

ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-2
Field ID: 00-126
Date/Time: 11/29/00 0930
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

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SCOEPA00026220

Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-2
Field ID: 00-126
Date/Time: 11/29/00 0930
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 220.1	0.05	ND	mg/L
Lead	EPA 239.2	0.005	ND	mg/L
Zinc	EPA 289.1	0.02	0.3	mg/L

ND means none detected at or above the detection limit listed.

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SCOEPA00026221

Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-3
Field ID: 00-127
Date/Time: 11/29/00 0945
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

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SCOEPA00026222

Analytical Data

Wacker Siltronic

Job Number: A01130AK

Lab Sample ID: A01130AK-3
Field ID: 00-127
Date/Time: 11/29/00 0945
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 220.1	0.05	ND	mg/L
Lead	EPA 239.2	0.005	ND	mg/L
Zinc	EPA 289.1	0.02	0.33	mg/L

ND means none detected at or above the detection limit listed.

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SCOEPA00026223

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, OR
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name: Storm Water - Fall - 2000
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: SJR

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ___ of ___
Job Number: GCA01130AC-5
Custabbr: WackerSilt ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test/ Profile
00.125	248	1-3i		11/29/00	0815	W	Oil/Grease - EPA 1664 - /Cu, Pb, Zn EPA 200.8	
00.126	005	1-3j		11/29/00	0930	W	Oil/Grease - EPA 1664 /Cu, Pb, Zn EPA 200.8	
00.127				11/29/00	0945	W	Oil/Grease - EPA-1664/Cu, Pb, Zn EPA 200.8	
*2 00-129	T1	4x		11/30/00	0815	W	BOD's	
*2 00-130 (1)	005	8y		11/30/00	0815	W	Chromium, Total	

Sampled By: Tom Rothschild, Gary Kent, Dianne Irish AUTHORIZED CUSTOMER SIGNATURE Dianne Irish DATE: 11/29/00

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
(1) Request Detection Limit = 0.001 mg/L.				[signature]	11-30-00	1000
				LAB [signature]	11/30/00	1400

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

*2 } changed turn around time to 6 day - w/mark L. on 12-5-00 DJ

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	20 April 2001 (1000 - 1400)	
			North 01-47	South 01-48	East 01-49
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	4.20.01	
			North 01-47	South 01-48	East 01-49
Total Copper	0.1	Mg/l	0.05	<0.05	~~0~~0.03
Total Lead	0.4	Mg/l	0.007	<0.005	<0.005
Total Zinc	0.6	Mg/l	0.39	0.29	0.25
pH	5.5-9	Su	6.4	6.3	6.4
TSS	130	Mg/l	207 / 58 *	19	10
Oil and Grease	10	Mg/l	<3.0	<3.0	<3.0

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

* TSS for 01-47 was a resample. 4/30/01

SCOEPA00026225

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Sample ID#: ~~80-47~~ 01.47 Di

Date: 20Apr200 Time: 1015 Sampled by: SJA/KL/FT

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: ✓ Floating Solids: yes:___ No: ✓

IN HOUSE ANALYTICAL DATA:

COD, mg/L: _____ F-, mg/L: _____ pH: 6.4

TSS, mg/L: 207.25 Nitrate, mg/L: _____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3.0

Metals(EPA 200.8), mg/L:

Copper: 0.05 Lead: 0.007 Zinc: 0.39

Notes:
- Resampled on 4/30/01 to retest TSS - Results: 57.5 mg/L

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 4·20·01 Oven Temp: 104 C Analyst: DC

Date In: 4·24·01 Time In/Out: 1410 / 1330 (4·25·01)

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0914	0.0914	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
28. #01·47	200	0.1314	0.0927	193.5
30. #01·47	200	0.1372	0.0930	221
		Average TSS		207.25

Comments: Storm Water Sample North #01·47

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

N NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Standard Methods for the Examination of Water and astewater, 1998, 20th Edition, Section 2540 D, age 2-57.
NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

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SCOEPA00026227

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 4/30/01 Oven Temp: 104 C Analyst: Di

Date In: 4/30/01 Time In/Out: 1340 / 0840 5/1/01

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0914	0.0914	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
10 8. North	200	0.1026	0.0914	56
11 8. North	200	0.1038	0.0920	59
		Average TSS		57.5

Comments: North storm water sample - resampled due to original high TSS

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

R[illegible] 1. Standard Methods for the Examination of Water and [illegible]astewater, 1998, 20th Edition, Section 2540 D, [illegible]ge 2-57.
[illegible]PDES Permit #101128.

TJR 21 Mar 1987
DEM 11 Jan 2000 Revised

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SCOEPA00026228

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South Sample ID#: 01-48

Date: 20Apr2000 Time: 1030 Sampled by: JJR/KL/FT

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: ✓ Floating Solids: yes:____ No: ✓

IN HOUSE ANALYTICAL DATA:

COD, mg/L: _____ F-, mg/L: _____ pH: 6.3

TSS, mg/L: 19 Nitrate, mg/L: _____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: < 3.0

Metals(EPA 200.8), mg/L:

Copper: < 0.05 Lead: < 0.005 Zinc: 0.29

Notes:

DEM 10 Oct 96
DEI 10 May 2000 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 4.20.01 Oven Temp: 104 C Analyst: DI

Date In: 4.24.01 Time In/Out: 1410 / 1330 (4.25.01)

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0914	0.0914	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
4B. 01-48	200	0.0963	0.0925	19
5B. 01-48	200	00953	0.0915	19
		Average TSS		19

Comments: Storm water South FT 01-48

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

:1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
. NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

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SCOEPA00026230

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East Sample ID#: 01-49

Date: 20Apr2001 Time: 1145 Sampled by: JJR/KL/FT

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: ✓ Floating Solids: yes:___ No: ✓

IN HOUSE ANALYTICAL DATA:

COD, mg/L: _____ F-, mg/L: _____ pH: 6.4

TSS, mg/L: 10 Nitrate, mg/L: _____

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease (EPA 1664), mg/L: <3.0

Metals(EPA 200.8), mg/L:

Copper: 0.03 Lead: <0.005 Zinc: 0.26

Notes:

_____

_____

_____

DEM 10 Oct 96
DEI 10 May 2000 Revised

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SCOEPA00026231

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 4.20.01 Oven Temp: 104 C Analyst: DC

Date In: 4.24.01 Time In/Out: 1410 / 1330 (4-25-01)

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0914	0.0914	
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
6. #01-49	200	0.0938	0.0921	8.5
7. #01.49	200	0.0947	0.0924	11.5
		Average TSS		10

Comments: Storm Water East # 01.49

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
2. NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

SCOEPA00026232

RECEIVED MAY 4 2001

Report Date: April 27, 2001
Job Number: A10420AI
PO Number: 4500075102
Project No: None Provided
Project Name: None Provided

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 04/20/01 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A10420AI-1	01-47 Stormwater - North	Storm Water	04/20/01	1015
A10420AI-2	01-48 Stormwater - South	Storm Water	04/20/01	1030
A10420AI-3	01-49 Stormwater - East	Storm Water	04/20/01	1045

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

John A. Guild

Technical Services

TS /atc

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-1
Field ID: 01-47 Stormwater - North
Date/Time: 04/20/01 1015
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

SCOEPA00026234

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-1
Field ID: 01-47 Stormwater - North
Date/Time: 04/20/01 1015
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 200.7	0.03	0.05	mg/L
Lead	EPA 239.2	0.005	0.007	mg/L
Zinc	EPA 200.7	0.02	0.39	mg/L

Coffey Laboratories, Inc.
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SCOEPA00026235

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-2
Field ID: 01-48 Stormwater - South
Date/Time: 04/20/01 1030
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
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SCOEPA00026236

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-2
Field ID: 01-48 Stormwater - South
Date/Time: 04/20/01 1030
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 200.7	0.05	ND	mg/L
Lead	EPA 239.2	0.005	ND	mg/L
Zinc	EPA 200.7	0.02	0.29	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

SCOEPA00026237

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-3
Field ID: 01-49 Stormwater - East
Date/Time: 04/20/01 1045
Matrix: Storm Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Oil & Grease	EPA 1664	3.	ND	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

SCOEPA00026238

Analytical Data

Wacker Siltronic

Job Number: A10420AI

Lab Sample ID: A10420AI-3
Field ID: 01-49 Stormwater - East
Date/Time: 04/20/01 1045
Matrix: Storm Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Copper	EPA 200.7	0.03	ND	mg/L
Lead	EPA 239.2	0.005	ND	mg/L
Zinc	EPA 200.7	0.02	0.26	mg/L

ND means none detected at or above the detection limit listed.

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

SCOEPA00026239

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Thomas J. Rothschild
Company Name: Wacker Siltronic Corporation
Mailing Address: 7200 N.W. Front Avenue
Portland, Oregon 97210
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number:
Project Name:
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: JJR

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date / Time		Media	Analysis Requested	Test/ Profile
01-47 Storm Water - North				20 Apr 2001	1015	Water	oil and Grease(1), Copper, Lead, Zinc	
01-48 Storm Water - South				20 Apr 2001	1030	Water	↓ ↓ ↓ ↓	
01-49 Storm Water - East				20 Apr 2001	1045	Water		

Sampled By: AUTHORIZED CUSTOMER SIGNATURE DATE:

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
(1) Put in plastic bottle. Coffey will put in glass bottle at Lab. Per Linda/Sample Receiving.	J. Rothschild	20 Apr 01	1420		4/20/01	1420
				LAB		

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

WACKER
Wacker Siltronic Corporation

July 5, 2000 ER036:PH

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

RE: TSS resample at North sample point

Dear Mr. Jeurries,

On June 26, 2000 Wacker Siltronic Corporation submitted the annual storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on October 27, 1999 and May 19, 2000 meeting the requirement of conducting two monitoring events per sample point between July 1 and June 30.

All results are well below the benchmark guideline concentrations with the exception of TSS at the North sample point on May 10, 2000. We believed this was an isolated incident and resampled on July 3, 2000. The TSS result was 14.75 mg/L, well below the TSS benchmark of 130 mg/L.

We are also in the process of reviewing our Storm water Pollution Control Plan. Revisions, if applicable, will be submitted to you and John Holtrop.

If you have any questions, please contact me at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Petra Hoy

Petra Hoy
Environmental Engineer

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1999 File

Enclosures: TSS North sample point benchsheet

TSS Report.doc

SCOEPA00026241

Wacker Siltronic Corporation Storm water Monitoring

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK[1]	UM	DATE:	7/3/00	
			North	South	East
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

- If oil and grease sheen is present please sample for total oil and grease.
- If there is no rain event in the month write "no rain" in the box.

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK[1]	UM	DATE:	7.3.00	
			North	South	East
Total Copper	0.1	Mg/l			
Total Lead	0.4	Mg/l			
Total Zinc	0.6	Mg/l			
pH	5.5-9	Su			
TSS	130	Mg/l	(1) 14.75		
Oil and Grease	10	Mg/l			

1. "Benchmark" is the term used by DEQ in the storm water permit. It is essentially a "limit". If a benchmark is exceeded resample and contact Petra Hoy in Environmental Engineering.
2. Please submit monitoring results and benchsheets to Petra Hoy.

(1) Resampled due to original high TSS in May.

SCOEPA00026242

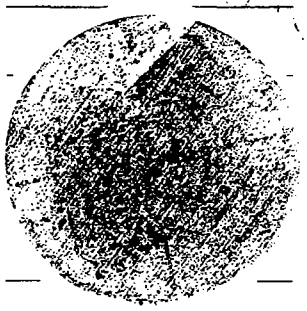
BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 7.3.00 Oven Temp: 104 C Analyst: DO

Date In: 7.3.00 Time In/Out: 1643 / 0810 / 7.5.00

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0887	0.0887	0
				Average TSS	
4	North	200	0.0938	0.0908	15
5	North	200	0.0939	0.0910	14.5
		Stormwater North		Average TSS	14.75
				Average TSS	
				Average TSS	



Notes: North Stormwater sample resampled on 7/3/00 @ 1530 - due to original high TSS.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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SCOEPA00026243

June 26, 2000

ER031:PH DEQ
ER032: City of Ptd

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

RE: Annual Storm water monitoring data; October 27, 1999 and May 10, 2000

Dear Mr. Jeurries,

Enclosed is the storm water monitoring data as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on October 27, 1999 and May 19, 2000 meeting the requirement of conducting two monitoring events per sample point between July 1 and June 30. Previous reports were submitted based on the calendar year. Per your request we are submitting this report based on a storm year (between July 1 and June 30). Please see your files for previous sample data.

All results are well below the benchmark guideline concentrations with the exception of TSS at the North sample point on May 10, 2000. We believe this was an isolated incident and will resample as soon as possible. These sample results will be submitted to you and John Holtrop at the City of Portland. We will also review and update, if needed, our Storm water Pollution Control Plan. Revisions will be submitted to you and John Holtrop.

Per our June 20, 2000 telephone conversation with John Holtrop at the City of Portland, we have submitted the summarized sampling results, analytical reports, QA/QC data, benchsheets and chain of custody forms.

If you have any questions, please contact Petra Hoy at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1999 File

Bureau of Environmental Services

Industrial Source Control Division

INDUSTRIAL STORMWATER

NPDES 1200-Z MONITORING REPORT

Industry Name: Wacker Siltronic Corporation

Site Address: 7200 NW Front Avenue, Portland, OR 97210-3676

The permittee shall monitor stormwater **twice** per year for the parameters outlined in their NPDES 1200-Z Stormwater Discharge Permit Schedule B.1.a., and submit results to the City as stated in Schedule D.2.

Stormwater samples were taken for the above permittee, on these days and at these sample points:

Sample Date(s)	Sample Point(s)
5-27-99	North, South, East
5-10-00	North, South, East

The permittee shall submit by **July 15** of each year a copy of the **laboratory analysis reports**, which show analytical methods and detection limits, for stormwater samples collected for the previous monitoring year (July 1-June 30).

❑ **Monitoring Waiver Reduction Notification:**
Check the box if your facility is exercising a waiver of monitoring based on meeting benchmarks listed in Schedule A.9., AND site conditions have not changed to impact stormwater run-off. Note: This does not exclude your facility from notifying DEQ about the waiver of monitoring. Please read Schedule B of the permit to clearly understand the monitor waiver reduction guidelines. If waiver request is for select pollutants, list the parameters excluded from monitoring: _____.

❑ **No Exposure Certification:**
Check the box if your facility is required to have a NPDES 1200-Z permit, but monitoring is not required due to no exposure of stormwater to industrial activities. This no exposure certification is outlined in Schedule B.3.b, and the facility meets the requirements of Schedule B.1.e. Note: This does not exclude your facility from notifying DEQ.

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 ensure 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.

Signature: For WSC: Thomas C. McCue

Title: Environmental Manager

Date: June 21, 2000

Wacker Siltronic Corporation
Storm Water Monitoring Data

Total Copper mg/l

	10/27/99	5/10/00
North	0.0097	0.0198
South	0.0116	0.0087
East	0.0122	0.0068
Benchmark ~~& Sample Date~~	0.1	0.1

Total Lead mg/l

	10/27/99	5/10/00
North	0.002	0.0090
South	0.002	0.0071
East	0.0018	0.0028
Benchmark & Sample Date	0.4	0.4

Total Zinc mg/l

	10/27/99	5/10/00
North	0.173	0.347
South	0.423	0.143
East	0.287	0.202
Benchmark & Sample Date	0.6	0.6

pH S.U.

	10/27/99	5/10/00
North	7.05	7.0
South	6.41	6.7
East	6.74	6.7
Lower Benchmark & Sample Date	5.5	5.5
Upper Benchmark & Sample Date	9.0	9

TSS mg/l

	10/27/99	5/10/00
North	14	151.5
South	6.25	27.5
East	8.25	19
Benchmark & Sample Date	130	130

Oil and Grease mg/l

	10/27/99	5/10/00
North	<5.0	<5.0
South	<5.0	<5.0
East	<5.0	<5.0
Benchmark & Sample Date	10	10

Benchmarks.xls1999 Report

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **North (outfall)** Sample ID#: **99-115**

Date: 10.27.99 Time: 1010 Sampled by: Dianne Mullen

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: __(*)___ COD, mg/L: 21.8 F-, mg/L: 0.22

pH: 7.05 PO_4, mg/L: ___(*)___ TSS,mg/L: 14

Ammonia (NH_3), mg/L: _(*)____Hydrogen Peroxide, mg/L: __(*)___

Nitrate, mg/L: 0.4

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.00970 mg/L Lead: 0.002 mg/L Zinc: 0.173 mg/L

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: JM

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East ((River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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#99115

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **South (Nox)** **Sample ID#:** 99-116

Date: 10.27.99 Time: 1020 Sampled **by:** Tom Rothschild
Steve Bell

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating **Solids: yes:**____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: __(*)___ COD, mg/L: 30.8 **F-, mg/L:** 0.92

pH: 6.41 PO_4, mg/L: ___(*)___ **TSS, mg/L:** 6.25

Ammonia (NH_3), mg/L: _(*)____ Hydrogen **Peroxide, mg/L:** __(*)___

Nitrate, mg/L: 0.3

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Copper: 0.0116 Lead: 0.002 Zinc: 0.423

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEW 10 Oct 96
DEW 03 Mar 99 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: [illegible]

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East (River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt. mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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SCOEPA00026250

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **East (River)** Sample ID#: **99-117**

Date: 10.27.99 Time: 1010 Sampled by: Tom Rothschild
Dianne Mullan
Steve Bell

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

~~IN HOUSE ANALYTICAL DATA:~~

BOD, mg/L: (*) COD, mg/L: 24.3 F-, mg/L: 0.16

pH: 6.74 PO_4, mg/L: (*) TSS, mg/L: 8.25

Ammonia (NH_3), mg/L: (*) Hydrogen Peroxide, mg/L: (*)

Nitrate, mg/L: 0.2

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.0122 Lead: 0.0018 Zinc: 0.287

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: [illegible]

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East ((River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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RECEIVED NOV 1 0 1999

JJR

Wacker Siltronic Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
99-[illegible] Storm water - North	9910569-01	Water	10/27/99
99-[illegible] Storm water - South	9910569-02	Water	10/27/99
99-[illegible] Storm water - East	9910569-03	Water	10/27/99

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sara McCarty, Project Manager

SCOEPA00026253

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-115 North			P910569-01				Water	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.00970**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00200**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.173**	"	
99-116 South			P910569-02				Water	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.0116**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00200**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.423**	"	
99-117 Park			P910569-03				Water	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.0122**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00180**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.287**	"	

North Creek Analytical - Portland

**Refer to end of report for text of notes and definitions.*

Sara McClure, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-115 North			**P910569-01**				**Water**	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1
~~99-116~~ South			~~P910569-02~~				~~Water~~	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1
99-117 East			**P910569-03**				**Water**	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1090907	**Date Prepared: 10/29/99**					**Extraction Method: EPA 200/3005**				
Blank	**1090907-BLK1**									
Copper	10/29/99			**ND**	mg/l	**0.00200**				
Lead	"			**ND**	"	**0.00100**				
Zinc	11/3/99			**ND**	"	**0.00500**				
LCS	**1090907-BS1**									
Copper	10/29/99	0.100		0.103	mg/l	85.0-115	103			
Lead	"	0.100		0.103	"	85.0-115	103			
Zinc	11/3/99	0.100		0.0921	"	85.0-115	92.1			
Duplicate	**1090907-DUP1**		**P910569-01**							
Copper	10/29/99		0.00970	0.00930	mg/l			20.0	**4.21**	
Lead	"		0.00200	0.00190	"			20.0	**5.13**	
Zinc	11/3/99		0.173	0.183	"			20.0	**5.62**	
Matrix Spike	**1090907-MS1**		**P910569-01**							
Copper	10/29/99	0.100	0.00970	0.113	mg/l	70.0-130	**103**			
Lead	"	0.100	0.00200	0.105	"	70.0-130	**103**			
Zinc	11/3/99	0.100	0.173	0.254	"	70.0-130	**81.0**			
Matrix Spike	**1090907-MS2**		**P910558-01**							
Copper	10/29/99	0.100	ND	0.105	mg/l	70.0-130	**105**			
Lead	"	0.100	ND	0.104	"	70.0-130	**104**			
Zinc	11/2/99	0.100	0.00730	0.107	"	70.0-130	**99.7**			

North Creek Analytical - Portland

**Refer to end of report for text of notes and definitions.*

Sara McClure, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

SCOEPA00026256

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1190067	**Date Prepared: 11/2/99**					**Extraction Method: EPA 1664**				
Blank	**1190067-BLK1**									
Oil & Grease	11/2/99			ND	mg/l	5.00				
Oil & Grease (non-polar)	"			ND	"	5.00				
Oil & Grease (polar)	"			ND	"					
LCS	**1190067-BS1**									
Oil & Grease	11/2/99	80.0		70.5	mg/l	73.0-109	88.1			
Oil & Grease (non-polar)	"	40.0		30.9	"	57.0-113	77.2			
LCS Dup	**1190067-BSD1**									
Oil & Grease	11/2/99	80.0		71.5	mg/l	73.0-109	89.4	18.0	1.46	
Oil & Grease (non-polar)	"	40.0		31.3	"	57.0-113	78.2	24.0	1.29	

SCOEPA00026257

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Waster Services Corporation	Project:	Storm Water	Sampled: 10/27/99
7201 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Notes and Definitions

#	Note
1	Since Total Oil & Grease was ND for sample, Non-polar hydrocarbon analysis was not performed.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov	Recovery
RPD	Relative Percent Difference

SCOEPA00026258

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
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COPY

CHAIN OF CUSTODY REPORT

Work Order # P910569

REPORT TO: Wacker Siltronic	INVOICE TO: Wacker Siltronic
ATTENTION: Tom Rothschild	ATTENTION: Accts Payable
ADDRESS: 7200 N.W. Front Ave Portland, OR	ADDRESS:
PHONE: 219-7374 FAX: 417-4144	P.O. NUMBER: 210167 NCA QUOTE #:
PROJECT NAME: Storm water - Fall - '99	
PROJECT NUMBER:	
SAMPLED BY: T. Rothschild, S. Bell, D. Mullan	

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [10] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: Oil & Grease EPA-1664	Cu, Pb, Zn EPA-200.8	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	99-115	10-27-99 1010		X	X	W	2	
2.	99-116	10-27-99 1020		X	X	W	2	
3.	99-117	10-27-99 1010		X	X	W	2	
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 10-28-99	RECEIVED BY (Signature):	DATE:
PRINT NAME: Dianne Mullan	FIRM: Wacker TIME: 1015	PRINT NAME:	FIRM: NCA TIME: 1015
RELINQUISHED BY (Signature):	DATE: 10-28-99	RECEIVED BY (Signature): Jessica Roberts	DATE: 10/28/99
PRINT NAME:	FIRM: NCA TIME:	PRINT NAME: JROBERTS	FIRM: NCA TIME: 1045

ADDITIONAL REMARKS:

PAGE 1 OF 1

SCOEPA00026259

WACKER SILTRONIC CORPORATION

STORM WATER SAMPLING – Monthly (when discharging):

PARAMETER	BENCHMARK	UM	DATE:	5.10.00	
			North #00.41	South #00.43	East #00.42
Floating Solids	No visible discharge	Yes or No	No	No	No
Oil and Grease Sheen*	No visible sheen	Yes or No	No	No	No

* If oil and grease sheen is present please sample for total oil and grease.

STORM WATER SAMPLING – Semiannual:

PARAMETER	BENCHMARK	UM	DATE:	5.10.00	
			North #00.41	South #00.43	East #00.42
Total Copper	0.1	Mg/l	0.0198	0.00872	0.00681
Total Lead	0.4	Mg/l	0.00902	0.00705	0.00278
Total Zinc	0.6	Mg/l	0.347	0.143	0.202
pH	5.5-9	Su	7.0	6.7	6.7
TSS	130	Mg/l	151.5	27.5	19
Oil and Grease	10	Mg/l	<5	<5	<5

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5.10.00 Oven Temp: 106 C Analyst: DD

Date In: 5.11.00 Time In/Out: 1110 / 1350

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0877	0.0877	✓
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB				
5. CE				
		Average CE FAB-2 TSS		
6. OWW				
7. OWW				
		Average OWW TSS		
4. 00-41	200	0.1181	0.0872	154.5
5. 00-41	200	0.1180	0.0883	148.5
		Average TSS		151.5

Comments: Storm Water Sample # 00-41 - North -

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
2. NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

L:\FACLAB\WWTP\BENCH\TSSB.DOC

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5·10·00 Oven Temp: 106 C Analyst: DO

Date In: 5·11·00 Time In/Out: 1110 / 1350

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0877	0.0877	0
2. CE FAB-1	200			
3. CE FAB-1	200			
		Average CE FAB-1 TSS		
4. CE FAB-2				
5. CE FAB-2				
		Average CE FAB-2 TSS		
6. OWW	50			
7. OWW	50			
		Average OWW TSS		
8. 00-43	200	0.0970	0.0904	33
9. 00·43	200	0.0925	0.0880	22.5
		Average TSS		27.75

Comments: Storm water sample #00·43 - South

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

00-43

.Standard Methods for the Examination of Water and
astewater, 1998, 20th Edition, Section 2540 D,
ge 2-57.
PDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

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SCOEPA00026262

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5-10-00 Oven Temp: 106 C Analyst: DO

Date In: 5-11-00 Time In/Out: 1110 / 1350

Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1. Blank	NA	0.0877	0.0877	0
2. CE FAB-1	200			
3. CE FAB-1	200			
			Average CE FAB-1 TSS	
4.				
5.				
			Average CE FAB-2 TSS	
6. C				
7. OWW	50			
			Average OWW TSS	
6. 8. 00-42	200	0.0907	0.0869	19
7. 8. 00-42	200	0.0937	0.0899	19
			Average TSS	19

Comments: Storm Water sample #00-42 - East

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Note: NPDES permit: monthly avg. 23 mg/L, daily max. 61 mg/L.

Reference: 1. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57.
2. NPDES Permit #101128.

TJR 21 Mar 87
DEM 11 Jan 2000 Revised

L:\FACLAB\WWTP\BENCH\TSSB.DOC

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RECEIVED JUN 16 2000

26 May, 2000

Thomas Rothschild
Wacker Siltronics Corporation
7200 N.W. Front
Portland, OR 97210

RE: Storm Water

Enclosed are the results of analyses for samples received by the laboratory on 05/11/00 11:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Howard Holmes
Project Manager

Work Orders included in this report:
P005235

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541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
00-41 Storm Water North	P005235-01	Water	05/10/00 11:20	05/11/00 11:10
00-42 " East	P005235-02	Water	05/10/00 11:45	05/11/00 11:10
00-43 " South	P005235-03	Water	05/10/00 11:30	05/11/00 11:10

North Creek Analytical - Portland

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
00-41 (P005235-01) Water North					Sampled: 05/10/00	Received: 05/11/00			
Copper	**0.0198**	0.00200	mg/l	1	EPA 200.8	05/16/00	05/17/00	0050468	
Lead	**0.00902**	0.00100	"	"	"	"	"	"	
Zinc	**0.347**	0.00500	"	"	"	"	"	"	
~~**00-42 (P005235-02) Water**~~ East					~~Sampled: 05/10/00~~	~~Received: 05/11/00~~			
Copper	**0.00681**	0.00200	mg/l	1	EPA 200.8	05/16/00	05/17/00	0050468	
Lead	**0.00278**	0.00100	"	"	"	"	"	"	
Zinc	**0.202**	0.00500	"	"	"	"	"	"	
00-43 (P005235-03) Water South					Sampled: 05/10/00	Received: 05/11/00			
Copper	**0.00872**	0.00200	mg/l	1	EPA 200.8	05/16/00	05/17/00	0050468	
Lead	**0.00705**	0.00100	"	"	"	"	"	"	
Zinc	**0.143**	0.00500	"	"	"	"	"	"	

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Howard Holmes, Project Manager

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Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
00-41 (P005235-01) Water North					Sampled: 05/10/00 Received: 05/11/00				
Oil & Grease	ND	5.00	mg/l	1	EPA 1664	05/17/00	05/17/00	0050493	
00-42 (P005235-02) Water East					Sampled: 05/10/00 Received: 05/11/00				
Oil & Grease	ND	5.00	mg/l	1	EPA 1664	05/17/00	05/17/00	0050493	
00-43 (P005235-03) Water South					Sampled: 05/10/00 Received: 05/11/00				
Oil & Grease	ND	5.00	mg/l	1	EPA 1664	05/17/00	05/17/00	0050493	

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Howard Holmes, Project Manager

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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

Total Metals per EPA 200 Series Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0050468 - EPA 200/3005										
Blank (0050468-BLK1)				Prepared: 05/16/00 Analyzed: 05/18/00						
Copper	ND	0.00200	mg/l							
Lead	ND	0.00100	"							
Zinc	ND	0.00500	"							
LCS (0050468-BS1)				Prepared: 05/16/00 Analyzed: 05/17/00						
Copper	0.0952	0.00200	mg/l	0.100		95.2	85-115			
Lead	0.104	0.00100	"	0.100		104	85-115			
Zinc	0.0974	0.00500	"	0.100		97.4	85-115			
Duplicate (0050468-DUP1)		Source: P005214-01		Prepared: 05/16/00 Analyzed: 05/18/00						
Copper	0.00289	0.00200	mg/l		0.00335			14.7	20	
Lead	ND	0.00100	"		ND			18.2	20	Q-06
Zinc	ND	0.00500	"		0.00557			26.2	20	Q-06
Matrix Spike (0050468-MS1)		Source: P005214-01		Prepared: 05/16/00 Analyzed: 05/18/00						
Copper	0.112	0.0200	mg/l	0.100	ND	109	70-130			
Lead	0.0995	0.00100	"	0.100	ND	99.1	70-130			
Zinc	0.114	0.0500	"	0.100	ND	108	70-130			
Matrix Spike Dup (0050468-MSD1)		Source: P005214-01		Prepared: 05/16/00 Analyzed: 05/18/00						
Copper	0.117	0.0200	mg/l	0.100	ND	114	70-130	4.37	20	
Lead	0.106	0.00100	"	0.100	ND	106	70-130	6.33	20	
Zinc	0.115	0.0500	"	0.100	ND	109	70-130	0.873	20	

North Creek Analytical - Portland

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Howard Holmes, Project Manager

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503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0050493 - EPA 1664										
Blank (0050493-BLK1)				Prepared & Analyzed: 05/17/00						
Oil & Grease	ND	5.00	mg/l							
LCS (0050493-BS1)				Prepared & Analyzed: 05/17/00						
Oil & Grease	74.2	5.00	mg/l	80.0		92.7	73-109			
LCS Dup (0050493-BSD1)				Prepared & Analyzed: 05/17/00						
Oil & Grease	81.2	5.00	mg/l	80.0		101	73-109	9.01	18	

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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project: Storm Water	
7200 N.W. Front	Project Number: PO# 210162	**Reported:**
Portland, OR 97210	Project Manager: Thomas Rothschild	05/26/00 13:37

Notes and Definitions

Q-06	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Howard Holmes, Project Manager

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CHAIN OF CUSTODY REPORT

Work Order #: P005235

CLIENT: Wacker Siltronic
REPORT TO: Tom Rothschild
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 219-7374 FAX: 417-4144

INVOICE TO: Wacker Siltronic
Accts Payable

P.O. NUMBER: 210162

PROJECT NAME:
PROJECT NUMBER:
SAMPLED BY: T. Rothschild, P. Wittke

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: ~~10~~ 7 5 4 3 2 1 <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 4 3 2 1 <1 (STD.)
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	O.I.&Grease EPA-1664	Total Pb, Zn Cu EPA 200.8	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
1.	00.41	5.10.00 11:20	X	X	W	2		
2.	00.42	5.10.00 1145	X	X	W	2		
3.	00.43	5.10.00 1130	X	X	W	2		
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								

RELINQUISHED BY: Dianne Irish DATE: 5.11-00
PRINT NAME: Dianne Irish FIRM: Wacker TIME: 0915
RECEIVED BY: [signature] DATE: 5-11-00
PRINT NAME: Larry Spangler FIRM: NCA TIME: 0915

RELINQUISHED BY: [signature] DATE: 5-11-00
PRINT NAME: Larry Spangler FIRM: NCA TIME:
RECEIVED BY: [signature] DATE: 5/11/00
PRINT NAME: Bob Fahshotz FIRM: NCA TIME: 11:10

ADDITIONAL REMARKS:
TEMP: 1.0

SCOEPA00026271

Wacker Siltronic P.O. Box 83180 M/S-30, Portland, OR 97283-0180

Wacker FAX

Date: **June 30, 2000**

Number of pages including cover sheet: **3**

To:

Dennis Jeurries – DEQ

Stormwater TSS analysis

Phone: 229-5937

Fax: 229-6957

CC:

From:

Petra Hoy

Wacker Siltronic Corporation

Phone: (503) 219-4469

Fax phone: (503) 219-7599

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment

Hi Dennis,

Attached is a copy of WSC's Lab Operating Procedure for Total Suspended Solids. This is the procedure used to analyze TSS in Stormwater.

If you have any questions please give me a call.

Petra

Lab Operating Procedure

WACKER
Wacker Siltronic Corporation

System 39 – Waste Water Treatment
Procedure Title: Total Suspended Solids
Document # LOP-39-01
Rev. Date: 01/11/00

I. References:
- A. Standard Methods for the Examination of Water and Wastewater, 1998, 20th Edition, Section 2540 D, page 2-57
- B. Methods for the Chemical Analysis of Water and Wastes, EPA Method 160-2, Residue, Non-Filterable.
- C. Facilities Chemist/Thomas J. Rothschild

II. Explanation:
Total Suspended Solids is required weekly on the Combined Effluent (CE) per NPDES Permit #101128, dated 5 May 1996 and is a Monitoring Parameter (no specified frequency) for the City of Portland Wastewater Discharge Permit #469-01, dated 28 Aug 1995. includes Stormwater

III. Procedures:
- A. Preparation:
  1. Rinse the Whatman 934-AH filters on the vacuum apparatus using three 20ml aliquots of RODI H2O.
  2. Dry the rinsed filters in a 105 C oven for 1 hour.
  3. Store the dried filters in the desicator or in the oven until use.

- B. Analysis:
  1. Weigh an individual dried filter to the nearest 0.1 mg. Use tweezers to handle the filter.
  2. Set the filter in the filtering apparatus.
  3. Wet the filter with RODI H2O so that it lays and seats in the apparatus.
  4. Pour a known volume of the well mixed sample into the cup of the filtering apparatus:
     - a. For CE: 200ml. + Stormwater
     - b. For OWW: 50ml.
  5. Turn on the vacuum allowing the sample to be drawn through the filter.
  6. Place this wetted filter in the aluminum weighing dish and put it in the 103 C oven for 1 hour.
  7. Reweigh the dried filter to the nearest 0.1 mg.
  8. Document all of the information on the TSS Benchsheet.

- C. Calculation:

$$\text{TSS, mg/L} = \frac{(\text{Gross Wt, mg} - \text{Tare Wt, mg}) \times 1000}{\text{Volume, ml}}$$

- D. Quality Control: + Stormwater
  1. CE: Each sample (composite or grab) will be run in duplicate, and the individual numbers will be averaged. This average will be reported as the individual sample.

SCOEPA00026273

2. OWW: No specific quality control is required. The City of Portland permit requires only an Extra Strength Sewer Charge for a TSS greater than 350 mg/L.
3. For the NPDES Monthly Report the total number of CE samples run during that month will be averaged.

IV. Supplies required: (Cost Center: 75952);
Order supplies through VWR Scientific Products by e-mail.
A. Whatman 934-AH Filters, 4.25 cm, Pkg/100:
1. VWR #28496-875

V. Computer File Designations:
A. Benchsheet, Total Suspended Solids (TSS):
L:\COMMON\FACLAB\WWTP\BEN\TSSB.DOC
B. Benchsheet, Total Suspended Solids, Miscellaneous:
L:\COMMON\FACLAB\WWTP\BEN\TSS-2B.
C. Log Sheet, Total Suspended Solids, Oven Temperature:
L:\COMMON\FACLAB\WWTP\LOG\TSSOVENL.DOC.

SCOEPA00026274

WACKER

Wacker Siltronic Corporation

001

January 5, 2000

ER:PH

Mr. John Holtrop
City of Portland Environmental Services
6543 N. Burlington Ave.
Portland, Oregon 97203-5452

Dear Mr. Holtrop,

Enclosed is the tabulated storm water monitoring data for the calendar years 1997 - 1999 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. Per telephone conversations with the Department of Environmental Quality, we have submitted the summarized sampling results. Back up information as well as QA/QC data is available upon request.

Also enclosed are a copy of our Storm Water Pollution Control Plan and the cover page of our 1200-Z permit.

If you have any questions, please contact me at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Petra Hoy

Petra Hoy
Environmental Engineer

Enclosures:
Storm water DMRs
SWPCP
Cover page of Stormwater permit 1200-Z

cc: SW Report 2000 File

SCOEPA00026275

Please return to Petra Hoy MS 30

Z 263 091 787

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to John Holtrop, BES	
Street & Number 6543 N Burlington Ave	
Post Office, State, & ZIP Code Portland OR 97203-5452	
Postage	$ 2.31
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Special Delivery Fee	
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TOTAL Postage & Fees	$ 4.96
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PS Form 3800, April 1995

PORTLAND OR

USPS

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- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
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1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

JOHN HOLTROP
CITY OF PORTLAND BES
6543 N BURLINGTON AVE
PORTLAND OR 97203-5452

4a. Article Number

Z 263 091 787

4b. Service Type

☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

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1-7-00

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6. Signature: *(Addressee or Agent)*

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PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

WACKER
Wacker Siltronic Corporation

November 15, 1999 ER152:PH

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Jeurries,

Enclosed is the tabulated storm water monitoring data for the calendar year 1999 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on May 11, 1999 and October 27, 1999 and all results are well below the benchmark guideline concentrations.

Per our March 15, 1999 telephone conversation, we have submitted the summarized sampling results. Back up information as well as QA/QC data is available upon request.

If you have any questions, please contact Petra Hoy at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1999 File

SCOEPA00026277

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676
North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0118	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0015	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.33	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.36	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						6	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*		503 | 219-7532		99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026278

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676
South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0142	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0017	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.298	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.39	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						5	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Thomas C. McCue	503 219-7532	99 11 12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR MO DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026279

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z (2-16)	(17-19)
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form ...proved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0128	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.001	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.28	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.54	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Thomas C. McCue	503 219-7532	99 11 12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR MO DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026280

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME: Wacker Siltronic Corp.
ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION: 7200 NW Front Avenue
Portland, OR 97210-3676
North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0097	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.002	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.173	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.05	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						14	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue,
Environmental Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP. BY:
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	219-7532	99	11	12
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026281

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME: Wacker Siltronic Corp.
ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION: 7200 NW Front Avenue
Portland, OR 97210-3676

South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0116	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.002	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.423	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.41	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						6.25	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue,
Environmental Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP. BY: Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	219-7532	99	11	12
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME: Wacker Siltronic Corp.
ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION: 7200 NW Front Avenue
Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

1200-Z (2-16)	(17-19)
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0122	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0018	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.287	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						5.5	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						8.25	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	Thomas C. McCue	503 219-7532	99 11 12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR MO DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Wacker Siltronic Corporation
ER063:TM

April 20, 1998

Mr. Neil Mullane
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Mullane,

Enclosed is the tabulated storm water monitoring data for the calendar year 1997 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on July 22, 1997. The sampling was conducted on May 28 and November 19 of 1997.

If you have any questions, please contact Tom McCue at 219-7532.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs
Laboratory analysis

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1997 File

SCOEPA00026284

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION North Sample Point

(2-16) 1200-Z PERMIT NUMBER

(17-19) DISCHARGE NUMBER

MONITORING PERIOD

	YEAR (20-21)	MO (22-23)	DAY (24-25)		YEAR (26-27)	MO (28-29)	DAY (30-31)
FROM	97	11	19	TO	97	11	19

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						7.35	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<0.5	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						11.9	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						30.9	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026285

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION North Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

MONITORING PERIOD

FROM YEAR	MO	DAY	TO YEAR	MO	DAY
97	11	19	97	11	19
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (46-53) MINIMUM	(54-61) AVERAGE	RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.009	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.005	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.091	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						26.75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.08	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

AREA CODE	NUMBER
503	219-7532

DATE

YEAR	MO	DA
98	04	14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026286

NAME [redacted]

ADDRESS P0 Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

MONITORING PERIOD

FROM YEAR	MO	DAY	TO YEAR	MO	DAY
97	11	19	97	11	19
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.003	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						11	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

AREA CODE 503 NUMBER 219-7532

DATE

YEAR 98 MO 04 DA 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026287

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION South Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						6.92	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						1.75	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						9.36	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						22.7	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.008	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DA

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026288

NAME

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION South Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (52-57)		(3 Card Only) (46-53) QUANTITY OR LOADING (54-61) AVERAGE	MAXIMUM	UNITS	(4 Card Only) (38-45) QUALITY OR CONCENTRATION (46-53) MINIMUM	AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.006	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.008	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						13.5	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.12	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DA 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026289

NAME [illegible]

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION South Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.005	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						8.4	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		Wacker Siltronic Corp. by:	TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Thomas C McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DA

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026290

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						6.96	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						0.685	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						4.54	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						13.2	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DA

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026291

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

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PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (46-53) MINIMUM	(54-61) AVERAGE	RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						<0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.167	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						5.75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.08	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

AREA CODE	NUMBER
503	219-7532

DATE

YEAR	MO	DA
98	04	14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026292

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

PERMIT NUMBER	DISCHARGE NUMBER
1200-Z	

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
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PARAMETER (52-57)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						3.4	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		Wacker Siltronic Corp. by:	TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Thomas C McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DA

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026293

Facility Name/Location (if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180

Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						9.29	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						1.11	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						6.42	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						39.7	mg/l			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.00239	mg/l			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/l			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.00898	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. By:

Thomas C McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026294

Facility Name/Location (if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: North Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0242	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.00766	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.00083	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.00833	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.319	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						117	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026295

Facility Name/Location if different

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.0	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

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WAcker Siltronic Corp by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026296

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION South Sample Point

(2-16) PERMIT NUMBER: 1200-Z
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	05	28	97	05	28

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						5.64	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						2.69	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						6.37	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						67.0	mg/l			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.00115	mg/l			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						0.00111	mg/l			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.0150	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026297

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION South Sample Point

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	AVERAGE	(46-53) RESULT (54-61)	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0394	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.0199	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.0103	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.0199	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532
DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026298

Facility Name/Location if different

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION South Sample Point

(2-16) PERMIT NUMBER

(17-19) DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.00	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

AREA CODE	NUMBER
503	219-7532

DATE

YEAR	MO	DAY
98	04	13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026299

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

(2-10) PERMIT NUMBER: 1200-Z
(11-15) DISCHARGE NUMBER:

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	05	28	97	05	28

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						5.09	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<0.5	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						2.37	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						22.7	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.00831	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532
DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026300

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

(2-16) PERMIT NUMBER: 1200-Z
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD (20-21 YEAR, 22-23 MO, 24-25 DAY)
FROM 97 05 28 TO (26-27 YEAR, 28-29 MO, 30-31 DAY) 97 05 28

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0294	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.0123	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.000230	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.00625	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.362	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						82	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532
DATE: YEAR 98 MO 04 DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026301

NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION East Sample Point

(2-16) PERMIT NUMBER: 1200-Z
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD

	YEAR (20-21)	MO (22-23)	DAY (24-25)		YEAR (26-27)	MO (28-29)	DAY (30-31)
FROM	97	05	28	TO	97	05	28

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.0	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026302

WACKER
Wacker Siltronic Corporation

March 16, 1999

ER113:TM

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Jeurries,

Enclosed is the tabulated storm water monitoring data for the calendar year 1998 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on May 19, 1998 and November 10 of 1998 and all results are well below the benchmark guideline concentrations.

Per our March 15, 1999 telephone conversation, we have submitted the summarized sampling results. Back up information as well as QA/QC data is available upon request.

If you have any questions, please contact Petra Beissmann at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1998 File

SCOEPA00026303

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z
PERMIT NUMBER

DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.00820	mg/L			Grab
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00110	mg/L			Grab
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.173	mg/L			Grab
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.35	SU			Grab
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						20.25	mg/L			Grab
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00	mg/L			Grab
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue,
Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP. By:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	219-7532	99	3	26
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026304

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676
South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form App. d.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0176				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00600				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.199				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						34.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503	219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026305

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.0173				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00170				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.167				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						7.0				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	Thomas C McCue	503 219-7532	99 3 26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR MO DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026306

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Apt. J.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.00560				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						<0.00100				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.193				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.87				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						3.75				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	Thomas C. McCue	503 219-7532	99 3 26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR MO DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026307

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.00940				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00120				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.207				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.47				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	WACKER SILTRONIC CORP. BY: Thomas C. McCue SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	503 219-7532 AREA CODE NUMBER	99 3 26 YEAR MO DAY
TYPED OR PRINTED						

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026308

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) (17-19)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) BENCHMARK	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULTS	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.00990				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						<0.00100				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.247				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.65				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503 219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

WACKER
Wacker Siltronic Corporation

November 15, 1999

ER152:PH

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Jeurries,

Enclosed is the tabulated storm water monitoring data for the calendar year 1999 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on May 11, 1999 and October 27, 1999 and all results are well below the benchmark guideline concentrations.

Per our March 15, 1999 telephone conversation, we have submitted the summarized sampling results. Back up information as well as QA/QC data is available upon request.

If you have any questions, please contact Petra Hoy at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1999 File

SCOEPA00026310

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676
North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0118	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0015	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.33	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.36	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						6	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503 | 219-7532	99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE | NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026311

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676
South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16)

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING			*(4 Card Only)* QUANTITY OR CONCENTRATION				NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
		AVERAGE *(46-53)*	BENCHMARK *(54-61)*	UNITS	MINIMUM *(38-45)*	AVERAGE *(46-53)*	RESULTS *(54-61)*	UNITS			
Total Copper	SAMPLE MEASUREMENT						0.0142	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0017	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.298	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.39	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						5	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Thomas C. McCue	503 219-7532	99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026312

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-16)	*(17-19)*
1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	5	11	TO	99	5	11
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0128	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.001	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.28	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.54	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503 219-7532	99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026313

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0097	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.002	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.173	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.05	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						14	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue,
Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP. BY:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	219-7532	99	11	12
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026314

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0116	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.002	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.423	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.41	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						6.25	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Thomas C. McCue	503 219-7532	99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026315

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	27	TO	99	10	27
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0122	mg/L			
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.0018	mg/L			
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.287	mg/L			
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						5.5	Su			
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						8.25	mg/L			
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0	mg/L			
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		WACKER SILTRONIC CORP. BY:	TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Thomas C. McCue	503 | 219-7532	99	11	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE | NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026316

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (outfall) Sample ID#: 99-35

Date: 5-11-99 Time: 1005 Sampled by: Tom Rothschild
Dianne Mullan

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 4.62 COD, mg/L: 32.1 F-, mg/L: 0.38

pH: 6.36 PO_4, mg/L: 0.074 TSS, mg/L: 6

Ammonia (NH_3), mg/L: 0.644 Hydrogen Peroxide, mg/L: 1

Nitrate, mg/L: 1.76

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Copper: _____ Lead: _____ Zinc: _____

Notes: _____

_____

_____

_____

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (NOx) Sample ID#: 99-36

Date: 5-11-99 Time: 0940 Sampled by: Tom Rothschuler
Dianne Muller

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 10.85 COD, mg/L: >45.0 F-, mg/L: 0.6

pH: 6.39 PO_4, mg/L: 0.202 TSS, mg/L: 5

Ammonia (NH_3), mg/L: 0.542 Hydrogen Peroxide, mg/L: 1
Nitrate, mg/L: 1.32

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Copper: _____ Lead: _____ Zinc: _____

Notes: _____

_____

_____

_____

DEM 10 Oct 96
DEM 14 Oct 98 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East, River) Bank Sample ID#: 99-37

Date: 5-11-99 Time: 1000 Sampled by: Tom Rothschild
Dianne Mullen

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 6.57 COD, mg/L: 28.9 F-, mg/L: 0.25

pH: 6.54 PO_4, mg/L: 0.123 TSS, mg/L: 1

Ammonia (NH_3), mg/L: 0.405 Hydrogen Peroxide, mg/L: 1
Nitrate - mg/L: 1.32

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Copper: _____ Lead: _____ Zinc: _____

Notes: _____

_____

_____

_____

DEM 10 Oct 96
DEM 14 Oct 98 Revised

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RECEIVED JUN 15 1999

Wacker Siltronics Corporation	Project:	Storm Water	Sampled:	5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received:	5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported:	6/10/99 11:19

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
99-35	P905319-01	Water	5/11/99
99-36	P905319-02	Water	5/11/99
99-37	P905319-03	Water	5/11/99
99-45	P905319-04	Water	5/14/99
99-46	P905319-05	Water	5/14/99
99-47 Top Layer	P905319-06	Other wet	5/14/99
99-47 Bottom Layer	P905319-07	Other wet	5/14/99

Storm Water

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

SCOEPA00026320

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-35 Storm Water - North			P905319-01				Water	
Copper	0590623	5/21/99	5/26/99	EPA 200.8	0.00200	**0.0118**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00150**	"	
Zinc	"	"	5/28/99	EPA 200.8	0.0500	**0.330**	"	
99-36 Storm - Water - South			P905319-02				Water	
Copper	0590623	5/21/99	5/26/99	EPA 200.8	0.00200	**0.0142**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00170**	"	
Zinc	"	"	5/28/99	EPA 200.8	0.0500	**0.298**	"	
99-37 Storm Water - East			P905319-03				Water	
Copper	0590623	5/21/99	5/26/99	EPA 200.8	0.00200	**0.0128**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	ND	"	
Zinc	"	"	5/28/99	EPA 200.8	0.0500	**0.280**	"	
99-45 CE, 14 May 1999			P905319-04				Water	
Chromium	0590623	5/21/99	5/26/99	EPA 200.8	0.00100	**0.00150**	mg/l	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0590623	**Date Prepared: 5/21/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590623-BLK1**									
Chromium	5/26/99			**ND**	mg/l	**0.00100**				
Copper	"			**ND**	"	**0.00200**				
Lead	"			**ND**	"	**0.00100**				
Zinc	"			**ND**	"	**0.00500**				
LCS	**0590623-BS1**									
Chromium	5/26/99	0.100		0.102	mg/l	85.0-115	102			
Copper	"	0.100		0.106	"	85.0-115	106			
Lead	"	0.100		0.112	"	85.0-115	112			
Zinc	"	0.100		0.108	"	85.0-115	108			
Duplicate	**0590623-DUP1**		**P905385-01**							
romium	5/26/99		ND	ND	mg/l			20.0		
Copper	"		0.00310	0.00310	"			20.0	**0**	
Lead	"		ND	ND	"			20.0		
Zinc	"		0.00570	0.00840	"			20.0	**38.3**	7
Matrix Spike	**0590623-MS1**		**P905385-01**							
Chromium	5/26/99	0.100	ND	0.105	mg/l	70.0-130	**105**			
Copper	"	0.100	0.00310	0.110	"	70.0-130	**107**			
Lead	"	0.100	ND	0.106	"	70.0-130	**106**			
Zinc	"	0.100	0.00570	0.121	"	70.0-130	**115**			
Matrix Spike Dup	**0590623-MSD1**		**P905385-01**							
Chromium	5/26/99	0.100	ND	0.108	mg/l	70.0-130	**108**	20.0	**2.82**	
Copper	"	0.100	0.00310	0.112	"	70.0-130	**109**	20.0	**1.85**	
Lead	"	0.100	ND	0.109	"	70.0-130	**109**	20.0	**2.79**	
Zinc	"	0.100	0.00570	0.122	"	70.0-130	**116**	20.0	**0.866**	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-35 Storm Water - North			P905319-01				Water	
Oil & Grease	0590553	5/19/99	5/20/99	EPA 1664	5.00	ND	mg/l	6
99-36 Storm Water - South			P905319-02				Water	
Oil & Grease	0590553	5/19/99	5/20/99	EPA 1664	5.00	ND	mg/l	6
99-37 Storm Water - East			P905319-03				Water	
Oil & Grease	0590553	5/19/99	5/20/99	EPA 1664	5.00	ND	mg/l	6

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

TCLP Metals per EPA 1311/6000/7000 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0590483	**Date Prepared: 5/17/99**					**Extraction Method: EPA 1311/3010**				
Blank	**0590483-BLK1**									
Mercury	5/19/99			**ND**	mg/l	**0.000200**				
LCS	**0590483-BS1**									
Mercury	5/19/99	0.00500		0.00394	mg/l	75.0-125	78.8			
Matrix Spike	**0590483-MS1**		**P905319-06**							
Mercury	5/19/99	0.00500	ND	0.00321	mg/l	50.0-150	**64.2**			
Batch: 0590523	**Date Prepared: 5/17/99**					**Extraction Method: TCLP Extraction**				
Blank	**0590523-BLK1**									
Arsenic	5/21/99			**ND**	mg/l	**0.500**				
Barium	5/19/99			**ND**	"	**0.500**				
Cadmium	"			**ND**	"	**0.0100**				
Chromium	"			**ND**	"	**0.0100**				
Lead	"			**ND**	"	**0.200**				
Selenium	"			**ND**	"	**0.250**				
Silver	"			**ND**	"	**0.0100**				
LCS	**0590523-BS1**									
Arsenic	5/21/99	5.00		5.25	mg/l	75.0-125	105			
Barium	5/19/99	10.0		8.81	"	75.0-125	88.1			
Cadmium	"	1.00		1.03	"	75.0-125	103			
Chromium	"	5.00		4.76	"	75.0-125	95.2			
Lead	"	5.00		5.10	"	75.0-125	102			
Selenium	"	2.00		1.97	"	75.0-125	98.5			
Silver	"	1.00		0.887	"	75.0-125	88.7			
Matrix Spike	**0590523-MS1**		**P905319-06**							
Arsenic	5/21/99	5.00	ND	5.31	mg/l	50.0-150	**106**			
Barium	5/19/99	10.0	ND	9.14	"	50.0-150	**91.4**			
Cadmium	"	1.00	ND	1.03	"	50.0-150	**103**			
Chromium	"	5.00	ND	4.83	"	50.0-150	**96.6**			
Lead	"	5.00	ND	5.20	"	50.0-150	**104**			
Selenium	"	2.00	ND	1.90	"	50.0-150	**95.0**			
Silver	"	1.00	ND	0.896	"	50.0-150	**89.6**			

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

TCLP Metals per EPA 1311/6000/7000 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0590544	**Date Prepared: 5/18/99**					**Extraction Method: TCLP Extraction**				
Blank	**0590544-BLK1**									
Arsenic	5/25/99			**ND**	mg/l	**0.0500**				
Barium	5/20/99			**ND**	"	**0.500**				
Cadmium	"			**ND**	"	**0.0100**				
Chromium	"			**ND**	"	**0.0100**				
Lead	5/25/99			**ND**	"	**0.250**				
Selenium	"			**ND**	"	**0.0500**				
Silver	5/20/99			**ND**	"	**0.0100**				
LCS	**0590544-BS1**									
Arsenic	5/25/99	5.00		5.41	mg/l	75.0-125	108			
Barium	5/20/99	10.0		10.2	"	75.0-125	102			
Cadmium	"	1.00		1.08	"	75.0-125	108			
Chromium	"	5.00		5.15	"	75.0-125	103			
Lead	5/25/99	5.00		5.07	"	75.0-125	101			
Selenium	"	2.00		2.34	"	75.0-125	117			
Silver	5/20/99	1.00		0.951	"	75.0-125	95.1			
Matrix Spike	**0590544-MS1**		**P905319-07**							
Arsenic	5/25/99	25.0	ND	26.5	mg/l	50.0-150	**106**			
Barium	5/20/99	50.0	3.06	45.9	"	50.0-150	**85.7**			
Cadmium	"	5.00	ND	4.52	"	50.0-150	**90.4**			
Chromium	"	25.0	ND	22.0	"	50.0-150	**88.0**			
Lead	5/25/99	25.0	0.253	25.1	"	50.0-150	**99.4**			
Selenium	"	10.0	ND	10.4	"	50.0-150	**104**			
Silver	5/20/99	5.00	ND	3.80	"	50.0-150	**76.0**			
Batch: 0590611	**Date Prepared: 5/18/99**					**Extraction Method: EPA 1311/3010**				
Blank	**0590611-BLK1**									
Mercury	5/24/99			**ND**	mg/l	**0.000200**				
LCS	**0590611-BS1**									
Mercury	5/24/99	0.00500		0.00495	mg/l	75.0-125	99.0			
Matrix Spike	**0590611-MS1**		**P905319-07**							
Mercury	5/24/99	0.200	ND	0.0936	mg/l	50.0-150	**46.8**			3,8

SCOEPA00026325

www.ncalabs.com

Seattle 18939 120th Avenue NE, Suite 101, Bothell, WA 98011-9508
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0590553	**Date Prepared: 5/19/99**					**Extraction Method: EPA 1664**				
Blank	**0590553-BLK1**									
Oil & Grease	5/20/99			**ND**	mg/l	**5.00**				6
LCS	**0590553-BS1**									
Oil & Grease	5/20/99	80.0		68.5	mg/l	73.0-109	85.6			6
LCS Dup	**0590553-BSD1**									
Oil & Grease	5/20/99	80.0		72.4	mg/l	73.0-109	90.5	18.0	5.57	6

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425.420.9200 fax 425.420.9210
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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/11/99 to 5/14/99
7200 N.W. Front	Project Number:	N/A	Received: 5/14/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/10/99 11:19

Notes and Definitions

#	Note
1	Reporting limits raised due to matrix interference.
2	The reporting limit for this analyte was raised due to possible laboratory contamination of the sample or extract.
3	The reporting limit for this analyte was raised due to matrix interference.
4	Results reported on 'As Received' basis. 100% solids value entered for calcuations only.
5	Reporting limits raised due to dilution necessary for analysis.
6	Since Total Oil & Grease was ND for sample, Non-polar hydrocarbon analysis was not performed.
7	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
9	Surrogate recovery is outside control limits due to matrix interference.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical - Portland

Crystal Burkholder, Project Manager

SCOEPA00026327

16 Aug

COPY

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210

CHAIN OF CUSTODY REPORT

Work Order # P905319

REPORT TO: Wacker Siltronic	INVOICE TO: Wacker Siltronic
ATTENTION: Tom Rothschild	ATTENTION: Accts Payable
ADDRESS: 7200 N.W. Front Ave Portland, OR	ADDRESS: Same
PHONE: 219-7374 FAX: 417-4144	P.O. NUMBER: 210162 NCA QUOTE #:
PROJECT NAME: Storm Water - Spring '99	
PROJECT NUMBER:	
SAMPLED BY: Tom Rothschild, Dianne Mullan	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	O&G & Grease	Total Cu, Pb & Zn	CN (T)	EPA 8260 (EPA)	8270 (EPA)	1010 (EPA)	1311 (EPA) & metals	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	99-35	5-11-99 1005		X	X						W	2	
2.	99-36	5-11-99 0940		X	X						W	2	
3.	99-37	5-11-99 1000		X	X						W	2	
4.	99-45	5/14/99 0750				X					W	1	HNO_3 (#4)
5.	99-46	5/14/99 0750					X				W	1	HCL (#5)
6.	99-47 Top layer	5/14/99 1010						X	X	X	X	O	6	
7.	99-47 Bottom layer							X	X	X	X			
8.														
9.														
10.														

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 5-14-99	RECEIVED BY (Signature): Larry Spangler	DATE: 5-14-99
PRINT NAME: Dianne Mullan FIRM: WS	TIME: 1035	PRINT NAME: Larry Spangler FIRM: NCA	TIME: 1035
RELINQUISHED BY (Signature): Larry Spangler	DATE: 5-14-99	RECEIVED BY (Signature): Jessica Roberts	DATE: 5/14/99
PRINT NAME: Larry Spangler FIRM: NCA	TIME:	PRINT NAME: JESSICA ROBERTS FIRM: NCA	TIME: 1430

ADDITIONAL REMARKS: #4 - Please use detection limit of 0.001 ppm
#5 - Please use detection limit of 1 ppm.
#6 - Please analyze both layers.

PAGE 1 OF 1

SCOEPA00026328

WACKER
Wacker Siltronic Corporation

March 16, 1999 ER113:TM

Mr. Dennis Jeurries
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Jeurries,

Enclosed is the tabulated storm water monitoring data for the calendar year 1998 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on December 23, 1997. The sampling was conducted on May 19, 1998 and November 10 of 1998 and all results are well below the benchmark guideline concentrations.

Per our March 15, 1999 telephone conversation, we have submitted the summarized sampling results. Back up information as well as QA/QC data is available upon request.

If you have any questions, please contact Petra Beissmann at 219-4469.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1998 File

SCOEPA00026329

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.00820	mg/L			Grab
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00110	mg/L			Grab
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.173	mg/L			Grab
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.35	SU			Grab
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						20.25	mg/L			Grab
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00	mg/L			Grab
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. By: Thomas C. McCue	503 219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026330

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676
South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM / TO	98	5	19		98	5	19
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0176				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00600				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.199				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						34.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503 219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*
(2-16) *(17-19)*

1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0173				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00170				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.167				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						7.0				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C McCue	503	219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026332

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676
North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

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OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.00560				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						<0.00100				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.193				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.87				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						3.75				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C. McCue	503 219-7532	99	3	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue
LOCATION Portland, OR 97210-3676
South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

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PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.00940				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						0.00120				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.207				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						7.47				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY: Thomas C. McCue SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	503 219-7532 AREA CODE NUMBER	99 3 26 YEAR MO DAY
TYPED OR PRINTED						

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026334

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY LOCATION 7200 NW Front Avenue
Portland, OR 97210-3676

East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

1200-Z	
PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* BENCHMARK	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULTS	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.00990				
	PERMIT REQUIREMENT		0.1	mg/L							
Total Lead	SAMPLE MEASUREMENT						<0.00100				
	PERMIT REQUIREMENT		0.4	mg/L							
Total Zinc	SAMPLE MEASUREMENT						0.247				
	PERMIT REQUIREMENT		0.6	mg/L							
pH	SAMPLE MEASUREMENT						6.65				
	PERMIT REQUIREMENT		5.5 - 9	Su							
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT		130	mg/L							
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT		10	mg/L							
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue,
Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP. BY:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	219-7532	99	3	26
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026335

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY
LOCATION 7200 NW Front Ave, Portland, OR 97210
North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER (2-16)	DISCHARGE NUMBER (17-19)
1200-Z	

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) Result	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
TOTAL Copper	SAMPLE MEASUREMENT		Benchmark	mg/L			0.00820	mg/L			Grab
	PERMIT REQUIREMENT		0.1								
TOTAL Lead	SAMPLE MEASUREMENT			mg/L			0.00110	mg/l			Grab
	PERMIT REQUIREMENT		0.4								
TOTAL Zinc	SAMPLE MEASUREMENT			mg/L			0.173	mg/L			Grab
	PERMIT REQUIREMENT		0.6								
PH	SAMPLE MEASUREMENT			SU			7.35	S.U.			Grab
	PERMIT REQUIREMENT		5.5-9								
Total Suspended Solids	SAMPLE MEASUREMENT			mg/L			20.25	mg/L			Grab
	PERMIT REQUIREMENT		120								
Oil and Grease	SAMPLE MEASUREMENT			mg/L			<5.00	mg/L			Grab
	PERMIT REQUIREMENT		10								
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE	DATE
Thomas C. McCue, Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	503 29-7582	
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE / NUMBER	YEAR / MO / DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026336

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME

ADDRESS

FACILITY

LOCATION South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		(3 Card Only) QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* Results	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0176				
	PERMIT REQUIREMENT										
Total Lead	SAMPLE MEASUREMENT						0.00600				
	PERMIT REQUIREMENT										
Total Zinc	SAMPLE MEASUREMENT						0.199				
	PERMIT REQUIREMENT										
PH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT										
Total Suspended Solids	SAMPLE MEASUREMENT						34.25				
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*		AREA CODE	NUMBER	YEAR	MO	DAY
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT					

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME

ADDRESS

FACILITY
LOCATION EAST SAMPLE POINT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	5	19	TO	98	5	19
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

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PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* Result	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0173				
	PERMIT REQUIREMENT										
Total Lead	SAMPLE MEASUREMENT						0.00170				
	PERMIT REQUIREMENT										
Total Zinc	SAMPLE MEASUREMENT						0.167				
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT						6.9				
	PERMIT REQUIREMENT										
Total Suspended Solids	SAMPLE MEASUREMENT						7.0				
	PERMIT REQUIREMENT										
Oil and grease	SAMPLE MEASUREMENT						<5.00				
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE	DATE
	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*		AREA CODE / NUMBER	YEAR / MO / DAY
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME

ADDRESS

FACILITY
LOCATION North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	~~98~~	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
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PARAMETER *(32-37)*		(3 Card Only) QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* Result	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.00560				
	PERMIT REQUIREMENT										
Total Lead	SAMPLE MEASUREMENT						<0.00100				
	PERMIT REQUIREMENT										
Total Zinc	SAMPLE MEASUREMENT						0.193				
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT						6.87				
	PERMIT REQUIREMENT										
Total Suspended Solids	SAMPLE MEASUREMENT						3.75				
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE	DATE
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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME

ADDRESS

FACILITY

LOCATION South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

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PARAMETER *(32-37)*		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) Result	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Copper	SAMPLE MEASUREMENT						0.00940				
	PERMIT REQUIREMENT										
Total Lead	SAMPLE MEASUREMENT						0.00120				
	PERMIT REQUIREMENT										
Total Zinc	SAMPLE MEASUREMENT						0.207				
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT						7.47				
	PERMIT REQUIREMENT										
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT										
Oil + Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE	DATE
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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/ Location if Different)*
NAME

ADDRESS

FACILITY

LOCATION EAST SAMPLE Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER *(2-16)*	DISCHARGE NUMBER *(17-19)*

Form Approved.
OMB No. 2040-0004
Approval expires 05-31-98

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	98	11	10	TO	98	11	10
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		(3 Card Only) QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	(4 Card Only) QUANTITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* Result	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Copper	SAMPLE MEASUREMENT						0.0090				
	PERMIT REQUIREMENT										
Total Lead	SAMPLE MEASUREMENT						<0.0100				
	PERMIT REQUIREMENT										
Total Zinc	SAMPLE MEASUREMENT						0.247				
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT						6.65				
	PERMIT REQUIREMENT										
Total Suspended Solids	SAMPLE MEASUREMENT						1.25				
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<5.0				
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE	DATE
	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*		AREA CODE / NUMBER	YEAR / MO / DAY
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

10/27/99

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Seattle 425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.382.9010 fax 541.382.2480

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
99-115 Stormwater - North	P910569-01	Water	10/27/99
99-116 " South	P910569-02	Water	10/27/99
99-117 " East	P910569-03	Water	10/27/99

The results in this report apply to the samples analyzed in accordance with the chain of custody document
This analytical report must be reproduced in its entirety.

Sara McClurg

Sara McClurg, Project Manager

SCOEPA00026342

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www.ncalabs.com

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Spokane East 1115 Montgomery, Suite B, Spokane, WA 99206-4776 509.924.9200 fax 509.924.9290
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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-115 North			**P910569-01**				**Water**	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.00970**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00200**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.173**	"	
99-116 South			**P910569-02**				**Water**	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.0116**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00200**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.423**	"	
99-117 East			**P910569-03**				**Water**	
Copper	1090907	10/29/99	10/29/99	EPA 200.8	0.00200	**0.0122**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00180**	"	
Zinc	"	"	11/3/99	EPA 200.8	0.00500	**0.287**	"	

SCOEPA00026343

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Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
99-115 North			P910569-01				Water	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1
99-116 South			P910569-02				Water	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1
99-117 East			P910569-03				Water	
Oil & Grease	1190067	11/2/99	11/2/99	EPA 1664	5.00	ND	mg/l	1

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Seattle [illegible]
425.420.9200 fax 425.420.9210
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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1090907	**Date Prepared: 10/29/99**					**Extraction Method: EPA 200/3005**				
Blank	**1090907-BLK1**									
Copper	10/29/99			ND	mg/l	0.00200				
Lead	"			ND	"	0.00100				
Zinc	11/3/99			ND	"	0.00500				
LCS	**1090907-BS1**									
Copper	10/29/99	0.100		0.103	mg/l	85.0-115	103			
Lead	"	0.100		0.103	"	85.0-115	103			
Zinc	11/3/99	0.100		0.0921	"	85.0-115	92.1			
Duplicate	**1090907-DUP1**		**P910569-01**							
Copper	10/29/99		0.00970	0.00930	mg/l			20.0	4.21	
Lead	"		0.00200	0.00190	"			20.0	5.13	
Zinc	11/3/99		0.173	0.183	"			20.0	5.62	
Matrix Spike	**1090907-MS1**		**P910569-01**							
Copper	10/29/99	0.100	0.00970	0.113	mg/l	70.0-130	**103**			
Lead	"	0.100	0.00200	0.105	"	70.0-130	**103**			
Zinc	11/3/99	0.100	0.173	0.254	"	70.0-130	**81.0**			
Matrix Spike	**1090907-MS2**		**P910558-01**							
Copper	10/29/99	0.100	ND	0.105	mg/l	70.0-130	**105**			
Lead	"	0.100	ND	0.104	"	70.0-130	**104**			
Zinc	11/2/99	0.100	0.00730	0.107	"	70.0-130	**99.7**			

North Creek Analytical - Portland

Refer to end of report for text of notes and definitions.

Sara McClurg, Project Manager

SCOEPA00026345

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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1190067	**Date Prepared: 11/2/99**					**Extraction Method: EPA 1664**				
Blank	**1190067-BLK1**									
Oil & Grease	11/2/99			ND	mg/l	5.00				
Oil & Grease (non-polar)	"			ND	"	5.00				
Oil & Grease (polar)	"			ND	"					
LCS	**1190067-BS1**									
Oil & Grease	11/2/99	80.0		70.5	mg/l	73.0-109	88.1			
Oil & Grease (non-polar)	"	40.0		30.9	"	57.0-113	77.2			
LCS Dup	**1190067-BSD1**									
Oil & Grease	11/2/99	80.0		71.5	mg/l	73.0-109	89.4	18.0	1.46	
Oil & Grease (non-polar)	"	40.0		31.3	"	57.0-113	78.2	24.0	1.29	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Sara McClurg, Project Manager

SCOEPA00026346

nca™
www.ncalabs.com

Seattle 425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue Beaverton, OR 97008-7132 503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 10/27/99
7200 N.W. Front	Project Number:	fall '99 / PO #210162	Received: 10/28/99
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 11/4/99 09:58

Notes and Definitions

#	Note
1	Since Total Oil & Grease was ND for sample, Non-polar hydrocarbon analysis was not performed.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical - Portland

Sara McClurg, Project Manager

SCOEPA00026347

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210

1.2 dig.

CHAIN OF CUSTODY REPORT

Work Order # P910569

REPORT TO: Wacker Siltronic
ATTENTION: Tom Rothschild
ADDRESS: 7200 N.W. Front Ave.
Portland, OR
PHONE: 219-7374 FAX: 417-4144
PROJECT NAME: Stormwater - Fall - '99
PROJECT NUMBER:
SAMPLED BY: T. Rothschild, S. Bell, D. Mullan

INVOICE TO: Wacker Siltronic
ATTENTION: Accts Payable
ADDRESS:
P.O. NUMBER: 210162 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] Standard 7 5 4 3 2 1 Same Day
Fuels & Hydrocarbon Analyses: 5 Standard 3-4 2 1 Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Requested: Oil & Grease EPA-1664; Cu, Pb, Zn EPA-200.8

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Oil & Grease EPA-1664	Cu, Pb, Zn EPA-200.8	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1	99-115	10-27-99 1010		X	X	W	2	
2	99-116	10-27-99 1020		X	X	W	2	
3	99-117	10-27-99 1010		X	X	W	2	
4								
5								
6								
7								
8								
9								
10								

RELINQUISHED BY: Dianne Mullan DATE: 10-28-99
PRINT NAME: Dianne Mullan FIRM: Wacker TIME: 1015
RECEIVED BY: [signature] DATE: 10/28/99
PRINT NAME: [illegible] FIRM: NCA TIME: 1015

RELINQUISHED BY: [signature] DATE: 10-27-99
PRINT NAME: [illegible] FIRM: NCA TIME:
RECEIVED BY: Justin Roberts DATE: 10/28/99
PRINT NAME: JROBERTS FIRM: NCA TIME: 1045

ADDITIONAL REMARKS:

PAGE 1 OF 1

FROM :NORTH CREEK ANALYTICAL TO :8417414 1999-11-04 10:14AM #900 P.08/08

SCOEPA00026348

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **South (Nox)** Sample ID#: **99-116**

Date: 10.27.99 Time: 1020 Sampled by: Tom Rothschild
Steve Bell

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: (*) COD, mg/L: 30.8 F-, mg/L: 0.92

pH: 6.41 PO_4, mg/L: (*) TSS, mg/L: 6.25

Ammonia (NH_3), mg/L: (*) Hydrogen Peroxide, mg/L: (*)

Nitrate, mg/L: 0.3

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Copper: 0.0116 Lead: 0.002 Zinc: 0.423

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: [illegible]

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East ((River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10-27-99 Sample Date: 10-27-99 Analyst: JM

Slope: -54.2 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U9102 Date Opened: 8/26/99

10.0 mg/L: Lot #: U9004 Date Opened: 8/26/99

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
#99-116	0.92

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	#99-116
After Spike Concentration:	mg/L	mg/L	2.20 mg/L
Recovery:	%	%	64 %

Comments: Storm Water Sample South (NOx)

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026351

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: _10-27-99_ Sample Date: _10-27-99_ Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 1130 / 1330 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.1 mg/L (Range: 28 - 32 mg/L)

4. #99-116: 30.8 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water Sample (South by NOx)_____

_____

_____

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 10-27-99 Sample Date: 10-27-99 Analyst: DM

Data:

Sample	Nitrate Nitrogen (N)	x Dilution	x 4.4* =	Nitrate, mg/L
#99-115 (North)	0.4	x N/A	x 4.4 =	0.41
#99-116 (South)	0.3	x N/A	x 4.4 =	0.3
#99-117 (East)	0.2	x N/A	x 4.4 =	0.2
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 08131

Sample:	#99-115	#99-116	#99-117
After Spike Concentration:	1.4 mg/L	1.3 mg/L	1.3 mg/L
Recovery:	100 %	100 %	116 %

Comments: Storm Water Samples.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-N03-E, page 4-88.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Medium Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 96
DEM 29 Jul 98 Revised

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SCOEPA00026353

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **North (outfall)** Sample ID#: **99-115**

Date: 10.27.95 Time: 1010 Sampled by: Dianne Mullan

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: __(*)___ COD, mg/L: 21.8 F-, mg/L: 0.22

pH: 7.05 PO_4, mg/L: ___(*)___ TSS,mg/L: 14

Ammonia (NH_3), mg/L: _(*)____Hydrogen Peroxide, mg/L: __(*)___

Nitrate, mg/L: 0.4

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.00970 mg/L Lead: 0.002 mg/L Zinc: 0.173 mg/L

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: [illegible]

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East ((River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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#99-115

SCOEPA00026355

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10-27-99 Sample Date: 10-27-99 Analyst: DH

Slope: -54.2 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U4102 Date Opened: 8/26/99

10.0 mg/L: Lot #: U9004 Date Opened: 8/26/99

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
#99-115	0.22

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	#99-115
After Spike Concentration:	mg/L	mg/L	1.90 mg/L
Recovery:	%	%	84 %

Comments: Storm Water Sample North (outfall)

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026356

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: _10-27-99_ Sample Date: _10-27-99_ Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 1130 / 1330 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.
2. Zero the DR/4000 with an RODI H_2O blank.
3. Check the 30mg/L standard: 30.1 mg/L (Range: 28 - 32 mg/L)
4. #99-115: 21.8 mg/L.
5. OWW (composite): Direct DR/4000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H_2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water Sample (North by Outfall)_____

_____

_____

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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BENCHSHEET

NITRATE ANALYSIS

Test Date: 10.27.99 Sample Date: 10-27-99 Analyst: DM

Data:

Sample	Nitrate Nitrogen(N)	x Dilution	x 4.4* =	Nitrate, mg/L
#99-115 (North)	0.4	x N/A	x 4.4 =	0.4
#99-116 (South)	0.3	x N/A	x 4.4 =	0.3
#99-117 (East)	0.2	x N/A	x 4.4 =	0.2
		x	x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 08131

Sample:	#99-115	#99-116	#99-117
After Spike Concentration:	1.4 mg/L	1.3 mg/L	1.3 mg/L
Recovery:	100 %	100 %	116 %

Comments: Storm Water Samples.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-N03-E, page 4-88.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Medium Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 96
DEM 29 Jul 98 Revised

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SCOEPA00026358

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: **East (River)** Sample ID#: **99-117**

Date: 10.27.99 Time: 1010 Sampled by: Tom Rothschild
Dianne Mulligan
Steve Bell

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: (*) COD, mg/L: 24.3 F-, mg/L: 0.16

pH: 6.74 PO_4, mg/L: (*) TSS, mg/L: 8.25

Ammonia (NH_3), mg/L: (*) Hydrogen Peroxide, mg/L: (*)

Nitrate, mg/L: 0.2

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.0122 Lead: 0.0018 Zinc: 0.287

Notes: (*) Low results from past data have warranted removing these parameters from in house testing.

DEM 10 Oct 96
DEM 09 Mar 99 Revised

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BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: _10-27-99_ Sample Date: _10-27-99_ Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 1130 / 1330 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.1 mg/L (Range: 28 - 32 mg/L)

4. #99-117: 24.3 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water Sample East (by NOx)_____

_____

_____

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026360

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 10-27-99 Sample Date: 10-27-99 Analyst: DM

Slope: -54.2 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U9102 Date Opened: 8/26/99

10.0 mg/L: Lot #: U9004 Date Opened: 8/26/99

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
#99-117	0.16

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	#99-117
After Spike Concentration:	mg/L	mg/L	1.34 mg/L
Recovery:	%	%	60 %

Comments: Storm Water Sample East (River)

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026361

BENCHSHEET

NITRATE ANALYSIS

Test Date: 10.27.99 Sample Date: 10-27-99 Analyst: DM

Data:

Sample	Nitrate Nitrogen (N)	x	Dilution	x 4.4* =	Nitrate, mg/L
#99-115 (North)	0.4	x	N/A	x 4.4 =	0.61
#99-116 (South)	0.3	x	N/A	x 4.4 =	0.3
#99-117 (East)	0.2	x	N/A	x 4.4 =	0.2
		x		x 4.4 =	

*Multiplication of 4.4 converts Nitrate Nitrogen to Nitrate.

Quality Control: Spike each of the above samples with 0.1 ml of 100 mg/L Standard. The Nitrate concentration should increase by 1.0 mg/L.
Manufacturer: HACH
Lot Number: 08131

Sample:	#99-115	#99-116	#99-117
After Spike Concentration:	1.4 mg/L	1.3 mg/L	1.3 mg/L
Recovery:	100 %	100 %	116 %

Comments: Storm Water Samples.

References:
1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-N03-E, page 4-88.
2. Hach DR/4000 Spectrophotometer Instrument Manual; Nitrogen, Nitrate Method 8171, Medium Range:0-5.0 mg/L Cadmium Reduction Method. HACH Program 2520.

TJR/JB 27 Jun 96
DEM 29 Jul 98 Revised

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SCOEPA00026362

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 10-27-99 Oven Temp: 105 C Analyst: [illegible]

Date In: 10-27-99 Time In/Out: 1400 / 1510

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	N/A	0.0892	0.0892	0
				Average TSS	
3	#99-115	200	0.0921	0.0892	14.5
4	#99-115	200	0.0926	0.0899	13.5
		#99-115 North (Outfall)		Average TSS	14
5	#99-116	200	0.0902	0.0890	6
6	#99-116	200	0.0885	0.0872	6.5
		#99-116 South (Nox)		Average TSS	6.25
7	#99-117	200	0.0914	0.0898	8
8	#99-117	200	0.0917	0.0900	8.5
		#99-117 East ((River)		Average TSS	8.25

Notes: Storm Water Samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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SCOEPA00026363

Total Copper mg/l

	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North	0.019	0.6	0.024	0.009	0.008	0.0056
South	0.028	0.836	0.039	0.006	0.0176	0.0094
East	0.016	0.008	0.03	0.004	0.0173	0.0099
Benchmark & Sample Date	0.1	0.1	0.1	0.1	0.1	0.1

Total Lead mg/l

	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North	0.0061	0.007	0.008	0.002	0.001	0.001
South	0.017	0.009	0.02	0.004	0.006	0.0012
East	0.011	0.001	0.01	0.001	0.0017	0.001
Benchmark & Sample Date	0.4	0.4	0.4	0.4	0.4	0.4

Total Zinc mg/l

	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North	0.18	0.178	0.319	0.091	0.173	0.193
South	0.65	0.233	0.282	0.133	0.199	0.207
East	0.61	0.286	0.36	0.167	0.167	0.247
Benchmark & Sample Date	0.6	0.6	0.6	0.6	0.6	0.6

pH S.U.

	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North	6.65	6.95	9.29	7.35	7.35	6.87
South	6.5	6.85	5.64	6.92	6.9	7.47
East	7	6.58	5.09	6.96	6.9	6.65
Lower Benchmark & Sample Date	5.5	5.5	5.5	5.5	5.5	5.5
Upper Benchmark & Sample Date	9.0	9.0	9.0	9.0	9.0	9.0

TSS mg/l

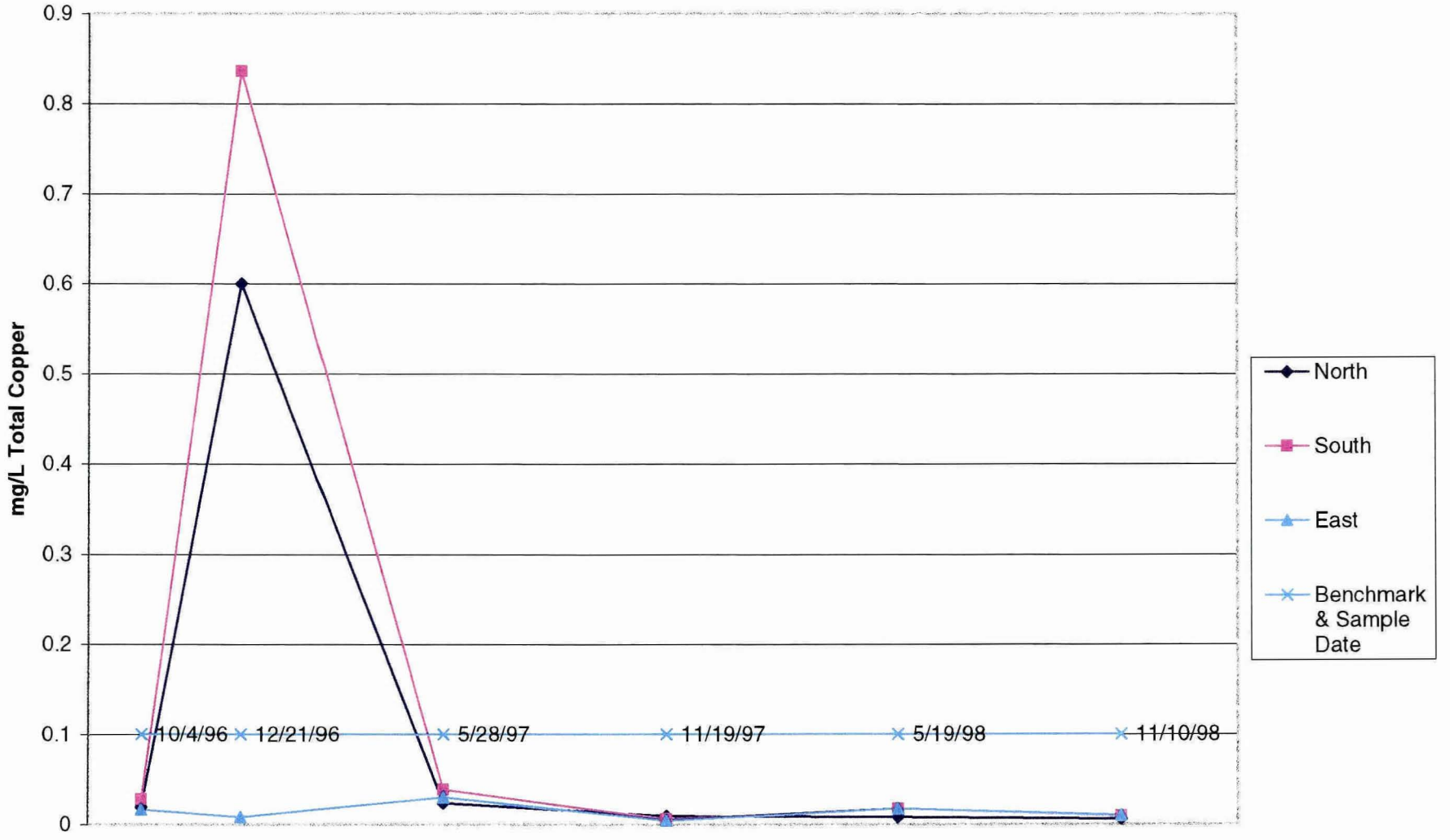
	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North		71	117	26.75	20.25	3.75
South		18	75	13.5	34.25	1.25
East		<10	82	5.75	7	1.25
Benchmark & Sample Date		130	130	130	130	130

Oil and Grease mg/l

	10/4/96	12/21/96	5/28/97	11/19/97	5/19/98	11/10/98
North	<5.0	<5.0	1.11	<0.5	<5.0	<5.0
South	<5.0	<5.0	2.69	1.75	<5.0	<5.0
East	<5.0	<5.0	<0.5	0.685	<5.0	<5.0
Benchmark & Sample Date	10	10	10	10	10	10

SCOEPA00026364

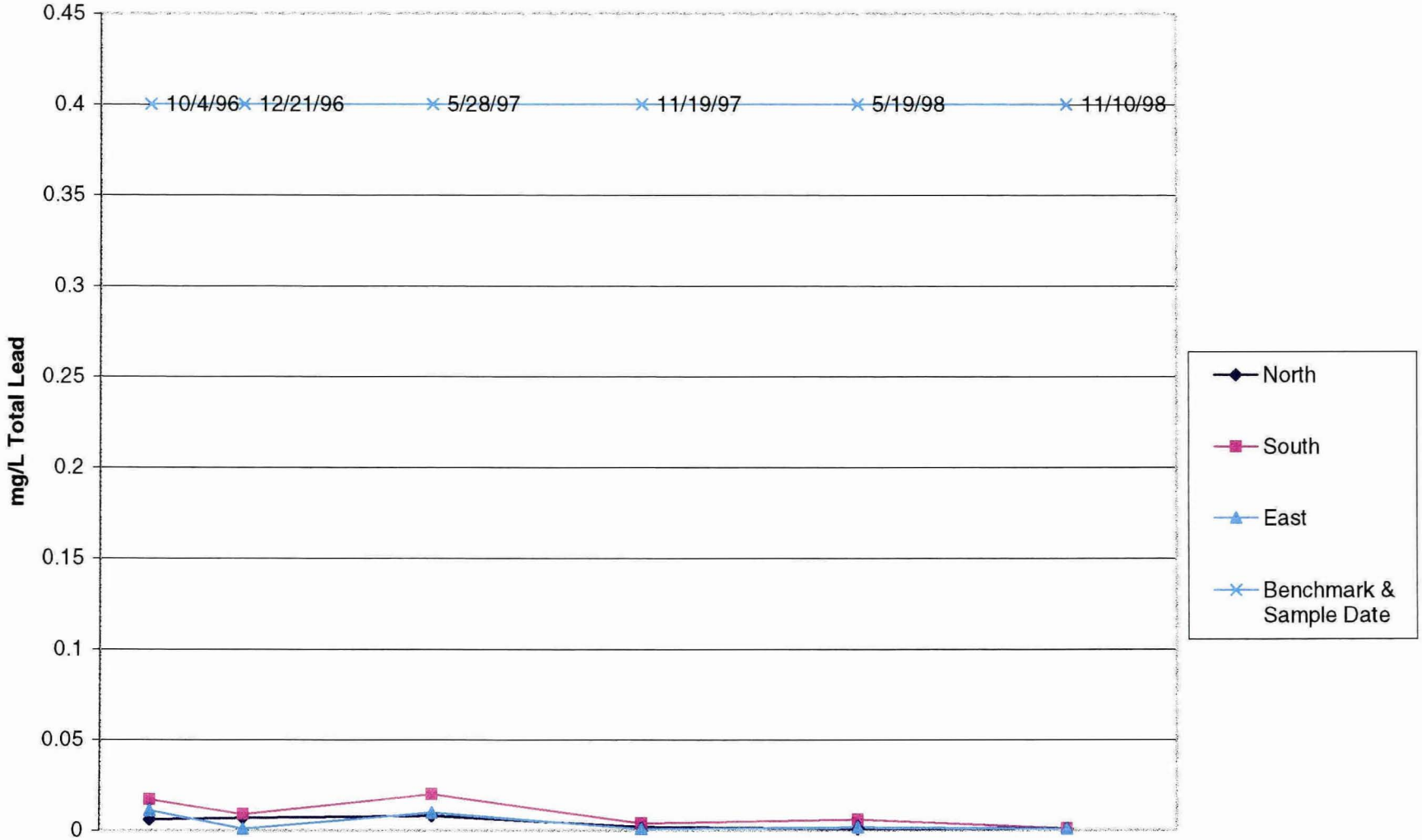
Storm Water Discharge Benchmarks - Copper
Benchmark, Established in December 1997, is 0.1 mg/L



3/16/99

Benchmarks.xlsCopper

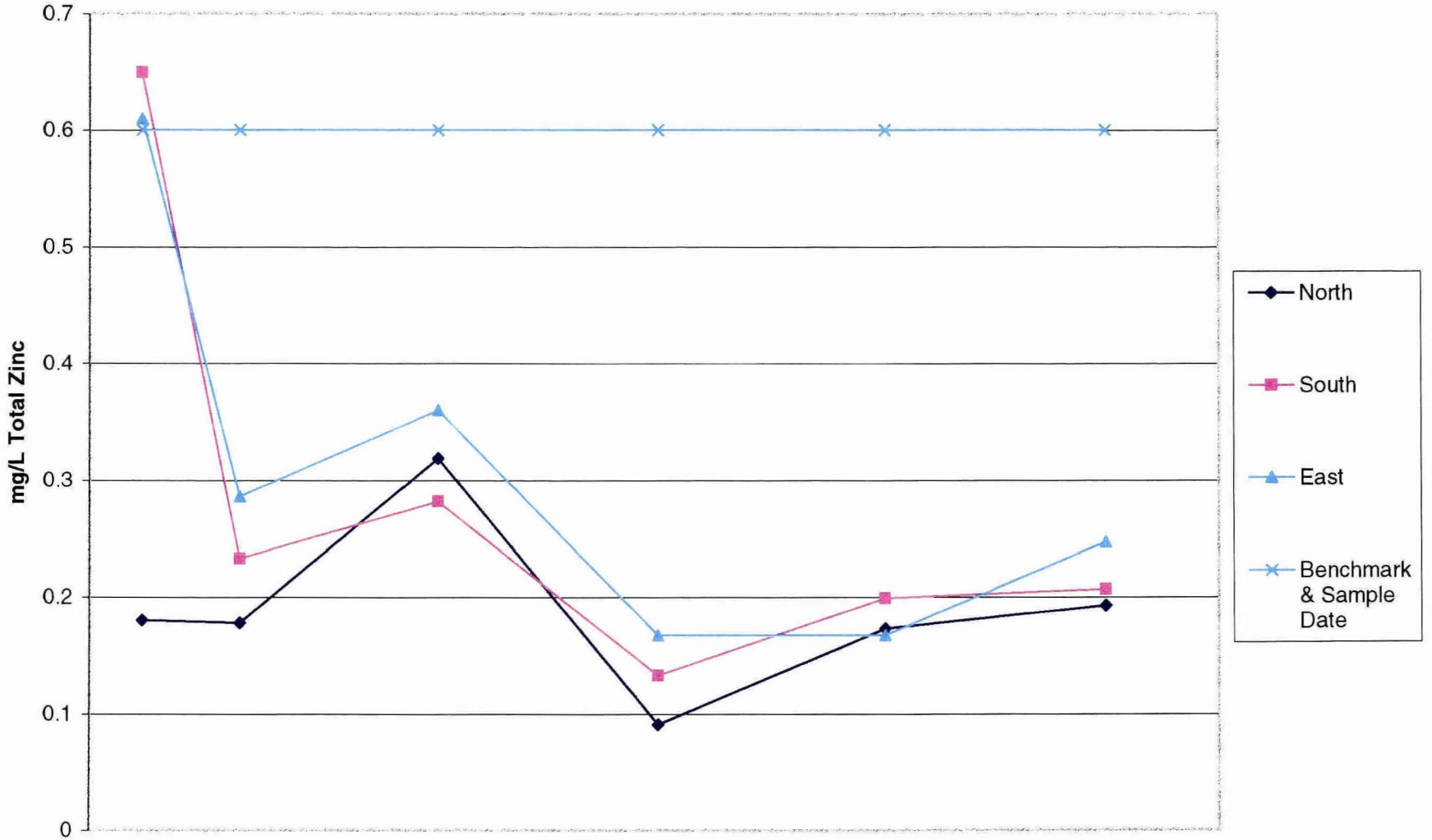
Storm Water Discharge Benchmarks - Lead
Benchmark, Established in December 1997, is 0.4 mg/L



3/16/99

Benchmarks.xlsLead

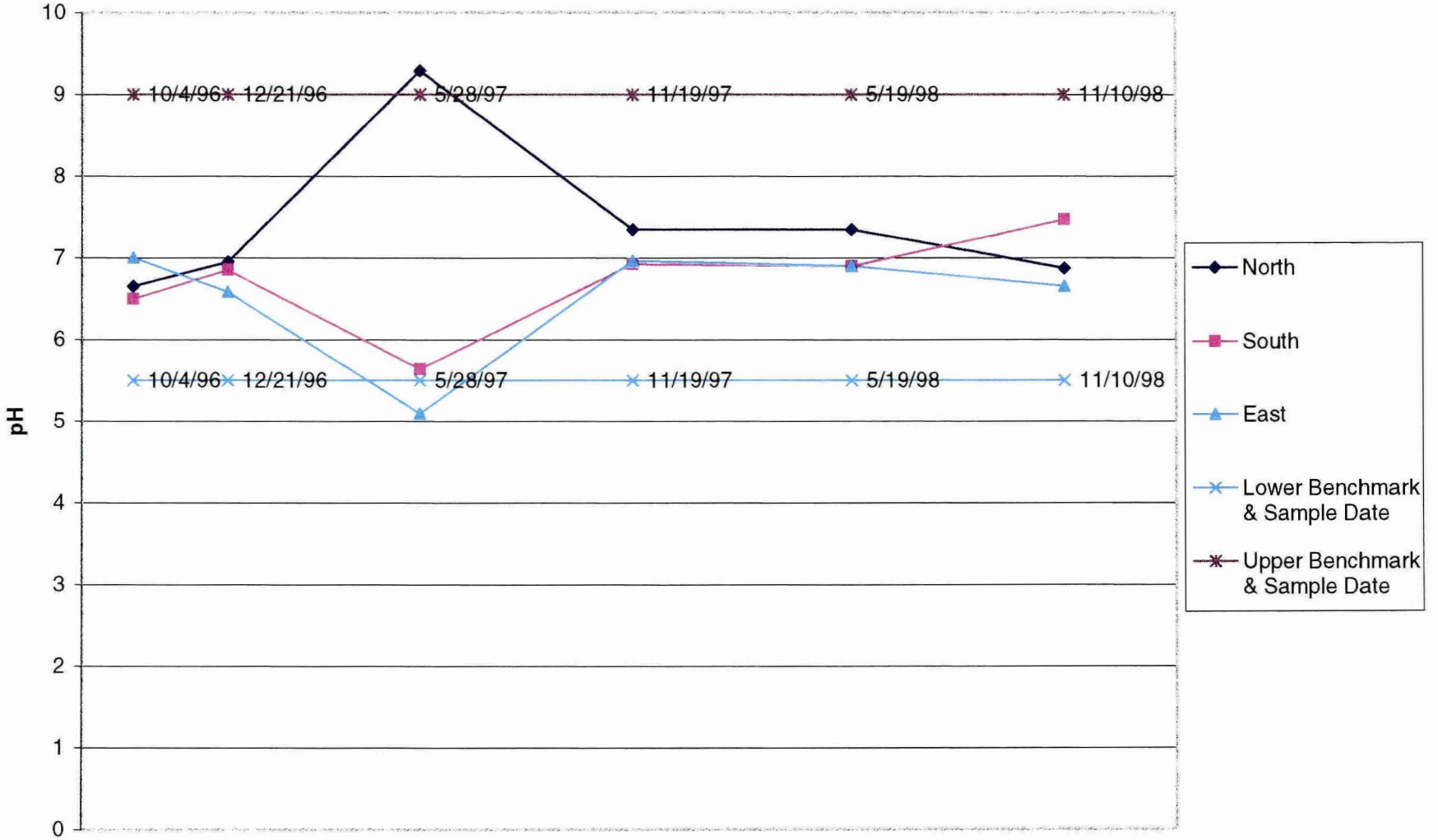
Storm Water Discharge Benchmarks - Zinc
Benchmark, Established in December 1997, is 0.6 mg/L



3/16/99

Benchmarks.xlsZinc

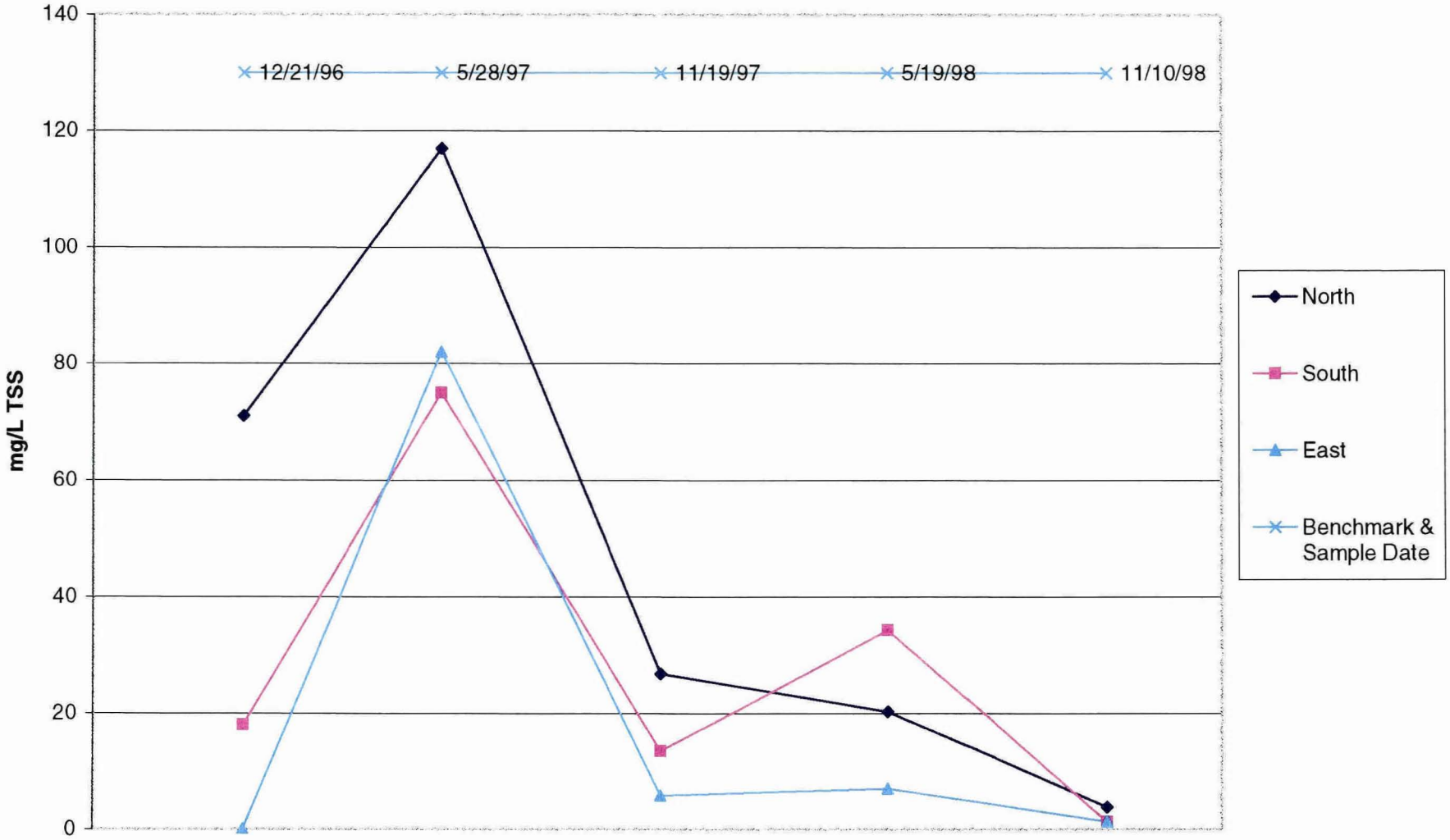
Storm Water Discharge Benchmarks - pH
Benchmark, Established in December 1997, is between 5.5 and 9.0 su



3/16/99

Benchmarks.xls pH

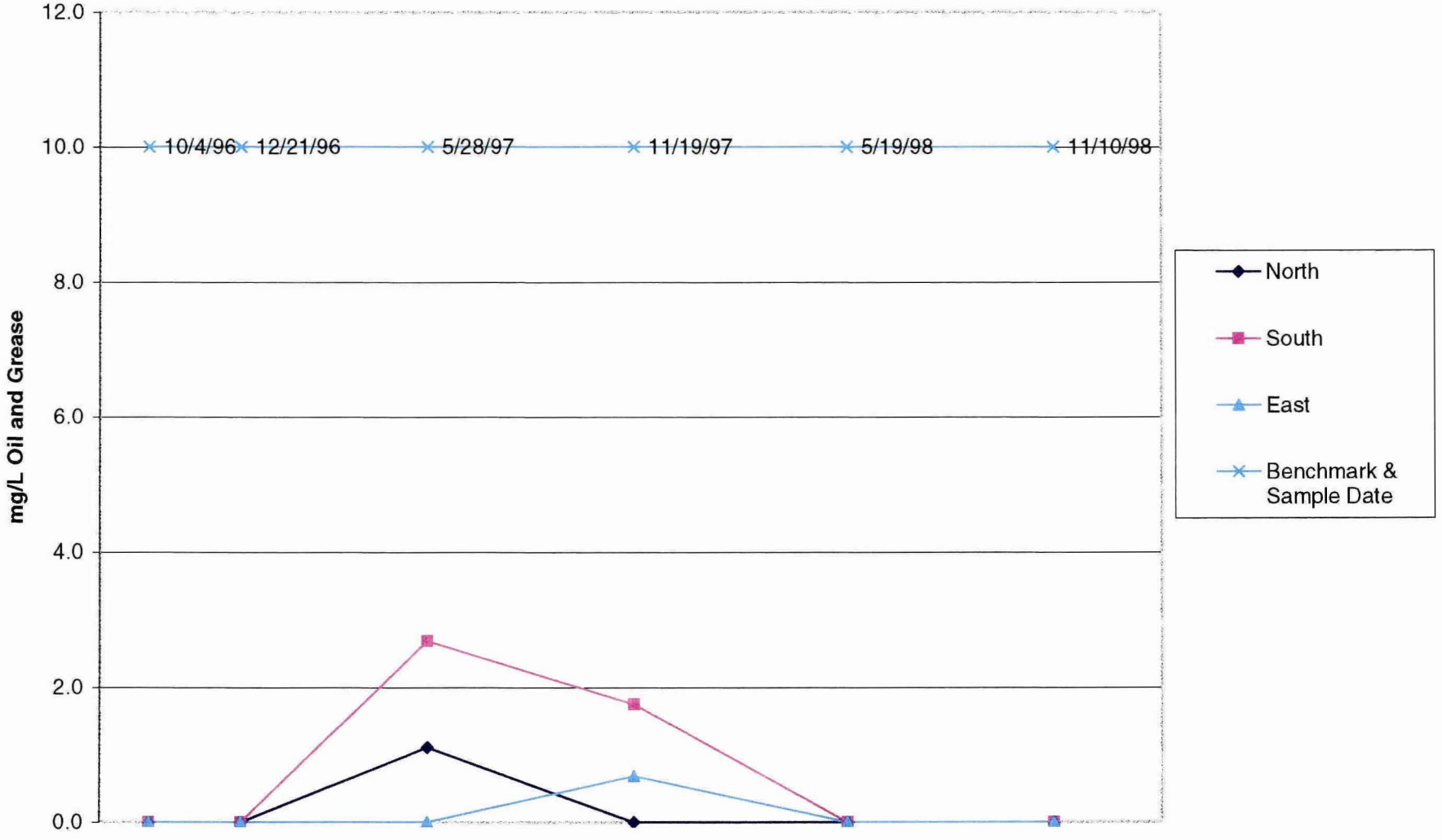
Storm Water Discharge Benchmarks - TSS
Benchmark, established in December 1997, is 130 mg/L



3/16/99

Benchmarks.xlsTSS

Storm Water Discharge Benchmarks - Oil and Grease
Benchmark, Established in December 1997, is 10 mg/L



3/16/99

Benchmarks.xlsOil and Grease

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South (NOx) Sample ID#: 98-123

Date: 11/10/98 Time: 1130 Sampled by: Jon Rothschild
Jerry Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 5.69 COD, mg/L: 23.6 F-, mg/L: 0.32

pH: 7.47 PO_4, mg/L: 0.001 TSS, mg/L: 1.25

Ammonia (NH_3), mg/L: 0.376 Hydrogen Peroxide, mg/L: 0

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.00940 Lead: 0.00120 Zinc: 0.207

Notes:

DEM 10 Oct 96
DEM 14 Oct 98 Revised

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NORTH CREEK ANALYTICAL
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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-123 storm water South			**P811235-01**				**Water**	
Copper	1280007	11/24/98	12/1/98	EPA 200.8	0.00200	**0.00940**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	**0.00120**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.207**	"	
98-124 storm water North			**P811235-02**				**Water**	
Copper	1280007	11/24/98	12/1/98	EPA 200.8	0.00200	**0.00560**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	ND	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.193**	"	
98-125 Storm water East			**P811235-03**				**Water**	
Copper	1280007	11/24/98	12/1/98	EPA 200.8	0.00200	**0.00990**	mg/l	
Lead	"	"	"	EPA 200.8	0.00100	ND	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.247**	"	
98-132 CE - grab			**P811235-05**				**Water**	
Chromium	1280122	12/2/98	12/4/98	EPA 200.8	0.00100	**0.00150**	mg/l	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-123 South			**P811235-01**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4
98-124 North			**P811235-02**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4
98-125 East			**P811235-03**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4

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Environmental Laboratory Services

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1280007	**Date Prepared: 11/24/98**					**Extraction Method: EPA 200/3005**				
Blank	**1280007-BLK1**									
Copper	12/1/98			**ND**	mg/l	**0.00200**				
Lead	"			**ND**	"	**0.00100**				
Zinc	"			**ND**	"	**0.00500**				
LCS	**1280007-BS1**									
Copper	12/1/98	0.100		0.102	mg/l	85.0-115	102			
Lead	"	0.100		0.103	"	85.0-115	103			
Zinc	"	0.100		0.104	"	85.0-115	104			
Duplicate	**1280007-DUP1**		**P811247-05**							
Copper	12/1/98		ND	ND	mg/l			20.0		
Lead	"		ND	ND	"			20.0		
Zinc	"		0.216	0.215	"			20.0	**0.464**	
Matrix Spike	**1280007-MS1**		**P811247-05**							
Copper	12/1/98	0.500	ND	0.550	mg/l	70.0-130	**110**			
Lead	"	0.500	ND	0.580	"	70.0-130	**116**			
Zinc	"	0.500	0.216	0.760	"	70.0-130	**109**			
Matrix Spike	**1280007-MS2**		**P811247-04**							
Copper	12/1/98	0.500	0.0220	0.530	mg/l	70.0-130	**102**			
Lead	"	0.500	0.0110	0.560	"	70.0-130	**110**			
Zinc	"	0.500	0.0960	0.555	"	70.0-130	**91.8**			
Matrix Spike Dup	**1280007-MSD1**		**P811247-05**							
Copper	12/1/98	0.500	ND	0.535	mg/l	70.0-130	**107**	20.0	**2.76**	
Lead	"	0.500	ND	0.555	"	70.0-130	**111**	20.0	**4.41**	
Zinc	"	0.500	0.216	0.740	"	70.0-130	**105**	20.0	**3.74**	
Matrix Spike Dup	**1280007-MSD2**		**P811247-04**							
Copper	12/1/98	0.500	0.0220	0.520	mg/l	70.0-130	**99.6**	20.0	**2.38**	
Lead	"	0.500	0.0110	0.535	"	70.0-130	**105**	20.0	**4.65**	
Zinc	"	0.500	0.0960	0.545	"	70.0-130	**89.8**	20.0	**2.20**	
Batch: 1280122	**Date Prepared: 12/2/98**					**Extraction Method: EPA 200/3005**				
Blank	**1280122-BLK1**									
Chromium	12/3/98			**ND**	mg/l	**0.00100**				

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions*

Crystal Burkholder, Project Manager

SCOEPA00026374

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1180510	**Date Prepared: 11/19/98**					**Extraction Method: EPA 1664**				
Blank	**1180510-BLK1**									
Oil & Grease	11/20/98			**ND**	mg/l	**5.00**				
LCS	**1180510-BS1**									
Oil & Grease	11/20/98	80.0		53.0	mg/l	73.0-109	66.3			3,4
LCS Dup	**1180510-BSD1**									
Oil & Grease	11/20/98	80.0		56.3	mg/l	73.0-109	70.4	18.0	6.00	3,4

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled:	11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received:	11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported:	12/8/98 09:25

Notes and Definitions

#	Note
1	Estimated value. The reported value exceeds the calibration range of the analysis.
2	Rerun within calibration range confirms result (vial contained headspace-not reported).
3	The RPD and/or the percent recovery for this QC spike sample is outside of established control limits due to a spiking error.
4	Since Total O&G was ND, sample was not analyzed for Non-polar hydrocarbons.
5	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Crystal Burkholder, Project Manager

SCOEPA00026376

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) /200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202 X

COPY

CHAIN OF CUSTODY REPORT

Work Order # 811235

REPORT TO: Wacker Siltronic
ATTENTION: Tom Rothschild
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 219-7374 FAX: 417-4144
PROJECT NAME: Stormwater - Fall - 98
PROJECT NUMBER:
SAMPLED BY: Dianne Mullan, Tom Rothschild, Gerry Munroe

INVOICE TO: Wacker Siltronic
ATTENTION: Accts Payable
ADDRESS: Same
P.O. NUMBER: 210162 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Total Copper & Lead & Zinc	Oil & Grease	Cr (T)	8260	8270	1,2-Diphenylhydrazine	IPA	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1	98-123	11-10-98 1130		X	X				-		W	2	H_2SO_4 / HNO_3
2	98-124	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
3	98-125	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
4	~~98-131~~	11/12/98 0810				X					W	1	HNO_3
5	98-132	11/12/98 0810				X	X	X	X		W	4	HCL
6	98-133	11/12/98 0810								X	W	2	HCL
7													
8													
9													
10													

Client will resample 1/8/98

RELINQUISHED BY (Signature): Dianne Mullan DATE: 11/12/98
PRINT NAME: Dianne Mullan FIRM: Wacker TIME: 0950
RELINQUISHED BY (Signature): Larry Spangler DATE: 11-12-98
PRINT NAME: Larry Spangler FIRM: NCA TIME: 1315

RECEIVED BY (Signature): Teresa Leigh DATE: 11-12-98
PRINT NAME: Larry Spangler FIRM: NCA TIME: 0950
RECEIVED BY (Signature): Mary McShane DATE: 11/12/98
PRINT NAME: Mary McShane FIRM: NCA TIME: 1315

ADDITIONAL REMARKS:
#4 Please use detect limit of 0.001 ppm

PAGE OF

COC Rev 8, 1/98

SCOEPA00026377

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Strom Water - South
#98-123

Sample Date: 11/10/98 Incubator: 21 C Analyst: DM

Date/Time In: 11/11/98 / 1455 Date/Time Out: 11/16/98 / 1500

		BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
✓	N	12	250	9.60	3.94	6.792
✓	N	15	200	9.27	5.39	5.82
✓	N	16	150	8.91	6.68	4.416
	N					
	N					
	N					
	N					
	N					
	N					
	N					

Average BOD, mg/L: 5.69

COMMENTS: _____

CALCULATION: $\text{BOD, mg/L} = \frac{(\text{DOI, mg/L} - \text{DOF, mg/L}) \times 300}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

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SCOEPA00026378

BENCHSHEET

BIOCHEMICAL OXYGEN DEMAND
BLANK / QUALITY CONTROL

Date: 11/11/98 Incubator: 21 C Analyst: DM

Date/Time In: 11/11/98 / 1455 Date/Time Out: 11/16/98 / 1500

SAMPLE	BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
Blank / N	3	N/A	8.32	8.17	0.15

Notes: 1. The Blank (dilution H2O) should have a DO Depletion (DOI, mg/L - DOF, mg/L) < 0.2 mg/L. Reference Standard Methods, 17th Edition, Section 5210 B, para. 4b.

QC / N	4	3	8.19	3.96	166

Notes: 1. QC Glucose/Glutamic Acid: Hach, 300mg/L, Lot N8268 (Must divide number by 2 since Standard Methods QC is based on 150mg/L standard.)
2. QC BOD should be 198 mg/L +/- 30 mg/L. (Reference Standard Methods, 18th Edition, 1992, Section 5210, Paragraph 6.
3. Seed the QC bottles with ~~1~~ 2 ml of OWW: (Y)
4. QC BOD = ((DOI - DOF) - (Ave DOI's - DOF's)(Seed Vol / Ave Vol)) (100) / 2
   = ((8.19 - 3.96) - (___)(___ / ___))(100)
   = 332 / 2
   = 166
   0.91
5. Method Used:
   a. Sodium Thiosulfate (Na2S2O3): Ricca Other _____
      Lot Number: _____
      Date Opened: _____
   b. DO Probe:
      Barometric Pressure:

	Inch	X 25.4 = mm
In:	30.20	767
Out:	29.92	760

Comments: _____

TJR 13 Nov 91
DEM 12 Sep 97 Revised

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SCOEPA00026379

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: ~~11/11/98~~ 11/13/98 DM Sample Date: 11/10/98 Analyst: DM

Slope: -58.4 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U8047 Date Opened: 10/8/98

10.0 mg/L: Lot #: U8019 Date Opened: 10/16/98

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
#98-123	0.32

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A0132

	CE FAB-1	CE FAB-2	#98-123
After Spike Concentration:	____ mg/L	____ mg/L	2.3 mg/L
Recovery:	____ %	____ %	99 %

Comments: Storm Water Sample South

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026380

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/10/98 Oven Temp: 108 C Analyst: DM

Date In: 11/11/98 Time In/Out: 1020 / 1137

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	98-123	200	0.0911	0.0905	3
2	98-123	200	0.0903	0.0898	2.5
			#98-123, South	AVG=	2.75
3	98-124	200	0.0902	0.0894	4
4	98-124	200	0.0897	0.0890	3.5
			#98-124, North	AVG=	3.75
5	98-125	200	0.0903	0.0901	1
6	98-125	200	0.0901	0.0898	1.5
			#98-125, East	AVG=	1.25
				AVG=	

Notes: Storm Water samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

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#98-123

SCOEPA00026381

(425) 420-9200 ▪ FAX 420-9210
(509) 924-9200 ▪ FAX 924-9290
(503) 906-9200 ▪ FAX 906-9210

Sampled:	11/10/98 to 11/12/98
Received:	11/12/98
Reported:	12/8/98 09:25

Result	Units	Notes*
	Water	
).00940	mg/l	
).00120	"	
0.207	"	
	Water	
).00560	mg/l	
ND	"	
0.193	"	
	Water	
).00990	mg/l	
ND	"	
0.247	"	
	Water	
).00150	mg/l	

*port for text of notes and definitions.

BENCHSHEET

PHOSPHATES (PO_4)

11-10-98 Analyst: DM

se all glassware with 1:1 HCl before using.

quot in 50 ml Erlenmeyer Flask.

otassium Persulfate Pillow, Hach #2451.
m7017)

H_2SO_4, 5.25 N. Swirl. (Hach Lot # u8152)

il for 30 minutes.

oom temperature

NaOH, 5.0 N. Swirl. (Hach Lot # u8159)

DR/4000 Method 8048, Phosphorous Reactive,
: 0-2.500 mg/L, HACH Program 3025.

Ver 3 Phosphate Reagent Powder Pillow Lot # m7017.

eading: CE FAB-1:_____mg/L CE FAB-2:_____mg/L

MV-3:_____mg/L

ple #98-123 : 0.001 mg/L

Control: Spike each sample with 0.050 ml of 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

ke Concentration:	CE mg/L	MV-3 mg/L	#98-123
	_____	_____	1.000
y	_____	_____	99.9

orm Water Sample # 98-123 - South

permit, CE: monthly avg. 23 mg/L, daily max. 61 mg/L.
monthly avg. 2.0 mg/L, daily max. 5 mg/L.

1. NPDES Permit #101128.

TJR 27 Nov 91
DEM 08 Jul 98 Revised

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SCOEPA00026382

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North (outfall) Sample ID#: 98-124

Date: 11-10-98 Time: 1130 Sampled by: Dianne Mullen

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 3.1 / 6.87 COD, mg/L: 10.3 F-, mg/L: ____

pH: ~~7.47~~ D4 PO_4, mg/L: 0.004 TSS, mg/L: 3.75

Ammonia (NH_3), mg/L: 0.406 Hydrogen Peroxide, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.0056 Lead: < 0.001 Zinc: 0.193

Notes: ____

DEM 10 Oct 96
DEM 14 Oct 98 Revised

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SCOEPA00026383

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Notes and Definitions

#	Note
1	Estimated value. The reported value exceeds the calibration range of the analysis.
2	Rerun within calibration range confirms result (vial contained headspace-not reported).
3	The RPD and/or the percent recovery for this QC spike sample is outside of established control limits due to a spiking error.
4	Since Total O&G was ND, sample was not analyzed for Non-polar hydrocarbons.
5	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Crystal Burkholder, Project Manager

SCOEPA00026384

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

COPY

CHAIN OF CUSTODY REPORT

Work Order # 811235

REPORT TO: Wacker Siltronic
ATTENTION: Tom Rothschild
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 219-7374 FAX: 417-4144
PROJECT NAME: Stormwater - Fall - 98
PROJECT NUMBER:
SAMPLED BY: Dianne Mullan, Tom Rothschild, Gerry Munroe

INVOICE TO: Wacker Siltronic
ATTENTION: Accts Payable
ADDRESS: Same
P.O. NUMBER: 210162 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [10] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: Total: copper Lead & Zinc	Oil & Grease	Cr (T)	8260	8270	1,2-Diphenyl-hydrazide	IPA	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	98-123	11-10-98 1130		X	X				1		W	2	H_2SO_4 / HNO_3
2.	98-124	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
3.	98-125	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
4.	~~98-131~~	11/12/98 0810				X					W	1	HNO_3
5.	98-132	11/12/98 0810				X	X	X	X		W	4	HCL
6.	98-133	11/12/98 0810								X	W	2	HCL
7.								Client will resample 1/18/98					
8.													
9.													
10.													

RELINQUISHED BY (Signature): Dianne Mullan DATE: 11/12/98
PRINT NAME: Dianne Mullan FIRM: Wacker TIME: 0950
RELINQUISHED BY (Signature): Larry Spangler DATE: 11-12-98
PRINT NAME: Larry Spangler FIRM: NCA TIME: 1315

RECEIVED BY (Signature): Larry Spangler DATE: 11-12-98
PRINT NAME: Larry Spangler FIRM: NCA TIME: 0950
RECEIVED BY (Signature): Mary McShane DATE: 11/12/98
PRINT NAME: Mary McShane FIRM: NCA TIME: 1315

ADDITIONAL REMARKS:
#4 Please use detect limit of 0.001 ppm

PAGE OF

COC Rev 8, 1/00

SCOEPA00026385

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Strom Water - North
#98-124

Sample Date: 11/10/98 Incubator: 21 C Analyst: DM

Date/Time In: 11/11/98 / 1455 Date/Time Out: 11/16/98 / 1500

		BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
-	N	21	250	8.76	6.08	3.216
✓	N	24	200	8.64	6.70	2.91
✓	N	25	150	8.48	6.89	3.18
	N					
	N					
	N					
	N					
	N					
	N					
	N					

Average BOD, mg/L: 3.102

COMMENTS: QA-QC filed with sample # 98-123

CALCULATION: $BOD, mg/L = \frac{(DOI, mg/L - DOF, mg/L) \times 300}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

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SCOEPA00026386

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: ~~11/11/98~~ 11/13/98 DM Sample Date: 11/10/98 Analyst: DM

Slope: -58.4 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U8047 Date Opened: 10/8/98

10.0 mg/L: Lot #: U8019 Date Opened: 10/16/98

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
#98-124	0.30

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	#98-124
After Spike Concentration:	____ mg/L	____ mg/L	2.2 mg/L
Recovery:	____ %	____ %	95 %

Comments: Storm water Sample North

Note: NPDES permit: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.
3. NPDES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026387

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/10/98 Oven Temp: 108 C Analyst: DM

Date In: 11/11/98 Time In/Out: 1020 / 1137

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	98-123	200	0.0911	0.0905	3
2	98-123	200	0.0903	0.0898	2.5
			#98-123, South	AVG=	2.75
3	98-124	200	0.0902	0.0894	4
4	98-124	200	0.0897	0.0890	3.5
			#98-124, North	AVG=	3.75
5	98-125	200	0.0903	0.0901	1
6	98-125	200	0.0901	0.0898	1.5
			#98-125, East	AVG=	1.25
				AVG=	

Notes: Storm Water samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

#98-124

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SCOEPA00026388

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 11/11/98 Sample Date: 11/10/98 Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 1010 / 1210 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.3 mg/L (Range: 28 - 32 mg/L)

4. ~~CE (composite)~~ #98-124: 10.3 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: #98-124, North Storm Water Sample

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026389

BENCHSHEET

HYDROGEN PEROXIDE (H_2O_2)

Date 11-10-98 Analyst DH

Date sampled 11-10-98

Sample	Drops Used	x Dilution factor =	H_2O_2mg/L
FAB-2 C E	_____	x _____ =	_____mg/L
98-124	0	x 2 =	0 mg/L
_____	_____	x _____ =	_____mg/L

Notes: Stormwater sample North

Refrence: Hach Company, Hydrogen Peroxide Test Kit Pamplet.
Calculations: 1 drop = 1mg/L H2O2.

DEM 06 Mar 95
DEM 12 Sep 97 REVISED

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SCOEPA00026390

BENCHSHEET

PHOSPHATES (PO_4)

Sample Date: 11-10-98 Analyst: [illegible]

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.

2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # M7017)

3. Add 2 ml H_2SO_4, 5.25 N. Swirl. (Hach Lot # U8152)

4. Gently boil for 30 minutes.

5. Cool to room temperature

6. Add 2 ml NaOH, 5.0 N. Swirl. (Hach Lot # U8159)

7. Use Hach DR/4000 Method 8048, Phosphorous Reactive, Low Range: 0-2.500 mg/L, HACH Program 3025.

8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # M7017.

9. DR/3000 reading: CE FAB-1:_____mg/L CE FAB-2:_____mg/L

MV-3:_____mg/L

Other Sample #98-124 : 0.004 mg/L

10. Quality Control: Spike each sample with 0.050 ml of 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

After Spike Concentration:	CE mg/L	MV-3 mg/L	#98-124
	_____	_____	~~0.004~~ 0.982
% Recovery	_____	_____	97.8

Comments: Storm Water sample - North

Notes: NPDES permit, CE: monthly avg. 23 mg/L, daily max. 61 mg/L.
MV-3: monthly avg. 2.0 mg/L, daily max. 5 mg/L.

References: 1. NPDES Permit #101128.

TJR 27 Nov 91
DEM 08 Jul 98 Revised

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SCOEPA00026391

BENCHSHEET

AMMONIA (NH_3)

Date 11-10-98 Analyst DM

Date sampled 11-10-98

Sample	DR/4000 reading	x Dilution factor	= NH_3 mg/L
FAB - 2, CE	_____	x _____	= _____ mg/L
98-124	0.406	x N/A	= 0.406 mg/L
_____	_____	x _____	= _____ mg/L

Notes: Storm water sample North

Refrence: Hach DR/4000 Method 8038, Nitrogen, Ammonia (Nessler Method) Range: 0-2.500 mg/L, HACH program 2400.

DEM 03 Mar 95
DEM 09 Oct 97 Revised

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SCOEPA00026392

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East River Bank Sample ID#: 98-125

Date: 11/10/98 Time: 1130 Sampled by: Jon Roths child, Gerry Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Floating Solids: yes:____ No: X

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 5.7 COD, mg/L: 16 F-, mg/L: 0.21

pH: 6.65 PO_4, mg/L: 0.002 TSS, mg/L: 1.25

Ammonia (NH_3), mg/L: 0.234 Hydrogen Peroxide, mg/L: 0

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Copper: 0.0099 Lead: < 0.001 Zinc: 0.247

Notes: _____

DEM 10 Oct 96
DEM 14 Oct 98 Revised

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	Sampled: 11/10/98 to 11/12/98	Project: Storm Water	Sampled: 11/10/98 to 11/12/98
	Received: 11/12/98	roject Number: Fall -98	Received: 11/12/98
	Reported: 12/8/98 09:25	oject Manager: Thomas Rothschild	Reported: 12/8/98 09:25

ity Control

s	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
action Method: EPA 200/3005					
	0.00200				
	0.00100				
	0.00500				
	85.0-115	102			
	85.0-115	103			
	85.0-115	104			
			20.0		
			20.0		
			20.0	0.464	
	70.0-130	110			
	70.0-130	116			
	70.0-130	109			
	70.0-130	102			
	70.0-130	110			
	70.0-130	91.8			
	70.0-130	107	20.0	2.76	
	70.0-130	111	20.0	4.41	
	70.0-130	105	20.0	3.74	
	70.0-130	99.6	20.0	2.38	
	70.0-130	105	20.0	4.65	
	70.0-130	89.8	20.0	2.20	
action Method: EPA 200/3005					
	0.00100				

Refer to end of report for text of notes and definitions.

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
		P811235-01				Water	
1	11/24/98	12/1/98	EPA 200.8	0.00200	0.00940	mg/l	
	"	"	EPA 200.8	0.00100	0.00120	"	
	"	"	EPA 200.8	0.00500	0.207	"	
		P811235-02				Water	
1	11/24/98	12/1/98	EPA 200.8	0.00200	0.00560	mg/l	
	"	"	EPA 200.8	0.00100	ND	"	
	"	"	EPA 200.8	0.00500	0.193	"	
		P811235-03				Water	
1	11/24/98	12/1/98	EPA 200.8	0.00200	0.00990	mg/l	
	"	"	EPA 200.8	0.00100	ND	"	
	"	"	EPA 200.8	0.00500	0.247	"	
		P811235-05				Water	
2	12/2/98	12/4/98	EPA 200.8	0.00100	0.00150	mg/l	

Refer to end of report for text of notes and definitions.

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st 11115 Montgomery, Suite B, Spokane, WA 99206-4776

SCOEPA00026394

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled:	11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received:	11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported:	12/8/98 09:25

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-123			**P811235-01**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4
98-124			**P811235-02**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4
98-125			**P811235-03**				**Water**	
Oil & Grease	1180510	11/19/98	11/20/98	EPA 1664	5.00	ND	mg/l	3,4

,ead
Zinc

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1180510	**Date Prepared: 11/19/98**					**Extraction Method: EPA 1664**				
Blank	**1180510-BLK1**									
Oil & Grease	11/20/98			**ND**	mg/l	**5.00**				
LCS	**1180510-BS1**									
Oil & Grease	11/20/98	80.0		53.0	mg/l	73.0-109	66.3			3,4
LCS Dup	**1180510-BSD1**									
Oil & Grease	11/20/98	80.0		56.3	mg/l	73.0-109	70.4	18.0	6.00	3,4

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/10/98 to 11/12/98
7200 N.W. Front	Project Number:	Fall -98	Received: 11/12/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/8/98 09:25

Notes and Definitions

#	Note
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4	Since Total O&G was ND, sample was not analyzed for Non-polar hydrocarbons.
5	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Crystal Burkholder, Project Manager

SCOEPA00026397

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202 X

COPY

CHAIN OF CUSTODY REPORT

Work Order # 811235

REPORT TO: Wacker Siltronic	INVOICE TO: Wacker Siltronic
ATTENTION: Tom Rothschild	ATTENTION: Accts Payable
ADDRESS: 7200 N.W. Front Ave Portland, OR	ADDRESS: Same
PHONE: 219-7374 FAX: 417-4144	P.O. NUMBER: 210162 NCA QUOTE #:
PROJECT NAME: Storm Water - Fall - 98	
PROJECT NUMBER:	
SAMPLED BY: Dianne Mullan, Tom Rothschild, Gerry Munroe	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: Total: copper Lead & Zinc	Oil & Grease	Cr (T)	8260	8270	1-2-Diphenyl-hydrazine	IPA	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	98-123	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
2.	98-124	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
3.	98-125	11-10-98 1130		X	X						W	2	H_2SO_4 / HNO_3
4.	~~98-131~~	11/12/98 0810				X					W	1	HNO_3
5.	98-132	11/12/98 0810				X	X	X	X		W	4	HCL
6.	98-133	11/12/98 0810								X	W	2	HCL
7.								Client will resample on 11/18/98					
8.													
9.													
10													

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 11/12/98	RECEIVED BY (Signature): Teresa Langley	DATE: 11-12-98
PRINT NAME: Dianne Mullan FIRM: Wacker	TIME: 0950	PRINT NAME: Larry Spangler FIRM: NCA	TIME: 0950
RELINQUISHED BY (Signature): Teresa Langley	DATE: 11-12-98	RECEIVED BY (Signature): Mary McShane	DATE: 11/12/98
PRINT NAME: Larry Spangler FIRM: NCA	TIME: 1315	PRINT NAME: Mary McShane FIRM: NCA	TIME: 1315

ADDITIONAL REMARKS:
#4 Please use detect limit of 0.001 ppm

PAGE OF

COC Rev 8 1/00

SCOEPA00026398

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Strom Water - East
#98-125

Sample Date: 11/10/98 Incubator: 21 C Analyst: DM

Date/Time In: 11/11/98 / 1455 Date/Time Out: 11/16/98 / 1500

		BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
✓	N	36	250	8.19	3.36	5.796
✓	N	45	200	8.14	4.40	5.61
✓	N	58	150	8.15	5.26	5.78
	N					
	N					
	N					
	N					
	N					
	N					
	N					

Average BOD, mg/L: 5.73

COMMENTS: QA-QC filed with sample # 98-123

CALCULATION: $\text{BOD, mg/L} = \frac{(\text{DOI, mg/L} - \text{DOF, mg/L}) \times 300}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

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SCOEPA00026399

BENCHSHEET

FLUORIDE ANALYSIS

yst: DM

using.

51.

152)

59)

ctive,

w Lot # M7017.

AB-2:_____mg/L

0 ml of 500 mg/L
ıould increase the
.

mg/L 98-125

___ 0.0 0.908

___ 90.6

ıily max. 61 mg/L.
ng/L.

Nov 91
Jul 98 Revised

Sample Date: 11/10/98 Analyst: DM

(Range: -54 to -60 mV)

#: U8047 Date Opened: 10/8/98

#: U8019 Date Opened: 10/16/98

	Fluoride, mg/L
	0.21

pike each of the above samples with 0.1 ml of
000 mg/L Standard. The Fluoride concentration
hould increase by 2.0 mg/L.
lanufacturer: RICCA
ıot Number: A032

	CE FAB-1	CE FAB-2	#98-125
.tration:	____mg/L	____mg/L	2.0 mg/L
	____%	____%	89.5 %

Water Sample - East

: monthly avg. 17.4 mg/L, daily max. 32 mg/L.

ındard Methods For The Examination of Water And
ıtewater, 1995, 19th Edition, Section 4500-F C,
ge 4-61.
.on Research Manual for the Fluoride Electrode,
lel 940900, 1991.
)ES Permit #101128.

TJR 06 Apr 1987
DEM 08 Jul 1998 Revised

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SCOEPA00026400

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 11/10/98 Oven Temp: 108 C Analyst: DM

Date In: 11/11/98 Time In/Out: 1020 / 1137

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	98-123	200	0.0911	0.0905	3
2	98-123	200	0.0903	0.0898	2.5
			#98-123, South	AVG=	2.75
3	98-124	200	0.0902	0.0894	4
4	98-124	200	0.0897	0.0890	3.5
			#98-124, North	AVG=	3.75
5	98-125	200	0.0903	0.0901	1
6	98-125	200	0.0901	0.0898	1.5
			#98-125, East	AVG=	1.25
				AVG=	

Notes: Storm Water samples.

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

#98-125

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SCOEPA00026401

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-67 North			P805459-01				Water	
Arsenic	0680205	6/6/98	6/6/98	EPA 200.8	0.00100	ND	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00200**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.00820**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.00110**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.00210**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.173**	"	
Mercury	0580739	5/28/98	5/29/98	EPA 245.1	0.000200	ND	"	
98-68 South			P805459-02				Water	
Arsenic	0680205	6/6/98	6/6/98	EPA 200.8	0.00100	ND	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00850**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.0176**	"	
Lead	"	"	6/11/98	EPA 200.8	0.00100	**0.00600**	"	
Nickel	"	"	6/6/98	EPA 200.8	0.00200	**0.00690**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.199**	"	
Mercury	0580739	5/28/98	5/29/98	EPA 245.1	0.000200	ND	"	
98-69 East			P805459-03				Water	
Arsenic	0680205	6/6/98	6/6/98	EPA 200.8	0.00100	ND	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00130**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.0173**	"	
Lead	"	"	6/11/98	EPA 200.8	0.00100	**0.00170**	"	
Nickel	"	"	6/6/98	EPA 200.8	0.00200	ND	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.167**	"	
Mercury	0580739	5/28/98	5/29/98	EPA 245.1	0.000200	ND	"	

North Creek Analytical, Inc.

Refer to end of report for text of notes and definitions.

Mary A. Holtzmann Smith, Project Manager

SCOEPA00026402

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-67 North			P805459-01				Water	
Acetone	0580685	5/27/98	5/28/98		50.0	ND	ug/l	1
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		5.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		5.00	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		2.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		5.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.

Mary A. Fitzmann Smith, Project Manager

SCOEPA00026403

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-67 (continued) North			P805459-01				Water	
Hexachlorobutadiene	0580685	5/27/98	5/28/98		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,2,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		5.00	ND	"	
1,2,3-Trichloropropane	"	"	"		1.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		2.00	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		2.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-125*		*106*	%	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-125*		*100*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-125*		*91.5*	"	

SCOEPA00026404

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
28-68 South			P805459-02				Water	
Acetone	0580685	5/27/98	5/28/98		50.0	ND	ug/l	I
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		5.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		5.00	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		2.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		5.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

North Creek Analytical, Inc.

Refer to end of report for text of notes and definitions.

Mary A. Fitzmann Smith, Project Manager

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SCOEPA00026405

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-68 (continued) South			P805459-02				Water	
Hexachlorobutadiene	0580685	5/27/98	5/28/98		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,2,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		5.00	ND	"	
1,2,3-Trichloropropane	"	"	"		1.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		2.00	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		2.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-125*		*110*	%	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-125*		*97.5*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-125*		*88.0*	"	

SCOEPA00026406

NORTH CREEK ANALYTICAL
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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-69 East			P805459-03				Water	
Acetone	0580685	5/27/98	5/28/98		50.0	ND	ug/l	I
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		5.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		5.00	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		2.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		5.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

North Creek Analytical, Inc.

Refer to end of report for text of notes and definitions.

Mary A. Fitzmann Smith, Project Manager

SCOEPA00026407

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-69 (continued) East			**P805459-03**				**Water**	
Hexachlorobutadiene	0580685	5/27/98	5/28/98		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,2,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		5.00	ND	"	
1,2,3-Trichloropropane	"	"	"		1.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		2.00	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		2.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-125*		*106*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-125*		*98.5*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-125*		*87.0*	"	

SCOEPA00026408

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-67 North			P805459-01				Water	2
Acenaphthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Acenaphthylene	"	"	"		5.00	ND	"	
Anthracene	"	"	"		5.00	ND	"	
Benzo (a) anthracene	"	"	"		5.00	ND	"	
Benzo (a) pyrene	"	"	"		5.00	ND	"	
Benzo (b) fluoranthene	"	"	"		5.00	ND	"	
Benzo (ghi) perylene	"	"	"		5.00	ND	"	
Benzo (k) fluoranthene	"	"	"		5.00	ND	"	
Benzoic Acid	"	"	"		25.0	ND	"	
Benzyl alcohol	"	"	"		10.0	ND	"	
4-Bromophenyl phenyl ether	"	"	"		5.00	ND	"	
Butyl benzyl phthalate	"	"	"		5.00	ND	"	
4-Chloro-3-methylphenol	"	"	"		5.00	ND	"	
4-Chloroaniline	"	"	"		20.0	ND	"	
Bis(2-chloroethoxy)methane	"	"	"		10.0	ND	"	
Bis(2-chloroethyl)ether	"	"	"		5.00	ND	"	
Bis(2-chloroisopropyl)ether	"	"	"		10.0	ND	"	
2-Chloronaphthalene	"	"	"		5.00	ND	"	
2-Chlorophenol	"	"	"		5.00	ND	"	
4-Chlorophenyl phenyl ether	"	"	"		5.00	ND	"	
Chrysene	"	"	"		5.00	ND	"	
Di-n-butyl phthalate	"	"	"		5.00	ND	"	
Di-n-octyl phthalate	"	"	"		5.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Dibenzofuran	"	"	"		5.00	ND	"	
1,2-Dichlorobenzene	"	"	"		5.00	ND	"	
1,3-Dichlorobenzene	"	"	"		5.00	ND	"	
1,4-Dichlorobenzene	"	"	"		5.00	ND	"	
3,3'-Dichlorobenzidine	"	"	"		5.00	ND	"	
2,4-Dichlorophenol	"	"	"		5.00	ND	"	
Diethyl phthalate	"	"	"		5.00	ND	"	
2,4-Dimethylphenol	"	"	"		10.0	ND	"	
Dimethyl phthalate	"	"	"		5.00	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"		10.0	ND	"	
2,4-Dinitrophenol	"	"	"		25.0	ND	"	
2,4-Dinitrotoluene	"	"	"		5.00	ND	"	
2,6-Dinitrotoluene	"	"	"		5.00	ND	"	
Bis(2-ethylhexyl)phthalate	"	"	"		10.0	ND	"	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.

Mary A. Fitzmann Smith, Project Manager

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SCOEPA00026409

NORTH CREEK ANALYTICAL
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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-67 (continued) North			P805459-01				Water	2
Fluoranthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Fluorene	"	"	"		5.00	ND	"	
Hexachlorobenzene	"	"	"		5.00	ND	"	
Hexachlorobutadiene	"	"	"		10.0	ND	"	
Hexachlorocyclopentadiene	"	"	"		10.0	ND	"	
Hexachloroethane	"	"	"		10.0	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		5.00	ND	"	
Isophorone	"	"	"		5.00	ND	"	
2-Methylnaphthalene	"	"	"		5.00	ND	"	
2-Methylphenol	"	"	"		10.0	ND	"	
4-Methylphenol	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		5.00	ND	"	
2-Nitroaniline	"	"	"		5.00	ND	"	
3-Nitroaniline	"	"	"		10.0	ND	"	
4-Nitroaniline	"	"	"		10.0	ND	"	
Nitrobenzene	"	"	"		5.00	ND	"	
2-Nitrophenol	"	"	"		5.00	ND	"	
4-Nitrophenol	"	"	"		10.0	ND	"	
N-Nitrosodi-n-propylamine	"	"	"		10.0	ND	"	
N-Nitrosodiphenylamine	"	"	"		5.00	ND	"	
Pentachlorophenol	"	"	"		10.0	ND	"	
Phenanthrene	"	"	"		5.00	ND	"	
Phenol	"	"	"		5.00	ND	"	
Pyrene	"	"	"		5.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		5.00	ND	"	
2,4,5-Trichlorophenol	"	"	"		5.00	ND	"	
2,4,6-Trichlorophenol	"	"	"		5.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*43.0-116*		*24.3*	%	*3*
Surrogate: 2-Fluorophenol	"	"	"	*21.0-100*		*NR*	"	*3*
Surrogate: Nitrobenzene-d5	"	"	"	*35.0-114*		*24.3*	"	*3*
Surrogate: Phenol d6	"	"	"	*10.0-94.0*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*33.0-141*		*17.1*	"	*3*
Surrogate: 2,4,6-Tribromophenol	"	"	"	*10.0-123*		*NR*	"	*3*

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Fitzmann Smith, Project Manager

SCOEPA00026410

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98 68 South			P805459-02				Water	
Acenaphthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Acenaphthylene	"	"	"		5.00	ND	"	
Anthracene	"	"	"		5.00	ND	"	
Benzo (a) anthracene	"	"	"		5.00	ND	"	
Benzo (a) pyrene	"	"	"		5.00	ND	"	
Benzo (b) fluoranthene	"	"	"		5.00	ND	"	
Benzo (ghi) perylene	"	"	"		5.00	ND	"	
Benzo (k) fluoranthene	"	"	"		5.00	ND	"	
Benzoic Acid	"	"	"		25.0	ND	"	
Benzyl alcohol	"	"	"		10.0	ND	"	
4-Bromophenyl phenyl ether	"	"	"		5.00	ND	"	
Butyl benzyl phthalate	"	"	"		5.00	ND	"	
4-Chloro-3-methylphenol	"	"	"		5.00	ND	"	
4-Chloroaniline	"	"	"		20.0	ND	"	
Bis(2-chloroethoxy)methane	"	"	"		10.0	ND	"	
Bis(2-chloroethyl)ether	"	"	"		5.00	ND	"	
Bis(2-chloroisopropyl)ether	"	"	"		10.0	ND	"	
2-Chloronaphthalene	"	"	"		5.00	ND	"	
2-Chlorophenol	"	"	"		5.00	ND	"	
4-Chlorophenyl phenyl ether	"	"	"		5.00	ND	"	
Chrysene	"	"	"		5.00	ND	"	
Di-n-butyl phthalate	"	"	"		5.00	ND	"	
Di-n-octyl phthalate	"	"	"		5.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Dibenzofuran	"	"	"		5.00	ND	"	
1,2-Dichlorobenzene	"	"	"		5.00	ND	"	
1,3-Dichlorobenzene	"	"	"		5.00	ND	"	
1,4-Dichlorobenzene	"	"	"		5.00	ND	"	
3,3'-Dichlorobenzidine	"	"	"		5.00	ND	"	
2,4-Dichlorophenol	"	"	"		5.00	ND	"	
Diethyl phthalate	"	"	"		5.00	ND	"	
2,4-Dimethylphenol	"	"	"		10.0	ND	"	
Dimethyl phthalate	"	"	"		5.00	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"		10.0	ND	"	
2,4-Dinitrophenol	"	"	"		25.0	ND	"	
2,4-Dinitrotoluene	"	"	"		5.00	ND	"	
2,6-Dinitrotoluene	"	"	"		5.00	ND	"	
Bis(2-ethylhexyl)phthalate	"	"	"		10.0	ND	"	

North Creek Analytical, Inc. **Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

SCOEPA00026411

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-68 (continued) South			**P805459-02**				**Water**	
Fluoranthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Fluorene	"	"	"		5.00	ND	"	
Hexachlorobenzene	"	"	"		5.00	ND	"	
Hexachlorobutadiene	"	"	"		10.0	ND	"	
Hexachlorocyclopentadiene	"	"	"		10.0	ND	"	
Hexachloroethane	"	"	"		10.0	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		5.00	ND	"	
Isophorone	"	"	"		5.00	ND	"	
2-Methylnaphthalene	"	"	"		5.00	ND	"	
2-Methylphenol	"	"	"		10.0	ND	"	
4-Methylphenol	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		5.00	ND	"	
2-Nitroaniline	"	"	"		5.00	ND	"	
3-Nitroaniline	"	"	"		10.0	ND	"	
4-Nitroaniline	"	"	"		10.0	ND	"	
Nitrobenzene	"	"	"		5.00	ND	"	
2-Nitrophenol	"	"	"		5.00	ND	"	
4-Nitrophenol	"	"	"		10.0	ND	"	
N-Nitrosodi-n-propylamine	"	"	"		10.0	ND	"	
N-Nitrosodiphenylamine	"	"	"		5.00	ND	"	
Pentachlorophenol	"	"	"		10.0	ND	"	
Phenanthrene	"	"	"		5.00	ND	"	
Phenol	"	"	"		5.00	ND	"	
Pyrene	"	"	"		5.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		5.00	ND	"	
2,4,5-Trichlorophenol	"	"	"		5.00	ND	"	
2,4,6-Trichlorophenol	"	"	"		5.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*43.0-116*		*90.0*	%	
Surrogate: 2-Fluorophenol	"	"	"	*21.0-100*		*76.0*	"	
Surrogate: Nitrobenzene-d5	"	"	"	*35.0-114*		*103*	"	
Surrogate: Phenol-d6	"	"	"	*10.0-94.0*		*80.7*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*33.0-141*		*113*	"	
Surrogate: 2,4,6-Tribromophenol	"	"	"	*10.0-123*		*76.0*	"	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.

Mary A. Friedmann Smith, Project Manager

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SCOEPA00026412

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-69 East			P805459-03				Water	
Acenaphthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Acenaphthylene	"	"	"		5.00	ND	"	
Anthracene	"	"	"		5.00	ND	"	
Benzo (a) anthracene	"	"	"		5.00	ND	"	
Benzo (a) pyrene	"	"	"		5.00	ND	"	
Benzo (b) fluoranthene	"	"	"		5.00	ND	"	
Benzo (ghi) perylene	"	"	"		5.00	ND	"	
Benzo (k) fluoranthene	"	"	"		5.00	ND	"	
Benzoic Acid	"	"	"		25.0	ND	"	
Benzyl alcohol	"	"	"		10.0	ND	"	
4-Bromophenyl phenyl ether	"	"	"		5.00	ND	"	
Butyl benzyl phthalate	"	"	"		5.00	ND	"	
4-Chloro-3-methylphenol	"	"	"		5.00	ND	"	
4-Chloroaniline	"	"	"		20.0	ND	"	
Bis(2-chloroethoxy)methane	"	"	"		10.0	ND	"	
Bis(2-chloroethyl)ether	"	"	"		5.00	ND	"	
Bis(2-chloroisopropyl)ether	"	"	"		10.0	ND	"	
2-Chloronaphthalene	"	"	"		5.00	ND	"	
2-Chlorophenol	"	"	"		5.00	ND	"	
4-Chlorophenyl phenyl ether	"	"	"		5.00	ND	"	
Chrysene	"	"	"		5.00	ND	"	
Di-n-butyl phthalate	"	"	"		5.00	ND	"	
Di-n-octyl phthalate	"	"	"		5.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Dibenzofuran	"	"	"		5.00	ND	"	
1,2-Dichlorobenzene	"	"	"		5.00	ND	"	
1,3-Dichlorobenzene	"	"	"		5.00	ND	"	
1,4-Dichlorobenzene	"	"	"		5.00	ND	"	
3,3'-Dichlorobenzidine	"	"	"		5.00	ND	"	
2,4-Dichlorophenol	"	"	"		5.00	ND	"	
Diethyl phthalate	"	"	"		5.00	ND	"	
2,4-Dimethylphenol	"	"	"		10.0	ND	"	
Dimethyl phthalate	"	"	"		5.00	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"		10.0	ND	"	
2,4-Dinitrophenol	"	"	"		25.0	ND	"	
2,4-Dinitrotoluene	"	"	"		5.00	ND	"	
2,6-Dinitrotoluene	"	"	"		5.00	ND	"	
Bis(2-ethylhexyl)phthalate	"	"	"		10.0	ND	"	

North Creek Analytical, Inc.

Refer to end of report for text of notes and definitions.

Mary A. Fritzmann Smith, Project Manager

SCOEPA00026413

NORTH CREEK ANALYTICAL
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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-69 (continued) East			**P805459-03**				**Water**	
Fluoranthene	0580655	5/26/98	6/1/98		5.00	ND	ug/l	
Fluorene	"	"	"		5.00	ND	"	
Hexachlorobenzene	"	"	"		5.00	ND	"	
Hexachlorobutadiene	"	"	"		10.0	ND	"	
Hexachlorocyclopentadiene	"	"	"		10.0	ND	"	
Hexachloroethane	"	"	"		10.0	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		5.00	ND	"	
Isophorone	"	"	"		5.00	ND	"	
2-Methylnaphthalene	"	"	"		5.00	ND	"	
2-Methylphenol	"	"	"		10.0	ND	"	
4-Methylphenol	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		5.00	ND	"	
2-Nitroaniline	"	"	"		5.00	ND	"	
3-Nitroaniline	"	"	"		10.0	ND	"	
4-Nitroaniline	"	"	"		10.0	ND	"	
Nitrobenzene	"	"	"		5.00	ND	"	
2-Nitrophenol	"	"	"		5.00	ND	"	
4-Nitrophenol	"	"	"		10.0	ND	"	
N-Nitrosodi-n-propylamine	"	"	"		10.0	ND	"	
N-Nitrosodiphenylamine	"	"	"		5.00	ND	"	
Pentachlorophenol	"	"	"		10.0	ND	"	
Phenanthrene	"	"	"		5.00	ND	"	
Phenol	"	"	"		5.00	ND	"	
Pyrene	"	"	"		5.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		5.00	ND	"	
2,4,5-Trichlorophenol	"	"	"		5.00	ND	"	
2,4,6-Trichlorophenol	"	"	"		5.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*43.0-116*		*95.7*	%	
Surrogate: 2-Fluorophenol	"	"	"	*21.0-100*		*66.8*	"	
Surrogate: Nitrobenzene-d5	"	"	"	*35.0-114*		*110*	"	
Surrogate: Phenol-d6	"	"	"	*10.0-94.0*		*74.2*	"	
Surrogate: p Terphenyl-d14	"	"	"	*33.0-141*		*112*	"	
Surrogate: 2,4,6-Tribromophenol	"	"	"	*10.0-123*		*64.2*	"	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.

Mary A. Fruhmann Smith, Project Manager

SCOEPA00026414

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-67 Storm water North			P805459-01				Water	
Oil & Grease	0680032	6/2/98	6/3/98	EPA 1664	5.00	ND	mg/l	4
Total Organic Carbon	0680093	6/3/98	"	EPA 415.1	3.00	**5.07**	"	
98-68 South			P805459-02				Water	
Oil & Grease	0680032	6/2/98	6/3/98	EPA 1664	5.00	ND	mg/l	4
Total Organic Carbon	0680093	6/3/98	"	EPA 415.1	3.00	**7.92**	"	
98-69 East			P805459-03				Water	
Oil & Grease	0680032	6/2/98	6/3/98	EPA 1664	5.00	ND	mg/l	4
Total Organic Carbon	0680093	6/3/98	"	EPA 415.1	3.00	**6.14**	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Frijmann Smith, Project Manager

SCOEPA00026415

NORTH CREEK ANALYTICAL
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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0580739	**Date Prepared: 5/28/98**					**Extraction Method: Metals**				
Blank	**0580739-BLK1**									
Mercury	5/29/98			ND	mg/l	0.000200				
LCS	**0580739-BS1**									
Mercury	5/29/98	0.00500		0.00510	mg/l	85.0-115	102			
Duplicate	**0580739-DUP1**		**P805535-00**							
Mercury	5/29/98		ND	ND	mg/l			20.0		
Matrix Spike	**0580739-MS1**		**P805535-00**							
Mercury	5/29/98	0.00500	ND	0.00510	mg/l	75.0-125	102			
Matrix Spike	**0580739-MS2**		**P805287-01**							
Mercury	5/29/98	0.00500	ND	0.00550	mg/l	75.0-125	110			
Batch: 0680205	**Date Prepared: 6/6/98**					**Extraction Method: EPA 200/3005**				
Blank	**0680205-BLK1**									
Arsenic	6/6/98			ND	mg/l	0.00100				
Cadmium	"			ND	"	0.000100				
Chromium	"			ND	"	0.00100				
Copper	6/9/98			ND	"	0.00100				5
Lead	"			ND	"	0.000200				
Nickel	6/6/98			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	**0680205-BS1**									
Arsenic	6/6/98	0.100		0.0924	mg/l	80.0-110	92.4			
Cadmium	"	0.100		0.0987	"	85.0-115	98.7			
Chromium	"	0.100		0.0994	"	85.0-115	99.4			
Copper	"	0.100		0.0987	"	85.0-115	98.7			
Lead	"	0.100		0.0896	"	85.0-115	89.6			
Nickel	"	0.100		0.0982	"	85.0-115	98.2			
Zinc	"	0.100		0.0992	"	80.0-110	99.2			
Duplicate	**0680205-DUP1**		**P805582-01**							
Arsenic	6/6/98		0.00190	0.00160	mg/l			20.0	17.1	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		

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Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Duplicate (continued)	**0680205-DUP1**		**P805582-01**							
Copper	6/6/98		0.00530	0.00550	mg/l			20.0	3.70	
Lead	"		0.0194	0.0189	"			20.0	2.61	
Nickel	"		0.0128	0.0140	"			20.0	8.96	
Zinc	"		0.0516	0.0648	"			20.0	22.7	6
Matrix Spike	**0680205-MS1**		**P805582-01**							
Arsenic	6/6/98	0.100	0.00190	0.0946	mg/l	70.0-130	92.7			
Cadmium	"	0.100	ND	0.0911	"	70.0-130	91.1			
Chromium	"	0.100	ND	0.0988	"	70.0-130	98.8			
Copper	"	0.100	0.00530	0.0966	"	70.0-130	91.3			
Lead	"	0.100	0.0194	0.103	"	70.0-130	83.6			
Nickel	"	0.100	0.0128	0.106	"	70.0-130	93.2			
Zinc	"	0.100	0.0516	0.124	"	70.0-130	72.4			
Matrix Spike	**0680205-MS2**		**P805451-01**							
Arsenic	6/6/98	0.100	ND	0.0839	mg/l	70.0-130	83.9			
Cadmium	"	0.100	ND	0.0911	"	70.0-130	91.1			
Chromium	"	0.100	0.00150	0.100	"	70.0-130	98.5			
Copper	"	0.100	0.00250	0.106	"	70.0-130	103			
Lead	6/9/98	0.100	ND	0.0967	"	70.0-130	96.7			
Nickel	6/6/98	0.100	0.00200	0.102	"	70.0-130	100			
Zinc	"	0.100	0.00730	0.0972	"	70.0-130	89.9			

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Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0580685	**Date Prepared: 5/27/98**					**Extraction Method: GC/MS Volatiles**				
Blank	**0580685-BLK1**									
Acetone	5/28/98			ND	ug/l	25.0				
Benzene	"			ND	"	1.00				
Bromobenzene	"			ND	"	1.00				
Bromochloromethane	"			ND	"	1.00				
Bromodichloromethane	"			ND	"	1.00				
Bromoform	"			ND	"	1.00				
Bromomethane	"			ND	"	10.0				
2-Butanone	"			ND	"	25.0				
n-Butylbenzene	"			ND	"	1.00				
sec-Butylbenzene	"			ND	"	1.00				
tert-Butylbenzene	"			ND	"	1.00				
Carbon tetrachloride	"			ND	"	1.00				
Chlorobenzene	"			ND	"	1.00				
Chloroethane	"			ND	"	5.00				
Chloroform	"			ND	"	1.00				
Chloromethane	"			ND	"	5.00				
2-Chlorotoluene	"			ND	"	1.00				
4-Chlorotoluene	"			ND	"	1.00				
1,2-Dibromo-3-chloropropane	"			ND	"	2.00				
Dibromochloromethane	"			ND	"	1.00				
1,2-Dibromoethane	"			ND	"	1.00				
Dibromomethane	"			ND	"	1.00				
1,2-Dichlorobenzene	"			ND	"	1.00				
1,3-Dichlorobenzene	"			ND	"	1.00				
1,4-Dichlorobenzene	"			ND	"	1.00				
Dichlorodifluoromethane	"			ND	"	5.00				
1,1-Dichloroethane	"			ND	"	1.00				
1,2-Dichloroethane	"			ND	"	1.00				
1,1-Dichloroethene	"			ND	"	1.00				
cis-1,2-Dichloroethene	"			ND	"	1.00				
trans-1,2-Dichloroethene	"			ND	"	1.00				
1,2-Dichloropropane	"			ND	"	1.00				
1,3-Dichloropropane	"			ND	"	1.00				
2,2-Dichloropropane	"			ND	"	1.00				
1,1-Dichloropropene	"			ND	"	1.00				
cis-1,3-Dichloropropene	"			ND	"	1.00				
trans-1,3-Dichloropropene	"			ND	"	1.00				

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank (continued)	**0580685-BLK1**									
Ethylbenzene	5/28/98			ND	ug/l	1.00				
Hexachlorobutadiene	"			ND	"	2.00				
2-Hexanone	"			ND	"	5.00				
Isopropylbenzene	"			ND	"	1.00				
p-Isopropyltoluene	"			ND	"	1.00				
4-Methyl-2-pentanone	"			ND	"	5.00				
Methylene chloride	"			ND	"	5.00				
Naphthalene	"			ND	"	1.00				
n-Propylbenzene	"			ND	"	1.00				
Styrene	"			ND	"	1.00				
1,1,1,2-Tetrachloroethane	"			ND	"	1.00				
1,1,2,2-Tetrachloroethane	"			ND	"	1.00				
Tetrachloroethene	"			ND	"	1.00				
Toluene	"			ND	"	1.00				
1,2,3-Trichlorobenzene	"			ND	"	1.00				
1,2,4-Trichlorobenzene	"			ND	"	1.00				
1,1,1-Trichloroethane	"			ND	"	1.00				
1,1,2-Trichloroethane	"			ND	"	1.00				
Trichloroethene	"			ND	"	1.00				
Trichlorofluoromethane	"			ND	"	5.00				
1,2,3-Trichloropropane	"			ND	"	1.00				
1,2,4-Trimethylbenzene	"			ND	"	1.00				
1,3,5-Trimethylbenzene	"			ND	"	1.00				
Vinyl chloride	"			ND	"	2.00				
o-Xylene	"			ND	"	1.00				
m,p-Xylene	"			ND	"	2.00				
Surrogate: 4-BFB	"	*20.0*		*22.6*	"	*75.0-125*	*113*			
Surrogate: Dibromofluoromethane	"	*20.0*		*18.4*	"	*75.0-125*	*92.0*			
Surrogate: Toluene-d8	"	*20.0*		*18.9*	"	*75.0-125*	*94.5*			
LCS	**0580685-BS1**									
Benzene	5/28/98	20.0		20.9	ug/l	76.0-127	104			
Chlorobenzene	"	20.0		21.3	"	75.0-130	106			
1,1-Dichloroethene	"	20.0		21.0	"	61.0-145	105			
Toluene	"	20.0		22.2	"	76.0-125	111			
Trichloroethene	"	20.0		23.6	"	71.0-120	118			
Surrogate: 4-BFB	"	*20.0*		*21.8*	"	*75.0-125*	*109*			
Surrogate: Dibromofluoromethane	"	*20.0*		*18.4*	"	*75.0-125*	*92.0*			

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Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Volatile Organic Compounds per EPA Method 8260A/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)	**0580685-BS1**									
Surrogate: Toluene-d8	*5/28/98*	*20.0*		*18.6*	*ug/l*	*75.0-125*	*93.0*			
LCS Dup	**0580685-BSD1**									
Benzene	5/28/98	20.0		20.6	ug/l	76.0-127	103	25.0	0.966	
Chlorobenzene	"	20.0		20.6	"	75.0-130	103	25.0	2.87	
1,1-Dichloroethene	"	20.0		21.0	"	61.0-145	105	25.0	0	
Toluene	"	20.0		20.5	"	76.0-125	103	25.0	7.48	
Trichloroethene	"	20.0		22.8	"	71.0-120	114	25.0	3.45	
Surrogate: 4-BFB	"	*20.0*		*21.5*	"	*75.0-125*	*108*			
Surrogate: Dibromofluoromethane	"	*20.0*		*18.5*	"	*75.0-125*	*92.5*			
Surrogate: Toluene-d8	"	*20.0*		*19.3*	"	*75.0-125*	*96.5*			

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0580655	**Date Prepared: 5/26/98**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0580655-BLK1**									
Acenaphthene	5/28/98			ND	ug/l	5.00				
Acenaphthylene	"			ND	"	5.00				
Anthracene	"			ND	"	5.00				
Benzo (a) anthracene	"			ND	"	5.00				
Benzo (a) pyrene	"			ND	"	5.00				
Benzo (b) fluoranthene	"			ND	"	5.00				
Benzo (ghi) perylene	"			ND	"	5.00				
Benzo (k) fluoranthene	"			ND	"	5.00				
Benzoic Acid	"			ND	"	25.0				
Benzyl alcohol	"			ND	"	10.0				
4-Bromophenyl phenyl ether	"			ND	"	5.00				
Butyl benzyl phthalate	"			ND	"	5.00				
4-Chloro-3-methylphenol	"			ND	"	5.00				
4-Chloroaniline	"			ND	"	20.0				
Bis(2-chloroethoxy)methane	"			ND	"	10.0				
Bis(2-chloroethyl)ether	"			ND	"	5.00				
Bis(2-chloroisopropyl)ether	"			ND	"	10.0				
2-Chloronaphthalene	"			ND	"	5.00				
2-Chlorophenol	"			ND	"	5.00				
4-Chlorophenyl phenyl ether	"			ND	"	5.00				
Chrysene	"			ND	"	5.00				
Di-n-butyl phthalate	"			ND	"	5.00				
Di-n-octyl phthalate	"			ND	"	5.00				
Dibenzo (a,h) anthracene	"			ND	"	5.00				
Dibenzofuran	"			ND	"	5.00				
1,2-Dichlorobenzene	"			ND	"	5.00				
1,3-Dichlorobenzene	"			ND	"	5.00				
1,4-Dichlorobenzene	"			ND	"	5.00				
3,3'-Dichlorobenzidine	"			ND	"	5.00				
2,4-Dichlorophenol	"			ND	"	5.00				
Diethyl phthalate	"			ND	"	5.00				
2,4-Dimethylphenol	"			ND	"	10.0				
Dimethyl phthalate	"			ND	"	5.00				
4,6-Dinitro-2-methylphenol	"			ND	"	10.0				
2,4-Dinitrophenol	"			ND	"	25.0				
2,4-Dinitrotoluene	"			ND	"	5.00				
2,6-Dinitrotoluene	"			ND	"	5.00				

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled:	5/19/98
7200 N.W. Front	Project Number:	Edit	Received:	5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported:	6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank (continued)	**0580655-BLK1**									
Bis(2-ethylhexyl)phthalate	5/28/98			ND	ug/l	10.0				
Fluoranthene	"			ND	"	5.00				
Fluorene	"			ND	"	5.00				
Hexachlorobenzene	"			ND	"	5.00				
Hexachlorobutadiene	"			ND	"	10.0				
Hexachlorocyclopentadiene	"			ND	"	10.0				
Hexachloroethane	"			ND	"	10.0				
Indeno (1,2,3-cd) pyrene	"			ND	"	5.00				
Isophorone	"			ND	"	5.00				
2-Methylnaphthalene	"			ND	"	5.00				
2-Methylphenol	"			ND	"	10.0				
4-Methylphenol	"			ND	"	5.00				
Naphthalene	"			ND	"	5.00				
2-Nitroaniline	"			ND	"	5.00				
3-Nitroaniline	"			ND	"	10.0				
4-Nitroaniline	"			ND	"	10.0				
Nitrobenzene	"			ND	"	5.00				
2-Nitrophenol	"			ND	"	5.00				
4-Nitrophenol	"			ND	"	10.0				
N-Nitrosodi-n-propylamine	"			ND	"	10.0				
N-Nitrosodiphenylamine	"			ND	"	5.00				
Pentachlorophenol	"			ND	"	10.0				
Phenanthrene	"			ND	"	5.00				
Phenol	"			ND	"	5.00				
Pyrene	"			ND	"	5.00				
1,2,4-Trichlorobenzene	"			ND	"	5.00				
2,4,5-Trichlorophenol	"			ND	"	5.00				
2,4,6-Trichlorophenol	"			ND	"	5.00				
Surrogate: 2-Fluorobiphenyl	"	*100*		*80.7*	"	*43.0-116*	*80.7*			
Surrogate: 2-Fluorophenol	"	*200*		*133*	"	*21.0-100*	*66.5*			
Surrogate: Nitrobenzene-d5	"	*100*		*105*	"	*35.0-114*	*105*			
Surrogate: Phenol-d6	"	*200*		*151*	"	*10.0-94.0*	*75.5*			
Surrogate: p-Terphenyl-d14	"	*100*		*101*	"	*33.0-141*	*101*			
Surrogate: 2,4,6-Tribromophenol	"	*200*		*157*	"	*10.0-123*	*78.5*			
LCS	**0580655-BS1**									
Acenaphthene	5/28/98	100		83.4	ug/l	47.0-145	83.4			
4-Chloro-3-methylphenol	"	200		154	"	22.0-147	77.0			

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Semivolatile Organic Compounds per EPA Method 8270B/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)	**0580655-BS1**									
2-Chlorophenol	5/28/98	200		143	ug/l	23.0-134	71.5			
1,4-Dichlorobenzene	"	100		62.8	"	20.0-124	62.8			
2,4-Dinitrotoluene	"	100		86.3	"	39.0-139	86.3			
4-Nitrophenol	"	200		126	"	0-132	63.0			
N-Nitrosodi-n-propylamine	"	100		62.4	"	0-230	62.4			
Pentachlorophenol	"	200		162	"	14.0-176	81.0			
Phenol	"	200		146	"	5.00-112	73.0			
Pyrene	"	100		86.7	"	55.0-133	86.7			
1,2,4-Trichlorobenzene	"	100		65.7	"	44.0-142	65.7			
Surrogate: 2 Fluorobiphenyl	"	*100*		*85.0*	"	*43.0-116*	*85.0*			
Surrogate: 2-Fluorophenol	"	*200*		*145*	"	*21.0-100*	*72.5*			
Surrogate: Nitrobenzene-d5	"	*100*		*111*	"	*35.0-114*	*111*			
Surrogate: Phenol-d6	"	*200*		*149*	"	*10.0-94.0*	*74.5*			
Surrogate: p-Terphenyl-d14	"	*100*		*100*	"	*33.0-141*	*100*			
Surrogate: 2,4,6-Tribromophenol	"	*200*		*163*	"	*10.0-123*	*81.5*			
LCS Dup	**0580655-BSD1**									
Acenaphthene	5/28/98	100		84.2	ug/l	47.0-145	84.2	60.0	0.955	
4-Chloro-3-methylphenol	"	200		151	"	22.0-147	75.5	60.0	1.97	
2-Chlorophenol	"	200		155	"	23.0-134	77.5	60.0	8.05	
1,4-Dichlorobenzene	"	100		62.9	"	20.0-124	62.9	60.0	0.159	
2,4-Dinitrotoluene	"	100		87.0	"	39.0-139	87.0	60.0	0.808	
4-Nitrophenol	"	200		135	"	0-132	67.5	60.0	6.90	
N-Nitrosodi-n-propylamine	"	100		63.2	"	0-230	63.2	60.0	1.27	
Pentachlorophenol	"	200		161	"	14.0-176	80.5	60.0	0.619	
Phenol	"	200		147	"	5.00-112	73.5	60.0	0.683	
Pyrene	"	100		89.6	"	55.0-133	89.6	60.0	3.29	
1,2,4-Trichlorobenzene	"	100		66.0	"	44.0-142	66.0	60.0	0.456	
Surrogate: 2-Fluorobiphenyl	"	*100*		*86.5*	"	*43.0-116*	*86.5*			
Surrogate: 2-Fluorophenol	"	*200*		*164*	"	*21.0-100*	*82.0*			
Surrogate: Nitrobenzene-d5	"	*100*		*106*	"	*35.0-114*	*106*			
Surrogate: Phenol-d6	"	*200*		*157*	"	*10.0-94.0*	*78.5*			
Surrogate: p-Terphenyl-d14	"	*100*		*100*	"	*33.0-141*	*100*			
Surrogate: 2,4,6-Tribromophenol	"	*200*		*176*	"	*10.0-123*	*88.0*			

SCOEPA00026423

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL • (425) 420-9200 • FAX 420-9210
SPOKANE • (509) 924-9200 • FAX 924-9290
PORTLAND • (503) 906-9200 • FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0680032	**Date Prepared: 6/1/98**					**Extraction Method: EPA 1664**				
Blank	**0680032-BLK1**									
Oil & Grease	6/3/98			ND	mg/l	5.00				
Oil & Grease (non-polar)	"			ND	"	5.00				
Oil & Grease (polar)	"			ND	"					
Blank	**0680032-BLK2**									
Oil & Grease	6/3/98			ND	mg/l	5.00				
Oil & Grease (non-polar)	"			ND	"	5.00				
LCS	**0680032-BS1**									
Oil & Grease	6/3/98	80.0		65.9	mg/l	79.0-114	82.4			
Oil & Grease (non-polar)	"	40.0		30.3	"	66.0-114	75.7			
LCS Dup	**0680032-BSD1**									
Oil & Grease	6/3/98	80.0		66.2	mg/l	79.0-114	82.7	18.0	0.363	
Oil & Grease (non-polar)	"	40.0		34.1	"	66.0-114	85.2	24.0	11.8	
Batch: 0680093	**Date Prepared: 6/3/98**					**Extraction Method: Wet Chem**				
Blank	**0680093-BLK1**									
Total Organic Carbon	6/3/98			ND	mg/l	3.00				
LCS	**0680093-BS1**									
Total Organic Carbon	6/3/98	10.0		9.74	mg/l	85.0-115	97.4			
Duplicate	**0680093-DUP1**		**P805451-01**							
Total Organic Carbon	6/3/98		ND	ND	mg/l			20.0		

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.

Mary K. Fitzmann Smith, Project Manager

SCOEPA00026424

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL • (425) 420 9200 • FAX 420-9210
SPOKANE • (509) 924-9200 • FAX 924-9290
PORTLAND • (503) 906-9200 • FAX 906-9210

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/19/98
7200 N.W. Front	Project Number:	Edit	Received: 5/20/98
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/18/98 09:00

Notes and Definitions

#	Note
1	Analyte present below reporting level.
2	Outside of acceptance criteria. Sample may have dried out in extraction/transfer procedure.
3	Outside of acceptance criteria. Acid surrogate may have volatilized during extraction.
4	Since Total O&G was ND, sample was not analyzed for Non-polar hydrocarbons.
5	The reporting limit for this analyte was raised due to background levels present from batch preparation.
6	The RPD is outside of control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Mary A. Fitzpatrick Smith, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

SCOEPA00026425

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Outfall Sample ID#: 98-67

Date: 5/19/98 Time: 1020 Sampled by: Gerry Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: ✓ Foam: yes: ____ No: ✗

Color: transparent

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 3.64 COD, mg/L: 15.3 F-, mg/L: 0.25

pH: 7.35 PO4, mg/L: 0.165 TSS, mg/L: 20.25

Ammonia (NH3), mg/L: 0.715 Hydrogen Peroxide, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Total Toxic Organics, mg/L: < 0.05

Total Organic Carbon, mg/L: 5.1

Semivolatile, mg/L:

Metals, mg/L:

Arsenic: < 0.001 Cadmium: < 0.001 Chromium: 0.002

Copper: 0.008 Lead: 0.001 Mercury: < 0.0002

Nickel: 0.002 Zinc: ~~0.002~~ 0.2

Notes: Cr^{+6} : 0.007 mg/L

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Stormwater - North #98-67

Sample Date: 5/19/98 Incubator: 20.0 C Analyst: DM

Date/Time In: 5/21/98 / 1350 Date/Time Out: 5/26/98 / 1100

	BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
✓N	15	250	8.95	6.36	3.108
✓N	17	200	8.64	6.70	2.91
✓N	20	150	8.39	6.84	3.1
N					
N					
N					
N					
N					
N					
N					

Average BOD, mg/L: 3.04

COMMENTS: QA - QC in May 1998 permit file

CALCULATION: $\text{BOD, mg/L} = \frac{(\text{DOI, mg/L} - \text{DOF, mg/L}) \times 300}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

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SCOEPA00026427

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 0830 / 1030 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.3 mg/L (Range: 28 - 32 mg/L)
#98-67

4. ~~CE~~ (composite): 15.3 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____ mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____ mg/L

Comments: Stormwater North

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026428

BENCHSHEET

HYDROGEN PEROXIDE (H_2O_2)

Date 5/21/98 Analyst DM

Date sampled 5/19/98

Sample	Drops Used	x Dilution factor =	H_2O_2mg/L
FAB-2 C E	_____	x _____ =	_____mg/L
98-67	0	x N/A =	0 mg/L
_____	_____	x _____ =	_____mg/L

Notes: Storm water sample - North

Refrence: Hach Company, Hydrogen Peroxide Test Kit Pamplet.
Calculations: 1 drop = 1mg/L H2O2.

DEM 06 Mar 95
DEM 12 Sep 97 REVISED

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BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

Slope: -57.0 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U7216 Date Opened: 5/7/98

10.0 mg/L: Lot #: U7258 Date Opened: 5/7/98

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
98-67	0.25

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: Ricca
Lot Number: A032

	CE FAB-1	CE FAB-2	98-67
After Spike Concentration:	____ mg/L	____ mg/L	2.36 mg/L
Recovery:	____ %	____ %	105.5 %

Comments: Stormwater sample - North

References:
1. Standard Methods For The Examination of Water And Wastewater, 1992, 18th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.

TJR 06 Apr 87
DEM 05 Apr 96 Revised

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SCOEPA00026430

BENCHSHEET

Chrome, Total / Chrome, +6 Analyses

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

1. For Chrome +6 analysis:
   a. Use a non-acid-preserved sample (per EPA Method 218.5).

2. For Chrome Total analysis:
   a. Preserve sample immediately upon collection with 2 - 5 ml HNO3 per liter (to a pH < 2)
   b. Transfer an 100 ml aliquot for step 1 above to a 250 ml Erlenmeyer flask.
   c. Add 5 ml of 1:1 HCl.
   d. Place in a boiling water bath until volume is reduced to approximately 20 ml (about 3 hours).
   d. Adjust pH of the cooled sample to pH 4 +/- 0.5 with NaOH (5M/1M). Adjusted pH = _____.
   e. Bring the volume back up to 100 ml.

98-67
~~CE Composite~~

Chrome Total, mg/L	Chrome +6, mg/L	Reagent Blank, mg/L
_____	0.007	_____

Quality Control: Spike the Chrome +6 aliquot with 0.1ml of 5.0mg/L Cr+6. The Chrome concentration should increase by 0.02mg/L. Manufacturer: HACH
Lot Number: ND 7143

Spiked aliquot = 0.026 mg/L

% Recovery = 95 % Acceptable Range 80 - 120%

Comments: storm water - North

References:
1. DR/4000 Spectrophotometer Manual, dated 18 Aug 95 (2ED), Method 8023, stored program 1560 (+6) and method 8024, stored program 1580 (total).
2. Standard Methods for the Examination of Water and Wastewater, 1995, 19th Edition, Section 3500-Cr D. Page 3-59

TJR 06 Dec 91
TJR/DEM 5 Dec 97 Revised

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BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/19/98 Oven Temp: 105 C Analyst: DM

Date In: 5/21/98 Time In/Out: 1030 / ~~1030~~ 1330 DM

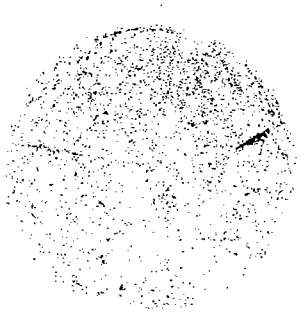
Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
4	98-67	200	0.0948	0.0907	20.5
5	98-67	200	0.0938	0.0898	20
			North	AVG=	20.25
6	98-68	200	0.0949	0.0880	34.5
7	98-68	200	0.0965	0.0897	34
			South	AVG=	34.25
8	98-69	200	0.0910	0.0894	8
9	98-69	200	0.0907	0.0895	6
			~~South~~ East	AVG=	7
				AVG=	

Notes: Storm water samples -
North - 98-67, South - 98-68, East - 98-69

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised



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north -

BENCHSHEET

PHOSPHATES (PO4)

Sample Date: 5/19/98 Analyst: DM

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.

2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # M7080)

3. Add 2 ml H2SO4, 5.25 N. Swirl. (Hach Lot # U7223)

4. Gently boil for 30 minutes.

5. Cool to room temperature

6. Add 2 ml NaOH, 5.0 N. Swirl. (Hach Lot # U8012)

7. Use Hach DR/4000 Method 8048, Phosphorous Reactive, Low Range: 0-2.500 mg/L, HACH Program 3025.

8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # M6243.

9. DR/3000 reading: CE FAB-1:_____mg/L CE FAB-2:_____mg/L

MV-3:_____mg/L

Other Sample #98-67 DM :0.165 mg/L

10. Quality Control: Spike each sample with 0.050 ml of 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

After Spike Concentration:	CE mg/L	MV-3 mg/L	#98-67
	_____	_____	1.208
% Recovery	_____	_____	104.3

Notes: Storm water - North -

TJR 27 Nov 91
DEM 16 Oct 96 Revised

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SCOEPA00026433

BENCHSHEET

AMMONIA (NH_3)

Date 5/19/98 Analyst DM

Date sampled 5/19

Sample	DR/4000 reading	x Dilution factor =	NH_3 mg/L
#98-67 ~~FAB - 2, CE~~	0.715	x N/A =	0.715 mg/L
		x =	mg/L
		x =	mg/L

Notes: Storm Water North

Refrence: Hach DR/4000 Method 8038, Nitrogen, Ammonia (Nessler Method) Range: 0-2.500 mg/L, HACH program 2400.

DEM 03 Mar 95
DEM 09 Oct 97 Revised

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SCOEPA00026434

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South, Dry Nox, Manhole Sample ID#: 98-68

Date: 5/19/98 Time: 1050 Sampled by: Tom Rothschild

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Foam: yes:____ No: X

Color: transparent brownish

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 4.46 COD, mg/L: 18.5 F-, mg/L: 0.26

pH: 6.9 PO4, mg/L: 0.712 TSS, mg/L: 34.25

Ammonia (NH3), mg/L: 0.416 Hydrogen Peroxide, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Total Toxic Organics, mg/L: < 0.05

Total Organic Carbon, mg/L: 7.9

Semivolatile, mg/L:

Metals, mg/L:

Arsenic: < 0.001 Cadmium: < 0.001 Chromium: 0.008

Copper: 0.02 Lead: 0.006 Mercury: < 0.0002

Nickel: 0.007 Zinc: 0.2

Notes: Cr^{+6}: 0.005 mg/L

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Storm Water - South #98-68

Sample Date: 5/19/98 Incubator: 20.0 C Analyst: DM

Date/Time In: 5/21/98 / 1350 Date/Time Out: 5/26/98 / 1100

		BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
✓	N	21	250	8.89	4.98	4.692
✓	N	22	200	8.55	5.62	4.395
✓	N	24	150	8.33	6.18	4.3
	N					
	N					
	N					
	N					
	N					
	N					
	N					

Average BOD, mg/L: 4.46

COMMENTS: QA - QC in May 1998 Permit file

CALCULATION: $\text{BOD, mg/L} = \frac{(\text{DOI, mg/L} - \text{DOF, mg/L}) \times 300}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

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SCOEPA00026436

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 0830 / 1030 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.3 mg/L (Range: 28 - 32 mg/L)
98-68

4. ~~CE (composite)~~: 18.5 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm Water South

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026437

BENCHSHEET

HYDROGEN PEROXIDE (H_2O_2)

Date 5/21/98 Analyst DM

Date sampled 5/19/98

Sample	Drops Used	x Dilution factor =	H_2O_2mg/L
FAB-2 C E	_____	x _____ =	_____mg/L
98-68	0	x N/A =	0 mg/L
_____	_____	x _____ =	_____mg/L

Notes: Stormwater South

Refrence: Hach Company, Hydrogen Peroxide Test Kit Pamplet.
Calculations: 1 drop = 1mg/L H2O2.

DEM 06 Mar 95
DEM 12 Sep 97 REVISED

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\H202B.DOC

SCOEPA00026438

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

Slope: -57.0 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U7216 Date Opened: 5/7/98

10.0 mg/L: Lot #: U7258 Date Opened: 5/7/98

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
98-68	0.26

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	
After Spike Concentration:	mg/L	mg/L	2.21 mg/L
Recovery:	%	%	%

Comments: Storm water - South

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.

TJR 6 Apr 1987
TJR/DEM 9 Jan 1998 Revised

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\FLUORIDB.DOC

BENCHSHEET

Chrome, Total / Chrome, +6 Analyses

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

1. For Chrome +6 analysis:
   a. Use a non-acid-preserved sample (per EPA Method 218.5).

2. For Chrome Total analysis:
   a. Preserve sample immediately upon collection with 2 - 5 ml HNO3 per liter (to a pH < 2)
   b. Transfer an 100 ml aliquot for step 1 above to a 250 ml Erlenmeyer flask.
   c. Add 5 ml of 1:1 HCl.
   d. Place in a boiling water bath until volume is reduced to approximately 20 ml (about 3 hours).
   d. Adjust pH of the cooled sample to pH 4 +/- 0.5 with NaOH (5M/1M). Adjusted pH = _____.
   e. Bring the volume back up to 100 ml.

98-68
~~CE Composite~~

Chrome Total, mg/L	Chrome +6, mg/L	Reagent Blank, mg/L
_____	0.005	_____

Quality Control: Spike the Chrome +6 aliquot with 0.1ml of 5.0mg/L Cr+6. The Chrome concentration should increase by 0.02mg/L. Manufacturer: HACH
Lot Number: N7143

Spiked aliquot = 0.026 mg/L

% Recovery = 105 % Acceptable Range 80 - 120%

Comments: Stormwater - South

References:
1. DR/4000 Spectrophotometer Manual, dated 18 Aug 95 (2ED), Method 8023, stored program 1560 (+6) and method 8024, stored program 1580 (total).
2. Standard Methods for the Examination of Water and Wastewater, 1995, 19th Edition, Section 3500-Cr D. Page 3-59

TJR 06 Dec 91
TJR/DEM 5 Dec 97 Revised

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SCOEPA00026440

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/19/98 Oven Temp: 105 C Analyst: DM

Date In: 5/21/98 Time In/Out: 1030 / ~~1030~~ 1330 DM

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
4	98-67	200	0.0948	0.0907	20.5
5	98-67	200	0.0938	0.0898	20
			North	AVG=	20.25
6	98-68	200	0.0949	0.0880	34.5
7	98-68	200	0.0965	0.0897	34
			South	AVG=	34.25
8	98-69	200	0.0910	0.0894	8
9	98-69	200	0.0907	0.0895	6
			~~South~~ East	AVG=	7
				AVG=	

Notes: Storm water samples -
North - 98-67, South - 98-68, East - 98-69

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised

ENCH\TSS-2B.DOC

South

BENCHSHEET

PHOSPHATES (PO4)

Sample Date: 5/19/98 Analyst: DM

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.

2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # M7080)

3. Add 2 ml H2SO4, 5.25 N. Swirl. (Hach Lot # 47223)

4. Gently boil for 30 minutes.

5. Cool to room temperature

6. Add 2 ml NaOH, 5.0 N. Swirl. (Hach Lot # 48012)

7. Use Hach DR/4000 Method 8048, Phosphorous Reactive, Low Range: 0-2.500 mg/L, HACH Program 3025.

8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # M6243.

9. DR/3000 reading: CE FAB-1:_____mg/L CE FAB-2:_____mg/L

MV-3:_____mg/L

Other Sample# 98-68 :0.712 mg/L

10. Quality Control: Spike each sample with 0.050 ml of 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

After Spike Concentration:	CE mg/L	MV-3 mg/L	
	_____	1.	1.714
% Recovery	_____	_____	100.2

Notes: Storm Water - South

TJR 27 Nov 91
DEM 16 Oct 96 Revised

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SCOEPA00026442

BENCHSHEET

AMMONIA (NH_3)

Date 5/19/98 Analyst DM

Date sampled 5/19/98

Sample	DR/4000 reading	x Dilution factor =	NH_3 mg/L
FAB - 2, CE	_____	x _____ =	_____ mg/L
# 98-68	0.416	x N/A =	0.416 mg/L
_____	_____	x _____ =	_____ mg/L

Notes: Storm Water South

Refrence: Hach DR/4000 Method 8038, Nitrogen, Ammonia (Nessler Method) Range: 0-2.500 mg/L, HACH program 2400.

DEM 03 Mar 95
DEM 09 Oct 97 Revised

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SCOEPA00026443

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East River Bank Sample ID#: 98-69

Date: 5/19/98 Time: 1100 Sampled by: Gerry Munda

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: X Foam: yes:____ No: X

Color: transparent

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 3.59 COD, mg/L: 12.4 F-, mg/L: 0.14

pH: 6.9 PO4, mg/L: 0.115 TSS,mg/L: 7

Ammonia (NH3), mg/L: 0.2 Hydrogen Peroxide, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Total Toxic Organics, mg/L: < 0.05

Total Organic Carbon, mg/L: 6.14

Semivolatile, mg/L:

Metals, mg/L:

Arsenic: < 0.001 Cadmium: < 0.100 Chromium: 0.001

Copper: 0.02 Lead: 0.002 Mercury: < 0.0002

Nickel: ~~< 0.05~~ 0.02 Zinc: 0.2

Notes: Cr^{+6} 0.003 mg/L

BENCHSHEET

AMMONIA (NH_3)

Date 5/19/98 Analyst DM

Date sampled 5/19/98

Sample	DR/4000 reading	x Dilution factor =	NH_3 mg/L
FAB - 2, CE	_____	x _____ =	_____mg/L
#98-69	0.201	x _____ =	_____mg/L
_____	_____	x _____ =	_____mg/L

Notes: Storm water East

Refrence: Hach DR/4000 Method 8038, Nitrogen, Ammonia (Nessler Method) Range: 0-2.500 mg/L, HACH program 2400.

DEM 03 Mar 95
DEM 09 Oct 97 Revised

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SCOEPA00026445

BENCHSHEET

Chemical Oxygen Demand (COD, ULR)

Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

COD Reactor Temperature: 150 C

Time In / Out: 0830 / 1030 (2 Hour Digestion)

1. DR/4000 Method 8000, HACH Program 2700.

2. Zero the DR/4000 with an RODI H_2O blank.

3. Check the 30mg/L standard: 30.3 mg/L (Range: 28 - 32 mg/L)
98-69
4. ~~CE (composite)~~: 12.4 mg/L.

5. OWW (composite): Direct DR/4000 reading: _____mg/L

(Dilution: ____ ml in ____ ml RODI H_2O)

X ____ (Dilution Factor) = _____mg/L

Comments: Storm water East

TJR 31 Dec 91
DEM 12 Sep 97 Revised

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SCOEPA00026446

BENCHSHEET

PHOSPHATES (PO4)

Sample Date: 5/21/98 Analyst: DM

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.
2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # M7080)
3. Add 2 ml H2SO4, 5.25 N. Swirl. (Hach Lot # U7223)
4. Gently boil for 30 minutes.
5. Cool to room temperature
6. Add 2 ml NaOH, 5.0 N. Swirl. (Hach Lot # U8012)
7. Use Hach DR/4000 Method 8048, Phosphorous Reactive, Low Range: 0-2.500 mg/L, HACH Program 3025.
8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # M6243.
9. DR/3000 reading: CE FAB-1:_____mg/L CE FAB-2:_____mg/L

   MV-3:_____mg/L

   Other Sample 98-69 : 0.115 mg/L
10. Quality Control: Spike each sample with 0.050 ml of 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

After Spike Concentration:	CE mg/L	MV-3 mg/L	#98-69
	_____	_____	1.142
% Recovery	_____	_____	102.7

Notes: Storm water - East -

TJR 27 Nov 91
DEM 16 Oct 96 Revised

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SCOEPA00026447

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 5/19/98 Oven Temp: 105 C Analyst: DM

Date In: 5/21/98 Time In/Out: 1030 / ~~1030~~ 1330 DM

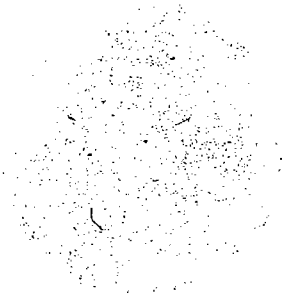
Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
4	98-67	200	0.0948	0.0907	20.5
5	98-67	200	0.0938	0.0898	20
			North	AVG=	20.25
6	98-68	200	0.0949	0.0880	34.5
7	98-68	200	0.0965	0.0897	34
			South	AVG=	34.25
8	98-69	200	0.0910	0.0894	8
9	98-69	200	0.0907	0.0895	6
			~~South~~ East	AVG=	7
				AVG=	

Notes: Storm water samples -
North - 98-67, South - 98-68, East - 98-69

Calculation: TSS, mg/L = $\frac{\text{(Gross Wt, mg - Tare Wt, mg) X 1000}}{\text{Volume of Sample, ml}}$

Reference: SOP for Facilities Operations Laboratory.

TJR 21 Mar 87
DEM 12 Sep 97 Revised



ENCH\TSS-2B.DOC

East

SCOEPA00026448

BENCHSHEET

Chrome, Total / Chrome, +6 Analyses

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

1. For Chrome +6 analysis:
   a. Use a non-acid-preserved sample (per EPA Method 218.5).

2. For Chrome Total analysis:
   a. Preserve sample immediately upon collection with 2 - 5 ml HNO3 per liter (to a pH < 2)
   b. Transfer an 100 ml aliquot for step 1 above to a 250 ml Erlenmeyer flask.
   c. Add 5 ml of 1:1 HCl.
   d. Place in a boiling water bath until volume is reduced to approximately 20 ml (about 3 hours).
   d. Adjust pH of the cooled sample to pH 4 +/- 0.5 with NaOH (5M/1M). Adjusted pH = _____.
   e. Bring the volume back up to 100 ml.

98-69
~~CE Composite~~

Chrome Total, mg/L	Chrome +6, mg/L	Reagent Blank, mg/L
_____	0.003	_____

Quality Control: Spike the Chrome +6 aliquot with 0.1ml of 5.0mg/L Cr+6. The Chrome concentration should increase by 0.02mg/L. Manufacturer: HACH
Lot Number: N7143

Spiked aliquot = 0.026 mg/L

% Recovery = 115 % Acceptable Range 80 - 120%

Comments: stormwater - East.

References:
1. DR/4000 Spectrophotometer Manual, dated 18 Aug 95 (2ED), Method 8023, stored program 1560 (+6) and method 8024, stored program 1580 (total).
2. Standard Methods for the Examination of Water and Wastewater, 1995, 19th Edition, Section 3500-Cr D. Page 3-59

TJR 06 Dec 91
TJR/DEM 5 Dec 97 Revised

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\CRNPDESB.DOC

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 5/21/98 Sample Date: 5/19/98 Analyst: DM

Slope: -57.0 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U7216 Date Opened: 5/7/98

10.0 mg/L: Lot #: U7258 Date Opened: 5/7/98

Data:

Sample	Fluoride, mg/L
CE FAB-1	
CE FAB-2	
98-69	~~0.0~~ DM 0.14

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.
Manufacturer: RICCA
Lot Number: A032

	CE FAB-1	CE FAB-2	
After Spike Concentration:	mg/L	mg/L	2.01 mg/L
Recovery:	%	%	93.5 %

Comments: Stormwater - East

References:

1. Standard Methods For The Examination of Water And Wastewater, 1995, 19th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.

TJR 6 Apr 1987
TJR/DEM 9 Jan 1998 Revised

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\FLUORIDB.DOC

BENCHSHEET

HYDROGEN PEROXIDE (H_2O_2)

Date 5/21/98 Analyst DM

Date sampled 5/19/98

Sample	Drops Used	x Dilution factor =	H_2O_2mg/L
98-69 ~~FAB-2-C-E~~	0	x N/A =	0 mg/L
		x =	mg/L
		x =	mg/L

Notes: Stormwater - East

Refrence: Hach Company, Hydrogen Peroxide Test Kit Pamplet.
Calculations: 1 drop = 1mg/L H2O2.

DEM 06 Mar 95
DEM 12 Sep 97 REVISED

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\H202B.DOC

SCOEPA00026451

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Stormwater - East #98-69

Sample Date: 5/19/98 Incubator: 20.0 C Analyst: DM

Date/Time In: 5/21/98 / 1350 Date/Time Out: 5/26/98 / 1100

		BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L
/	N	36	250	8.71	5.82	3.468
/	N	38	200	8.39	6.02	3.555
/	N	39	150	8.29	6.40	3.78
	N					
	N					
	N					
	N					
	N					
	N					
	N					

Average BOD, mg/L: 3.59

COMMENTS: QA - QC in May 1998 permit file

CALCULATION: BOD, mg/L = $\frac{\text{(DOI, mg/L - DOF, mg/L) X 300}}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94
DEM/TJR 30 Dec 97

\\WSC-COMMON\COMMON\GROUP\FACLAB\WWTP\BENCH\BODBLNKB.DOC

SCOEPA00026452

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #

REPORT TO: Wacker Siltronic
ATTENTION: Tom Rothschild
ADDRESS: 7200 NW Front Ave
Portland, OR
PHONE: 219-7374 FAX: 417-4144
PROJECT NAME: Storm Water
PROJECT NUMBER:
SAMPLED BY: Gerry Munroe, Tom Rothschild

INVOICE TO: Wacker Siltronic
ATTENTION: Accts Payable
ADDRESS: same
P.O. NUMBER: 210167 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* *Turnaround Requests less than standard may incur Rush Charges.*

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: Oil & Grease	As, Cd, Cr, Cu, Pb, Zn, Hg	EPA 8260	EPA 8270	TOC	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	98-67	5/19/98 1020		X	X	X	X	X	W	8	
2.	98-68	5/19/98 1050		X	X	X	X	X	W	8	
3.	98-69	5/19/98 1100		X	X	X	X	X	W	8	
4.									W		
5.											
6.											
7.											
8.											
9.											
10.											

RELINQUISHED BY (Signature): Thomas J. Rothschild DATE: 20 May 98
PRINT NAME: Thomas J. Rothschild FIRM: Wacker TIME: 1530

RECEIVED BY (Signature): [signature] DATE: 5-20-98
PRINT NAME: Amy Spangler FIRM: N/A TIME: 1530

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

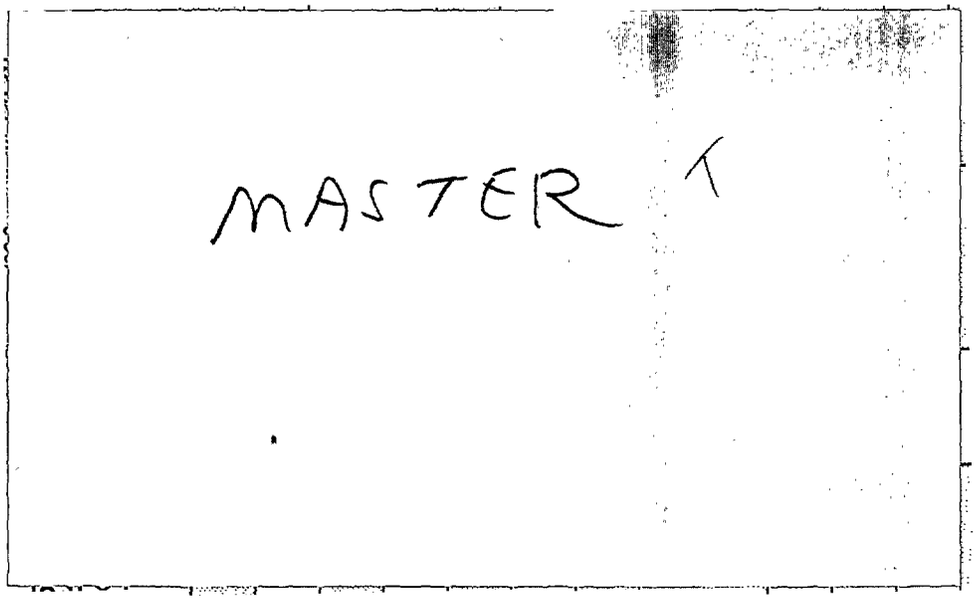
RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 8, 1/96

SCOEPA00026453



SCOEPA00026454

Wacker Siltronic Corporation
ER063:TM

April 20, 1998

Mr. Neil Mullane
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Mullane,

Enclosed is the tabulated storm water monitoring data for the calendar year 1997 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-Z issued on July 22, 1997. The sampling was conducted on May 28 and November 19 of 1997.

If you have any questions, please contact Tom McCue at 219-7532.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosures:
Storm water DMRs
Laboratory analysis

cc: Tom Rothschild
John Holtrop, City of Portland BES
SW Report 1997 File

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

NEIL MULLANE
DEQ, NORTHWEST REGION
2020 SW FOURTH AVENUE, SUITE 400
PORTLAND, OR 97201

4a. Article Number
Z463 352 320

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery APR 22 1998

5. Received By: *(Print Name)* DEQ/NWR

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Thank you for using Return Receipt Service.

return to: Petra Mattes Mail Stop 30

Z 463 352 320

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Neil Mullane, DEQ NW Region	
Street & Number 2020 NW Fourth Ave. suite 400	
Post Office, State, & ZIP Code Portland, OR 97201	
Postage	$ 3.00
Certified Fee	1.35
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, & Addressee's Address	APR 22 1998
TOTAL Postage & Fees	$ 5.45
Postmark or Date	PORTLAND OR SAINT JOHNS STA. APR 22 USPS

PS Form **3800**, April 1995

SCOEPA00026456

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180

Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						7.35	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<0.5	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						11.9	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						30.9	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026457

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	11	19	97	11	19

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.009	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.005	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.091	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						26.75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.08	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

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I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026458

Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.003	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						11	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

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Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026459

Facility Name/Location if different)
NAME Wacker Siltronic Corp.
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Avenue, Portland, OR 97210
LOCATION South Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) 1200-Z PERMIT NUMBER

(17-19) DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						6.92	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						1.75	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						9.36	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						22.7	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.008	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Thomas C. McCue, Manager of Plant Engineering
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:
Thomas C McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026460

Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION South Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
1200-Z	
PERMIT NUMBER	DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.006	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.008	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						13.5	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.12	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026461

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION South Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	11	19	97	11	19

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.005	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						8.4	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by: Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026462

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION East Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						6.96	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						0.685	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						4.54	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						13.2	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026463

Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION East Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
1200-Z	

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.004	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						<0.002	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.167	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						5.75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.08	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	219-7532	98	04	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026464

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180

Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION East Sample Point

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	11	19	TO	97	11	19
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						0.002	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						3.4	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026465

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180

Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						9.29	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						1.11	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						6.42	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						39.7	mg/l			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.00239	mg/l			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/l			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.00898	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. By: Thomas C McCue	503	219-7532	98	04	13
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026466

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.
ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210
LOCATION: North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z
(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0242	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.00766	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.00083	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.00833	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.319	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						117	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER: Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 219-7532

DATE: YEAR 98 MO 04 DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026467

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: North Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-16) PERMIT NUMBER	*(17-19)* DISCHARGE NUMBER
1200-Z	

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULT	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.0	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	WAcker Siltronic Corp by: Thomas C. McCue	503	219-7532	98	04	13
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026468

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	05	28	97	05	28

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						5.64	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						2.69	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						6.37	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						67.0	mg/l			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.00115	mg/l			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						0.00111	mg/l			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.0150	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS (*Reference all attachments here*)

SCOEPA00026469

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180

Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0394	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.0199	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						<0.0002	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.0103	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.0199	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						75	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

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Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026470

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: South Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER

(17-19) DISCHARGE NUMBER

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
97	05	28	97	05	28

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.00	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

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Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 — NUMBER 219-7532

DATE: YEAR 98 — MO 04 — DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026471

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-Z

(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	97	05	28	TO	97	05	28
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT						5.09	Su			Grab
	PERMIT REQUIREMENT										
Oil and Grease	SAMPLE MEASUREMENT						<0.5	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						2.37	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						22.7	mg/L			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						<0.001	mg/L			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.00831	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Thomas C. McCue, Manager of Plant Engineering

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp. by:

Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 219-7532

DATE: YEAR 98 | MO 04 | DAY 13

COMMENT AND EXPLANATION OF ANY VIOLATIONS (*Reference all attachments here*)

SCOEPA00026472

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: Wacker Siltronic Corp.

ADDRESS: PO Box 83180
Portland, OR 97283-0180

FACILITY: 7200 NW Front Avenue, Portland, OR 97210

LOCATION: East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
1200-Z	

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR (20-21)	MO (22-23)	DAY (24-25)		YEAR (26-27)	MO (28-29)	DAY (30-31)
FROM	97	05	28	TO	97	05	28

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) RESULT	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Copper	SAMPLE MEASUREMENT						0.0294	mg/L			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.0123	mg/L			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.000230	mg/L			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.00625	mg/L			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.362	mg/L			Grab
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						82	mg/L			Grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						<0.5	mg/L			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	AREA CODE: 503	NUMBER: 219-7532	YEAR: 98	MO: 04	DAY: 13
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT					

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026473

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME Wacker Siltronic Corp.

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Avenue, Portland, OR 97210

LOCATION East Sample Point

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*

DISCHARGE MONITORING REPORT *(DMR)*

(2-16) PERMIT NUMBER	*(17-19)* DISCHARGE NUMBER
1200-Z	

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR *(20-21)*	MO *(22-23)*	DAY *(24-25)*		YEAR *(26-27)*	MO *(28-29)*	DAY *(30-31)*
FROM	97	05	28	TO	97	05	28

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* RESULT	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Phosphate	SAMPLE MEASUREMENT						<0.035	mg/L			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						<4.0	mg/L			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		Wacker Siltronic Corp. by:	TELEPHONE		DATE		
Thomas C. McCue, Manager of Plant Engineering	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C § 1001 AND 33 U.S.C § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE 503	NUMBER 219-7532	YEAR 98	MO 04	DAY 13
TYPED OR PRINTED							

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026474

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: North Sample ID#: 97.81

Date: 5/28/97 Time: 1350 Sampled by: Dianne Mullan
Gary Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ✓ No: ____ Foam: yes: ____ No: ✓

Color: transparent w/brown

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.0 COD, mg/L: 39.7

F-, mg/L: < 0.5 pH: 9.29

Po4, mg/L: < 0.035 TSS, mg/L: 117

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: 1.11

Metals, mg/L:

Arsenic: 0.00239 Cadmium: < 0.001 Chromium: 0.00898

Copper: 0.0242 Lead: 0.00766 Mercury: 0.00053

Nickel: 0.00833 Zinc: 0.319

Notes: TOC = 6.42 mg/L. TTO = < 0.01 mg/L.
All analyses done by outside lab.

DEM 10 Oct 96

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: South Sample ID#: 97.82

Date: 5/28/97 Time: 1410 Sampled by: Jon Rothschuler

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ✓ No: ____ Foam: yes: ____ No: ✓

Color: Transparent w/ brown

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.00 COD, mg/L: 67.0

F-, mg/L: < 0.5 pH: 5.64

Po4, mg/L: < 0.035 TSS, mg/L: 75

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: 2.69

Metals, mg/L:

Arsenic: 0.00115 Cadmium: 0.00111 Chromium: 0.0150

Copper: 0.0394 Lead: 0.0199 Mercury: < 0.0002

Nickel: 0.0103 Zinc: 0.282

Notes: Oil Sheen: very slight. TOC = 6.37 mg/L.
TTO = < 0.01 mg/L
All samples analyzed by outside lab.

DEM 10 Oct 96

SCOEPA00026476

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: East Sample ID#: 9783

Date: 5/28/97 Time: 14:20 Sampled by: Tom Rothschild

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: ✓ Foam: yes:____ No: ✓

Color: Transparent w/ brown

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.0 COD, mg/L: ~~82~~ 22.7

F-, mg/L: < 0.5 pH: 5.09

Po4, mg/L: < 0.035 TSS, mg/L: 82

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 0.5

Metals, mg/L:

Arsenic: < 0.001 Cadmium: < 0.001 Chromium: 0.00531

Copper: 0.0294 Lead: 0.0123 Mercury: 0.000230

Nickel: 0.00625 Zinc: 0.362

Notes: TOC = 2.37 mg/L. TTO = < 0.01 mg/L

All analyses done by outside lab.

DEM 10 Oct 96

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

RECEIVED JUL 1 1997

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
97-81 North	P705423-01	Water	5/28/97
97-82 South	P705423-02	Water	5/28/97
97-83 East	P705423-03	Water	5/28/97

This report is not complete without Attachment A. Attachment A contains results for Volatile Organic Compounds by GC/MS EPA 8260a. The waters for volatile organics were analyzed for North Creek Analytical by AGRA Earth & Environmental Lab in Portland, Oregon. AGRA's data and QC report for samples 97-81(P705423-01C), 97-82 (P705423-02), and 97-83 (P705423-03) is reproduced in its entirety.

North Creek Analytical, Inc.

Sandra K. Wright, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

SCOEPA00026478

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-81			**P705423-01**				**Water**	
Arsenic	0670011	5/31/97	6/3/97	EPA 200.8	0.00100	**0.00239**	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00898**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.0242**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.00766**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.00833**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.319**	"	
Mercury	0670226	6/11/97	6/12/97	EPA 245.1	0.000200	**0.000830**	"	
97-82			**P705423-02**				**Water**	
Arsenic	0670011	5/31/97	6/3/97	EPA 200.8	0.00100	**0.00115**	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	**0.00111**	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.0150**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.0394**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.0199**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.0103**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.282**	"	
Mercury	0670226	6/11/97	6/12/97	EPA 245.1	0.000200	ND	"	
97-83			**P705423-03**				**Water**	
Arsenic	0670011	5/31/97	6/3/97	EPA 200.8	0.00100	ND	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00831**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.0294**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.0123**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.00625**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.362**	"	
Mercury	0670226	6/11/97	6/12/97	EPA 245.1	0.000200	**0.000230**	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Sandra K. Wright, Project Manager

SCOEPA00026479

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-81			**P705423-01**				**Water**	
Total Suspended Solids	0670005	6/2/97	6/2/97	EPA 160.2	10.0	**117**	mg/l	
Phosphorus	0670033	6/4/97	6/4/97	EPA 365.3	0.0350	ND	"	
Biochemical Oxygen Demand	0570606	5/29/97	6/3/97	EPA 405.1	4.00	ND	"	
Chemical Oxygen Demand	0670057	6/3/97	"	EPA 410.4	5.00	**39.7**	"	
Oil & Grease	0670097	6/4/97	6/5/97	EPA 413.2/418.1	0.500	**1.11**	"	
Oil & Grease (non-polar)	"	"	"	EPA 413.2/418.1	0.500	**0.751**	"	
Oil & Grease (polar)	"	"	"	EPA 413.2/418.1		**0.358**	"	
97-82			**P705423-02**				**Water**	
Total Suspended Solids	0670005	6/2/97	6/2/97	EPA 160.2	10.0	**75.0**	mg/l	
Phosphorus	0670033	6/4/97	6/4/97	EPA 365.3	0.0350	ND	"	
Biochemical Oxygen Demand	0570606	5/29/97	6/3/97	EPA 405.1	4.00	ND	"	
hemical Oxygen Demand	0670057	6/3/97	"	EPA 410.4	5.00	**67.0**	"	
l & Grease	0670097	6/4/97	6/5/97	EPA 413.2/418.1	0.500	**2.69**	"	
Oil & Grease (non-polar)	"	"	"	EPA 413.2/418.1	0.500	**1.87**	"	
Oil & Grease (polar)	"	"	"	EPA 413.2/418.1		**0.818**	"	
97-83			**P705423-03**				**Water**	
Total Suspended Solids	0670005	6/2/97	6/2/97	EPA 160.2	10.0	**82.0**	mg/l	
Phosphorus	0670033	6/4/97	6/1/97	EPA 365.3	0.0350	ND	"	
Biochemical Oxygen Demand	0570606	5/29/97	6/3/97	EPA 405.1	4.00	ND	"	
Chemical Oxygen Demand	0670057	6/3/97	"	EPA 410.4	5.00	**22.7**	"	
Oil & Grease	0670097	6/4/97	6/5/97	EPA 413.2/418.1	0.500	ND	"	
Oil & Grease (non-polar)	"	"	"	EPA 413.2/418.1	0.500	ND	"	
Oil & Grease (polar)	"	"	"	EPA 413.2/418.1		ND	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Anions per EPA Method 300.0
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-81			**P705423-01**				**Water**	
Fluoride	0670344	6/16/97	6/16/97	EPA 300.0	0.500	ND	mg/l	
97-82			**P705423-02**				**Water**	
Fluoride	0670344	6/16/97	6/16/97	EPA 300.0	0.500	ND	mg/l	
97-83			**P705423-03**				**Water**	
Fluoride	0670344	6/16/97	6/16/97	EPA 300.0	0.500	ND	mg/l	

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Sandra K. Wright, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Hexavalent Chromium per EPA Method 7195
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-81			**P705423-01**				**Water**	
Hexavalent Chromium	0670125	6/5/97	6/12/97	EPA 7195	0.0100	ND	mg/l	1
97-82			**P705423-02**				**Water**	
Hexavalent Chromium	0670125	6/5/97	6/12/97	EPA 7195	0.0100	ND	mg/l	1
97-83			**P705423-03**				**Water**	
Hexavalent Chromium	0670125	6/5/97	6/12/97	EPA 7195	0.0100	ND	mg/l	1

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-81			**P705423-01**				**Water**	
Total Organic Carbon	0670049	6/2/97	6/2/97	EPA 415.1	1.00	**6.42**	mg/l	
97-82			**P705423-02**				**Water**	
Total Organic Carbon	0670049	6/2/97	6/2/97	EPA 415.1	1.00	**6.37**	mg/l	
97-83			**P705423-03**				**Water**	
Total Organic Carbon	0670049	6/2/97	6/2/97	EPA 415.1	1.00	**2.37**	mg/l	

North Creek Analytical, Inc.

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0670011	**Date Prepared: 5/31/97**					**Extraction Method: EPA 200/3005**				
Blank	**0670011-BLK1**									
Arsenic	6/3/97			**ND**	mg/l	**0.00100**				
Cadmium	"			**ND**	"	**0.000100**				
Chromium	"			**ND**	"	**0.000500**				
Copper	"			**ND**	"	**0.000500**				
Lead	"			**ND**	"	**0.000500**				
Nickel	"			**ND**	"	**0.000500**				
Zinc	"			**ND**	"	**0.00500**				
LCS	**0670011-BS1**									
Arsenic	6/3/97	0.100		0.0965	mg/l	85.0-115	96.5			
Cadmium	"	0.100		0.0998	"	85.0-115	99.8			
Chromium	"	0.100		0.101	"	85.0-115	101			
Copper	"	0.100		0.105	"	85.0-115	105			
Lead	"	0.100		0.100	"	85.0-115	100			
Nickel	"	0.100		0.102	"	85.0-115	102			
Zinc	"	0.100		0.100	"	80.0-110	100			
Duplicate	**0670011-DUP1**		**P705424-01**							
Arsenic	6/3/97		0.00111	ND	mg/l			20.0		
Cadmium	"		ND	ND	"			20.0		
Chromium	"		0.00189	0.00197	"			20.0	**4.15**	2
Copper	"		0.00818	0.00829	"			20.0	**1.34**	2
Lead	"		ND	ND	"			20.0		
Nickel	"		0.00337	0.00355	"			20.0	**5.20**	2
Zinc	"		0.00590	0.00621	"			20.0	**5.12**	2
Matrix Spike	**0670011-MS1**		**P705424-01**							
Arsenic	6/3/97	0.100	0.00111	0.105	mg/l	70.0-130	**104**			
Cadmium	"	0.100	ND	0.0995	"	70.0-130	**99.5**			
Chromium	"	0.100	0.00189	0.116	"	70.0-130	**114**			
Copper	"	0.100	0.00818	0.115	"	70.0-130	**107**			
Lead	"	0.100	ND	0.0952	"	70.0-130	**95.2**			
Nickel	"	0.100	0.00337	0.110	"	70.0-130	**107**			
Zinc	"	0.100	0.00590	0.0984	"	70.0-130	**92.5**			
Matrix Spike	**0670011-MS2**		**P705411-02**							
Arsenic	6/3/97	0.100	ND	0.0965	mg/l	70.0-130	**96.5**			

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Sandra K. Wright, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike (continued)	**0670011-MS2**		**P705411-02**							
Cadmium	6/3/97	0.100	ND	0.0989	mg/l	70.0-130	**98.9**			
Chromium	"	0.100	0.00143	0.103	"	70.0-130	**102**			
Copper	"	0.100	0.00320	0.105	"	70.0-130	**102**			
Lead	"	0.100	0.000730	0.0951	"	70.0-130	**94.4**			
Nickel	"	0.100	0.00228	0.101	"	70.0-130	**98.7**			
Zinc	"	0.100	0.167	0.103	"	70.0-130	**NR**			3
Batch: 0670226	**Date Prepared: 6/11/97**					**Extraction Method: Metals**				
Blank	**0670226-BLK1**									
Mercury	6/12/97			**ND**	mg/l	**0.000200**				
LCS	**0670226-BS1**									
Mercury	6/12/97	0.00500		0.00520	mg/l	85.0-115	104			
Duplicate	**0670226-DUP1**		**P706133-01**							
Mercury	6/12/97		ND	ND	mg/l			20.0		
Matrix Spike	**0670226-MS1**		**P706133-01**							
Mercury	6/12/97	0.00500	ND	0.00570	mg/l	75.0-125	**114**			
Matrix Spike	**0670226-MS2**		**P705427-01**							
Mercury	6/12/97	0.00500	ND	0.00530	mg/l	75.0-125	**106**			

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0570606	**Date Prepared: 5/29/97**					**Extraction Method: Wet Chem**				
Blank	**0570606-BLK1**									
Biochemical Oxygen Demand	6/3/97			**ND**	mg/l	**4.00**				
LCS	**0570606-BS1**									
Biochemical Oxygen Demand	6/3/97	198		208	mg/l	75.0-125	105			
Duplicate	**0570606-DUP1**		**P705424-03**							
Biochemical Oxygen Demand	6/3/97		ND	ND	mg/l			40.0		
Batch: 0670005	**Date Prepared: 6/2/97**					**Extraction Method: Wet Chem**				
Blank	**0670005-BLK1**									
Total Suspended Solids	6/2/97			**ND**	mg/l	**10.0**				
LCS	**0670005-BS1**									
Total Suspended Solids	6/2/97	60.0		50.0	mg/l	80.0-120	83.3			
Duplicate	**0670005-DUP1**		**P705423-01**							
Total Suspended Solids	6/2/97		117	129	mg/l			20.0	**9.76**	
Batch: 0670033	**Date Prepared: 6/4/97**					**Extraction Method: Wet Chem**				
Blank	**0670033-BLK1**									
Phosphorus	6/4/97			**ND**	mg/l	**0.0350**				
LCS	**0670033-BS1**									
Phosphorus	6/4/97	0.326		0.313	mg/l	85.0-115	96.0			
Duplicate	**0670033-DUP1**		**P705443-03**							
Phosphorus	6/4/97		ND	ND	mg/l			20.0		
Matrix Spike	**0670033-MS1**		**P705443-03**							
Phosphorus	6/4/97	0.326	ND	0.114	mg/l	75.0-125	**35.0**			4
Batch: 0670057	**Date Prepared: 6/3/97**					**Extraction Method: Wet Chem**				
Blank	**0670057-BLK1**									
Chemical Oxygen Demand	6/3/97			**ND**	mg/l	**5.00**				
Blank	**0670057-BLK2**									
Chemical Oxygen Demand	6/3/97			**ND**	mg/l	**5.00**				

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Sandra K. Wright, Project Manager

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS	**0670057-BS1**									
Chemical Oxygen Demand	6/3/97	30.0		32.4	mg/l	75.0-125	108			
LCS	**0670057-BS2**									
Chemical Oxygen Demand	6/3/97	1000		931	mg/l	75.0-125	93.1			
Duplicate	**0670057-DUP1**		**P705403-01**							
Chemical Oxygen Demand	6/3/97		149	150	mg/l			20.0	**0.669**	
Duplicate	**0670057-DUP2**		**P705426-01**							
Chemical Oxygen Demand	6/3/97		1740	4110	mg/l			20.0	**81.0**	5
Batch: 0670097	**Date Prepared: 6/4/97**					**Extraction Method: TPH Freon Extraction**				
Blank	**0670097-BLK1**									
Oil & Grease	6/5/97			**ND**	mg/l	**0.500**				
Oil & Grease (non-polar)	"			**ND**	"	**0.500**				
Oil & Grease (polar)	"			**ND**	"					
LCS	**0670097-BS1**									
Oil & Grease	6/5/97	5.00		5.36	mg/l	50.0-150	107			
Oil & Grease (non-polar)	"	5.00		ND	"	50.0-150	NR			
Oil & Grease (polar)	"			5.36	"	50.0-150				
LCS Dup	**0670097-BSD1**									
Oil & Grease	6/5/97	5.00		5.48	mg/l	50.0-150	110	50.0	2.76	
Oil & Grease (non-polar)	"	5.00		ND	"	50.0-150	NR	50.0		
Oil & Grease (polar)	"			5.48	"	50.0-150		50.0		

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Anions per EPA Method 300.0/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0670344	**Date Prepared: 6/16/97**					**Extraction Method: Wet Chem**				
Blank	**0670344-BLK1**									
Fluoride	6/16/97			**ND**	mg/l	**0.500**				
LCS	**0670344-BS1**									
Fluoride	6/16/97	1.00		1.04	mg/l	85.0-115	104			
Duplicate	**0670344-DUP1**		**P705423-01**							
Fluoride	6/16/97		ND	ND	mg/l			20.0		
Matrix Spike	**0670344-MS1**		**P705423-01**							
Fluoride	6/16/97	2.00	ND	2.15	mg/l	85.0-115	**108**			
Matrix Spike Dup	**0670344-MSD1**		**P705423-01**							
Fluoride	6/16/97	2.00	ND	1.97	mg/l	85.0-115	**98.5**	20.0	**9.20**	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Hexavalent Chromium per EPA Method 7195/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0670125	**Date Prepared: 6/5/97**					**Extraction Method: Metals**				
Blank	**0670125-BLK1**									
Hexavalent Chromium	6/12/97			**ND**	mg/l	**0.0100**				
LCS	**0670125-BS1**									
Hexavalent Chromium	6/12/97	1.00		0.985	mg/l	85.0-115	98.5			
Duplicate	**0670125-DUP1**		**P705423-01**							
Hexavalent Chromium	6/12/97		ND	ND	mg/l			20.0		1
Matrix Spike	**0670125-MS1**		**P705423-01**							
Hexavalent Chromium	6/12/97	1.00	ND	0.935	mg/l	80.0-120	**93.5**			

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

Conventional Chemistry Parameters by APHA/EPA Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0670049	**Date Prepared: 6/2/97**					**Extraction Method: General Preparation**				
Blank	**0670049-BLK1**									
Total Organic Carbon	6/2/97			**ND**	mg/l	**1.00**				
LCS	**0670049-BS1**									
Total Organic Carbon	6/2/97	5.00		5.02	mg/l	95.0-111	100			
Duplicate	**0670049-DUP1**		**B705515-01**							
Total Organic Carbon	6/2/97		168	164	mg/l			15.0	**2.41**	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled:	5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received:	5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported:	6/23/97 21:54

Notes and Definitions

#	Note
1	This sample was analyzed outside the EPA recommended holding time.
2	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
3	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
4	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
5	Visual evaluation indicates the RPD is above the control limit due to a non-homogeneous sample matrix.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
[illegible]	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Sandra K. Wright, Project Manager

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ATTACHMENT A

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 5/28/97
7200 N.W. Front	Project Number:	97-81, 97-82, 97-83	Received: 5/29/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 6/23/97 21:54

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
97-81	P705423-01	Water	5/28/97
97-82	P705423-02	Water	5/28/97
97-83	P705423-03	Water	5/28/97

This report is not complete without Attachment A. Attachment A contains results for Volatile Organic Compounds by GC/MS EPA 8260a. The waters for volatile organics were analyzed for North Creek Analytical by AGRA Earth & Environmental Lab in Portland, Oregon. AGRA's data and QC report for samples 97-81(P705423-01C), 97-82 (P705423-02), and 97-83 (P705423-03) is reproduced in its entirety.

SCOEPA00026492

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 483-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # P705423

REPORT TO:	Wacker Siltronic Corporation
ATTENTION:	Thomas J. Rothschild
ADDRESS:	7200 N.W. Front Avenue Portland, Oregon 97210
PHONE:	243-2020 FAX: 417-4144
PROJECT NAME:	Storm Water Plan 04S
PROJECT NUMBER:	97-81, 97-82, 97-83
SAMPLED BY:	T.J. Rothschild

INVOICE TO:	Wacker Siltronic Corp.
ATTENTION:	Accounts Payable
ADDRESS:	7200 N.W. Front Avenue Portland, Oregon 97210
P.O. NUMBER:	VCS 745 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify: Charge

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: Cr(VI)	As	Cd	Cr	Pb	Hg	Ni	Zn	Ag	Be	Cu	Sb	Tl	Sn	TCLP Metals (1)	BOD	TSS	Phosphorus	Fluoride	Hold	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1	97-81	23may97 1400		X	X			X	X	X	X								X	X	X		⊗	W	8	
2	97-82	↓		X	X			X	X	X	X								X	X	X		⊗	W	8	
3	97-83	↓		X	X			X	X	X	X								X	X	X		⊗	W	8	
4																										
5																										
6																										
7																										
8																										
9																										
10																										

RELINQUISHED BY (Signature)	[signature]	DATE: 5/29/97	RECEIVED BY (Signature) [signature]	DATE: 5-29-97
PRINT NAME:	Thomas J. Rothschild	FIRM: Wacker TIME: 0930	PRINT NAME: Amy Spangler	FIRM: NCA TIME: 0930
RELINQUISHED BY (Signature)	[signature]	DATE: 5-29-97	RECEIVED BY (Signature) [signature]	DATE: 5/29/97
PRINT NAME:	Amy Spangler	FIRM: NCA TIME: 1015	PRINT NAME: [illegible]	FIRM: NCA TIME: 10:15

ADDITIONAL REMARKS: (1) As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, Ag, Be, Cu, Sb, Tl, Sn
2) 2 x 40ml vial

Hex Chrome added per Tom Rothschild

PAGE 1 OF 1

SCOEPA00026493

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth & Environmental, Inc.
7477 SW Tech Center Drive
Portland, Oregon
USA 97223-8025
Tel (503) 639-3400
Fax (503) 620-7892

June 13, 1997

North Creek Analytical
9405 Nimbus Avenue
Beaverton, OR 97008-7132

Attention: Ms. Sandy Wright

Dear Ms. Wright:

RE: Analytical Results For Project P705423

Attached are the results for the samples submitted on June 11, 1997 from the above referenced project. For your reference, our project number associated with these samples is OR970385.

The samples were analyzed for volatile organic compounds by GC/MSD at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

AGRA Earth & Environmental

Sean Gormley
Laboratory Manager

Project:	North Creek	Service Request No.: OR970385
Project No.:	P705423	Report Date: 6/17/97
Project Manager:	Sandy Wright	
Sample Matrix:	Water	

Case Narrative
EPA Methods 5030/8260A

Recovery of the surrogate spiking compound 4-Bromofluorobenzene (BFB) was higher than the upper control limit for the samples and associated matrix spikes from this project. Since no target analytes were detected in the samples, it is the opinion of the laboratory that the usability of the data has not been adversely affected.

All other Method 8260A QC criteria were met for analysis of these samples.

Sean Gormley
Laboratory Manager

Project: North Creek
Project No.: P705423
Project Manager: Sandy Wright
Sample Matrix: Water

Service Request No.: OR97385
Report Date: 6/12/97
Report No.: 97038501
C.O.C. No.: NA

Volatile Organic Compounds by GC/MSD
EPA Methods 5030/8260A
ug/L(ppb)

Sample Name:	P705423-01C	P705423-02B	P705423-3B	Lab Blank	**Reporting**
Lab Code:	0385-1	0385-2	0385-3	0385-MB	**Limit**
Dichlorodifluoromethane	ND	ND	ND	ND	1.0
Chloromethane	ND	ND	ND	ND	1.0
Vinyl Chloride	ND	ND	ND	ND	1.0
Bromomethane	ND	ND	ND	ND	1.0
Chloroethane	ND	ND	ND	ND	1.0
Trichlorofluoromethane	ND	ND	ND	ND	1.0
1,1-Dichloroethene	ND	ND	ND	ND	1.0
Acetone	35.7	55.2	ND	ND	20
Carbon Disulfide	ND	ND	ND	ND	1.0
Methylene Chloride	ND	ND	ND	ND	1.0
trans-1,2-Dichloroethene	ND	ND	ND	ND	1.0
1,1-Dichloroethane	ND	ND	ND	ND	1.0
2,2-Dichloropropane	ND	ND	ND	ND	1.0
cis-1,2-Dichloroethene	ND	ND	ND	ND	1.0
2-Butanone(MEK)	ND	ND	ND	ND	10
Bromochloromethane	ND	ND	ND	ND	1.0
Chloroform	ND	ND	ND	ND	1.0
1,1,1-Trichloroethane	ND	ND	ND	ND	1.0
Carbon Tetrachloride	ND	ND	ND	ND	1.0
1,1-Dichloropropene	ND	ND	ND	ND	1.0
Benzene	ND	ND	ND	ND	1.0
1,2-Dichloroethane	ND	ND	ND	ND	1.0
Trichloroethene	ND	ND	ND	ND	1.0
1,2-Dichloropropane	ND	ND	ND	ND	1.0
Dibromomethane	ND	ND	ND	ND	1.0
Bromodichloromethane	ND	ND	ND	ND	1.0
cis-1,3-Dichloropropene	ND	ND	ND	ND	1.0
4-Methyl-2-Pentanone(MIBK)	ND	ND	ND	ND	10
Toluene	ND	1.11	ND	ND	1.0
trans-1,3-Dichloropropene	ND	ND	ND	ND	1.0
1,1,2-Trichloroethane	ND	ND	ND	ND	1.0
Tetrachloroethene	ND	ND	ND	ND	1.0
2-Hexanone	ND	ND	ND	ND	10
1,3-Dichloropropane	ND	ND	ND	ND	1.0
Dibromochloromethane	ND	ND	ND	ND	1.0
1,2-Dibromoethane	ND	ND	ND	ND	1.0
Chlorobenzene	ND	ND	ND	ND	1.0
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1.0
Ethylbenzene	ND	ND	ND	ND	1.0
m,p-Xylene	ND	ND	ND	ND	1.0
o-Xylene	ND	ND	ND	ND	1.0
Styrene	ND	ND	ND	ND	1.0

ND Not Detected

Project: North Creek
Project No.: P705423
Project Manager: Sandy Wright
Sample Matrix: Water

Service Request No.: OR97385
Report Date: 6/12/97
Report No.: 97038502
C.O.C.: NA

QC Data Report
MS/MSD Summary
Volatile Organic Compounds by GC/MSD
EPA Methods 5030/8260A
ug/L(ppb)

Sample Name:	P705423-01C	Spike		Percent	Matrix	Percent	AEE % Recovery	Relative Percent
Lab Code:	0385-1	Level (ug/L)	Matrix Spike	Recovery (MS)	Spike Duplicate	Recovery (DMS)	Acceptance Criteria	Difference (RPD)
1,1 - Dichloroethene	<1.0	50.0	52.2	104	53.2	106	75% - 129%	2
Benzene	<1.0	50.0	51.8	104	52.6	105	91% - 115%	2
Trichloroethene	<1.0	50.0	46.9	94	46.9	94	86% - 110%	<1
Toluene	<1.0	50.0	51.5	103	52.1	104	86% - 116%	1
Chlorobenzene	<1.0	50.0	51.7	103	52.4	105	92% - 113%	1
Sample Date:	5/28/97	~	5/28/97	~	5/28/97	~	~	
Analysis Date:	6/11/97	~	6/11/97	~	6/11/97	~	~	
Surrogate Recovery:							**AEE Acceptance Limits**	
Dibromofluoromethane:	96%	~	99%	~	97%	~	90%-107%	
Toluene-d_8:	99%	~	100%	~	100%	~	93%-105%	
4-Bromofluorobenzene:	136%(a)	~	119%	~	123%(a)	~	92%-121%	

ND Not Detected
(a) Surrogate recovery is outside acceptance limits. Please see case narrative.

For Brian Johnson
Signature of Chemist

QA/QC Review

AGRA Earth & Environmental

Project: North Creek
Project No.: P705423
Project Manager: Sandy Wright
Sample Matrix: Water

Service Request No.: OR97385
Report Date: 6/12/97
Report No.: 97038501
C.O.C. No.: NA

Volatile Organic Compounds by GC/MSD
EPA Methods 5030/8260A
ug/L(ppb)

Sample Name:	P705423-01C	P705423-02B	P705423-3B	Lab Blank	**Reporting**
Lab Code:	0385-1	0385-2	0385-3	0385-MB	**Limit**
Bromoform	ND	ND	ND	ND	1.0
Isopropylbenzene	ND	ND	ND	ND	1.0
Bromobenzene	ND	ND	ND	ND	1.0
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1.0
1,2,3-Trichloropropane	ND	ND	ND	ND	1.0
n-Propylbenzene	ND	ND	ND	ND	1.0
2-Chlorotoluene	ND	ND	ND	ND	1.0
4-Chlorotoluene	ND	ND	ND	ND	1.0
1,3,5-Trimethylbenzene	ND	ND	ND	ND	1.0
tert-Butylbenzene	ND	ND	ND	ND	1.0
1,2,4-Trimethylbenzene	ND	ND	ND	ND	1.0
sec-Butylbenzene	ND	ND	ND	ND	1.0
1,3-Dichlorobenzene	ND	ND	ND	ND	1.0
4-Isopropyltoluene	ND	ND	ND	ND	1.0
1,4-Dichlorobenzene	ND	ND	ND	ND	1.0
1,2-Dichlorobenzene	ND	ND	ND	ND	1.0
n-Butylbenzene	ND	ND	ND	ND	1.0
.,2-Dibromo-3-Chloropropane	ND	ND	ND	ND	1.0
1,2,4-Trichlorobenzene	ND	ND	ND	ND	1.0
Hexachlorobutadiene	ND	ND	ND	ND	1.0
Naphthalene	ND	ND	ND	ND	20
1,2,3-Trichlorobenzene	ND	ND	ND	ND	20
Sample Date:	5/28/97	5/28/97	5/28/97	6/11/97	
Analysis Date:	6/11/97	6/11/97	6/11/97	6/11/97	
					AEE Acceptance Limits
Surrogate Recoveries:					
Dibromofluoromethane:	96%	99%	99%	98%	90%-107%
Toluene-d_8:	99%	101%	100%	100%	93%-105%
4-Bromofluorobenzene:	136%(a)	126%(a)	135%(a)	105%	92%-121%

ND Not Detected
(a) Surrogate recovery is outside acceptance limits. Please see case narrative.

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

NORTH CREEK ANALYTICAL

SAMPLES ORIGINATING FROM:

East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290

9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202 X

SUBCONTRACTING CHAIN OF CUSTODY REPORT

SUBCONTRACTOR: AGRA

ADDRESS:

PHONE: FAX:

NCA PROJECT NUMBER: P705423

REPORT RESULTS ATTN. TO: Sandy Wright

INVOICE IN DUPLICATE WITH CHAIN TO:

NCA BOTHELL, ATTN: ACCOUNTS PAYABLE

P.O. NUMBER:

DATE RESULTS DUE NORTH CREEK: ASAP!

NEXT BUSINESS DAY RUSH	X
2 BUSINESS DAY RUSH	
3 BUSINESS DAY RUSH	
5 BUSINESS DAY RUSH	
10 BUSINESS DAY STANDARD	

Analysis Request: 8240

NORTH CREEK SAMPLE NUMBER	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	8240	COMMENTS & PRESERVATIVES USED	SUBCONTRACTOR SAMPLE NUMBER
1. P705423-01C	5-28-97	W	1	X	Hold time expires today!	
2. P705423-02B	↓	W	1	X	"	
3. P705423-3B	↓	W	1	X	"	
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Sara McClurg DATE: 6-11-97

FIRM: NORTH CREEK ANALYTICAL Inc. TIME: 1040

RECEIVED BY: DATE:

FIRM: TIME:

RELINQUISHED BY: DATE:

FIRM: TIME:

RECEIVED BY: Cynthia Duxall DATE: 6/11/97

FIRM: AEE TIME: 1215

ADDITIONAL REMARKS:

PAGE 1 OF 1

SCOEPA00026499

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: North Sample ID#: 97-239

Date: 11/19/97 Time: 1000 Sampled by: DM

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:____ No: ✓ Foam: yes:____ No: ✓

Color: light brn & murky -

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 11 COD, mg/L: 30.9 F-, mg/L: 0.08

pH: 7.35 PO4, mg/L: 0.003 TSS, mg/L: 26.75

Ammonia (NH3), mg/L: 0.890 Hydrogen Peroxide, mg/L: Ø

OUTSIDE LAB ANALYTICAL DATA: Rcd. 29 Dec 97 JgR

Oil & Grease, mg/L: < 0.5

Total Toxic Organics, mg/L: < 0.025

Total Organic Carbon, mg/L: 11.9

Metals, mg/L:

Arsenic: 0.002 Cadmium: < 0.001 Chromium: 0.004

Copper: 0.009 Lead: 0.002 Mercury: 0.0002

Nickel: 0.005 Zinc: 0.091

Notes: Located @ Outfall.

Cr^{+6}: < 0.001 ppm

DEM 10 Oct 96
DEM 07 Oct 97 Revised

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SCOEPA00026500

WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: South) Sample ID#: 97-240

Date: 11/19/97 Time: 1040 Sampled by: ~~Gothschild~~/Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:(1) ✓ No: ___ Foam: yes: ___ No: ✓

Color: Transparent brown ~~murky~~ tan

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 8.4 COD, mg/L: 22.7 F-, mg/L: 0.12

pH: 6.92 PO4, mg/L: 0.005 TSS, mg/L: 13.5

Ammonia (NH3), mg/L: 0.357 Hydrogen Peroxide, mg/L: 1.0

OUTSIDE LAB ANALYTICAL DATA: Rcd. on 29 Dec 97. SJR

Oil & Grease, mg/L: 1.75

Total Toxic Organics, mg/L: < 0.025

Total Organic Carbon, mg/L: 9.36

Metals, mg/L:

Arsenic: 0.001 Cadmium: < 0.001 Chromium: 0.008

Copper: 0.006 Lead: 0.004 Mercury: < 0.0002

Nickel: ~~0.004~~ 0.008 Zinc: 0.133

Notes: Located @ Nox Intersection.

(1) oil sheen very slight.

Cr^{+6}: < 0.001 ppm

DEM 10 Oct 96
DEM 07 Oct 97 Revised

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WACKER SILTRONIC CORPORATION
STORM WATER RUN-OFF SAMPLE

Location: East Sample ID#: 97-241

Date: 11/19/97 Time: 1110 Sampled by: Rothschild / Munroe

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: X Foam: yes: ____ No: X

Color: transparent - brownish

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 3.4 COD, mg/L: 13.2 F-, mg/L: 0.08

pH: 6.96 PO4, mg/L: 0.002 TSS, mg/L: 5.75

Ammonia (NH3), mg/L: 0.214 Hydrogen Peroxide, mg/L: 1.0

OUTSIDE LAB ANALYTICAL DATA: Rcd 29 Dec 97. SJR

Oil & Grease, mg/L: 0.685

Total Toxic Organics, mg/L: <0.025

Total Organic Carbon, mg/L: 4.54

Metals, mg/L:

Arsenic: <0.001 Cadmium: <0.001 Chromium: 0.001

Copper: 0.004 Lead: 0.001 Mercury: <0.0002

Nickel: <0.002 Zinc: 0.167

Notes: Located in between Admin. & Process bldg.

Cr^{+6} : <0.001 ppm

DEM 10 Oct 96
DEM 07 Oct 97 Revised

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

RECEIVED DEC 2 9 1997
SDR

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Vacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
97-239	P711322-01	Water	11/19/97
97-240	P711322-02	Water	11/19/97
97-241	P711322-03	Water	11/19/97
97-245	P711322-04	Water	11/20/97

North Creek Analytical, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Mary A. Fritzmann Smith, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

SCOEPA00026503

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Total Metals per EPA 200 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-239 Storm Water - North			P711322-01				Water	
Arsenic	1270074	12/2/97	12/3/97	EPA 200.8	0.00100	**0.00250**	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00370**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.00900**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.00210**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.00470**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.0911**	"	
Mercury	1170551	11/26/97	12/2/97	EPA 245.1	0.000200	**0.000200**	"	
97-240 Storm water - South			P711322-02				Water	
Arsenic	1270074	12/2/97	12/3/97	EPA 200.8	0.00100	**0.00100**	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00760**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.00640**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.00350**	"	
Nickel	"	"	"	EPA 200.8	0.00200	**0.00770**	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.133**	"	
Mercury	1170551	11/26/97	12/2/97	EPA 245.1	0.000200	ND	"	
97-241 Storm Water - East			P711322-03				Water	
Arsenic	1270074	12/2/97	12/3/97	EPA 200.8	0.00100	ND	mg/l	
Cadmium	"	"	"	EPA 200.8	0.00100	ND	"	
Chromium	"	"	"	EPA 200.8	0.00100	**0.00120**	"	
Copper	"	"	"	EPA 200.8	0.00200	**0.00350**	"	
Lead	"	"	"	EPA 200.8	0.00100	**0.00120**	"	
Nickel	"	"	"	EPA 200.8	0.00200	ND	"	
Zinc	"	"	"	EPA 200.8	0.00500	**0.167**	"	
Mercury	1170551	11/26/97	12/2/97	EPA 245.1	0.000200	ND	"	
97-245 Feb 2 CE 20 Nov 97			P711322-04				Water	
Chromium	1270074	12/2/97	12/3/97	EPA 200.8	0.00100	**0.00270**	mg/l	

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-239			**P711322-01**				**Water**	
Acetone	1270087	12/3/97	12/3/97		25.0	**55.9**	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		2.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		2.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		10.0	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		10.0	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		5.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		10.0	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

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Vacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
'200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-239 (continued)			**P711322-01**				**Water**	
Hexachlorobutadiene	1270087	12/3/97	12/3/97		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		2.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		10.0	ND	"	
1,2,3-Trichloropropane	"	"	"		5.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		10.0	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-130*		*101*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-130*		*97.5*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-130*		*104*	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-240			**P711322-02**				**Water**	
Acetone	1270087	12/3/97	12/3/97		25.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		2.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		2.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		10.0	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		10.0	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		5.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		10.0	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-240 (continued)			**P711322-02**				**Water**	
Hexachlorobutadiene	1270087	12/3/97	12/3/97		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		2.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		10.0	ND	"	
1,2,3-Trichloropropane	"	"	"		5.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		10.0	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-130*		*111*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-130*		*95.5*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-130*		*101*	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-241			**P711322-03**				**Water**	
Acetone	1270087	12/3/97	12/3/97		25.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromobenzene	"	"	"		1.00	ND	"	
Bromochloromethane	"	"	"		2.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		2.00	ND	"	
Bromomethane	"	"	"		10.0	ND	"	
2-Butanone	"	"	"		25.0	ND	"	
n-Butylbenzene	"	"	"		1.00	ND	"	
sec-Butylbenzene	"	"	"		1.00	ND	"	
tert-Butylbenzene	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		10.0	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		10.0	ND	"	
2-Chlorotoluene	"	"	"		1.00	ND	"	
4-Chlorotoluene	"	"	"		1.00	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		5.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		1.00	ND	"	
Dibromomethane	"	"	"		1.00	ND	"	
1,2-Dichlorobenzene	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		1.00	ND	"	
1,4-Dichlorobenzene	"	"	"		1.00	ND	"	
Dichlorodifluoromethane	"	"	"		10.0	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
1,3-Dichloropropane	"	"	"		1.00	ND	"	
2,2-Dichloropropane	"	"	"		1.00	ND	"	
1,1-Dichloropropene	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-241 (continued)			**P711322-03**				**Water**	
Hexachlorobutadiene	1270087	12/3/97	12/3/97		2.00	ND	ug/l	
2-Hexanone	"	"	"		5.00	ND	"	
Isopropylbenzene	"	"	"		1.00	ND	"	
p-Isopropyltoluene	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		5.00	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
Naphthalene	"	"	"		2.00	ND	"	
n-Propylbenzene	"	"	"		1.00	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
,3-Trichlorobenzene	"	"	"		1.00	ND	"	
1,2,4-Trichlorobenzene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Trichlorofluoromethane	"	"	"		10.0	ND	"	
1,2,3-Trichloropropane	"	"	"		5.00	ND	"	
1,2,4-Trimethylbenzene	"	"	"		1.00	ND	"	
1,3,5-Trimethylbenzene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		10.0	ND	"	
o-Xylene	"	"	"		1.00	ND	"	
m,p-Xylene	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-130*		*103*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-130*		*94.0*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-130*		*104*	"	

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
97-239			**P711322-01**				**Water**	
Oil & Grease	1170473	11/21/97	11/25/97	EPA 413.2	0.500	ND	mg/l	
Total Organic Carbon	1270124	12/4/97	12/4/97	EPA 415.1	3.00	**11.9**	"	
97-240			**P711322-02**				**Water**	
Oil & Grease	1170473	11/21/97	11/25/97	EPA 413.2	0.500	**1.75**	mg/l	
Total Organic Carbon	1270124	12/4/97	12/4/97	EPA 415.1	3.00	**9.36**	"	
97-241			**P711322-03**				**Water**	
Oil & Grease	1170473	11/21/97	11/25/97	EPA 413.2	0.500	**0.685**	mg/l	
Total Organic Carbon	1270124	12/4/97	12/4/97	EPA 415.1	3.00	**4.54**	"	

NORTH CREEK ANALYTICAL
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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1170551	**Date Prepared: 11/26/97**					**Extraction Method: Metals**				
Blank	**1170551-BLK1**									
Mercury	12/2/97			**ND**	mg/l	**0.000200**				
LCS	**1170551-BS1**									
Mercury	12/2/97	0.00500		0.00500	mg/l	85.0-115	100			
Duplicate	**1170551-DUP1**		**P711327-01**							
Mercury	12/2/97		ND	ND	mg/l			20.0		
Matrix Spike	**1170551-MS1**		**P711327-01**							
Mercury	12/2/97	0.00500	ND	0.00510	mg/l	75.0-125	**102**			
Matrix Spike	**1170551-MS2**		**P711326-01**							
Mercury	12/2/97	0.00500	ND	0.00500	mg/l	75.0-125	**100**			
Batch: 1270074	**Date Prepared: 12/2/97**					**Extraction Method: EPA 200/3005**				
Blank	**1270074-BLK1**									
Arsenic	12/3/97			**ND**	mg/l	**0.00100**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Copper	"			**ND**	"	**0.00200**				
Lead	"			**ND**	"	**0.00100**				
Nickel	"			**ND**	"	**0.00200**				
Zinc	"			**ND**	"	**0.00500**				
LCS	**1270074-BS1**									
Arsenic	12/3/97	0.100		0.0980	mg/l	85.0-115	98.0			
Cadmium	"	0.100		0.0946	"	85.0-115	94.6			
Chromium	"	0.100		0.0977	"	85.0-115	97.7			
Copper	"	0.100		0.100	"	85.0-115	100			
Lead	"	0.100		0.0933	"	85.0-115	93.3			
Nickel	"	0.100		0.0982	"	85.0-115	98.2			
Zinc	"	0.100		0.0975	"	80.0-110	97.5			
Duplicate	**1270074-DUP1**		**P712010-01**							
Arsenic	12/3/97		0.00120	ND	mg/l			20.0		

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Wacker Siltronics Corporation	Project:	Storm Water	Sampled: 11/19/97 to 11/20/97
7200 N.W. Front	Project Number:	97-239,97-240,97-241,97-245	Received: 11/20/97
Portland, OR 97210	Project Manager:	Thomas Rothschild	Reported: 12/12/97 13:15

Total Metals per EPA 200 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Duplicate (continued)	**1270074-DUP1**		**P712010-01**							
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Copper	"		0.00530	0.00490	"			20.0	**7.84**	
Lead	"		0.00800	0.00740	"			20.0	**7.79**	
Nickel	"		0.0117	0.0111	"			20.0	**5.26**	
Zinc	"		0.0780	0.0757	"			20.0	**2.99**	
Matrix Spike	**1270074-MS1**		**P712010-01**							
Arsenic	12/3/97	0.100	0.00120	0.0988	mg/l	70.0-130	**97.6**			
Cadmium	"	0.100	ND	0.0895	"	70.0-130	**89.5**			
Chromium	"	0.100	ND	0.0996	"	70.0-130	**99.6**			
Copper	"	0.100	0.00530	0.0998	"	70.0-130	**94.5**			
ad	"	0.100	0.00800	0.0940	"	70.0-130	**86.0**			
ickel	"	0.100	0.0117	0.106	"	70.0-130	**94.3**			
Zinc	"	0.100	0.0780	0.160	"	70.0-130	**82.0**			
Matrix Spike	**1270074-MS2**		**P711326-01**							
Arsenic	12/3/97	0.100	0.00130	0.103	mg/l	70.0-130	**102**			
Cadmium	"	0.100	ND	0.0914	"	70.0-130	**91.4**			
Chromium	"	0.100	ND	0.100	"	70.0-130	**100**			
Copper	"	0.100	0.00560	0.102	"	70.0-130	**96.4**			
Lead	"	0.100	0.0245	0.111	"	70.0-130	**86.5**			
Nickel	"	0.100	0.0128	0.108	"	70.0-130	**95.2**			
Zinc	"	0.100	0.114	0.198	"	70.0-130	**84.0**			

SCOEPA00026513

lyst: DMV

e using.

451.

(7223)

1416)

active,

ow Lot # M7080 .

FAB-2: _____ mg/L

0.003 mg/L

)50 ml of 500 mg/L
hould increase the
g/L.

-3 mg/L 97-239-N

_____ 0.983

_____ 98%

point.

7 Nov 91
6 Oct 96 Revised

AL
ices

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Project:	Storm Water	Sampled:	11/19/97 to 11/20/97
ject Number:	97-239,97-240,97-241,97-245	Received:	11/20/97
ect Manager:	Thomas Rothschild	Reported:	12/12/97 13:15

ic Compounds per EPA Method 8260A/Quality Control
North Creek Analytical - Portland

Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
ared: 12/3/97			**Extraction Method: GC/MS Volatiles**					
:LK1								
		ND	ug/l	**25.0**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**2.00**				
		ND	"	**1.00**				
		ND	"	**2.00**				
		ND	"	**10.0**				
		ND	"	**25.0**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**10.0**				
		ND	"	**1.00**				
		ND	"	**10.0**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**5.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**10.0**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				
		ND	"	**1.00**				

Refer to end of report for text of notes and definitions.

SCOEPA00026514

ENCHSHEET

PHATES (PO4)

Analyst: DM

re with 1:1 HCl before using.

Erlenmeyer Flask.

lfate Pillow, Hach #2451.

Swirl. (Hach Lot # U7223)

ites.

e

Swirl. (Hach Lot # U7146)

l 8048, Phosphorous Reactive,
, HACH Program 3025.

e Reagent Powder Pillow Lot # M7080.

3-1:_____mg/L CE FAB-2:_____mg/L

_____mg/L

Sample 97-239-N : 0.003 mg/L

e each sample with 0.050 ml of 500 mg/L
ate Standard. This should increase the
centration by 1.000 mg/L.

ion: CE mg/L MV-3 mg/L 97-239-N

_____ _____ 0.983

_____ _____ 98%

sample - north point.

TJR 27 Nov 91
DEM 16 Oct 96 Revised

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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

-245

Sampled: 11/19/97 to 11/20/97
Received: 11/20/97
Reported: 12/12/97 13:15

60A/Quality Control
nd:

Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
ug/l	**1.00**				
"	**2.00**				
"	**5.00**				
"	**1.00**				
"	**1.00**				
"	**5.00**				
"	**5.00**				
"	**2.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**1.00**				
"	**10.0**				
"	**5.00**				
"	**1.00**				
"	**1.00**				
"	**10.0**				
"	**1.00**				
"	**1.00**				
"	*75.0-130*	*128*			
"	*75.0-130*	*103*			
"	*75.0-130*	*96.0*			
ug/l	76.0-127	106			
"	75.0-130	112			
"	61.0-145	79.5			
"	76.0-125	108			
"	71.0-120	91.5			
"	*75.0-130*	*131*			*1*
"	*75.0-130*	*98.5*			

*Refer to end of report for text of notes and definitions.

011-9508
06-4776
-7132

SCOEPA00026515

ENCHSHEET

PHATES (PO4)

Analyst: DMV

re with 1:1 HCl before using.

Erlenmeyer Flask.

lfate Pillow, Hach #2451.

Swirl. (Hach Lot # U7223)

tes.

e

Swirl. (Hach Lot # U7146)

l 8048, Phosphorous Reactive,
, HACH Program 3025.

e Reagent Powder Pillow Lot # M7080.

3-1:_____mg/L CE FAB-2:_____mg/L

_____mg/L

Sample 97-239-N : 0.003 mg/L

e each sample with 0.050 ml of 500 mg/L
ıate Standard. This should increase the
entration by 1.000 mg/L.

on: CE mg/L MV-3 mg/L 97-239-N

_____ _____ 0.983

_____ _____ 98%

mple - north point.

TJR 27 Nov 91
DEM 16 Oct 96 Revised

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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

-245

Sampled: 11/19/97 to 11/20/97
Received: 11/20/97
Reported: 12/12/97 13:15

60A/Quality Control
nd

Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
ug/l	*75.0-130*	*96.5*			
ug/l	76.0-127	113	25.0	6.39	
"	75.0-130	119	25.0	6.06	
"	61.0-145	81.5	25.0	2.48	
"	76.0-125	112	25.0	3.64	
"	71.0-120	96.5	25.0	5.32	
"	*75.0-130*	*115*			
"	*75.0-130*	*44.9*			*2*
"	*75.0-130*	*97.5*			

*Refer to end of report for text of notes and definitions.

SCOEPA00026516

ENCHSHEET

PHATES (PO4)

Analyst: DM

ire with 1:1 HCl before using.

Erlenmeyer Flask.

ılfate Pillow, Hach #2451.

Swirl. (Hach Lot # U7223)

ıtes.

:e

Swirl. (Hach Lot # U7146)

ł 8048, Phosphorous Reactive,
., HACH Program 3025.

:e Reagent Powder Pillow Lot # M7080.

3-1:_____mg/L CE FAB-2:_____mg/L

_____mg/L

Sample 97-239-N : 0.003 mg/L

e each sample with 0.050 ml of 500 mg/L
ıate Standard. This should increase the
centration by 1.000 mg/L.

ion: CE mg/L MV-3 mg/L 97-239-N

_____ _____ 0.983

_____ _____ 98%

simple - north point.

TJR 27 Nov 91
DEM 16 Oct 96 Revised

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

7-245

Sampled: 11/19/97 to 11/20/97
Received: 11/20/97
Reported: 12/12/97 13:15

Methods/Quality Control
nd

Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Extraction Method: TPH Freon Extraction					
mg/l	**0.500**				
mg/l	50.0-150	122			
mg/l	50.0-150	126	50.0	3.23	
Extraction Method: Wet Chem					
mg/l	**3.00**				
mg/l	85.0-115	92.0			
mg/l			20.0		

Refer to end of report for text of notes and definitions.

011-9508
06-4776
-7132

SCOEPA00026517

;ENCHSHEET

;PHATES (PO4)

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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Analyst: DM

ıre with 1:1 HCl before using.

Erlenmeyer Flask.

ılfate Pillow, Hach #2451.

. Swirl. (Hach Lot # U7223)

ıtes.

:e

Swirl. (Hach Lot # U7146)

ł 8048, Phosphorous Reactive,
ı, HACH Program 3025.

:e Reagent Powder Pillow Lot # M7080.

3-1:_____mg/L CE FAB-2:_____mg/L

_____mg/L

Sample 97-239-N : 0.003 mg/L

e each sample with 0.050 ml of 500 mg/L
ıate Standard. This should increase the
centration by 1.000 mg/L.

ion:	CE mg/L	MV-3 mg/L	97-239-N
			0.983
			98%

ample - north point.

TJR 27 Nov 91
DEM 16 Oct 96 Revised

-245

Sampled: 11/19/97 to 11/20/97
Received: 11/20/97
Reported: 12/12/97 13:15

es in sample are in control. Data quality not affected.

011-9508
206-4776
3-7132

SCOEPA00026518

BENCHSHEET

SPHATES (PO4)

Analyst: [signature]

are with 1:1 HCl before using.

Erlenmeyer Flask.

ulfate Pillow, Hach #2451.

. Swirl. (Hach Lot # U7223)

utes.

re

Swirl. (Hach Lot # U7146)

d 8048, Phosphorous Reactive,
L, HACH Program 3025.

te Reagent Powder Pillow Lot # M7080.

B-1:_____mg/L CE FAB-2:_____mg/L

_____mg/L

Sample 97-239-N : 0.003 mg/L

e each sample with 0.050 ml of 500 mg/L
hate Standard. This should increase the
centration by 1.000 mg/L.

ion:	CE mg/L	MV-3 mg/L	97-239-N
			0.983
			98%

sample - north point.

TJR 27 Nov 91
DEM 16 Oct 96 Revised

7.			
8.			
9.			
10.			
RELINQUISHED BY (Signature): [signature]	DATE: 11/20/97	RECEIVED BY (Signature): [signature]	DATE: 11-20-97
PRINT NAME: Dianne Mullan	FIRM: Wacker	TIME: 0925	PRINT NAME: Carry Spangler	FIRM: NCA	TIME: 0925
RELINQUISHED BY (Signature): [signature]	DATE: 11-20-97	RECEIVED BY (Signature): [signature]	DATE: 11-20-97
PRINT NAME: Carry Spangler	FIRM: NCA	TIME: 1100	PRINT NAME: Julie Reynolds	FIRM: NCA	TIME: 1120

ADDITIONAL REMARKS: (1) Metals: As, Cu, Cd, Cr, Pb, Hg, Ni, Zn.
(2) 2 x 40 ml vials (3) Request detect. limit of 0.001 ppm for Cr(T)

PAGE 1 OF 1

COC Rev 8, 1/96

SCOEPA00026519

NORTH CREEK ANALYTICAL

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RECEIVED NOV 06 1995

RECEIVED NOV 07 1995
TJR

October 23, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas J. Rothschild

RE: JOB # 95-56N & 95-56S
P.O.# 46998
PROJECT - STORM WATER SAMPLING

Enclosed are test results for your samples received in this lab on Sep. 27, 1995. For your reference, these analyses have been assigned our NCA # P509389.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Cindy Hetrick

Cindy Hetrick
Project Manager

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Total Metals per EPA 200 series
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Sampled: 09/26/95
Received: 09/27/95

Client ID	Lab ID	Analyte	Result	MRL	Date Prepared	Date Analyzed
95-56N	P509389-1	Arsenic	ND	0.0020	10/03/95	10/16/95
		Cadmium	ND	0.0050		
		Chromium	0.0063	0.0050		
		Copper	0.024	0.0050		
		Lead	0.0040	0.0020		
		Mercury	ND	0.00020		
		Nickel	ND	0.015		
		Zinc	0.22	0.010		
95-56S	P509389-2	Arsenic	ND	0.0020	10/03/95	10/16/95
		Cadmium	ND	0.0050		
		Chromium	0.0076	0.0050		
		Copper	0.036	0.0050		
		Lead	0.016	0.0020		
		Mercury	ND	0.00020		
		Nickel	ND	0.015		
		Zinc	0.76	0.010		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026521

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Total Organic Carbon per EPA 415.1
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Sampled: 09/26/95
Received: 09/27/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-56N	P509389-1	TOC	20	3.0	10/02/95	10/02/95
95-56S	P509389-2	TOC	21	3.0	10/02/95	10/02/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026522

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Oil & Grease per EPA 413.2

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Sampled: 09/26/95
Received: 09/27/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-56N	P509389-1	Oil & Grease	1.0	0.50	10/03/95	10/04/95
95-56S	P509389-2	Oil & Grease	2.0	0.50	10/03/95	10/04/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026523

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Received: 09/27/95
Sampled: 09/26/95
Prepared: 10/05/95
Analyzed: 10/05/95

Client ID	Lab ID	Analyte	Result	MRL
95-56N	P509389-1	Acetone	ND	25
		Acrolein	ND	200
		Acrylonitrile	ND	10
		Benzene	ND	2.0
		Bromodichloromethane	ND	2.0
		Bromoform	ND	2.0
		Bromomethane	ND	10
		2-Butanone	ND	25
		Carbon Disulfide	ND	2.0
		Carbon Tetrachloride	ND	2.0
		Chlorobenzene	ND	2.0
		Chloroethane	ND	10
		Chloroform	ND	2.0
		Chloromethane	ND	10
		Dibromochloromethane	ND	2.0
		Dibromomethane	ND	2.0
		1,4-Dichloro-2-butene	ND	10
		1,2-Dichlorobenzene	ND	2.0
		1,3-Dichlorobenzene	ND	2.0
		1,4-Dichlorobenzene	ND	2.0
		Dichlorodifluoromethane	ND	5.0
		1,1-Dichloroethane	ND	2.0
		1,2-Dichloroethane	ND	2.0
		1,1-Dichloroethene	ND	2.0
		cis-1,2-Dichloroethene	ND	2.0
		trans1,2Dichloroethene	ND	2.0
		1,2-Dichloropropane	ND	2.0
		cis-1,3-Dichloropropene	ND	2.0
		trans1,3Dichloropropene	ND	2.0
		Ethyl Methacrylate	ND	2.0
		Ethylbenzene	ND	2.0
		2-Hexanone	ND	5.0
		Iodomethane	ND	2.0
		4-Methyl-2-pentanone	ND	5.0
		Methylene Chloride	ND	5.0
		Styrene	ND	2.0
		1,1,2,2-Tetrachloroethane	ND	2.0
		Tetrachloroethene	ND	2.0
		Toluene	ND	2.0
		1,1,1-Trichloroethane	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026524

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Received: 09/27/95
Sampled: 09/26/95
Prepared: 10/05/95
Analyzed: 10/05/95

Client ID	Lab ID	Analyte	Result	MRL
95-56N (continued)	P509389-1			
		1,1,2-Trichloroethane	ND	2.0
		Trichloroethene	ND	2.0
		Trichlorofluoromethane	ND	2.0
		1,2,3-Trichloropropane	ND	2.0
		Vinyl Acetate	ND	5.0
		Vinyl Chloride	ND	5.0
		Xylenes (total)	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026525

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Received: 09/27/95
Sampled: 09/26/95
Prepared: 10/05/95
Analyzed: 10/05/95

Client ID	Lab ID	Analyte	Result	MRL
95-56S	P509389-2	Acetone	ND	25
		Acrolein	ND	200
		Acrylonitrile	ND	10
		Benzene	ND	2.0
		Bromodichloromethane	ND	2.0
		Bromoform	ND	2.0
		Bromomethane	ND	10
		2-Butanone	ND	25
		Carbon Disulfide	ND	2.0
		Carbon Tetrachloride	ND	2.0
		Chlorobenzene	ND	2.0
		Chloroethane	ND	10
		Chloroform	ND	2.0
		Chloromethane	ND	10
		Dibromochloromethane	ND	2.0
		Dibromomethane	ND	2.0
		1,4-Dichloro-2-butene	ND	10
		1,2-Dichlorobenzene	ND	2.0
		1,3-Dichlorobenzene	ND	2.0
		1,4-Dichlorobenzene	ND	2.0
		Dichlorodifluoromethane	ND	5.0
		1,1-Dichloroethane	ND	2.0
		1,2-Dichloroethane	ND	2.0
		1,1-Dichloroethene	ND	2.0
		cis-1,2-Dichloroethene	ND	2.0
		trans1,2Dichloroethene	ND	2.0
		1,2-Dichloropropane	ND	2.0
		cis-1,3-Dichloropropene	ND	2.0
		trans1,3Dichloropropene	ND	2.0
		Ethyl Methacrylate	ND	2.0
		Ethylbenzene	ND	2.0
		2-Hexanone	ND	5.0
		Iodomethane	ND	2.0
		4-Methyl-2-pentanone	ND	5.0
		Methylene Chloride	ND	5.0
		Styrene	ND	2.0
		1,1,2,2-Tetrachloroethane	ND	2.0
		Tetrachloroethene	ND	2.0
		Toluene	ND	2.0
		1,1,1-Trichloroethane	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026526

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Matrix: water
Received: 09/27/95
Sampled: 09/26/95
Prepared: 10/05/95
Analyzed: 10/05/95

Client ID	Lab ID	Analyte	Result	MRL
95-56S (continued)	P509389-2			
		1,1,2-Trichloroethane	ND	2.0
		Trichloroethene	ND	2.0
		Trichlorofluoromethane	ND	2.0
		1,2,3-Trichloropropane	ND	2.0
		Vinyl Acetate	ND	5.0
		Vinyl Chloride	ND	5.0
		Xylenes (total)	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026527

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Number: P509389
Received: 09/27/1995

Sample Name	Analyte	Result	Control Limits
Volatile Organic Compounds per EPA 8240			
95-56N	4-Bromofluorobenzene	95	86-115
	1,2-Dichloroethane-d4	84	76-114
	Toluene-d8	96	88-110
95-56S	4-Bromofluorobenzene	95	86-115
	1,2-Dichloroethane-d4	84	76-114
	Toluene-d8	97	88-110

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026528

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic Corporation
ADDRESS: 7200 N.W. Front Avenue
Portland, Oregon 97210
PHONE: 243-2020 FAX: 241-7599

REPORT TO: Thomas J. Rothschild
BILLING TO: Wacker Siltronic
P.O. NUMBER: 46998
NCA QUOTE #:

PROJECT NAME: Storm Water Sampling
PROJECT NUMBER: 95-56N 95-56S
SAMPLED BY: Chip Bloemer/Thomas J. Rothschild

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

* *Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TOC	Metals(d)	EPA 8240	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-56N	1600 26Sep95	W	4	X	X	X	TOC Preserved with H_2SO_4	PS09389-1
2.								
3. 95-56S	1600 26 Sep 95	W	4	X	X	X	metals Preserved with HNO_3	-2
4.								
5.							EPA 8240 Preserved with HCl	
6.								
7.								16.5
8.								
9.								
10.								

RELINQUISHED BY: Thomas J. Rothschild	DATE: 27Sep95	RECEIVED BY: Bob Fowler	DATE: 9/27/95
PRINT NAME: Thomas J. Rothschild FIRM: Wacker	TIME: 1140	PRINT NAME:	FIRM: NCA TIME: 1140
RELINQUISHED BY: Bob Fowler	DATE:	RECEIVED BY:	DATE: 9.27.95
PRINT NAME: FIRM:	TIME:	PRINT NAME: Karin Stanley	FIRM: NCA TIME: 1440

ADDITIONAL REMARKS: (1) As, Cd, Cr, Cu, Pb, Hg, Ni, Zn

PAGE OF

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October 23, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas J. Rothschild

Re: Quality Control Data
JOB # 95-56N & 95-56S
P.O.# 46998
PROJECT - STORM WATER SAMPLING

NCA project number P509389.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Cindy Hetrick

Cindy Hetrick
Project Manager

SCOEPA00026531

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # QW95175a
Results In mg/L (ppm)

Compound	Result	MRL
Cadmium	ND	0.0050
Chromium	ND	0.0050
Copper	ND	0.0050
Nickel	ND	0.015
Zinc	ND	0.010
Date Prepared	10/03/95	
Date Analyzed	10/16/95	

DUPLICATE
Batch # QW95175a **Duplicate ID P510008-1b**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Cadmium	ND	ND	0	20
Chromium	0.020	0.018	11	20
Copper	2.1	2.1	0	20
Nickel	0.26	0.26	0	20
Zinc	0.96	0.97	1.0	20

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

MATRIX SPIKE
Batch # QW95175a
Results In mg/L (ppm)

Spike ID P510008-1b

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Cadmium	0.10	ND	0.10	100	75-125
Chromium	0.10	0.020	0.11	90	75-125
Copper	0.10	2.1	2.2	100	75-125
Nickel	0.10	0.26	0.37	110	75-125
Zinc (u)	0.10	0.96	1.0	–	75-125

(u) Unable to determine spike recovery due to the high concentration of analyte in the sample.

LABORATORY CONTROL SAMPLE
Batch # QW95175a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Cadmium	0.10	0.10	100	75-129
Chromium	0.10	0.095	95	83-112
Copper	0.10	0.11	110	86-115
Nickel	0.10	0.11	110	85-118
Zinc	0.10	0.10	100	85-117

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # QW95175z
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.0020
Lead	ND	0.0020
Date Prepared	10/03/95	
Date Analyzed	10/12/95	

DUPLICATE
Batch # QW95175z
Duplicate ID P510008-1b
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Arsenic	0.022	0.022	0	20
Lead	0.066	0.065	1.5	20

MATRIX SPIKE
Batch # QW95175z
Spike ID P510008-1b
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	0.10	0.022	0.12	98	75-125
Lead	0.10	0.066	0.17	104	75-125

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

LABORATORY CONTROL SAMPLE
Batch # QW95175z
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	0.10	0.11	110	80-110
Lead	0.10	0.12	120	81-140

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # ZW95060a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00020
Date Prepared	10/04/95	
Date Analyzed	10/04/95	

DUPLICATE
Batch # ZW95060a
Duplicate ID P509369-1
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Mercury	ND	ND	0	20

MATRIX SPIKE
Batch # ZW95060a
Spike ID P509395-1
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.0050	ND	0.0041	82	75-125

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

LABORATORY CONTROL SAMPLE
Batch # ZW95060a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0046	92	77-106

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BATCH QUALITY CONTROL RESULTS
Total Organic Carbon per EPA 415.1

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # IW95072a
Results In mg/L (ppm)

Compound	Result	MRL
TOC	ND	3.0
Date Prepared	10/02/95	
Date Analyzed	10/02/95	

DUPLICATE
Batch # IW95072a **Duplicate ID P509381-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
TOC	ND	ND	0	20

LABORATORY CONTROL SAMPLE
Batch # IW95072a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
TOC	10	9.0	90	90-114

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BATCH QUALITY CONTROL RESULTS
Oil & Grease per EPA 413.2

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # FH95056b
Results In mg/L (ppm)

Compound	Result	MRL
Oil & Grease	ND	0.50
Date Prepared	10/03/95	
Date Analyzed	10/04/95	

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE
Batch # FH95056a
Results In mg/L (ppm)

Compound	True	Found	% Rec
TPH	5.0	5.3	106

Compound	Dup True	Dup Found	Dup % Rec	RPD	QC Limit RPD	QC Limit % Rec
TPH	5.0	5.3	106	0	50	50-150

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

METHOD BLANK
Batch # VW95029d
Results In ug/L (ppb)

Compound	Result	MRL
Acetone	ND	25
Acrolein	ND	200
Acrylonitrile	ND	10
Benzene	ND	2.0
Bromodichloromethane	ND	2.0
Bromoform	ND	2.0
Bromomethane	ND	10
2-Butanone	ND	25
Carbon Disulfide	ND	2.0
Carbon Tetrachloride	ND	2.0
Chlorobenzene	ND	2.0
Chloroethane	ND	10
Chloroform	ND	2.0
Chloromethane	ND	10
Dibromochloromethane	ND	2.0
Dibromomethane	ND	2.0
1,4-Dichloro-2-butene	ND	10
1,2-Dichlorobenzene	ND	2.0
1,3-Dichlorobenzene	ND	2.0
1,4-Dichlorobenzene	ND	2.0
Dichlorodifluoromethane	ND	5.0
1,1-Dichloroethane	ND	2.0
1,2-Dichloroethane	ND	2.0
1,1-Dichloroethene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0
trans1,2Dichloroethene	ND	2.0
1,2-Dichloropropane	ND	2.0
cis-1,3-Dichloropropene	ND	2.0
trans1,3Dichloropropene	ND	2.0
Ethyl Methacrylate	ND	2.0
Ethylbenzene	ND	2.0
2-Hexanone	ND	5.0
Iodomethane	ND	2.0
4-Methyl-2-pentanone	ND	5.0
Methylene Chloride	ND	5.0
Styrene	ND	2.0
1,1,2,2-Tetrachloroethane	ND	2.0
Tetrachloroethene	ND	2.0
Toluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0
1,1,2-Trichloroethane	ND	2.0
Trichloroethene	ND	2.0
Trichlorofluoromethane	ND	2.0
1,2,3-Trichloropropane	ND	2.0
Vinyl Acetate	ND	5.0

SCOEPA00026540

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

Vinyl Chloride	ND	5.0
Xylenes (total)	ND	2.0
Date Prepared	10/05/95	
Date Analyzed	10/05/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	95	86-115
1,2-Dichloroethane-d4	90	76-114
Toluene-d8	97	88-110

SCOEPA00026541

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VW95029a **Spike ID P509310-1d**
Results In ug/L (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	20	100
Chlorobenzene	20	ND	18	90
1,1-Dichloroethene	20	ND	21	105
Toluene	20	ND	20	100
Trichloroethene	20	ND	19	95

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	20	100	0	11	76-127
Chlorobenzene	20	18	90	0	13	75-130
1,1-Dichloroethene	20	21	105	0	14	61-145
Toluene	20	20	100	0	13	76-125
Trichloroethene	20	19	95	0	14	71-120

SCOEPA00026542

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER SAMPLING

NCA Project #: P509389
Received: 09/27/95

LABORATORY CONTROL SAMPLE
Batch # VW95029d
Results In ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	20	100	76-127
Chlorobenzene	20	19	95	75-130
1,1-Dichloroethene	20	22	110	61-145
Toluene	20	20	100	76-125
Trichloroethene	20	18	90	71-120

SCOEPA00026543

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INVOICE FOR ANALYTICAL SERVICES

COPY

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Thomas J. Rothschild

Project: STORM WATER SAMPLING
#95-56N & 95-56S

Invoice Number: 25100216

Invoice Date: 10/30/95

PO# 46998

Water, Received 9/27/95

NCA Project #:P509389

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
2	Oil & Grease (I.R.)	5 Day	50.00	100.00
2	Total Metals (8)	10 Day	151.00	302.00
2	T.O.C., Water	10 Day	40.00	80.00
2	8240 VOC's (W)	10 Day	195.00	390.00

Invoice Total $ 872.00

****
* *
* Remit To: North Creek Analytical, Inc. *
* 18939 - 120th Ave. NE #101 *
* Bothell, WA 98011-9508 *
* *
****

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 9-27-95 Oven Temp: 104 C Analyst: DM

Date In: 9-27-95 Time In/Out: 1045 / 1305

Tin #	Sample	Vol, ml	Gross Wt, g	Tare Wt, g	TSS, mg/L
1	Blank	-	0.0890	0.0890	—
				AVG=	
2	95-56-N	200	0.0920	0.0906	7
3	95-56-N	200	0.0901	0.0882	4.5
				AVG=	5.7
4	95-56-S	200	0.0956	0.0888	34.0
5	95-56-S	200	0.0988	0.0907	40.5
				AVG=	37.2
				AVG=	

Notes: [illegible] 6.[illegible] 95-56-S : pH: 6.98

Storm Water Run off North Well

Storm Water Run off South Manhole

Calc[illegible] (Gross Wt, mg - Tar[illegible]

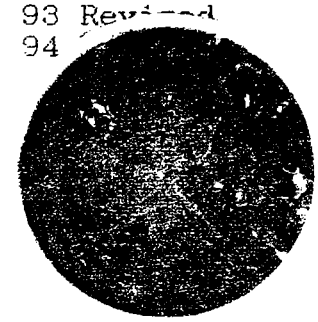
Volume of Sample

1600 26Sep95 3JR

1600 26Sep95 3JR

Refer[illegible]ds for the Examinati[illegible] of Wa[illegible] and Wastewater, 1992, 18th Edition, Section 2540 [illegible] page 2-56.

TJR
TJR [illegible]
DES 11 Aug 93 Revised
DEM 13 Nov 94



SCOEPA00026545

Storm Water Runoff

26 Sep 95 at 1600

#95-56 N : Well adjacent to outfall shed. (~1620)

pH: 6.81

Oil Sheen: None

Foam : None

Color : slight brown tint

#95-56S Manhole at T-intersection near NOX (~1635)

pH: 6.98

Oil Sheen: None

Foam: None

Color: murky, light brown

D.M./JJR

SCOEPA00026546

BENCHSHEET

Chemical Oxygen Demand (COD)

Date: 9-27-95 Sample Date: 9-27-95 Analyst: JM

COD Reactor Temperature: 150 C

Time In / Out: 1000 / 1200 (2 Hour Digestion)

1. DR/3000 Procedure Code 0.9, stored program 45.

2. Zero the DR/3000 with an RODI H2O blank.

3. Check the 60mg/L standard: 61 mg/L (Range: 58 - 62 mg/L)

4. ~~CE~~ 9556-N (composite): 39 mg/L.

5. ~~CWW~~ 95-565 (composite): Direct DR/3000 reading: 51 mg/L

(Dilution: ____ ml in ____ ml RODI H2O)

X ____ (Dilution Factor) = ____mg/L

Comments: _____

_____

_____

TJR 31 Dec 91
TJR 19 Aug 94 Revised

SCOEPA00026547

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 9-27-95 Sample Date: 9-27-95 Analyst: DH

Slope: -55.3 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: U5107 Date Opened: 6-8-95

10.0 mg/L: Lot #: U5058 Date Opened: 6-8-95

Data:

Sample	Fluoride, mg/L
CE (composite)	
OWW (composite)	
95-56 N	0.351
95-56 S	0.494

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.

Manufacturer: Ricca
Lot Number: F249

	~~CE~~ North	~~OWW~~ South
After Spike Concentration:	2.28 mg/L	2.41 mg/L
% Recovery:	96.5 %	95.8 %

Comments: _____

References:

1. Standard Methods For The Examination of Water And Wastewater, 1992, 18th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.

TJR 6 Apr 87
TJR 31 May 95 Revised

SCOEPA00026548

BENCHSHEET

PHOSPHATES (PO4)

Sample Date: 9-27-95 Analyst: AM

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.

2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # 2457)

3. Add 2 ml H2SO4, 5.25 N. Swirl. (Hach Lot # 45170)

4. Gently boil for 30 minutes.

5. Cool to room temperature

6. Add 2 ml NaOH, 5.0 N. Swirl. (Hach Lot # 45170)

7. Use Hach DR/3000 Procedure Code P.4, Phosphorous Reactive, Low Range: 0-2.000 mg/L, stored program 51.

8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # 2125 .

9. DR/3000 reading: ~~CE~~ 95-56-N 0.308 mg/L ~~MV-3~~ 95-56-S 0.695 mg/L

Other Sample _____: _____ mg/L

10. Quality Control: Spike each sample with ~~0.025~~ 0.050 ml of ~~1000~~ 500 mg/L Phosphate Standard. This should increase the concentration by 1.000 mg/L.

	~~CE~~ 95-56-N mg/L	~~MV-3~~ 95-56-S mg/L	
After Spike Concentration:	1.328	0.750	_____
% Recovery	102	105.5	_____

Notes: _____

_____

_____

TJR 27 Nov 91
TJR 19 Aug 94 Revised

SCOEPA00026549

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Storm Water 9556-N, S

Sample Date: 9-27-95 Incubator: 20.0 C Analyst: DM 10-2-95

Date/Time In: 9-27-95 / 1455 Date/Time Out: ~~10-2-95~~ / 1410

		BOTTLE #	VOL., ml	DOI, mg/L	DOF mg/L	BOD, mg/L
95-56-N	N	8	250	8.21	1.68	7.836
95-56-N	N	11	200	8.16	2.83	7.995
95-56-N	N	12	150	8.15	3.70	8.9
___	N			9556-N Avg:		8.24
___	N					
95-56-S	N	14	250	8.04	2.1	
95-56-S	N	17	200	8.04	2.11	8.895
9556-S	N	18	150	8.05	3.93	8.24
___	N				95-56-S Avg:	8.57
___	N					

Average BOD, mg/L: _____

COMMENTS: _____

CALCULATION: BOD, mg/L = $\frac{\text{(DOI, mg/L - DOF, mg/L) X 300}}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; _____C

TJR 3 Mar 94

SCOEPA00026550

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RECEIVED JUL 2 1 1995

JJR

July 11, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas Rothschild

RE: JOB # 95-11, 95-12
P.O.# 46998
PROJECT - STORM WATER RUNOFF

Enclosed are test results for your samples received in this lab on Jun. 14, 1995. For your reference, these analyses have been assigned our NCA # P507020.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Cindy Hetrick

Cindy Hetrick
Project Manager

NORTH CREEK ANALYTICAL

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Oil & Grease per EPA 413.2
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P507020
Matrix: water
Sampled: 06/13/95
Received: 06/14/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-11 *[1]	P507020-1	Oil & Grease	1.3	0.50	07/09/95	07/11/95
95-12 *[1]	P507020-2	Oil & Grease	2.8	0.50	07/09/95	07/11/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026552

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COMMENTS

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P507020

1. Samples were extracted outside of hold time.

SCOEPA00026553

NORTH CREEK ANALYTICAL

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July 11, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas Rothschild

Re: Quality Control Data
JOB # 95-11, 95-12
P.O.# 46998
PROJECT - STORM WATER RUNOFF

NCA project number P507020.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Cindy Hetrick

Cindy Hetrick
Project Manager

SCOEPA00026555

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BATCH QUALITY CONTROL RESULTS
Oil & Grease per EPA 413.2

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P507020
Received: 06/14/95

METHOD BLANK
Batch # FH95039c
Results In mg/L (ppm)

Compound	Result	MRL
Oil & Grease	ND	0.50
Date Prepared	07/09/95	
Date Analyzed	07/10/95	

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE
Batch # FH95039a
Results In mg/L (ppm)

Compound	True	Found	% Rec
TPH	5.0	5.7	114

Compound	Dup True	Dup Found	Dup % Rec	RPD	QC Limit RPD	QC Limit % Rec
TPH	5.0	5.9	118	3.4	50	50-150

SCOEPA00026556

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic Corporation
ADDRESS: 7200 N.W. Front Avenue
Portland, Oregon 97210
PHONE: 243-2020 FAX: 241-7551
PROJECT NAME: Storm Water Runoff
PROJECT NUMBER: 95-11 ; 95-12
SAMPLED BY: Thomas J. Rothschild/Chip Bloomer

REPORT TO: Thomas J. Rothschild
BILLING TO: Wacker Siltronic Corp.
P.O. NUMBER: 46998
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1
(Please Select One)
Fuels & Hydrocarbon Analyses: [ ] 5 [ ] 3 [ ] 2 [ ] 1
* Turnaround Requests less than standard will incur Rush Charg.
FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: EPA 9240	TCC Metals (1)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-11	13 Jun 95 1550	W	4	X	X	HCl, H_2SO_4, HNO_3	P506180
2. 95-12	13 Jun 95 1615	W	4	X	X	HCl, H_2SO_4, HNO_3	7.2°C
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Thomas J Rothschild DATE: 14 Jun 95
PRINT NAME: Thomas J. Rothschild FIRM: Wacker TIME: 0900
RECEIVED BY: P CONROY DATE: 6-14-95
PRINT NAME: P CONROY FIRM: WACKER TIME: 10:00 A.M.

RELINQUISHED BY: P CONROY DATE: 6-14-95
PRINT NAME: P. CONROY FIRM: WACKER TIME: 11:05 A.M.
RECEIVED BY: EK Schmeltzer DATE: 6/14/95
PRINT NAME: FIRM: NCA TIME: 1105

ADDITIONAL REMARKS: (1) Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc

PAGE 1 OF 1

COC Rev 6, 10/94

SCOEPA00026557

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Thomas Rothschild

Project: STORM WATER RUNOFF
95-11, 95-12

Invoice Number: 25070046

Invoice Date: 07/11/95

PO# 46998

Water, Received 6/14/95

NCA Project #:P507020

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
2	Oil & Grease (I.R.)	5 Day	50.00	100.00

COPY

Invoice Total $ 100.00

Remit To: North Creek Analytical, Inc.
18939 - 120th Ave. NE #101
Bothell, WA 98011-9508

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

NORTH CREEK ANALYTICAL

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June 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas Rothschild

RE: JOB # 95-11, 95-12
P.O.# 46998
PROJECT - STORM WATER RUNOFF

Enclosed are test results for your samples received in this lab on Jun. 14, 1995. For your reference, these analyses have been assigned our NCA # P506180.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Cindy Hetrick

Cindy Hetrick
Project Manager

NORTH CREEK ANALYTICAL
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Total Metals per EPA 200 series
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Sampled: 06/13/95
Received: 06/14/95

Client ID	Lab ID	Analyte	Result	MRL	Date Prepared	Date Analyzed
95-11	P506180-1	Arsenic	ND	0.0020	06/16/95	06/28/95
		Cadmium	ND	0.0050		
		Chromium	0.0055	0.0050		
		Copper	0.038	0.0050		
		Lead	0.011	0.0020		
		Mercury	ND	0.00050		
		Nickel	ND	0.015		
		Zinc	0.29	0.010		
95-12	P506180-2	Arsenic	ND	0.0020	06/16/95	06/28/95
		Cadmium	ND	0.0050		
		Chromium	ND	0.0050		
		Copper	0.032	0.0050		
		Lead	0.0049	0.0020		
		Mercury	ND	0.00050		
		Nickel	0.025	0.015		
		Zinc	0.36	0.010		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026560

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Total Organic Carbon per EPA 415.1
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Sampled: 06/13/95
Received: 06/14/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-11	P506180-1	TOC	11	3.0	06/22/95	06/22/95
95-12	P506180-2	TOC	9.8	3.0	06/22/95	06/22/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026561

NORTH CREEK ANALYTICAL

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Received: 06/14/95
Sampled: 06/13/95
Prepared: 06/19/95
Analyzed: 06/19/95

Client ID	Lab ID	Analyte	Result	MRL
95-11	P506180-1	Acetone	ND	30
		Acrolein	ND	200
		Acrylonitrile	ND	10
		Benzene	ND	2.0
		Bromodichloromethane	ND	2.0
		Bromoform	ND	2.0
		Bromomethane	ND	10
		2-Butanone	ND	25
		Carbon Disulfide	ND	2.0
		Carbon Tetrachloride	ND	2.0
		Chlorobenzene	ND	2.0
		Chloroethane	ND	10
		Chloroform	ND	2.0
		Chloromethane	ND	10
		Dibromochloromethane	ND	2.0
		Dibromomethane	ND	2.0
		1,4-Dichloro-2-butene	ND	10
		1,2-Dichlorobenzene	ND	2.0
		1,3-Dichlorobenzene	ND	2.0
		1,4-Dichlorobenzene	ND	2.0
		Dichlorodifluoromethane	ND	5.0
		1,1-Dichloroethane	ND	2.0
		1,2-Dichloroethane	ND	2.0
		1,1-Dichloroethene	ND	2.0
		cis-1,2-Dichloroethene	ND	2.0
		trans1,2Dichloroethene	ND	2.0
		1,2-Dichloropropane	ND	2.0
		cis-1,3-Dichloropropene	ND	2.0
		trans1,3Dichloropropene	ND	2.0
		Ethyl Methacrylate	ND	2.0
		Ethylbenzene	ND	2.0
		2-Hexanone	ND	5.0
		Iodomethane	ND	2.0
		4-Methyl-2-pentanone	ND	5.0
		Methylene Chloride	ND	5.0
		Styrene	ND	2.0
		1,1,2,2-Tetrachloroethane	ND	2.0
		Tetrachloroethene	ND	2.0
		Toluene	ND	2.0
		1,1,1-Trichloroethane	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026562

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Received: 06/14/95
Sampled: 06/13/95
Prepared: 06/19/95
Analyzed: 06/19/95

Client ID	Lab ID	Analyte	Result	MRL
95-11 (continued)	P506180-1	1,1,2-Trichloroethane	ND	2.0
		Trichloroethene	ND	2.0
		Trichlorofluoromethane	ND	2.0
		1,2,3-Trichloropropane	ND	2.0
		Vinyl Acetate	ND	5.0
		Vinyl Chloride	ND	5.0
		Xylenes (total)	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026563

NORTH CREEK ANALYTICAL

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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Received: 06/14/95
Sampled: 06/13/95
Prepared: 06/19/95
Analyzed: 06/19/95

Client ID	Lab ID	Analyte	Result	MRL
95-12	P506180-2	Acetone	ND	30
		Acrolein	ND	200
		Acrylonitrile	ND	10
		Benzene	ND	2.0
		Bromodichloromethane	ND	2.0
		Bromoform	ND	2.0
		Bromomethane	ND	10
		2-Butanone	ND	25
		Carbon Disulfide	ND	2.0
		Carbon Tetrachloride	ND	2.0
		Chlorobenzene	ND	2.0
		Chloroethane	ND	10
		Chloroform	ND	2.0
		Chloromethane	ND	10
		Dibromochloromethane	ND	2.0
		Dibromomethane	ND	2.0
		1,4-Dichloro-2-butene	ND	10
		1,2-Dichlorobenzene	ND	2.0
		1,3-Dichlorobenzene	ND	2.0
		1,4-Dichlorobenzene	ND	2.0
		Dichlorodifluoromethane	ND	5.0
		1,1-Dichloroethane	ND	2.0
		1,2-Dichloroethane	ND	2.0
		1,1-Dichloroethene	ND	2.0
		cis-1,2-Dichloroethene	ND	2.0
		trans1,2Dichloroethene	ND	2.0
		1,2-Dichloropropane	ND	2.0
		cis-1,3-Dichloropropene	ND	2.0
		trans1,3Dichloropropene	ND	2.0
		Ethyl Methacrylate	ND	2.0
		Ethylbenzene	ND	2.0
		2-Hexanone	ND	5.0
		Iodomethane	ND	2.0
		4-Methyl-2-pentanone	ND	5.0
		Methylene Chloride	ND	5.0
		Styrene	ND	2.0
		1,1,2,2-Tetrachloroethane	ND	2.0
		Tetrachloroethene	ND	2.0
		Toluene	ND	2.0
		1,1,1-Trichloroethane	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00026564

NORTH CREEK ANALYTICAL
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Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Matrix: water
Received: 06/14/95
Sampled: 06/13/95
Prepared: 06/19/95
Analyzed: 06/19/95

Client ID	Lab ID	Analyte	Result	MRL
95-12 (continued)	P506180-2			
		1,1,2-Trichloroethane	ND	2.0
		Trichloroethene	ND	2.0
		Trichlorofluoromethane	ND	2.0
		1,2,3-Trichloropropane	ND	2.0
		Vinyl Acetate	ND	5.0
		Vinyl Chloride	ND	5.0
		Xylenes (total)	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Number: P506180
Received: 06/14/1995

Sample Name	Analyte	Result	Control Limits
Volatile Organic Compounds per EPA 8240			
95-11	4-Bromofluorobenzene	100	86-115
	1,2-Dichloroethane-d4	102	76-114
	Toluene-d8	99	88-110
95-12	4-Bromofluorobenzene	100	86-115
	1,2-Dichloroethane-d4	102	76-114
	Toluene-d8	100	88-110

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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June 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas Rothschild

Re: Quality Control Data
JOB # 95-11, 95-12
P.O.# 46998
PROJECT - STORM WATER RUNOFF

NCA project number P506180.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Cindy Hetrick

Cindy Hetrick
Project Manager

SCOEPA00026568

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # QW95097a
Results In mg/L (ppm)

Compound	Result	MRL
Cadmium	ND	0.0050
Chromium	ND	0.0050
Copper	ND	0.0050
Nickel	ND	0.015
Zinc	ND	0.010
Date Prepared	06/16/95	
Date Analyzed	06/19/95	

DUPLICATE
Batch # QW95097a **Duplicate ID P506176-1b**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Cadmium	ND	ND	0	20
Chromium	ND	ND	0	20
Copper	0.014	0.013	7.4	20
Nickel	ND	ND	0	20
Zinc	0.50	0.45	11	20

MATRIX SPIKE
Batch # QW95097a **Spike ID P506176-1b**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Cadmium	0.10	ND	0.11	110	75-125
Chromium	0.25	ND	0.25	100	75-125
Copper	0.25	0.014	0.27	102	75-125
Nickel	0.25	ND	0.28	112	75-125
Zinc	0.25	0.50	0.80	120	75-125

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Received: 06/14/95

LABORATORY CONTROL SAMPLE
Batch # QW95097a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Cadmium	0.10	0.10	100	75-129
Chromium	0.25	0.25	100	83-112
Copper	0.25	0.26	104	86-115
Nickel	0.25	0.27	108	85-118
Zinc	0.25	0.29	116	85-117

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # YW95101a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.0020
Date Prepared	06/16/95	
Date Analyzed	06/20/95	

DUPLICATE
Batch # YW95101a **Duplicate ID P506186-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Arsenic	ND	ND	0	20

MATRIX SPIKE
Batch # YW95101a **Spike ID P506186-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	0.050	ND	0.046	92	75-125

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Received: 06/14/95

LABORATORY CONTROL SAMPLE
Batch # YW95101a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	0.010	0.0095	95	80-109

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # YW95107a
Results In mg/L (ppm)

Compound	Result	MRL
Lead	ND	0.0020
Date Prepared	06/27/95	
Date Analyzed	06/28/95	

DUPLICATE
Batch # YW95107a **Duplicate ID P506186-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Lead	ND	ND	0	20

MATRIX SPIKE
Batch # YW95107a **Spike ID P506186-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Lead	0.050	ND	0.049	98	75-125

LABORATORY CONTROL SAMPLE
Batch #YW95107a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Lead	0.010	0.011	110	81-140

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BATCH QUALITY CONTROL RESULTS
Total Metals per EPA 200 Series

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # ZW95042a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00020
Date Prepared	06/19/95	
Date Analyzed	06/20/95	

MATRIX SPIKE
Batch # ZW95042b **Spike ID P506193-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.0050	ND	0.051	110	75-125

MATRIX SPIKE
Batch # ZW95042a **Spike ID P506176-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.0050	ND	0.0049	98	75-125

LABORATORY CONTROL SAMPLE
Batch #ZW95042a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0052	104	77-106

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BATCH QUALITY CONTROL RESULTS
Total Organic Carbon per EPA 415.1

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # IW95060a
Results In mg/L (ppm)

Compound	Result	MRL
TOC	ND	3.0
Date Prepared	06/22/95	
Date Analyzed	06/22/95	

DUPLICATE
Batch # IW95060a **Duplicate ID P506052-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
TOC	ND	ND	0	20

LABORATORY CONTROL SAMPLE
Batch # IW95060a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
TOC	10	9.1	91	90-110

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Received: 06/14/95

METHOD BLANK
Batch # VW95020a
Results In ug/L (ppb)

Compound	Result	MRL
Acetone	ND	25
Acrolein	ND	200
Acrylonitrile	ND	10
Benzene	ND	2.0
Bromodichloromethane	ND	2.0
Bromoform	ND	2.0
Bromomethane	ND	10
2-Butanone	ND	25
Carbon Disulfide	ND	2.0
Carbon Tetrachloride	ND	2.0
Chlorobenzene	ND	2.0
Chloroethane	ND	10
Chloroform	ND	2.0
Chloromethane	ND	10
Dibromochloromethane	ND	2.0
Dibromomethane	ND	2.0
1,4-Dichloro-2-butene	ND	10
1,2-Dichlorobenzene	ND	2.0
1,3-Dichlorobenzene	ND	2.0
1,4-Dichlorobenzene	ND	2.0
Dichlorodifluoromethane	ND	5.0
1,1-Dichloroethane	ND	2.0
1,2-Dichloroethane	ND	2.0
1,1-Dichloroethene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0
trans1,2Dichloroethene	ND	2.0
1,2-Dichloropropane	ND	2.0
cis-1,3-Dichloropropene	ND	2.0
trans1,3Dichloropropene	ND	2.0
Ethyl Methacrylate	ND	2.0
Ethylbenzene	ND	2.0
2-Hexanone	ND	5.0
Iodomethane	ND	2.0
4-Methyl-2-pentanone	ND	5.0
Methylene Chloride	ND	5.0
Styrene	ND	2.0
1,1,2,2-Tetrachloroethane	ND	2.0
Tetrachloroethene	ND	2.0
Toluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0
1,1,2-Trichloroethane	ND	2.0
Trichloroethene	ND	2.0
Trichlorofluoromethane	ND	2.0
1,2,3-Trichloropropane	ND	2.0
Vinyl Acetate	ND	5.0

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF

NCA Project #: P506180
Received: 06/14/95

Vinyl Chloride	ND	5.0
Xylenes (total)	ND	2.0
Date Prepared	06/19/95	
Date Analyzed	06/19/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	99	86-115
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	99	88-110

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VW95020a **Spike ID P506180-2b**
Results In ug/L (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	19.1	96
Chlorobenzene	20	ND	20.5	103
1,1-Dichloroethene	20	ND	20.8	104
Toluene	20	ND	19.3	97
Trichloroethene	20	ND	19.4	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	19.0	95	1.0	11	76-127
Chlorobenzene	20	20.3	102	0.98	13	75-130
1,1-Dichloroethene	20	20.0	100	3.9	14	61-145
Toluene	20	18.9	95	2.1	13	76-125
Trichloroethene	20	18.7	94	3.1	14	71-120

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BATCH QUALITY CONTROL RESULTS
Volatile Organic Compounds per EPA 8240

Client: Wacker Siltronic Corporation
Project: STORM WATER RUNOFF
NCA Project #: P506180
Received: 06/14/95

LABORATORY CONTROL SAMPLE
Batch # VW95020a
Results In ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	18.6	93	76-127
Chlorobenzene	20	20.1	101	75-130
1,1-Dichloroethene	20	19.9	100	61-145
Toluene	20	18.5	93	76-125
Trichloroethene	20	18.7	94	71-120

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic Corporation
ADDRESS: 7200 N.W. Front Avenue
Portland, Oregon 97210
PHONE: 243-2020 FAX: 241-7591

REPORT TO: Thomas J. Rothschild
BILLING TO: Wacker Siltronic Corp.
P.O. NUMBER: 46998
NCA QUOTE #:

PROJECT NAME: Storm Water Runoff
PROJECT NUMBER: 95-11 ; 95-12
SAMPLED BY: Thomas J. Rothschild/Chip Bloomer

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] [5] [3] [2] [1]
(Please Select One)
Fuels & Hydrocarbon Analyses: [5] [3] [2] [1]
* *Turnaround Requests less than standard will incur Rush Charg.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: EPA 5.2+C	TCC	Metals (1)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-11	13 Jun 95 1550	W	4	X	X	X	HCl, H_2SO_4, HNO_3	P506180
2. 95-12	13 Jun 95 1615	W	4	X	X	X	HCl, H_2SO_4, HNO_3	7.2°C
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY: Thomas J. Rothschild DATE: 14 Jun 95
PRINT NAME: Thomas J. Rothschild FIRM: Wacker TIME: 0900
RECEIVED BY: P. CONROY DATE: 6-14-95
PRINT NAME: P. CONROY FIRM: WACKER TIME: 10:00 A.M.

RELINQUISHED BY: P. CONROY DATE: 6-14-95
PRINT NAME: P. CONROY FIRM: WACKER TIME: 11:05 A.M.
RECEIVED BY: EK Schmeltzer DATE: 6/14/95
PRINT NAME: FIRM: NCA TIME: 1105

ADDITIONAL REMARKS: (1) Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc

PAGE 1 OF 1

COC Rev 6, 10/94

SCOEPA00026580

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Thomas Rothschild

Project: STORM WATER RUNOFF
#95-11, 95-12

Invoice Number: 25060292

Invoice Date: 06/30/95

PO# 46998

Water, Received 6/14/95

NCA Project #:P506180

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
2	Total Metals (8)	10 Day	151.00	302.00
2	T.O.C., Water	10 Day	40.00	80.00
2	GC/MS Volatiles	10 Day	195.00	390.00

COPY

Invoice Total $ 772.00

****
* *
* Remit To: North Creek Analytical, Inc. *
* 18939 - 120th Ave. NE #101 *
* Bothell, WA 98011-9508 *
* *
****

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

Storm Water Sampling 13 June 1995

Sampling Location	Wacker #	pH	Oil Sheen	Color/ Foam/ Turbidity
Northwest Manhole	95-12	7.0	No	No Foam / Very turbid / light brown
West Manhole	95-11	6.8	No	No Foam / Very turbid / light brown

JJR

BENCHSHEET

TOTAL SUSPENDED SOLIDS (TSS)

Sample Date: 6-13-95 Oven Temp: 107 C Analyst: DM

Date In: 6-14-95 Time In/Out: 1030 / 1300

Tin #	Sample	Vol. ml	Gross Wt. g	Tare Wt. g	TSS. mg/L
4	W NW Manhole	100	0.0918	0.0873	45
5	W Manhole	100	0.0906	0.0862	44
			West Manhole	AVG=	44.5
6	NW Manhole	100	0.0945	0.0891	54
7	N.W Manhole	100	0.0957	0.0890	67
			North West Manhole	AVG=	60.5
				AVG=	
				AVG=	

Notes: Storm water samples; West Manhole & North West Manhole

Calculation: TSS, mg/L = (Gross Wt, mg - Tare Wt, mg) X 1000 / Volume of Sample, ml

Reference: Standard Methods for the Examination of Water and Wastewater, 1992, 18th Edition, Section 2540 D, page 2-56.

TJR 21 Mar 87
TJR 21 Apr 93 Revised
DES 11 Aug 93 Revised
DEM 18 Nov 94 Revised

SCOEPA00026583

BENCHSHEET
BIOCHEMICAL OXYGEN DEMAND

Storm Water Samples

Sample Date: 6-13-95 Incubator: 21.0 C Analyst: DM

Date/Time In: 6-14-95 / 1525 Date/Time Out: 6-19-95 / 1335

	BOTTLE #	VOL, ml	DOI, mg/L	DOF mg/L	BOD, mg/L	
✓N	8-W	250	8.43	1.86	7.884	7.95
✓N	9-W	200	8.47	3.14	7.995	
✓N	11-W	150	8.48	4.50	7.96	
✓N			8			
✓N	13-NW	250	8.80	4.37	5.316	5.627
✓N	17-NW	200	8.98	5.31	5.505	
✓N	18-NW	150	8.93	5.90	6.06	
N						
N						
N						

Average BOD, mg/L: _____

COMMENTS: #8, 9, 11 W - manhole (West)
#13, 17, 18 NW - Manhole (North West)

CALCULATION: BOD, mg/L = $\frac{\text{(DOI, mg/L - DOF, mg/L) X 300}}{\text{Volume of Sample, ml}}$

NOTES: 1. A check mark in front of N = Nutrient Pillow added.
2. Sample Temperature; 22 C

TJR 3 Mar 94

SCOEPA00026584

BENCHSHEET

PHOSPHATES (PO4)

Sample Date: ~~4~~ 6-13-95 Analyst: Dh

Note: Rinse all glassware with 1:1 HCl before using.

1. 25 ml aliquot in 50 ml Erlenmeyer Flask.

2. Add one Potassium Persulfate Pillow, Hach #2451. (Hach Lot # 2451)

3. Add 5 ml H2SO4, 5.25 N, Swirl. (Hach Lot # 12EH)

4. Gently boil for 30 minutes.

5. Cool to room temperature.

6. Add 5 ml NaOH, 5.0 N, Swirl. (Hach Lot # 20EG)

7. Use Hach DR/3000 Procedure Code P.4, Phosphorous Reactive. Low Range: 0-5.000 mg/L, stored program 51.

8. Hach PhosVer 3 Phosphate Reagent Powder Pillow Lot # 2125.

9. DR/3000 reading: West ~~CE~~ 0.022 mg/L North West ~~MV-3~~ 0.037 mg/L

Other Sample _____ : _____ mg/L

10. Quality Control: Spike and sample with 0.025 ml of 1000 mg/L Phosphate Standard. This should increase the [illegible] by 1.000 mg/L.

After Spike Concentration: West ~~CE~~ mg/L North West ~~MV-3~~ mg/L

(1) 0.023 (?) 0.033 (?)

% Recovery: _____

No. (1) Spike on CE and MV-3 sample's ok..?

[illegible] 21
[illegible] 12 Aug 94 Revised

SCOEPA00026585

BENCHSHEET

Chemical Oxygen Demand (COD)

Date: 6-14-95 Sample Date: 6-13-95 Analyst: JM

COD Reactor Temperature: 150 C

Time In / Out: 0900 / 1100 (2 Hour Digestion)

1. DR/3000 Procedure Code 0.9, stored program 45.
2. Zero the DR/3000 with an RODI H2O blank.
3. Check the 60mg/L standard: 62 mg/L (Range: 58 - 62 mg/L)
4. CK (composite): _____mg/L.
5. OWW (composite): Direct DR/3000 reading: _____mg/L

   (Dilution: ____ ml in ____ ml RODI H2O)

   X ____ (Dilution Factor) = _____mg/L

Comments: W.W. Manhole: 24 mg/L

West Manhole: 26 mg/L

TJR 31 Dec 91
TJR 19 Aug 94 Revised

SCOEPA00026586

BENCHSHEET

FLUORIDE ANALYSIS

Test Date: 6-14-95 Sample Date: 6-13-95 Analyst: DH

Slope: -57.6 (Range: -54 to -60 mV)

Standards:

1.0 mg/L: Lot #: 5-3-95 → Date Opened: 45023

10.0 mg/L: Lot #: 31EK Date Opened: 5-15-95

Data:

Sample	Fluoride, mg/L
CE (composite)	
OWW (composite)	
N.W. Manhole	0.27
West Manhole	0.48

Quality Control: Spike each of the above samples with 0.1 ml of 1000 mg/L Standard. The Fluoride concentration should increase by 2.0 mg/L.

	~~CE~~ N.W.	~~OWW~~ W.
After Spike Concentration:	2.2 mg/L	2.3 mg/L
% Recovery:	96.5 %	91 %

Comments: West: PH: 6.67

North West: PH: 6.96

References: 1. Standard Methods For The Examination of Water And Wastewater, 1992, 18th Edition, Section 4500-F C, page 4-61.
2. Orion Research Manual for the Fluoride Electrode, Model 940900, 1991.

TJR 6 Apr 87
TJR 6 Apr 93 Revised

SCOEPA00026587

BENCHSHEET

Chrome, Total / Chrome, +6 Analyses

Test Date: 6-14-95 Sample Date: 6-13-95 Analyst: DM

1. For Chrome +6 analysis:
   a. Use a non-acid-preserved sample (per EPA Method 218.5).
   b. Use Hach Procedure, Code C.7, for Chrome +6.
2. For Chrome Total analysis:
   a. Preserve sample immediately upon collection with 2 - 5 ml HNO3 per liter (to a pH < 2)
   b. Transfer an 100 ml aliquot for step 1 above to a 250 ml Erlenmeyer flask.
   c. Add 5 ml of 1:1 HCl.
   d. Place in a boiling water bath until volume is reduced to approximately 20 ml (about 3 hours).
   d. Adjust pH of the cooled sample to pH 4 +/- 0.5 with NaOH (5M/1M). Adjusted pH = _____.
   e. Bring the volume back up to 100 ml.
   f. Use the Hach Procedure, Code C.8 for Total Chrome.

	Chrome Total, mg/L	Chrome +6, mg/L
~~CE composite~~:	_____ N.W. MH	< 0.01
	W.M.H	< 0.01 mg/L

Quality Control: Spike the Chrome +6 aliquot with 0.0125ml of 1000mg/L Cr+6. The Chrome concentration should increase by 0.5mg/L.

Spiked aliquot = 0.46 (N.W.) mg/L — 0.45 (W) mg/L

% Recovery = 90 % — 88 % Acceptable Range 80 - 120%

Comments; Storm water samples - Total Cr sent to outside lab. N.W.M.H: North West Man Hole - W.M.H: West Manhole

References:
1. DR/3000 Spectrophotometer Manual, dated 15 Nov 89, Procedure Code C.7, stored program 12 (+6) and C.8, stored program 13 (total).
2. Standard Methods for the Examination of Water and Wastewater, 1989, 17th Edition, Table 1020:I, p1-8

TJR 6 Dec 91
TJR 6 Oct 94 Revised

SCOEPA00026588

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

MR NEIL MULLANE
DEQ-NW. REGION
2020 S.W. 4TH AVE-SUITE 400
PORTLAND, OR 97201

4a. Article Number
P 494-544-946

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
DEQ/NWR

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

SCOEPA00026589

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, $300

U.S.MAIL

Eric Spieung M/S 30
Print your name, address and ZIP Code here
WACKER SILTRONIC
P.O. BOX 83180
PORTLAND, OR. 97283

SCOEPA00026590

Eric Spiering MS30

P 494 544 946

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to NEIL MULLAN DEQ-NW REGION	
Street & Number 2020 S.W. 4th AVE-SUITE 400	
Post Office, State, & ZIP Code PORTLAND OR 97201	
Postage	$ .78
Certified Fee	1.35
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$ 3.23
Postmark or Date	JUN 30 1993

PS Form **3800**, April 1995

USPS

SCOEPA00026591

WACKER
Wacker Siltronic Corporation

June 30, 1997 ER28:ES

Mr Neil Mullane
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201

Dear Mr Mullane,

Enclosed are the tabulated storm water monitoring data for the calendar year 1996 as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-L issued on February 22 1993. The sampling was conducted on October 4 and December 21 of 1996.

If you have any questions please call Eric Spiering at 219-7132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Enclosure:
Stormwater DMRs

cc: John Pittman
Tom Rothschild
SW Report 1996 file

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

SCOEPA00026592

Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0810

FACILITY 7200 NW Front Ave.
LOCATION Porltand, OR 97210

DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
1200	
PERMIT NUMBER	DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	96	1	1	TO	96	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	MAXIMUM (54-61)	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Color and/or Foam	SAMPLE MEASUREMENT						turbid,	visual			Grab
	PERMIT REQUIREMENT						No foam	obs.			
Oil and grease sheen	SAMPLE MEASUREMENT						none	visual			Grab
	PERMIT REQUIREMENT						visible	obs.			
pH	SAMPLE MEASUREMENT				6.5		7.0	pH			Grab
	PERMIT REQUIREMENT				6.0		9.0	units			
Oil and Grease	SAMPLE MEASUREMENT				< 5.0		< 5.0	mg/l			Grab
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT				< 3.0		29	mg/l			Grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT				23.8		79	mg/l			Grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT				< 0.001		< 0.01	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Tom McCue,
Environmental Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years)

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
503	243-2020	97	6	30
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026593

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME: W[redacted]r Siltronic Corporation

ADDRESS: PO [redacted]x 83180
Portland, OR 97283-0810

FACILITY: 7200 NW Front Ave.

LOCATION: Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) 1200[redacted] — PERMIT NUMBER

(17-19) — DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	96	01	01	TO	96	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-65)	FREQUENCY OF ANALYSIS (66-68)	SAMPLE TYPE (69-70)
Cadmium	SAMPLE MEASUREMENT				< 0.001		< 0.005	mg/l			Grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT				0.001		0.026	mg/l			Grab
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT				0.008		0.836	mg/l			Grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT				0.001		0.017	mg/l			Grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT				< 0.0002		0.00043	mg/l			Grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT				0.006		0.178	mg/l			Grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT				0.178		0.65	mg/l			Grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Tom McCue,
Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and a maximum imprisonment of between 6 months and 5 years).

Wacker Siltronic Corp. by:

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 — NUMBER 243-2020

DATE: YEAR 97 — MO 6 — DAY 30

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026594

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME W[illegible]er Siltronic Corporation
ADDRESS P[illegible]ox 83180
Portland, OR 97283-0810
FACILITY 7200 NW Front Ave.
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
120[illegible]	

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	96	1	1	TO	96	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(3 Card Only) QUANTITY OR LOADING (54-61) MAXIMUM	(3 Card Only) QUANTITY OR LOADING UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(4 Card Only) QUALITY OR CONCENTRATION (46-53) AVERAGE	(4 Card Only) QUALITY OR CONCENTRATION (54-61) MAXIMUM	(4 Card Only) QUALITY OR CONCENTRATION UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Suspended Solids*	SAMPLE MEASUREMENT				< 10.0		71	mg/l			Grab
	PERMIT REQUIREMENT										
Fluoride*	SAMPLE MEASUREMENT				< 5.0		< 5.0	mg/l			Grab
	PERMIT REQUIREMENT										
Total Phosphate	SAMPLE MEASUREMENT				0.04		4.8	mg/l			Grab
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT				< 4.0		14	mg/l			Grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Tom McCue,
Environmental Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319 (Penalties under these statutes may include fines up to $10,000 and maximum imprisonment of between 6 months and 5 years).

Wacker Siltronic Corp. by:
Thomas C. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
AREA CODE	NUMBER	YEAR	MO	DAY
503	243-2020	97	6	30

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

* Only one sampling data set available for TSS and fluoride.

SCOEPA00026595

WACKER
Wacker Siltronic Corporation

June 28, 1996 ER25:MS

Mr. Neil Mullane
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Mullane:

Enclosed are the tabulated storm water monitoring data for the period ending 1 July 1996, as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-L issued on 22 February 1993.

Please contact Michael Sutton at (503) 245-2020 ext. 4572 if you have any questions.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

enclosure:
(1)Tabulated Storm Water Data

cc:John Pittman
Tom Rothschild

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

SCOEPA00026596

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME Wa[illegible]r Siltronic Corporation

ADDRESS PO [illegible]x 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Ave

LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*

DISCHARGE MONITORING REPORT *(DMR)*

(2-[illegible])	(17-19)
1200-[illegible]	
PERMIT NUMBER	DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

FROM YEAR	MO	DAY	TO YEAR	MO	DAY
95	01	01	95	12	31
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Color and/or foam	SAMPLE MEASUREMENT						No foam Light brown	visual obs			grab
	PERMIT REQUIREMENT										
Oil and grease sheen	SAMPLE MEASUREMENT						None visible	visual obs			grab
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT				6.8		7	pH units			grab
	PERMIT REQUIREMENT				6.0		9.0				
Oil and grease	SAMPLE MEASUREMENT						2.8	mg/L			grab
	PERMIT REQUIREMENT						10				
TOC	SAMPLE MEASUREMENT						21	mg/L			grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						51	mg/L			grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.002	mg/L			grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Tom McCue/Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp.
by: Thomas C. McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE AREA CODE	NUMBER	DATE YEAR	MO	DAY
503	243-2020	96	06	28

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME Wa[illegible]e Siltronic Corporation

ADDRESS PO [illegible]x 83180

Portland, OR 97283-0180

FACILITY 7200 NW Front Ave

LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*

DISCHARGE MONITORING REPORT *(DMR)*

(2-) PERMIT NUMBER: 1200-I *(17-19)* DISCHARGE NUMBER:

MONITORING PERIOD

FROM YEAR	MO	DAY	TO YEAR	MO	DAY
95 *(20-21)*	01 *(22-23)*	01 *(24-25)*	95 *(26-27)*	12 *(28-29)*	31 *(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Cadmium	SAMPLE MEASUREMENT				[illegible]		0.005	mg/L			grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.0076	mg/L			grab
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT						0.038	mg/L			grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.016	mg/L			grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.0002	mg/L			grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.025	mg/L			grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.76	mg/L			grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Tom McCue/Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: [signature]	503	243-2020	96	06	28
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026598

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME Wacker Siltronic Corporation

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Ave

LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
1200-[illegible]	

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	01	01	TO	95	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Total Suspended Solids	SAMPLE MEASUREMENT						60.5	mg/L			grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.494	mg/L			grab
	PERMIT REQUIREMENT										
Total Phosphate	SAMPLE MEASUREMENT						0.695	mg/L			grab
	PERMIT REQUIREMENT										
Hexavalent Chromium	SAMPLE MEASUREMENT						0.01	mg/L			grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Tom McCue/Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	AREA CODE 503	NUMBER 243-2020	YEAR 96	MO 06	DAY 28
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT					

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026599

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: North Outfalls Sample ID#: 96-~~208~~ 209

Date: 12-21-96 Time: 1100 Sampled by: Paul Marty

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: X Foam: yes: ____ No: X

Color: Clear with particles

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.0 COD, mg/L: 439

F-, mg/L: < 0.5 pH: 6.95

Po4, mg/L: 0.068 TSS, mg/L: 71.0

OUTSIDE LAB ANALYTICAL DATA:

TOC, mg/L: 17.3

TTO, mg/L: < 0.01

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Arsenic:	< 0.001	Cadmium:	< 0.001	Chromium:	0.008
Copper:	0.6	Lead:	0.007	Mercury:	< 0.0002
Nickel:	0.178	Zinc:	0.178		

Notes: WSC Number to NCA: 96-209

DEM 10 Oct 96

SCOEPA00026600

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: South West Point (Nox) Sample ID#: 96.208

Date: 12.21.96 Time: 1100 Sampled by: Paul Marty

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes:___ No: X Foam: yes:___ No: X

Color: light brown/murky

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: ~~0.001~~ < 4.0 COD, mg/L: 23.8

F-, mg/L: < 0.5 pH: 6.85

Po4, mg/L: 3.1 TSS, mg/L: 18.0

~~BOD, mg/L: < 4.0~~

OUTSIDE LAB ANALYTICAL DATA:

TOC, mg/L: < 3.0

TTO, mg/L: < 0.01

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Arsenic: 0.001 Cadmium: < 0.001 Chromium: 0.014

Copper: 0.836 Lead: 0.009 Mercury: < 0.0002

Nickel: 0.022 Zinc: 0.233

Notes: WSC Number to NCA: 96-208

DEM 10 Oct 96

SCOEPA00026601

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: East point Sample ID#: 96-210

Date: 12.21.96 Time: 1100 Sampled by: Paul Manty

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ~~X~~ No: X Foam: yes: ____ No: X

Color: colorless

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: <4.0 COD, mg/L: 56.5

F-, mg/L: <0.5 pH: 6.58

Po4, mg/L: 0.04 TSS, mg/L: <10.0

TTe, mg/L: <0.01

OUTSIDE LAB ANALYTICAL DATA: Toc, mg/L: <3.0

Oil & Grease, mg/L: <5.0

Metals, mg/L:

Arsenic: <0.01 Cadmium: <0.001 Chromium: 0.001

Copper: 0.008 Lead: *0.001 Mercury: <0.0002

Nickel: 0.006 Zinc: 0.286

Notes: WSC Number to NCA: 96-210

DEM 10 Oct 96

SCOEPA00026602

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: North Stormwater Well Sample ID#: 96-58

Date: 4 Oct 96 Time: 1445 Sampled by: T. J. Rothschild / D. Mull

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: X (4) Foam: yes: ____ No: X (4)

Color: Turbid (4)

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.0 (1) COD, mg/L: 32 (1)

F-, mg/L: ____ (4)(5) pH: 6.65

Po4, mg/L: 0.13 (1) TSS, mg/L: ____ (4)(5)

TOC, mg/L: 12

TTO, ug/L: ~~< 0.01~~ < 10

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Arsenic:	< 0.002	Cadmium:	< 0.005	Chromium:	< 0.005
Copper:	0.019	Lead:	0.0061	Mercury:	< 0.0002
Nickel:	0.036	Zinc:	0.18		

Notes: (1) Outside Lab. (2) TOC = 12 mg/L (3) TTO = < 0.01 mg/l

(4) Original data misfiled - visual observation also accurate for east & west. pH listed on pg. 2 of 15.

(5) ~~Tech~~ Notebook for 10 Oct 96 ~~proves~~ indicates these analyses were done

DEM 10 Oct 96

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: Storm Water - South Sample ID#: 95-59

Date: 4 Oct 96 Time: 1430 Sampled by: JJR / D.M.

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: ✓ (1) Foam: yes: ____ No: ✓ (1)

Color: Turbid (1)

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: 14 COD, mg/L: 79

F-, mg/L: (2) pH: 6.5

Po4, mg/L: 0.5 TSS, mg/L: (2)

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Arsenic: < 0.002 Cadmium: < 0.005 Chromium: 0.026

Copper: 0.028 Lead: 0.017 Mercury: 0.00043

Nickel: < 0.015 Zinc: 0.65

Notes: TOC = 29 mg/L. TTO = < 0.01 mg/L

(1) To the best of our recollection.

(2) Original data misfiled. Log book entry indicates analyses were done.

DEM 10 Oct 96

SCOEPA00026604

WACKER SILTRONIC CORPORATION

STORM WATER RUN-OFF SAMPLE

Location: East Storm Water Sample ID#: 96-60

Date: 4 Oct 96 Time: 1510 Sampled by: JJR / DM

OBSERVATIONS UPON SAMPLING:

Oil Sheen: yes: ____ No: ✓ (1) Foam: yes: ____ No: ✓ (1)

Color: Turbid (1)

IN HOUSE ANALYTICAL DATA:

BOD, mg/L: < 4.0 COD, mg/L: 41

F-, mg/L: ____ (2) pH: 7.0

Po4, mg/L: 4.8 TSS, mg/L: ____ (2)

OUTSIDE LAB ANALYTICAL DATA:

Oil & Grease, mg/L: < 5.0

Metals, mg/L:

Arsenic: < 0.002 Cadmium: < 0.005 Chromium: 0.007

Copper: 0.016 Lead: 0.011 Mercury: 0.00027

Nickel: 0.015 Zinc: 0.61

Notes: (1) To the best of our recollection.
TOC = 17 mg/L. TTO = < 0.01 mg/L
(2) Log entry indicates analyses were done on 10 Oct 96.
Data misfiled.

DEM 10 Oct 96

SCOEPA00026605

Log Book Entry 25 Jun 97 JJR

October 8, 96
BOD read out -
FAB-1 Plant ↓

October 9 -
Bacteria from EP1 setup -
Set samplers
~~Set up~~ grab TTO'S CE & OWW -
Chrome sample pulled after Calcium Chloride addition. letting settle overnight to turbid.

October 10 → Permit Testing
TSS & 7 Storm water
Chromic waste after Calcium Chloride +
Cr^6 0.040
Cr(T) 0.162

Oct 11 96 * TPA - Mike Young: Oct 21st

* Total Chrome - Outside Jab & in house
Antifoam Sulfuric acid
Polymer

* Reagent Volumes - in analyzers.

Fire water Collection sump FAB-2

Fluoride: 0.17 spike 1.9
NH_3: 1.6
H_2O_2: 22
pH: 8.21

SCOEPA00026606

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

July 14, 1995

SER031:CB

Mr. Elliot Zais
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Zais:

Enclosed is the July Discharge Monitoring Report (DMR) and the annual Storm Water 1200-L Monitoring Report for Wacker Siltronic Corporation NPDES Permit Number 101128.

If you have any questions, please contact Chip Bloomer at (503) 243-2020 ext 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Murray M. Tilson, P.E.
Director Manufacturing Support

enclosure:
(1) July DMR
(2) Annual Storm Water 1200-L Monitoring Report

cc: Tom Rothschild

SCOEPA00026607

FACILITY NAME/ADDRESS (*Include Facility Name/Location if different*)
NAME Wacker Siltronic Corp.
ADDRESS P.O. Box 83180
Portland, OR 97283-0180
FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (*NPDES*)
DISCHARGE MONITORING REPORT (*DMR*)

(2-16) PERMIT NUMBER: 101128
(17-19) DISCHARGE NUMBER:

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	06	01	TO	95	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Process Wastewater Flow MV-1	SAMPLE MEASUREMENT	381,000	459,000	G/D	---	---	---	---		Continuous Totalizing Recorder	
	PERMIT REQUIREMENT	---	---		---	---	---				
MV-1 BOD	SAMPLE MEASUREMENT	13.1	20.8	#/D	2.7	4.1	5.4	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	81	162		---	15	30			---	---
MV-1 TSS	SAMPLE MEASUREMENT	11.7	17.2	#/D	2.2	3.7	4.5	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	81	162		---	23	61			---	---
MV-1 Cr^{+6}	SAMPLE MEASUREMENT	0.0002	0.0005	#/D	0.00007	0.00015	0.00031	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	0.11	0.27		---	0.02	0.05			---	---
MV-1 Cr^{Total}	SAMPLE MEASUREMENT	0.06	0.11	#/D	0.01	0.02	0.03	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	1.6	5.4		---	0.3	1.0			---	---
MV-1 Fluoride	SAMPLE MEASUREMENT	18.7	30.6	#/D	3.5	5.9	8.0	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	33	65		---	17.4	32			---	---
MV-1 Total Phosphate	SAMPLE MEASUREMENT	1.2	1.9	#/D	0.3	0.4	0.5	mg/L	0	1/7	24 HC
	PERMIT REQUIREMENT	---	---		---	23	61			---	---

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Murray M. Tilson/Director Manufacturing Support
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (*Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.*)

WACKER SILTRONIC CORP.
BY:
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 243-2020

DATE: YEAR 95 MO 07 DAY 11

COMMENT AND EXPLANATION OF ANY VIOLATIONS (*Reference all attachments here*)

EPA Form 3320-1 (F -88) *Previous editions may be used.* (REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.)

SCOEPA00026608

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*
NAME Wacker Siltronic Corp.
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-1) 101128 PERMIT NUMBER

(17-19) DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	06	01	TO	95	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
MV-1 TTO	SAMPLE MEASUREMENT	---	---	GPD	---	---	0.01	mg/L	0	1/30	Grab
	PERMIT REQUIREMENT	---	---		---	---	1.37			---	---
MV-3 Flow	SAMPLE MEASUREMENT	124,000	185,000	G/D	---	---	---	---	0	Continuous	
	PERMIT REQUIREMENT				---	---	---			---	---
MV-3 Total Phosphates	SAMPLE MEASUREMENT	---	---	---	0.1	0.3	0.7	mg/L	0	1/7	Grab
	PERMIT REQUIREMENT	---	---		---	2.0	5.0			---	---
Outfall Flow	SAMPLE MEASUREMENT	476,000	588,000	G/D	---	---	---	---	0	Continuous	
	PERMIT REQUIREMENT	---	---		---	---	---			---	---
Outfall Temperature	SAMPLE MEASUREMENT	---	---	---	70.0	70.7	71.8	F	0	1/7	Grab
	PERMIT REQUIREMENT	---	---		---	---	85°			---	---
Outfall pH	SAMPLE MEASUREMENT	---	---	---	6.0	7.4	9.8	pH Units	0	Continuous	
	PERMIT REQUIREMENT	---	---		6.0	---	9.0			---	---
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Murray M. Tilson/Director Manufacturing Support	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*	WACKER SILTRONIC CORP. BY:	503	243-2020	95	07	11
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*
pH Outages: 1) 6 Jun 95 pH= 9.0 for 18 seconds; 2) 9 Jun 95 pH= 9.8 for 107 seconds
3) 17 Jun 95 pH= 9.1 for 11 seconds. all Outages within permit limits

SCOEPA00026609

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

(Mailing Label if different)

NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER: 01

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94	07	01	TO	95	07	01
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Oil & Grease	SAMPLE MEASUREMENT				1.3	1.85	2.4	~~pH~~ mg/L ~~Units~~		2/365	G
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT				7.3	7.7	8	mg/L		2/365	G
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT				44.5	57	69.5	mg/L		2/365	G
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT				8.8	9.9	11	mg/L		2/365	G
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT				26	33.5	41	mg/L		2/365	G
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT				.4	.45	.5	mg/L		2/365	G
	PERMIT REQUIREMENT										
Phosphate	SAMPLE MEASUREMENT				.023	.33	.64	mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Chip Bloomer/Environmental Engineer
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP.
BY: Chip Bloomer
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 243-2020

DATE: YEAR 95 MO 07 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026610

Facility Name/Location if different)

NAME Wacker Siltronic Corporation

ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue

LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16) 1200-L — PERMIT NUMBER

(17-19) 01 — DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94	07	01	TO	95	07	01
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT				7	7	7	pH Units		2/365	G
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<.004	mg/L		2/365	G
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT				<.00003		.0007	mg/L		2/365	G
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						<.01	mg/L		2/365	G
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT				<.02		.04	mg/L		2/365	G
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT				.01	.01	.01	mg/L		2/365	G
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						<.05	mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Chip Bloomer/Environmental Engineer

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and of maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP.
BY: Chip Bloomer
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 — NUMBER 243-2020

DATE: YEAR 95 — MO 07 — DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026611

Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

1200-L (2-16)	01 (17-19)
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94 (20-21)	07 (22-23)	01 (24-25)	TO	95 (26-27)	07 (28-29)	01 (30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Zinc	SAMPLE MEASUREMENT				.3	.33	.36	mg/L ~~pH Units~~		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Chip Bloomer/Environmental Engineer
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP.
BY: Chip Bloomer
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 243-2020

DATE: YEAR 95 | MO 07 | DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

EPA Form 3320-1 (Rev. 9-88) Previous editions may be used. (REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.)

SCOEPA00026612

Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180
FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
1200-L	02
PERMIT NUMBER	DISCHARGE NUMBER

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94	07	01	TO	95	07	01
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Oil & Grease	SAMPLE MEASUREMENT				.9	1.85	2.8	mg/L ~~pH Units~~		2/365	G
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT				5.6	5.8	6	mg/L		2/365	G
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT				37	48.8	60.5	mg/L		2/365	G
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT				7	8.5	10	mg/L		2/365	G
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT				24	32	40	mg/L		2/365	G
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT				.2	.25	.3	mg/L		2/365	G
	PERMIT REQUIREMENT										
Phosphate	SAMPLE MEASUREMENT						2.1	mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Chip Bloomer/Environmental Engineer
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP.
BY: Chip Bloomer
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 243-2020
DATE: YEAR 95 MO 07 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026613

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER: 02

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94	07	01	TO	95	07	01
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT				6.8	6.9	7	pH Units		2/365	G
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<.004	mg/L		2/365	G
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT				<.00003		.0016	mg/L		2/365	G
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						<.01	mg/L		2/365	G
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT				<.02		.03	mg/L		2/365	G
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT				.005	.0075	.01	mg/L		2/365	G
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						<.05	mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Chip Bloomer/Environmental Engineer
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)

WACKER SILTRONIC CORP.
BY: [signature]
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 243-2020

DATE: YEAR 95 MO 07 DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SCOEPA00026614

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NAME Wacker Siltronic Corporation
ADDRESS P.O. x 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER: 02

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	94	07	01	TO	95	07	01
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Zinc	SAMPLE MEASUREMENT				.18	.195	.21	~~mg/L~~ ~~pH Units~~		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT							mg/L		2/365	G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Chip Bloomer/Environmental Engineer
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 USC § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP.
BY: [signature]
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 243-2020

DATE: YEAR 95 | MO 07 | DAY 14

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026615

WACKER
Wacker Siltronic Corporation

June 28, 1996

ER25:MS

Mr. Neil Mullane
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Mullane:

Enclosed are the tabulated storm water monitoring data for the period ending 1 July 1996, as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-L issued on 22 February 1993.

Please contact Michael Sutton at (503) 245-2020 ext. 4572 if you have any questions.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

enclosure:
(1)Tabulated Storm Water Data

cc:John Pittman
Tom Rothschild

DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUL 1 - 1996
NORTHWEST REGION

Rec'd DMR for
1/1/95 - 12/31/95

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

SCOEPA00026616

WACKER
Wacker Siltronic Corporation

June 28, 1996 ER25:MS

Mr. Neil Mullane
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Mullane:

Enclosed are the tabulated storm water monitoring data for the period ending 1 July 1996, as required by Wacker Siltronic's NPDES Storm Water Discharge Permit number 1200-L issued on 22 February 1993.

Please contact Michael Sutton at (503) 245-2020 ext. 4572 if you have any questions.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

enclosure:
(1)Tabulated Storm Water Data

cc:John Pittman
Tom Rothschild

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

SCOEPA00026617

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180
FACILITY 7200 NW Front Ave
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-16) PERMIT NUMBER	*(17-19)* DISCHARGE NUMBER
1200-L	

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	01	01	TO	95	12	31
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Color and/or foam	SAMPLE MEASUREMENT						No foam Light brown	visual obs			grab
	PERMIT REQUIREMENT										
Oil and grease sheen	SAMPLE MEASUREMENT						None visible	visual obs			grab
	PERMIT REQUIREMENT										
pH	SAMPLE MEASUREMENT				6.8		7	pH units			grab
	PERMIT REQUIREMENT				6.0		9.0				
Oil and grease	SAMPLE MEASUREMENT						2.8	mg/L			grab
	PERMIT REQUIREMENT						10				
TOC	SAMPLE MEASUREMENT						21	mg/L			grab
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						51	mg/L			grab
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						0.002	mg/L			grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Tom McCue/Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	243-2020	96	06	28
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026618

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*
NAME Wacker Siltronic Corporation
ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Ave
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

(2-16) PERMIT NUMBER	*(17-19)* DISCHARGE NUMBER
1200-I	

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	01	01	TO	95	12	31
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Cadmium	SAMPLE MEASUREMENT				n-m		0.005	mg/L			grab
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						0.0076	mg/L			grab
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT						0.038	mg/L			grab
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						0.016	mg/L			grab
	PERMIT REQUIREMENT										
Mercury	SAMPLE MEASUREMENT						0.0002	mg/L			grab
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						0.025	mg/L			grab
	PERMIT REQUIREMENT										
Zinc	SAMPLE MEASUREMENT						0.76	mg/L			grab
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Tom McCue/Environmental Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*	Wacker Siltronic Corp. by: Thomas C. McCue	503	243-2020	96	06	28
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026619

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if different)*

NAME Wacker Siltronic Corporation

ADDRESS PO Box 83180
Portland, OR 97283-0180

FACILITY 7200 NW Front Ave

LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*

DISCHARGE MONITORING REPORT *(DMR)*

(2-16) PERMIT NUMBER: 1200-L

(17-19) DISCHARGE NUMBER:

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	95	01	01	TO	95	12	31
	(20-21)	*(22-23)*	*(24-25)*		*(26-27)*	*(28-29)*	*(30-31)*

Form Approved.
OMB No. 2040-0004
Approval expires 10-31-94

NOTE: Read instructions before completing this form.

PARAMETER *(32-37)*		*(3 Card Only)* QUANTITY OR LOADING *(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	*(4 Card Only)* QUALITY OR CONCENTRATION *(38-45)* MINIMUM	*(46-53)* AVERAGE	*(54-61)* MAXIMUM	UNITS	NO. EX *(62-63)*	FREQUENCY OF ANALYSIS *(64-68)*	SAMPLE TYPE *(69-70)*
Total Suspended Solids	SAMPLE MEASUREMENT						60.5	mg/L			grab
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						0.494	mg/L			grab
	PERMIT REQUIREMENT										
Total Phosphate	SAMPLE MEASUREMENT						0.695	mg/L			grab
	PERMIT REQUIREMENT										
Hexavalent Chromium	SAMPLE MEASUREMENT						0.01	mg/L			grab
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Tom McCue/Environmental Manager

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

Wacker Siltronic Corp.
by: Thomas C McCue

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 243-2020

DATE: YEAR 96 | MO 06 | DAY 28

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026620

Lisa B

P 699 796 662

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to KENT ASHBAKER DEQ - N.W. REGION	
Street & No. 2020 S.W. 4th AVE - SUITE 400	
P.O. State & ZIP Code PORTLAND, OR 97201	
Postage	$ .75
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.00
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$2.75
Postmark or Date	

PS Form **3800**, June 1990

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

DEQ-N.W. REGION
2020 S.W. 4th AVE - SUITE 400
PORTLAND, OR. 97201

4a. Article Number
P 699-796-662

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JUN 29 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆ U.S.G.P.O.: 1992-307-530 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

SCOEPA00026622

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, $300

U.S. MAIL

Print your name, address and ZIP Code here

WACKER SILTRONIC CORPORATION
7200 N. W. FRONT AVENUE
P. O. BOX 83180
PORTLAND, OR. 97283-0180

WACKER SILTRONIC CORPORATION
7200 N. W. FRONT AVENUE
P. O. BOX 83180

ATTN-LISA BLANCHARD

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 241-7598
TDD (503) 241-7519

June 26, 1994 SER 024:CB

Mr. Kent Ashbaker
Northwest Region
Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Ashbaker:

Pursuant to the requirements of storm water permit number 1200-L, issued to Wacker Siltronic Corporation February 22, 1993 enclosed is the tabulated storm water data for the period ending July 1, 1994.

If you have any questions, please contact Chip Bloomer at (503) 243-2020 ext 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

enclosure:
(1) Storm Water Data

cc: John Pittman
Tom Rothschild

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Ave.
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORM WATER DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD
FROM YEAR (20-21) MO (22-23) DAY (24-25)
TO YEAR 94 (26-27) MO 07 (28-29) DAY 01 (30-31)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Oil & Grease	SAMPLE MEASUREMENT						<.50	mg/L			G
	PERMIT REQUIREMENT										
BOD	SAMPLE MEASUREMENT						4.5	mg/L			G
	PERMIT REQUIREMENT										
TSS	SAMPLE MEASUREMENT						27	mg/L			G
	PERMIT REQUIREMENT										
TOC	SAMPLE MEASUREMENT						<5.0	mg/L			G
	PERMIT REQUIREMENT										
COD	SAMPLE MEASUREMENT						1.0	mg/L			G
	PERMIT REQUIREMENT										
Fluoride	SAMPLE MEASUREMENT						.19	mg/L			G
	PERMIT REQUIREMENT										
Phosphate	SAMPLE MEASUREMENT						.02	mg/L			G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER: Tom McCue/Environmental Manager (TYPED OR PRINTED)

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 USC § 1001 AND 33 USC § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP.
BY: Thomas C McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 NUMBER 243-2020

DATE: YEAR 06 MO 27 DAY 94

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

EPA Form 3320-1 (Rev. 9-88) *Previous editions may be used.* (REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.) PAGE OF

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORM WATER DISCHARGE MONITORING REPORT (DMR)
(2-16) 1200-L
(17-19)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

SCOEPA00026625

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORM WATER DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD
FROM YEAR (20-21) MO (22-23) DAY (24-25)
TO YEAR 94 (26-27) MO 07 (28-29) DAY 01 (30-31)

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	SAMPLE MEASUREMENT				7.1	7.1	7.1	pH Units			G
	PERMIT REQUIREMENT										
Arsenic	SAMPLE MEASUREMENT						<.004	mg/L			G
	PERMIT REQUIREMENT										
Cadmium	SAMPLE MEASUREMENT						.0006	mg/L			G
	PERMIT REQUIREMENT										
Chromium	SAMPLE MEASUREMENT						<.02	mg/L			G
	PERMIT REQUIREMENT										
Copper	SAMPLE MEASUREMENT						<.02	mg/L			G
	PERMIT REQUIREMENT										
Lead	SAMPLE MEASUREMENT						.007	mg/L			G
	PERMIT REQUIREMENT										
Nickel	SAMPLE MEASUREMENT						<.05	mg/L			G
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Tom McCue/Environmental Manager
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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 SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP.
BY: Thomas G. McCue
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 503 | NUMBER 243-2020
DATE: YEAR 94 | MO 06 | DAY 27

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORM WATER DISCHARGE MONITORING REPORT (DMR)
(2-16) 1200-L
(17-19)

Form Approved.
OMB No. 2040-0004.

SCOEPA00026626

Facility Name/Location if different) STORM WATER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

NAME Wacker Siltronic Corporation
ADDRESS P.O. Box 83180
Portland, OR 97283-0180

FACILITY 7200 N.W. Front Avenue
LOCATION Portland, OR 97210

(2-16) PERMIT NUMBER: 1200-L
(17-19) DISCHARGE NUMBER:

MONITORING PERIOD

FROM YEAR (20-21)	MO (22-23)	DAY (24-25)	TO YEAR (26-27)	MO (28-29)	DAY (30-31)
			94	07	01

Form Approved.
OMB No. 2040-0004.
Approval expires 6-30-91.

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
Zinc	SAMPLE MEASUREMENT						.18	mg/L			G
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
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	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Tom McCue/Manager Environmental

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED 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. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

WACKER SILTRONIC CORP.
BY: [signature]
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

AREA CODE	NUMBER
503	243-2020

DATE

YEAR	MO	DAY
94	06	27

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

SCOEPA00026627

7002 2030 0003 5905 1953

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Sent
Stree
or PC
City,

Wesley McDaniel CLAXTON
Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, OR 97203-5452

PS Form 3800, June 2002 See Reverse for Instructions

SCOEPA00026628

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1. *Article Addressed to:*

Wesley McDaniel
Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, OR 97203-5452

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) C. Date of Delivery
3-31-04

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☐ Insured Mail ☐ C.O.D.

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PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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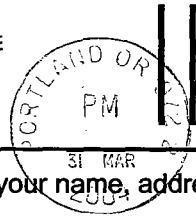

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Jim Claxton
Siltronic Corporation
7200 NW Front Avenue M/S 30
Portland, OR 97210-3676

97210+3676

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Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

Wesley C. McDaniel
Water Pollution Control Laboratory
City of Portland Environmental Services
6543 N. Burlington Ave.
Portland, Oregon 97203-5452

ER:015 JWC

2004-March-30

Stromwater Sampling January 14, 2004

Dear Mr. McDaniel

January 14, 2004 you collected a stormwater grab sample from Siltronic's north stormwater sampling point. The pH of the sample measured by your laboratory was 5.3 (S.U.). The recommended benchmark for pH is >5.5 - < 9.0 (S.U.). As required by Schedule A (10) of Siltronic's 1200-Z permit, we have reviewed our SWPCP and are submitting the results of the review to DEQ and the City in accordance with Schedule B (3).

Environmental impact

Stormwater passing though the north sampling point is mixed with Siltronic's NPDES effluent discharge to the Willamette River. The pH of the effluent is monitored and controlled by the Siltronic's wastewater treatment facility (WWTP). Records from the WWTP indicate that the pH range of the effluent from 2pm until midnight, January 14, was 6.6 to 7.3. No environmental impact due to pH is expected to occur from stormwater passing though the north sampling point.

Review of Stormwater Pollution Control Plan: Siltronic continues to follow Stormwater Best Management Practices.

Containment: All hazardous material are stored undercover, within berms or other secondary containment devices to prevent leaks and spills from contaminating stormwater. All personnel involved with chemical transportation are trained in the safety handling and transport of chemicals. Each is also trained in Chemical Spill Response.

Oil and Grease Controls: An oil and grease separator is located in the oil dispensing area and is set-up for annual inspection and cleaning.

Waste Chemicals and Material Disposal: Wastes are recycled or disposed of in a manner to eliminate or minimize exposure of pollutants to storm water. Wastes contained in bins or dumpsters, where there is a potential for drainage of storm water through the waste, are covered or have sealed side to prevent exposure of storm water to these pollutants.

Covering Activities: All manufacturing activities are conducted indoors. Treatment and storage areas are undercover.

Housekeeping: Areas that may contribute pollutants to storm water are kept clean. Prompt clean up of spills and leaks as well as proper maintenance of vehicles is conducted to eliminate or minimize exposure of storm water to pollutants. In addition, the parking lot and fenced areas swept semi-annually.

Isolation Valves: Catch basins near chemical delivery areas are installed with isolation valves, which are closed while tanks are being filled. Additional isolation valves are located on catch basins to reduce the possibility of a spill reaching an outfall point.

Recommendations

At this time Siltronic Corporation believe that we are meeting or exceeding efforts to minimize the environmental impact of stormwater runoff from the Siltronic property.

Tom Rothschild, Siltronic's Facilities Laboratory Chemist, will be contacting you to coordinate a join sampling day in April or May to sample all three stormwater outfalls

If you have any question for Tom, he can be reached at 503-219-7374.

If you have any other questions, please contact me.

Best regards,

Siltronic Corporation

J Claxton

Jim Claxton
Environmental Engineer

cc: Tom Rothschild
Dennis Jurries DEQ
SWPCP File DEQ
SWPCP File BES

N:\Environmental\Enviromental Affairs\Enviromental-NPDES\Storm Water\stormwater letter 040114.doc

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Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

Mr. Dennis Jurries
Department of Environmental Quality
Northwest Water Quality Division
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

ER:016 JWC

2004-March-30

Stromwater Sampling January 14, 2004 by Wesley McDaniel BES

Dear Mr. Jurries

January 14, 2004 Mr. Wesley McDaniel with the Water Pollution Control Laboratory, City of Portland Environmental Services, collected a stormwater grab sample from Siltronic's north stormwater sampling point. The pH of the sample measured by the BES laboratory was 5.3 (S.U.). The recommended benchmark for pH is >5.5 - < 9.0 (S.U.). As required by Schedule A (10) of Siltronic's 1200-Z permit, we have reviewed our SWPCP and are submitting the results of the review to DEQ and the City in accordance with Schedule B (3).

The enclosed letter was sent to Mr. McDaniel and is your copy of the results of the review.

If you have any other questions, please contact me.

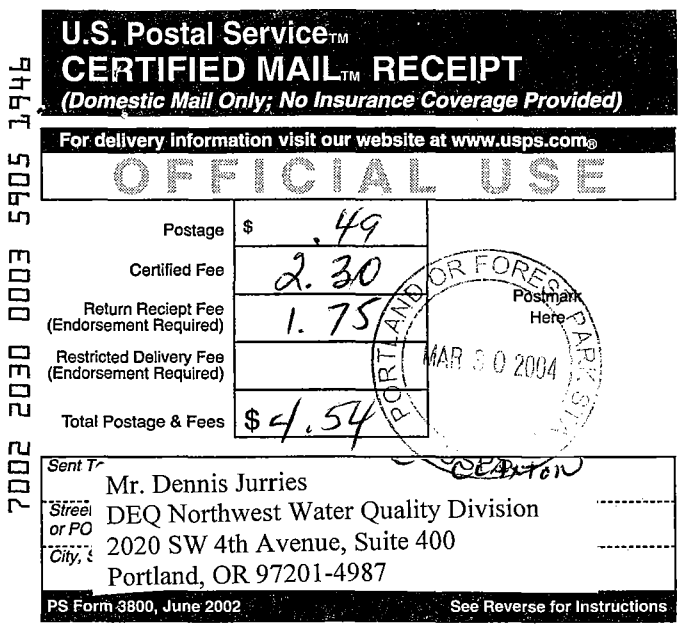
Best regards,

Siltronic Corporation

J Claxton

Jim Claxton
Environmental Engineer

cc: Tom Rothschild
SWPCP File DEQ
SWPCP File BES



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MAR 30 2004

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Sent To
Mr. Dennis Jurries
Street or PO
DEQ Northwest Water Quality Division
City,
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

PS Form 3800, June 2002 See Reverse for Instructions

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1. Article Addressed to:

Mr. Dennis Jurries
DEQ Northwest Water Quality Division
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X DEQ
☐ Agent
☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery
MAR 31 2004

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

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☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7002 2030 0003 5905 1946

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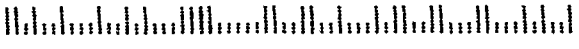
24



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Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

Mr. Dennis Jurries
Department of Environmental Quality
Northwest Water Quality Division
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

ER:016 JWC

2004-March-30

Stromwater Sampling January 14, 2004 by Wesley McDaniel BES

Dear Mr. Jurries

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The enclosed letter was sent to Mr. McDaniel and is your copy of the results of the review.

If you have any other questions, please contact me.

Best regards,

Siltronic Corporation

J Claxton

Jim Claxton
Environmental Engineer

cc: Tom Rothschild
SWPCP File DEQ
SWPCP File BES

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Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

Wesley C. McDaniel
Water Pollution Control Laboratory
City of Portland Environmental Services
6543 N. Burlington Ave.
Portland, Oregon 97203-5452

ER:015 JWC

2004-March-30

Stromwater Sampling January 14, 2004

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Environmental impact

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Recommendations

At this time Siltronic Corporation believe that we are meeting or exceeding efforts to minimize the environmental impact of stormwater runoff from the Siltronic property.

Tom Rothschild, Siltronic's Facilities Laboratory Chemist, will be contacting you to coordinate a join sampling day in April or May to sample all three stormwater outfalls

If you have any question for Tom, he can be reached at 503-219-7374.

If you have any other questions, please contact me.

Best regards,

Siltronic Corporation

J Claxton

Jim Claxton
Environmental Engineer

cc: Tom Rothschild
Dennis Jurries DEQ
SWPCP File DEQ
SWPCP File BES

N:\Environmental\Enviromental Affairs\Enviromental-NPDES\Storm Water\stormwater letter 040114.doc

WACKER
Wacker Siltronic Corporation

Certified Mail

May 23, 2002

Mr. Elliot Zais
Oregon Department of Environmental Protection
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

RE: May 15, 2002, Spill Report ER:017MB
Permit No. 1200-Z

Dear Elliot:

On May 15, 2002, Mr. Jim Claxton of our office called you to report a spill of approximately 1900 gallons of de-ionized city water that was the result of a pipe that broke earlier that day in a clean room in Fab 2. (Upon further review, we have determined that the volume discharged to this drain was approximately 1600 gallons.) This letter reports our findings regarding this event.

This DI pipe broke about 1 a.m. on May 15. At that time there was a small cleanup crew available and they proceeded to bucket the water into an Organic Waste Water (OWW) drain near the clean room. They continued discharging the water to this drain until about 6 a.m. when more people came on shift to assist with the cleanup. This DI water had to be cleaned up quickly because it was starting to leak through the floor into other areas. With more water now being discharged to this drain, it began to backup. Therefore, the excess water was discharged by a contractor to a roof drain outside the clean room under the assumption that all drains associated with the fab go to the wastewater treatment plant. Later that day when this pipe break was reported to the Wacker Environmental Department, it was determined that this roof drain goes to the storm water system.

We collected samples and tested the small amount of solid and liquid found on the roof. We found that the liquid had a pH of 7.6. We also had the liquid sample checked for the surfactant that is used in this clean room and found no detectable amounts. There was some slight foaming of the liquid when it was shaken but the foam disappeared quickly. The roof area was swept and the solids were checked for pH. The solid material when mixed with DI water had a pH of 8.8 to 9.0. It is not known if the solids found on the roof were related to the discharge.

Based on these results, we do not believe any harm was done to the environment from the discharge of this de-ionized city water nor were any effluent limitations exceeded. However, as future precautions, we have taken the following steps:

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

1. Directed the contractor to re-train its employees, and to review with all their staff the drainage restriction policies at our site specified in our Storm Water Pollution Control Plan (SWPCP) document. We understand that this has already been completed.

2. Mark the roof drains with signs that say "DUMP NO WASTE / DRAINS TO WILLAMETTE" like we have on our grade-level catch basins.

3. Finally, we have drafted an article to be published in our next company newsletter which will review for all of our employees the storm water pollution prevention controls and practices we have established for the site.

We also re-enforced existing training and just implemented an employee on-line training course for Environmental Awareness. In this course we specifically state that "nothing, besides rainwater, can be put into a storm or roof drain. Storm water is discharged directly to the Willamette River so familiarize yourself with storm drains in your area".

If you have any questions regarding this spill, please feel free to call me at (503) 219-7532.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

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1. Article Addressed to:

Dr. Elliot Zais
Water Quality Source Control, DEQ
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

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Dr. Elliot Zais, DEQ, State of OR, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

PS Form 3800, January 2001 See Reverse for Instructions

SCOEPA00026642

Jim,
For our
Storm water files.
Megan

SCOEPA00026643

WACKER
Wacker Siltronic Corporation

ENGINEERING WORK REQUEST

E 22126

DEPARTMENT Facilities BLDG. FAB-2 ROOM: D221 D220 COST CENTER: S.T.N.

REQUEST: ATCOR H4541.T02
INSTALL/PROVIDE GRAVITY OWW DRAINS OR PNEUMATIC PUMPS WITH OWW DRAINS IN THE LOWEST POINT IN room D220 AND D201. THE LOWEST POINT IN THE CLASS 10 AREA AND THE LAST POINT FLUIDS ARE EVACUATED IS IN room D201 CLOSE to the GRAY AREA MAINTENANCE BOWN room doors.

CHARGE TO
PROJECT NO.:
ITEM CODE, MAT'L:
ITEM CODE, LABOR:

DESCRIPTION OF JUSTIFICATION: At This time, WE HAVE NO WAY to dispose of ANY Problem fluids ENVIRONMENTally correct IN THE CLASS 10 AREA UNDER THE RAISED floor. WE have had 3 EA problems with A DI flow master BREAKING that LEFT 2000 GAL. OR more of DI WATER with Loss of production (HIGH moisture counts) This should BE A Priority 1. Job.

PRIORITY REQUEST (circle the most appropriate priority):
(1) Critical scheduling for projects that are immediate / to personnel safety, and/or environmental regulatory status, and/or / to alleviate current production problems (capacity/quality).
2 Scheduling for projects that / meet production plans / are associated with quality and/or capability, and/or effect environmental regulatory status.
3 Routine scheduling for projects that do not directly effect production quality and/or quantity

TYPE OF WORK (Check One)

☐	0	Safety
☐	1	Legal/Environmental
☐	2	Quality Improvement
☐	3	Future Product
☐	4	Increased Productivity
☐	5	Increased Yields
☐	6	Cost Savings
☐	7	Capacity Adjustment
☐	8	Replacement
☐	9	Special

DATE REQUIRED

FOR ENGINEERING ONLY

PROJECT TITLE: ATCOR DRAINS

ENGINEERING PROPOSAL:

SUMMARY

ESTIMATED	DOLLARS	WEEKS
Eng. Labor		
Equip./Labor ...		
Other Labor		
Other		
Project Total		

REVIEWED BY FINANCIAL ANALYST _____ DATE: _____
☐ CAPITAL ☐ EXPENSE

REQUIRED APPROVALS AND ROUTING

AUTHORIZATIONS PROVIDED BY REQUESTOR
Requested by: Blue Linden Ext. 4576 Date: 5-28-02
User Mgr./Team Leader: _____ Date: _____

AS APPROPRIATE:
Process Engineering: _____ Date: _____
Equipment Engineering Mgr.: Larry Bayer Date: 5/29/02
Mfg. Team Leader: _____ Date: _____
Fac. Engineering Mgr. _____ Date: _____
Environmental Mgr. _____ Date: _____
Safety Mgr. _____ Date: _____

ENGINEERING
Assigned Eng. Mgr.: Tom Cates CCC: _____
Assigned Project Engr.: _____ Date: _____
Computer Entry By: _____ Date: _____

DESIGN & COST APPROVALS
User Mgr./Team Leader: _____ Date: _____
Requestor's Mgr./Team Leader: _____ Date: _____

FINAL ACCEPTANCE & CLOSURE
Requestor: _____ Date: _____
User Mgr./Team Leader: _____ Date: _____

AS APPROPRIATE:
Process Engineering: _____ Date: _____
Equipment Engineering Mgr.: _____ Date: _____
Mfg. Team Leader: _____ Date: _____
Fac. Engineering Mgr. _____ Date: _____
Environmental Mgr. _____ Date: _____
Safety Mgr. _____ Date: _____
Closed in Computer _____ Date: _____

This form complies with Engineering Work Request Procedure No. C15.99.2/0004

FORM NO. 5407579

PLEASE USE PEN OR TYPEWRITER ONLY

SCOEPA00026644

Pacific West Site Services **Wacker Siltronics Facility**

EWR and SWPCP to Blue

05/15/02 Water Spill

Location: Fab-2 Class 10 Cleanroom (all areas)
Time of Event: 1:00 AM
Duration of Event: 11 hours
Total Volume of Water: From the time we started at 6:00 am an approx. of 1900 gallons. total of ~1600 gallons went to roof drain
Number of Pacific West Personnel involved: 12

I (Rosa Salskov) received a page from fab-2 lead at 7:15 am. Diana said that there was a large volume of water on the ground that the night staff had been working on since 1:00 am. She requested 2 night employees to stay and help. Diana had continued recovery of the area along with 5 more employees until I arrived on site at 8:10 am.

Diana informed me that when she started the recovery at 6:00 am there were 2 inches of water spanning the entire cleanroom of class 10.

There was several more water spills in the sub-fab due to water seeping through fissures in the concrete flooring. The area was under control.

I called two more employees to help out and utilizing 7 PWSS employees we proceeded to vacuum the water from under the floor of class 10 cleanroom. We quickly overloaded the system and had to dump outside.

Mindy, Ulises responded to security call at 1:10 am. Hector was inform immediately and sent extra help (Alfredo and Gustavo) Ulises worked until 7:00 am and Mindy until 8:10 am. Alfredo worked until 4:00 am and Gustavo left at 2:30 am.

Diana, Nicholas, Maria, Jesus and myself worked until 11:50 am.
Juan and Pedro came in at 9:15 until 2:15 am. Wacker personnel were also working at the area around 6:30am. They supplied us with different wet vacuums and water separators. We finally had area under control by 11:50am and immediately continued to detail the area and finished around 2:15.

Roof water - 7.6
(Storm Drain - 6.3 — other side of fab)

Roof
Solids 8.8-9.
(Road 7.2 — other side of fab)

NO 9N9 Surfactant (no Abs @ 277nm)
Slight foaming (possible Tergitol - Atcos) but very little if any.

Burr, Myron

From: PWS-Fab1
Sent: Wednesday, May 15, 2002 5:43 PM
To: McCue, Tom
Cc: Burr, Myron; Blodgett, Holly
Subject: 5/15/02 Fab 2 Water spill

Hello Tom,

Incident Summary: I wanted to summarize a few points regarding the water spill in the Fab 2 class 10 Atcor area that occurred on 5/15/02. The water spill began at 1am on 5/15/02 and was the result of a 2 " plastic fitting breaking on one of the water lines in the Atcor area. The water accumulated rather quickly in the entire class 10 sub floor area. The result was a shallow pool of water spanning the entire area class about 1/4 - 1/2 inch in depth. The water then found its way through fissures in the concrete and began raining down to the sub Fab area. The water pools in two low spots in the room where our custodians access with water vacuums. The custodians were bucket brigading the filled wet vacs into the subfab area and dumping into the OWW sump area directly under the class 10 hallway. With a limited staff on night shift we had no problems. During the day shift we doubled staff, and the OWW sump became overloaded. PWSS's (Pacific West Site Services) Fab 2 customer, Blue Linden, then directed us to dispose of the water off of the rear balcony/roof area. Over 1600 gallons of water ended up in these drains. These drains are not classified OWW, and drain directly into the river.

Corrective Action: PWSS will retrain and review with all staff, the drainage restriction policies at this site utilizing WSC environmental documents. PWSS would like to partner with WSC to create a procedure for dealing with water spills in this area. One recommendation would be to label those rooftop drains as draining to river. Additionally, PWSS will touch up all painted drains on site. Long term, PWSS would like to work with WSC engineers and facility personnel to create a water spill recovery plan that accommodates, safety, environmental, protocol and production restrictions. We might want to look at automatic sump pumps under that floor. Additional filters on the current sump system. I look forward to any additional feedback that you and your team might be able to provide.

Thank-you,

Tannon Scoggins
Pacific West Site Services

SCOEPA00026646

Lotus cc:Mail for cathryn young

Date: 6/18/01
Sender: Tom McCue
To: Tom Rothschild, Dianne Irish
cc: Justin Darr, Jim Claxton, Cathryn Young
Subject: DEQ Sampling of Catch Basins

We have just been notified that DEQ will be on-site at 1:30 Tuesday, 6/19/01 to observe us taking samples of three stormwater catch basins. Please arrange to assist us. There will be three samples taken and a possible field blank. Samples will be taken of the sediment in the bottom of three marked catch basins with a clean and decontaminated polyethylene scoop. I noticed that you have several in the lab. The sample scoop must be free of organics and metals. Mr. Claxton suggests soaking the sample scoop in acid for a couple hours and rinse with DI water before use. All samples must be documented on our chain of custody form and sent to an independent outside laboratory for analysis. Instructions are to be given to the laboratory to composite all three samples before analysis.

Equipment needed:

4 - 9 oz. glass sample bottles
Polyethylene sample scoop
Gloves
Sample Labels
Chain of custody forms
Steel bar to remove catch basin grates or hyster and chain.

I will get the analysis list to you in the morning so the chain of custody forms can be filled out ahead of time. Samples must be cooled to 4 C. Holding time is a minimum of 14 days.

Tom McCue

Wacker Siltronic Corporation

WACKER

Permit 12002

To: Distribution

From: Murray Tilson

Subj: Unauthorized Disposal into Stormwater Drains

Date: 4/7/87

DISCUSSION:

1. We experienced a period of "non-compliance" on 3/25/87 with our river pH oufall as a result of someone using the steam cleaning unit and discharging the waste water to the catch basin on the roadway south of the Facilities Maintenance Shop.

2. All catch basins are connected to a common stormwater line, and combine with the Combined Effluent line before flowing through the river outfall pH station and discharging to the Willamette River. Anything discharged through the catchbasin sytem receives NO treatment prior to draining to the river.

2. The roadway catchbasins are designed to collect stormwater runoff from our roads and parking areas only, not serve as a convenient means of disposal for other fluids.

3. A new Oily Wastewater Containment site will soon be constructed at the outside corner of the Process Building where Facilities Maintenance is located to serve the needs of collecting and disposing of oily wastewater, wash water from steam cleaning operations, etc. This project should be completed by June 30th.

4. This new containment area will discharge through a oily wastewater seperator into the Sanitary Sewer system and eliminate further problems associated with this type of action (see attached Site Plan).

COMMENTS/RECOMMENDATIONS:

1. The catchbasins should not be used in any way for disposal of any type of wastewater or other chemical substance.

2. Prior to completion of the new Oily Wastewater Containment site all washings associated with the steam cleaner should be disposed of at the OWW forwarding sump (see attached Site Plan). This should be coordinated with the Facilities Operations Supervisor. I thank you in advance for implementing this procedure.

Distribution:
Emil Dogaru
Don Anderson
Morgan Richardson
Zeki Atay
Dave Stalder

cc:
John Pittman
Otto Sweep
Jerry Schaeffer
Don Crane
Mike Pilkington

Greg Carr
George Stevens
Oliver Price

WACKER

HAZARDOUS MATERIALS
USE AND HANDLING LOCATIONS

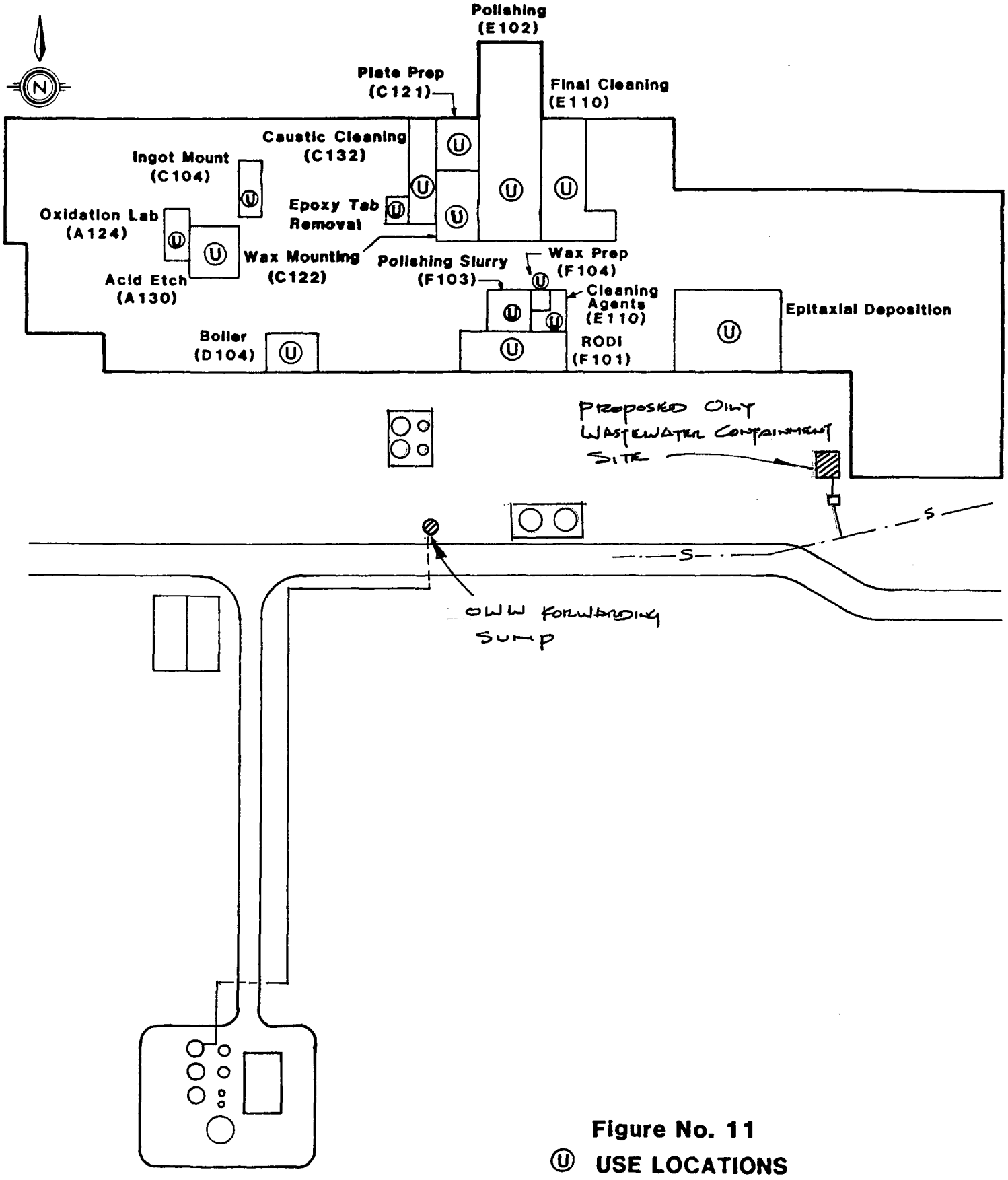

Figure No. 11

Ⓤ **USE LOCATIONS**

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Dr. Elliot Zais
Water Quality Source Control, DEQ
2020 SW 4th Ave., Suite 400
Portland, OR 97201-4987

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1. Article Addressed to:

Dr. Elliot Zais
Water Quality Source Control - DEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201-4987

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NORTHWEST REGION

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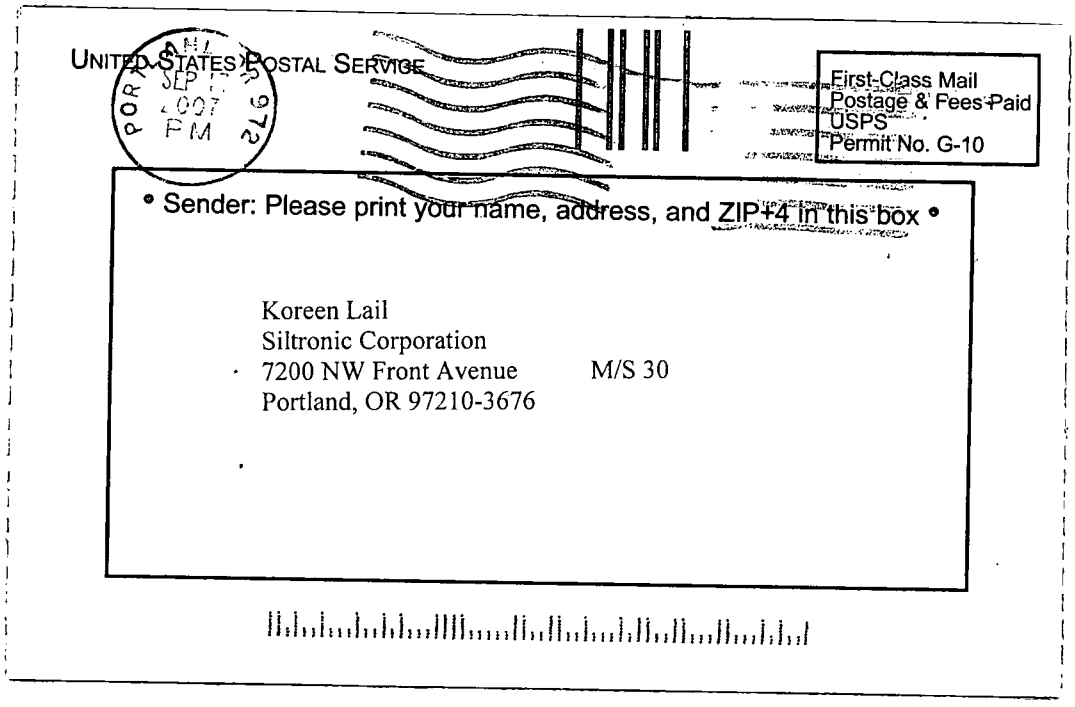

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Koreen Lail
Siltronic Corporation
7200 NW Front Avenue M/S 30
Portland, OR 97210-3676

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7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
koreen.lail@siltronic.com

ER052:KL

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

2007-September-10

August 2007 Bioassay results

Dear Dr. Zais,

The Bioassay of Siltronic's effluent **passes the requirements** of our NPDES permit number 101128.

The Bioassay was performed on three species: *Ceriodaphnia dubia* (water flea), *Pimephales promelas* (fathead minnow) and *Raphidocelis subcapitata* (green algae). The analyses were performed at the following dilutions, which are based on the average of three mixing zone dilution studies[1], as percentage effluent: 1.90%, 3.75%, 7.5%, 15% and 30%. Samples were taken August 6 though August 10, 2007. The analytical methods used were "*Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002*" and *"Whole Effluent Toxicity Testing Guidance Document, Oregon Department of Environmental Quality, January 1993".*

Ceriodaphnia dubia

Acute Toxicity test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value (concentration of sample causing a 50% reduction in survival) was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's zone of immediate dilution (ZID) is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated a statistically significant reduction in reproduction at the 30% effluent concentration when compared to the control. The NOEC and LOEC were 7.5% and 15% effluent, respectively. Control survival was 100%. The IC_{25} value (concentration of sample causing a 25% reduction in biological measurement) calculated on reproduction was 3.23% effluent concentration. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Pimephales promelas (dual endpoint)

Acute Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's ZID is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The IC_{25} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Raphidocelis subcapitata

Chronic Toxicity test results indicated that there was a statistically significant reduction in growth at the 30 percent effluent concentration tested when compared to the control. The NOEC and LOEC were 15 and 30 percent effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is ≥ 1.8% effluent[1].

Summary of CH2MHill results for August 2007

Acute (48-hour) Results:	Ceriodaphnia dubia	Pimephales promelas
NOEC	30%	30% (% Effluent)
ZID Pass Criteria[1]	≥13.4%	≥13.4%

Chronic Results:	Ceriodaphnia dubia	Pimephales promelas	Raphidocelis subcapitata
NOEC	7.5%	30%	15% (% Effluent)
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%	≥ 1.8%

If you have any questions, please contact Koreen Lail at (503) 219-7994.

Regards,
Siltronic Corporation

Thomas McCue
Environmental Manager

cc: Tom Rothschild
NPDES Bioassay File

[1] CH2MHILL Mixing Zone Effluent Dilution Evaluations prepared for Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Siltronic's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The average of the three mixing zone dilution studies identified worst-case (0.1-feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$), respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. **Conversely, the effluent is in compliance for toxicity if the acute test NOEC is greater than or equal to (≥) 13.4% effluent and the chronic test NOEC is greater than or equal to (≥) 1.8% effluent.**

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 7 through 14, 2007

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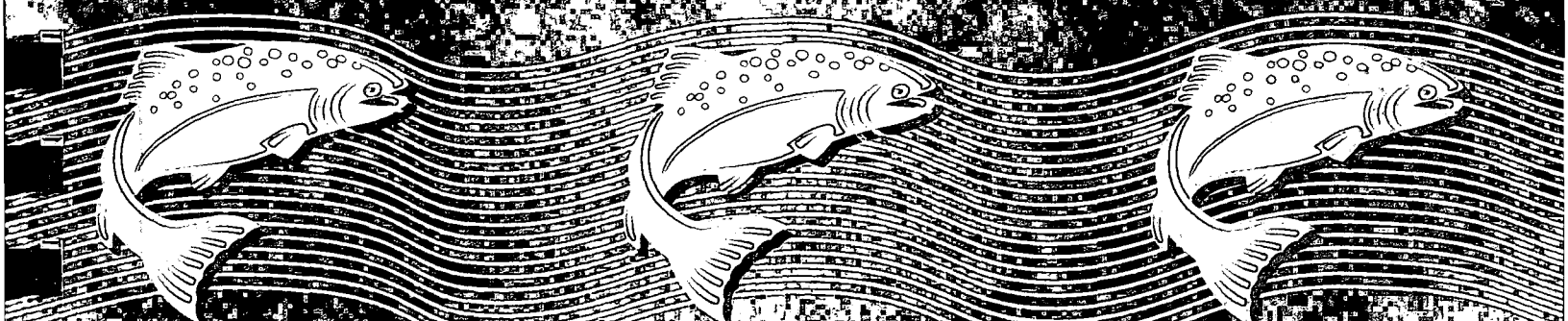

CH2MHILL

SCOEPA00026656

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 7 through 14, 2007

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Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

August 17, 2007
Lab I.D. No. B1863

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SCOEPA00026658

INTRODUCTION

CH2M HILL conducted chronic and acute bioassays from August 7 through 14, 2007, on samples provided by the Siltronics Corporation, Portland, Oregon. The tests were conducted using the water flea (*Ceriodaphnia dubia*), the fathead minnow (Pimephales *promelas*), and algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum)*.

SUMMARY OF TEST RESULTS

Exhibits 1 and 2 provide a summary of the final test results.

EXHIBIT 1
Summary of Acute Test Results

Species	NOEC (%)	LOEC (%)	LC_{50} (%)
C. dubia	30.0	>30.0	>30.0
P. promelas	30.0	>30.0	>30.0

Note: acronyms are as defined below Exhibit 2.

No statistically significant acute responses were observed in the *C. dubia* or *P. promelas* acute tests. More detailed information is provided in the Acute Bioassay section below.

EXHIBIT 2
Summary of Chronic Test Results

Species	NOEC (%)	LOEC (%)	IC_{25} (%)
C. dubia	7.50	15.0	3.23
P. promelas	30.0	>30.0	>30.0
R. subcapitata	15.0	30.0	>30.0

Note: acronyms are as defined below.

Statistically significant chronic responses were observed in the *C. dubia* and *R. subcapitata* tests. No statistically significant chronic responses were observed in the *P. promelas* test. More detailed information is provided in the Chronic Results section below.

SCOEPA00026659

ACRONYM DEFINITIONS (from EPA guidance):

NOEC = No Observed Effect Concentration: The highest test concentration that causes no observable adverse effects on the test organisms (i.e. no statistically significant reduction from the control).
LOEC = Low Observed Effect Concentration: The lowest test concentration that does cause an observable adverse effect on the test organisms (i.e. is a statistically significant reduction from the control).
LC_{50} = Lethal Concentration (50%): A point estimate of the test concentration that would result in death in 50 percent of the test population.
IC_{25} = Inhibition Concentration (25%): A point estimate of the test concentration that would result in a 25 percent reduction of a non-quantal biological measurement (i.e. growth, reproduction, etc.) for the test population.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. EPA/600/4-91/002, July 1994 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

The acute test was performed according to: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F; and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

Additional guidance was provided by:

- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, USEPA Office of Water (2002), EPA-821-R-02-012.
- *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (2002), EPA-821-R-02-013.
- *Reasonable Potential Analysis for Toxic Pollutants, Internal Management Directive*, Oregon Department of Environmental Quality (September 2005).

DEVIATIONS FROM TEST PROTOCOLS

Deviations from required procedures in the test methods:

- None noted.

Deviations from recommended procedures in the test methods:

- None noted.

SCOEPA00026660

TEST ORGANISMS

The *C. dubia* were obtained from CH2M HILL's in-house cultures and were less than 24 hours old for the acute test and less than 24 hours old and within an 8-hour age range for the chronic test. The fathead minnows were obtained from Aquatox Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. The *R. subcapitata* was obtained from CH2M HILL's in-house cultures and were 4 days old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA. The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used was reconstituted, moderately hard water with a total hardness of 80 to 100 mg/L as $CaCO_3$ and an alkalinity of 60 to 70 mg/L as $CaCO_3$. The dilution water used for the algae tests was reconstituted, moderately hard water with nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to use.

TEST CONCENTRATIONS

The concentrations for the acute test were 1.90, 3.75, 7.50, 15.0, 30.0 percent effluent with dilution water for the control. For the acute *C. dubia* test, 20 organisms per concentration were used with four test vessels per concentration and five organisms per vessel.

The concentrations tested in the chronic tests were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent and dilution water for the control. For the chronic *C. dubia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel. For the fathead minnow chronic test, 10 organisms per chamber, with four chambers per concentration for a total of 40 organisms per concentration were used. The algae test was run with four replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

Samples were collected by Siltronics Corporation personnel on August 6, 8, and 10, 2007. The samples were received by CH2M HILL's Corvallis Aquatic Toxicology Laboratory on August 6, 8, and 10, 2007, and tests were initiated within 36 hours of sample collection. Sample temperatures were 0.8, 4.2, and 5.3 °C on arrival, respectively. On receipt, the samples were stored in the dark at 4°C until test solutions were prepared and tested. Chain of Custody for sample collection is provided in Appendix C.

SCOEPA00026661

SAMPLE PREPARATION

Samples used during these tests were filtered through a 60 µm net upon arrival and temperature was adjusted prior to each daily renewal.

The samples used for the algae test had nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to test initiation.

MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

The acute test was analyzed at initiation for dissolved oxygen, pH, and conductivity, and every 24 hours thereafter for mortality, dissolved oxygen, and pH. Conductivity was again taken at test termination. Temperature was monitored daily and in the incubator or waterbath continuously throughout the testing period.

For the fathead minnow and *C. dubia* chronic tests, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in all the concentrations. Conductivity was measured in each new sample (100 percent effluent) and in the control. *C. dubia* survival and neonate production was measured daily in the chronic tests. According to EPA, *C. dubia* tests should be terminated when 60 percent or more of the surviving female *C. dubia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored in prerenewal solutions daily and in the incubator or waterbath continuously throughout the testing period.

For the chronic algae, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity were measured in the control, low, middle, and high test concentrations at test initiation. *R. subcapitata* growth was determined by cell counts using a hemocytometer. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period.

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DATA ANALYSIS

The effects measured during the *C. dubia* acute test included survival over the exposure period. The acute dual endpoint test data included survival over the initial 48 hour exposure period in the fathead minnow chronic test. The statistical analyses performed were those outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA-821-R-02-012, using CETIS version 1.1.2. For definitive tests, Dunnett's Procedure or Bonferroni T-test was used to compare the survival data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data. LC_{50} values were calculated for the acute tests using Probit, Trimmed Spearman-Karber, or Linear Interpolation statistical methods.

The effects measured during the *C. dubia* chronic test included survival and reproduction over the exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the exposure period. The effect measured during the algae test was algae growth response. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA-821-R-02-013, CETIS version 1.1.2. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the reproduction or growth data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data. IC_{25} values were calculated for growth effects in the chronic tests.

DATA INTERPRETATION

Oregon DEQ's *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive*, Chapter 7, states that hypothesis testing must be conducted to evaluate acute toxicity. The NOEC value is used to "meet the requirement for no statistical difference between the effluent" and the control. NOEC values less than the effluent concentration found at the edge of the zone of immediate dilution (ZID), or 100 percent effluent if no ZID exists, indicate acute toxicity.

Oregon DEQ's *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive*, Chapter 7, recommends that the chronic effect 25% inhibition concentration (IC_{25} value) "... be the benchmark for determining whether the results of chronic tests indicate toxicity." IC_{25} values less than the effluent concentration found at the edge of the mixing zone, or 100 percent effluent if no mixing zone exists, indicate chronic toxicity.

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RESULTS AND DISCUSSION

ACUTE RESULTS

The raw data sheets are presented in Appendix A and the results are summarized in Table 1 below. The survival in the 30 percent sample was 100 percent for the *C. dubia* acute test.

Table 1
Summary of Acute Results
Percent Survival

Concentration (%)	0 hr	24 hr	48 hr
C. dubia			
Control	100	100	100
1.90	100	100	100
3.75	100	100	100
7.50	100	100	100
15.0	100	100	100
30.0	100	100	100

The test resulted in no statistically significant difference in any of the effluent concentrations tested when compared to the control for the *C. dubia* acute test. The NOEC and LOEC were 30 and greater than 30 percent effluent.

The LC_{50} value was calculated on the *C. dubia* survival. The LC_{50} value was greater than 30 percent effluent.

The dissolved oxygen concentration remained at 4.0 mg/L or greater throughout the test period. Test temperatures remained in the range of 20±1°C. The test proceeded without interruption or incidence that could have affected test results.

The 48 hour dual endpoint (deriving of the acute mortality results from the chronic test) resulted in no statistically significant difference between the control and any effluent concentrations tested for the fathead minnow test. The NOEC and LOEC were 30 and greater than 30 percent effluent. The LC_{50} value calculated on fathead minnow survival was greater than 30 percent effluent.

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CHRONIC BIOASSAYS

Table 2 summarizes the survival and growth data for the fathead minnow chronic test.

Table 2
Summary of Chronic Results
Fathead Minnow

Sample Concentration (%)	Percent Survival	Mean Dry Weight Per Fish (mg)
Control	97.5	0.780
1.90	97.5	0.784
3.75	100	0.769
7.50	100	0.797
15.0	100	0.825
30.0	100	0.806

The fathead minnow test results showed no statistically significant reduction in survival or growth at any effluent concentration tested when compared to the control. Control survival was 97.5 percent. The NOEC and the LOEC were 30 and greater than 30 percent effluent, respectively.

Oregon DEQ's *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive* recommends that the chronic effect 25% inhibition concentration (IC_{25} value) "... be the benchmark for determining whether the results of chronic tests indicate toxicity." The IC_{25} value calculated on the fathead minnow growth was greater than 30 percent.

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Table 3 summarizes the survival and reproduction data for the *C. dubia* test.

Table 3
Summary of Chronic Results
C. dubia

Concentration (%)	Percent Survival	No. Young Per Adult
Control	100	30.9
1.90	80	27.8
3.75	100	20.8
7.50	90	21.9
15.0	90	18.2 [a]
30.0	60	11.8 [a]

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Bonferroni T- test.

The *C. dubia* test results indicated no statistically significant reduction in survival at any effluent concentration tested. The test results did show a statistically significant reduction in reproduction at the 15 and 30 percent effluent concentrations when compared to the control. The NOEC and the LOEC were 7.50 and 15 percent effluent, respectively.

Oregon DEQ's *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive* recommends that the chronic effect 25% inhibition concentration (IC_{25} value) "... be the benchmark for determining whether the results of chronic tests indicate toxicity." The IC_{25} value calculated on the fathead minnow growth was 3.23 percent.

Typo - should read C. dubia reproduction as per conversation with Bret Muckey CH2M Hill at (541-758-0235) 9/12/07. See attached page

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Table 4 summarizes the 96-hour algae growth response data for the *R. subcapitata* test.

Table 4 **Summary of Chronic Results** ***R. subcapitata***	
Concentration (%)	**Growth (Cells/ml x 10^6)**
Control	4.890
1.90	4.506
3.75	4.992
7.50	4.402
15.0	4.587
30.0	3.878 [a]
[a] Indicates a statistically significant reduction from control at p= 0.05 using Dunnett's Multiple Comparison test.	

The *R. subcapitata* test results indicated a statistically significant reduction in growth at the 30 percent effluent concentration tested when compared to the control. The NOEC and the LOEC were 15 and 30 percent effluent, respectively.

Oregon DEQ's *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive* recommends that the chronic effect 25% inhibition concentration (IC_{25} value) "... be the benchmark for determining whether the results of chronic tests indicate toxicity." The IC_{25} value calculated on *R. subcapitata* growth was greater than 30 percent effluent.

The dissolved oxygen levels in the chronic tests remained above 4.0 mg/L throughout the chronic test periods and test temperatures remained at 25±1°C. The tests proceeded without any interruption that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted using sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines. The IC_{25} values, LC_{50} values, and control chart limits are listed in Tables 5 and 6. The data sheets for the reference toxicant tests are provided in Appendix B.

Table 5
Acute Reference Toxicant Tests (g/L)

Species	LC_{50}	Control Chart
P. promelas (FHM 1379)	7.3	6.6 to 7.8
C. dubia	2.1	1.6 to 3.0

Table 6
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
P. promelas (survival)	2.4	1.6 to 4.8
P. promelas (growth)	2.4	1.4 to 3.5
C. dubia (survival)	1.58	1.30 to 1.80
C. dubia (reproduction)	0.33	0.24 to 0.78
R. subcapitata (growth)	1.40	0.29 to 2.32

SCOEPA00026668

CH2M HILL **TOXICITY TEST: SAMPLE, TEST ORGANISM, AND DILUTION WATER DATA**

Client: Siltronics Corporation — Test Initiation: Date 8/7/2007

Contact: Tom Rothschild (503) 219-7374 — Test Termination: Date 8-14-2007

Technician(s): Pittenger,

Sample ID Number	Field ID	Collected Date (mm/dd/yy)	Collected Time	Date Received	Date of 1st Use	Total Residual Chlorine (mg/l) as Rc'vd / as Tested	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
BB63 -01	07-102	08-06-07	0500	8-6-07	8-7-07	0.02 / -	1.62	126	-
-02	07-103	8-8-07	0720	8-8-07	8-9-07	<0.02 / -	0.47	182	-
-03	07-107	8-10-07	0720	8-10-07	8-11-07	<0.02 / -	0.49	210	-
						/			
						/			
						/			
						/			
						/			
						/			
						/			
						/			
						/			
Reporting Limits:						0.02 mg/L	0.20 mg/L	4 mg/L	4 mg/L

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (Algae)	2861	106	82
Recon MH (FHM)	2859	94	70

Comments: ☑ Indicates the action was taken, (☐= action not taken):

☑ Sample(s) filtered through 60 µm mesh prior to use.

☑ Subsample for algae test had nutrients added and was 0.45 um filtered

Test Species Information	Cd # 2080 *Ceriodaphnia dubia* Chronic	FHM # 1379 *Pimephales promelas* Chronic	Rs # 469 *Raphidocelis subcapitata* Chronic	Cd # 2081 *Ceriodaphnia dubia* Acute	
Organism Age at Initiation	<24 hrs, all within an 8 hr window	<48 hrs, all within a 24 hour window	4 Days	<24 hrs	
Test Container Size	30 ml	800 ml	125 ml	30 ml	
Test Volume	15 ml	500 ml	50 ml	25 ml	
Feeding: Type and Amount	0.10 ml Algae and 0.10 ml YCT daily	0.15 ml *Artemia*, 2 x Daily	1 ml/L Nutrients, incl. EDTA, added	Algae and YCT during acclimation	
Aeration: In Test Chambers via Slow Bubble :	☑ None ☐ Prior to use	☑ None ☐ Prior to use ☐ @ ____ hrs	☑ None ☐ Prior to use	☑ None ☐ Prior to use	
Dilution Water ID#	2859	2859	2861	2859	
Acclimation Period	<24 hrs	<24 hrs	4 Days	<24 hrs	
Test Location	# 5	# 10	# 2	# 7	
Organism Source	In-House	Aquatox	In-House	In-House	
Size	-	-	-	-	
Loading Rate	-	-	-	-	

Water Quality Meters Used/ID#: Dissolved Oxygen #12 pH #4 Conductivity #2

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation Sample ID #: B1863-01

Sample Description:

Random Template Used: Whiskey Cup random # 7

Test Species: *Ceriodaphnia dubia* ID#: Cd 2081

Beginning, Date: 8-7-2007 Time: 0950

Ending, Date: 8-9-2007 Time: 0830

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	DW	DW	~~DW~~		
Time	0950	0950	0830		
Therm. ID#	5	5	5		

Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			8.7	8.6/8.7	8.6			8.0	7.8/7.8	7.7			19.7	19.9	19.5			319	341/322	303		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
1.90	A	5	5	5			8.7	8.6/8.7	8.7			8.0	7.8/7.8	7.7			19.9	19.7	19.6			334	352/330	319		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
3.75	A	5	5	5			8.7	8.6/8.7	8.7			8.0	7.8/7.8	7.8			19.8	19.6	19.2			340	363/334	340		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation Sample ID #: B1863-01

Sample Description:

Random Template Used: Whiskey Cup random # 7

Test Species: *Ceriodaphnia dubia* ID#: Cd 2081

Beginning, Date: 8-7-2007 Time: 0950

Ending, Date: 8-9-2007 Time: 0830

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	DW	DW	DW		
Time	0950	0950	0830		
Therm. ID#	5	5	5		

Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
7.50	A	5	5	5			8.7	8.6/8.7	8.8			8.0	7.7/7.8	7.7			19.8	19.7	19.2			361	380/348	365		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
15.0	A	5	5	5			8.7	8.6/8.7	8.9			7.9	7.7/7.7	7.7			19.8	19.8	19.3			402	414/427	396		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
30.0	A	5	5	5			8.7	8.6/8.8	8.9			7.8	7.7/7.6	7.7			20.0	19.7	19.1			484	491/479	526		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 17 Aug-07 8:59 AM
Test Link: 09-4547-3709/B186301cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	05-6388-3410	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	07 Aug-07 09:50 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	09 Aug-07 08:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	07 Aug-07 09:50 AM	**Brine:**			

Sample No:	03-4767-9768	**Code:**	B1863-01	**Client:**	
Sample Date:	06 Aug-07 05:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Aug-07 10:25 AM	**Source:**	Siltronic Corporation		
Sample Age:	29h (0.8 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-2580-8111	48h Proportion Survived	30	> 30	N/A	5.00%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
12-4039-1425	48h Proportion Survived	50	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
12-4039-1425	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria
13-2580-8111	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

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CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	09-4547-3709	09-4547-3709	17 Aug-07 8:59 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	5.00%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	4	Non-Significant Effect
		3.75	18	10	0.8333	4	Non-Significant Effect
		7.5	18	10	0.8333	4	Non-Significant Effect
		15	18	10	0.8333	4	Non-Significant Effect
		30	18	10	0.8333	4	Non-Significant Effect

ANOVA Table

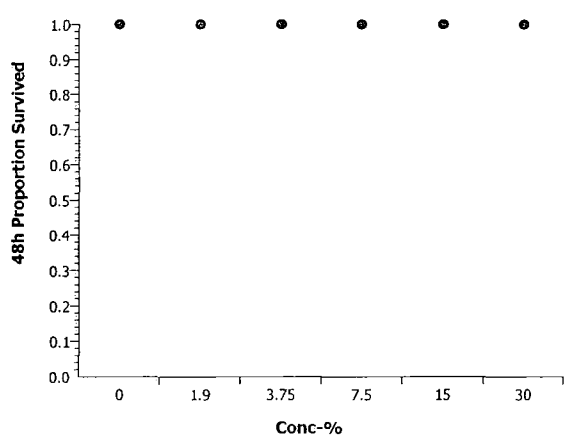
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0	0	5	65535.0	0.00000	Significant Effect
Error	0	0	18			
Total	0	0	23			

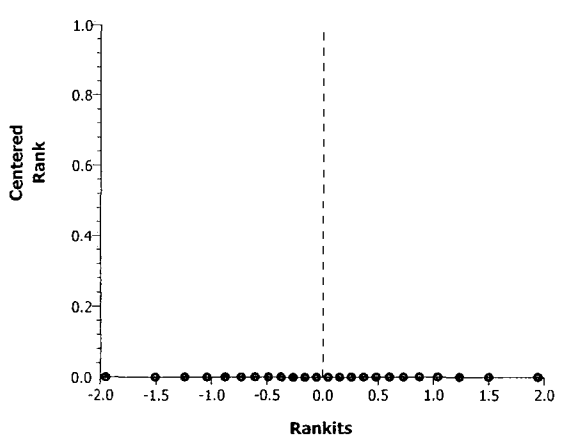
ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	65535.00000	4.24788	0.00000	Unequal Variances

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
1.9		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
3.75		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
15		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
30		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0

Graphics





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CETIS Analysis Detail

Report Date: 17 Aug-07 8:59 AM
Analysis: 12-4039-1425/B186301cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	09-4547-3709	09-4547-3709	17 Aug-07 8:59 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	3019480	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	> 30	N/A	N/A

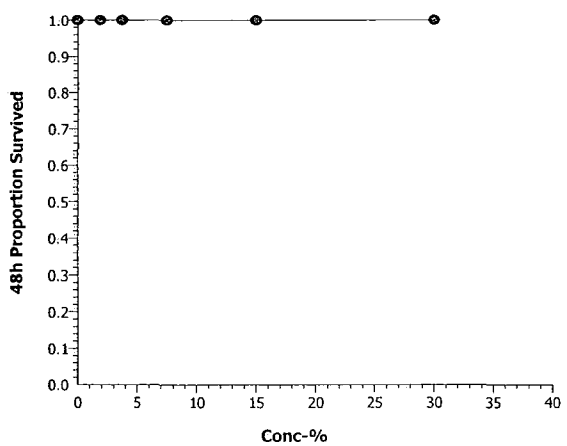
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20

Data 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	1.00000	1.00000	1.00000	1.00000						
1.9		1.00000	1.00000	1.00000	1.00000						
3.75		1.00000	1.00000	1.00000	1.00000						
7.5		1.00000	1.00000	1.00000	1.00000						
15		1.00000	1.00000	1.00000	1.00000						
30		1.00000	1.00000	1.00000	1.00000						

Graphics



SCOEPA00026674

CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation — Date Initiated: 8-7-07 — Time: 1340

Sample Description: B1863 - — Date Terminated: 8-14-07 — Time: ~~1400~~ 1210

Random Template Used: 6 conc. x 4 reps. # 10

Technician: Day 0 DW Day 1 DW Day 2 NJ Day 3 (TF) Day 4 VW Day 5 PMC Day 6 BMT Day 7 BMT

Time: Day 0 1340 Day 1 1020 Day 2 0915 Day 3 0930 Day 4 1750 Day 5 1825 Day 6 1250 Day 7 1120

Concentration or Percent	Day	Number of Live Organisms A	B	C	D	Dissolved O_2 (mg/l) Pre	Post	pH Pre	Post	Temp. (°C) Pre	Therm. ID #	Conductivity (µmhos/cm) Post
Control	0	10	10	10	10		8.1		7.9	Post 24.6	5	311
	1	10	10	10	10	7.5	8.1	7.6	7.8	24.8	3	
	2	10	10	10	10	7.4	8.2	7.7	7.8	24.8	5	305
	3	10	10	10	10	7.4	8.1	7.7	7.7	25.0	1	
	4	10	10	10	9	~~6.2~~ 7.8	8.1	7.7	7.7	25.3	1	300
	5	10	10	10	9	7.7	8.1	7.8	7.8	24.8	6	
	6	10	10	10	9	7.2	8.1	7.5	7.7	25.6	4	301
	7	10	10	10	9	7.2		8.0		25.6	1	
1.90 %	0	10	10	10	10		8.1		7.9	Post 24.9		
	1	10	10	10	10	7.5	8.1	7.6	7.8	24.8		
	2	10	10	10	10	7.5	8.2	7.6	7.8	25.5		
	3	10	10	10	10	7.5	8.1	7.7	7.7	25.5		
	4	10	10	10	10	~~6.2~~ 7.5	8.2	7.6	7.8	25.6		
	5	10	10	10	10	7.6	8.1	7.6	7.8	24.8		
	6	10	10	10	9 + BMT	7.2	8.1	7.5	7.8	25.3		
	7	10	10	10	9	7.3		8.0		25.9		
3.75 %	0	10	10	10	10		8.1		7.9	Post 24.6		
	1	10	10	10	10	7.5	8.1	7.6	7.8	24.9		
	2	10	10	10	10	7.4	8.2	7.6	7.8	25.1		
	3	10	10	10	10	7.5	8.1	7.7	7.7	25.0		
	4	10	10	10	10	~~6.2~~ 7.6	8.2	7.6	7.8	25.3		
	5	10	10	10	10	7.6	8.2	7.6	7.8	24.8		
	6	10	10	10	10	7.1	8.1	7.5	7.8	25.1		
	7	10	10	10	10	7.3		8.0		25.3		
7.50 %	0	10	10	10	10		8.1		7.9	Post 24.5		
	1	10	10	10	10	7.5	8.1	7.6	7.7	24.6		
	2	10	10	10	10	7.4	8.2	7.6	7.8	25.1		
	3	10	10	10	10	7.5	8.1	7.6	7.7	25.1		
	4	10	10	10	10	~~6.2~~ 7.6	8.2	7.6	7.7	25.2		
	5	10	10	10	10	7.6	8.2	7.6	7.8	24.9		
	6	10	10	10	10	7.2	8.2	7.5	7.7	25.1		
	7	10	10	10	10	7.3		7.9		25.4		
15.0 %	0	10	10	10	10		8.2		7.9	Post 24.7		
	1	10	10	10	10	7.5	8.1	7.6	7.7	24.8		
	2	10	10	10	10	7.4	8.2	7.6	7.8	25.0		
	3	10	10	10	10	7.5	8.2	7.6	7.7	24.9 VW		
	4	10	10	10	10	~~6.2~~ 7.6	8.2	7.6	7.7	25.2 VW		
	5	10	10	10	10	7.6	8.2	7.6	7.7	24.6		
	6	10	10✓	10	10	7.1	8.1	7.5	7.7	25.0		
	7	10	10	10	10	7.3		7.8		25.4		
30.0 %	0	10	10	10	10		8.3		7.8	Post 24.6		483
	1	10	10	10	10	7.5	8.2	7.5	7.6	24.7		
	2	10	10	10	10	7.4	8.2	7.5	7.7	25.2		520
	3	10	10	10	10	7.5	8.2	7.6	7.6	24.7		
	4	10	10	10	10	~~6.2~~ 7.5	8.2	7.5	7.6	25.5		500
	5	10	10	10	10	7.6	8.2	7.6	7.6	24.7		
	6	10	10	10	10✓	7.1	8.2	7.4	7.6	25.0		502
	7	10	10	10	10	7.4		7.7		25.3		

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.

"M" = organism missing, start count reduced.

"F" = fungus noted on dead organisms.

Pre =Prerenewal solutions

Post =Postrenewal solutions

Therm ID# = Thermometer ID used. Same thermometer used for all measurements that day.

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics | Species ID#: FHM 1379

Lab ID: B 1863 | Start Date: 8/7/2007

Sample Description:

Technician:	VW	VW
Date:	8/15/2007	8/1/2007
Balance Serial #:	50309851	50309851

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1149.12	1141.75	10
	B	1150.67	1142.04	10
	C	1181.50	1173.61	10
	D	1142.73	1135.44	9
1.90%	A	1199.30	1190.80	10
	B	1140.22	1132.86	10
	C	1173.12	1165.07	10
	D	1170.54	1163.09	9
3.75%	A	1180.63	1173.16	10
	B	1178.90	1170.69	10
	C	1190.03	1182.28	10
	D	1177.33	1170.00	10
7.5%	A	1201.79	1194.02	10
	B	1211.13	1203.82	10
	C	1215.66	1207.61	10
	D	1215.52	1206.76	10
15%	A	1188.99	1180.81	10
	B	1165.08	1156.99	10
	C	1169.80	1161.26	10
	D	1212.61	1204.42	10
30%	A	1217.28	1209.43	10
	B	1215.18	1207.01	10
	C	1147.66	1140.01	10
	D	1192.50	1183.95	10
	A			
	B			
	C			
	D			

weigh to 0.01 mg

SCOEPA00026676

CETIS Test Summary

Report Date: 17 Aug-07 8:22 AM
Test Link: 10-9220-0531/B186301ppc

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	07-0938-5371	**Test Type:**	Growth-Survival (7d)	**Duration:**	6d 22h
Start Date:	07 Aug-07 01:40 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	14 Aug-07 12:10 PM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	07 Aug-07 01:40 PM	**Brine:**			

Sample No:	03-4767-9768	**Code:**	B1863-01	**Client:**	
Sample Date:	06 Aug-07 05:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Aug-07 10:25 AM	**Source:**	Siltronic Corporation		
Sample Age:	33h (0.8 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
07-5728-6360	2d Proportion Survived	30	> 30	N/A	2.50%	Steel Many-One Rank
07-8141-6096	7d Proportion Survived	30	> 30	N/A	5.25%	Steel Many-One Rank
07-0063-9060	Mean Dry Biomass-mg	30	> 30	N/A	10.48%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
16-2013-4087	2d Proportion Survived	50	> 30	N/A	N/A	Linear Interpolation
09-1688-7996	Mean Dry Biomass-mg	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
07-8141-6096	7d Proportion Survived	Control Response	0.975	0.8 - NL	Yes	Passes acceptability criteria
07-0063-9060	Mean Dry Biomass-mg	Control Response	0.77950	0.25 - NL	Yes	Passes acceptability criteria
09-1688-7996	Mean Dry Biomass-mg	Control Response	0.77950	0.25 - NL	Yes	Passes acceptability criteria
07-0063-9060	Mean Dry Biomass-mg	PMSD	0.10478	0.12 - 0.3	Yes	Fails acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1.9		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.77950	0.72900	0.86300	0.03085	0.06169	7.91%
1.9		4	0.78400	0.73600	0.85000	0.02680	0.05361	6.84%
3.75		4	0.76900	0.73300	0.82101	0.01941	0.03882	5.05%
7.5		4	0.79725	0.73101	0.87600	0.03036	0.06072	7.62%
15		4	0.82500	0.80900	0.85400	0.00993	0.01985	2.41%
30		4	0.80550	0.76500	0.85500	0.01967	0.03934	4.88%

SCOEPA00026677

CETIS Test Summary

Report Date: 17 Aug-07 8:22 AM
Test Link: 10-9220-0531/B186301ppc

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	0.90000
1.9		1.00000	1.00000	1.00000	0.90000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.73700	0.86300	0.78900	0.72900
1.9		0.85000	0.73600	0.80500	0.74501
3.75		0.74700	0.82101	0.77500	0.73300
7.5		0.77700	0.73101	0.80500	0.87600
15		0.81799	0.80900	0.85400	0.81899
30		0.78500	0.81700	0.76500	0.85500

SCOEPA00026678

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	10-9220-0531	10-9220-0531	17 Aug-07 8:19 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	2.50%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	4	Non-Significant Effect
		3.75	18	10	0.8333	4	Non-Significant Effect
		7.5	18	10	0.8333	4	Non-Significant Effect
		15	18	10	0.8333	4	Non-Significant Effect
		30	18	10	0.8333	4	Non-Significant Effect

ANOVA Table

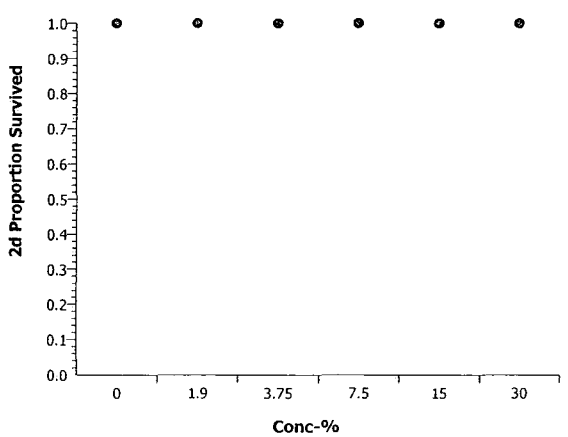
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0	0	5	65535.0	0.00000	Significant Effect
Error	0	0	18			
Total	0	0	23			

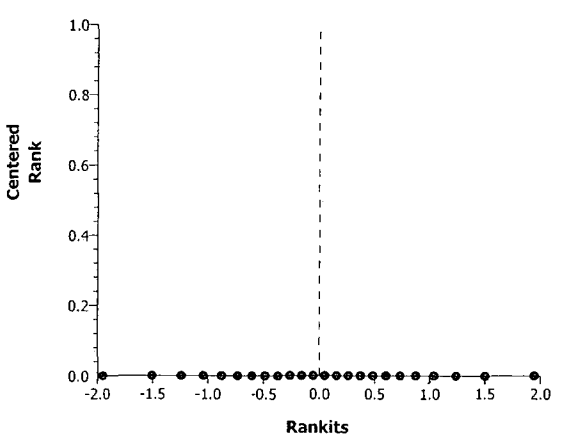
ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	65535.00000	4.24788	0.00000	Unequal Variances

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
1.9		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
3.75		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
15		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
30		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0

Graphics





SCOEPA00026679

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	10-9220-0531	10-9220-0531	17 Aug-07 8:20 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	5.25%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	3	Non-Significant Effect
		3.75	20	10	0.9516	3	Non-Significant Effect
		7.5	20	10	0.9516	3	Non-Significant Effect
		15	20	10	0.9516	3	Non-Significant Effect
		30	20	10	0.9516	3	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0088531	0.001771	5	0.80	0.56404	Non-Significant Effect
Error	0.039839	0.002213	18			
Total	0.04869211	0.0039839	23			

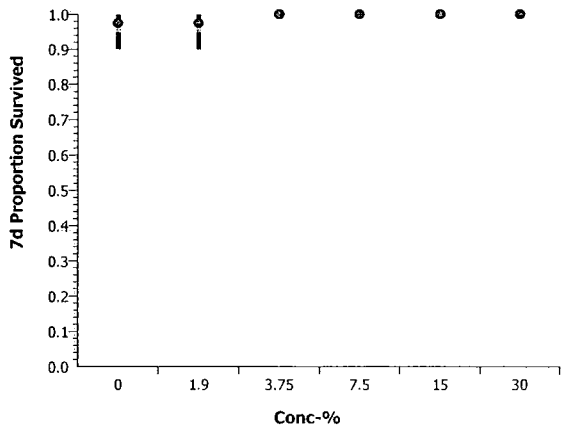
ANOVA Assumptions

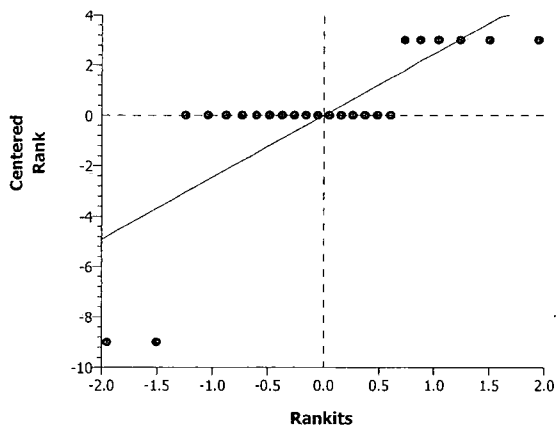
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	0.80000	4.24788	0.56404	Equal Variances
Distribution	Shapiro-Wilk W	0.61543		0.00000	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	10.5	1.5	13.5	6
1.9		4	0.97500	0.90000	1.00000	0.05000	10.5	1.5	13.5	6
3.75		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
15		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
30		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0

Graphics





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CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	10-9220-0531	10-9220-0531	17 Aug-07 8:21 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.3333	N/A	10.48%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	-0.1327	2.40711	0.8694	0.08168	Non-Significant Effect
		3.75	0.30948	2.40711	0.7265	0.08168	Non-Significant Effect
		7.5	-0.5232	2.40711	0.9427	0.08168	Non-Significant Effect
		15	-1.3408	2.40711	0.9934	0.08168	Non-Significant Effect
		30	-0.7663	2.40711	0.9682	0.08168	Non-Significant Effect

ANOVA Table

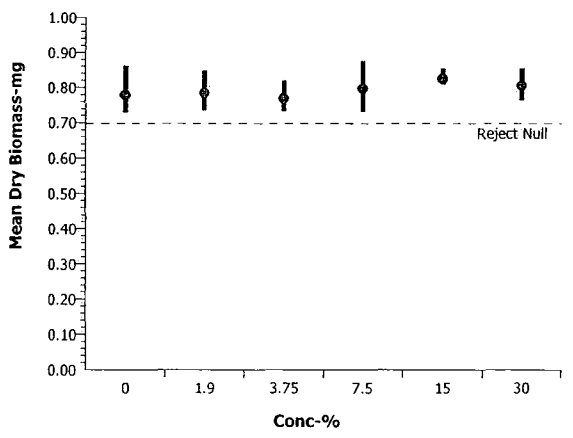
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0081460	0.001629	5	0.71	0.62538	Non-Significant Effect
Error	0.041448	0.002303	18			
Total	0.04959401	0.0039319	23			

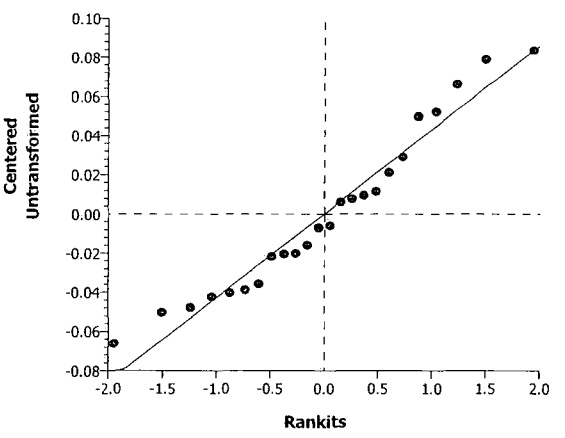
ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	3.69488	15.08627	0.59413	Equal Variances
Distribution	Shapiro-Wilk W	0.94859		0.25253	Normal Distribution

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.77950	0.72900	0.86300	0.06169				
1.9		4	0.78400	0.73600	0.85000	0.05361				
3.75		4	0.76900	0.73300	0.82101	0.03882				
7.5		4	0.79725	0.73101	0.87600	0.06072				
15		4	0.82500	0.80900	0.85400	0.01985				
30		4	0.80550	0.76500	0.85500	0.03934				

Graphics





SCOEPA00026681

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	10-9220-0531	10-9220-0531	17 Aug-07 8:19 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	> 30	N/A	N/A

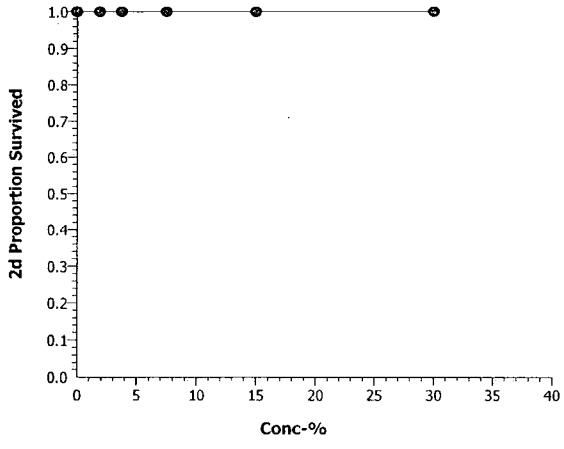
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Data 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	1.00000	1.00000	1.00000	1.00000						
1.9		1.00000	1.00000	1.00000	1.00000						
3.75		1.00000	1.00000	1.00000	1.00000						
7.5		1.00000	1.00000	1.00000	1.00000						
15		1.00000	1.00000	1.00000	1.00000						
30		1.00000	1.00000	1.00000	1.00000						

Graphics



SCOEPA00026682

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	10-9220-0531	10-9220-0531	17 Aug-07 8:21 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

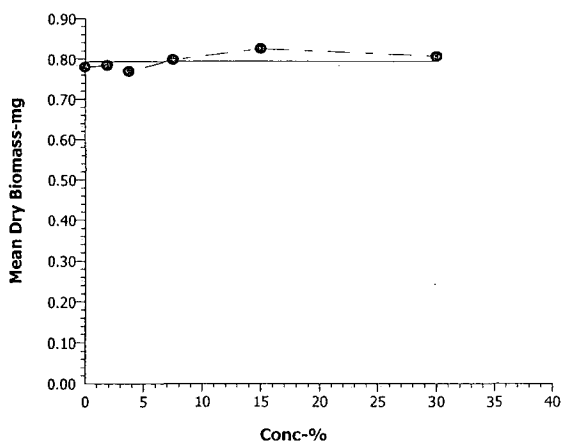
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.77950	0.72900	0.86300	0.01259	0.06169
1.9		4	0.78400	0.73600	0.85000	0.01094	0.05361
3.75		4	0.76900	0.73300	0.82101	0.00792	0.03882
7.5		4	0.79725	0.73101	0.87600	0.01239	0.06072
15		4	0.82500	0.80900	0.85400	0.00405	0.01985
30		4	0.80550	0.76500	0.85500	0.00803	0.03934

Data 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	0.73700	0.86300	0.78900	0.72900						
1.9		0.85000	0.73600	0.80500	0.74501						
3.75		0.74700	0.82101	0.77500	0.73300						
7.5		0.77700	0.73101	0.80500	0.87600						
15		0.81799	0.80900	0.85400	0.81899						
30		0.78500	0.81700	0.76500	0.85500						

Graphics



SCOEPA00026683

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics Corporation — Test Start Date: 8-7-2007

Sample Description: — Initial Sample ID#: B1863

Ceriodaphnia Lot#: Cd 2080 — Statistician:

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	41	17	17	18	39	30	34	34	40	39	10	309
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
1.90 %	22	44	13	0	31	34	34	29	40	31	8	278
	AD?	AD?	AD? ✓	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?		
3.75 %	14	34	20	37	6	13	36	5	5	38	10	208
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
7.50 %	17	16	17	15	42	16	26	15	27	28	9	219
	AD?	AD?	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
15.0 %	14	10	16	0	25	12	0	22	33	32	9	164
	AD?	AD?	AD?	AD? M	AD?	AD?	AD? ✓	AD?	AD?	AD?		
30.0 %	6	26	14	15	11	0	0	6	26	14	6	118
	AD?	AD?	AD? ✓	AD? ✓	AD?	AD? ✓	AD? ✓	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-600-4-91-002 and EPA-821-R-02-013, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Siltronics Corporation | Test Initiation : Date: 8-7-07 Time: 1010

Sample Description: | Test Termination : Date: 8-13-07 Time: 1520

Initial Sample ID #: B1863 | Ceriodaphnia Lot#: Cd 2080

Technician: Day 0 DW Day 1 DW Day 2 DW Day 3 DW Day 4 AM Day 5 AM Day 6 TP Day 7 ____

Time: Day 0 1010 Day 1 0900 Day 2 0910 Day 3 0920 Day 4 1415 Day 5 1445 Day 6 1520 Day 7 ____

Neonates were obtained from culture Board ID:	A	B	C	D	E	F	G	H	I	J
	H	H	H	H	H	H	H	H	H	H
Slot #:	5	6	13	15	16	17	18	20	24	25

Random Template Used: 6 Conc. # 17

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	8	5	6	5	5	4	5	5	6	7	10	56
	5	12	12	11	13	14	10	12	14	13	12	10	123
	6	21	0	0	0	20	16	17	15	21	20	10	130
	7												
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0/AD	0	0	0	0	0	0	9	0
	4	9	6	5		6	6	5	3	6	6	9	52
	5	13	12	8		11	11	12	9	12	7	9	95
	6	0	26	0/AD		14	17	17	17	22	18	8	131
	7			↓	↓								
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	5	10	5
	4	6	3	7	4	6	0	4	5	5	0	10	40
	5	8	10	13	11	0	3	14	0	0	12	10	71
	6	0	21	0	22	0/AY	10	18	0	0/AY	21/8(M)	10	92
	7												
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	3	10	3
	4	4	4	5	5	7	3	3	2	4	0	10	37
	5	13	12	12	10	12	13	8	6	7	8	10	101
	6	0	0	0/AD	0	23	0	15	7	16	17	9	78
	7			↓									
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0/AD	0	0	0	9 10 DW	0
	3	0	0	0	0	0	0		0	0	0	9	0
	4	5	3	6	0	6	5		4	5	6	9	40
	5	9	7	10	0	4	7		10	9	11	9	67
	6	0	6	0	0M	15	0		8	19	15	9	57
	7							↓					
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0/AD	0	0	0	9 10 DW	0
	3	0	0	0	0	0	0/AD		0	0	0	9	0
	4	6	4	4	6	2			4	5	4	9	35
	5	0	8	10/AD	9/10	0			2	7	10	9	46
	6	0	14	↓	↓	9	↓	↓	0	14	0	6	37
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, "/" = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution ~~renewal, replicate~~ removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics Corporation | Initiated Date: 8-7-07 Time: 1010 | Adults Isolated Date: 8-6-07 Time: 1720

Sample Description: | Initial Sample ID #: B 1863 | Neo's Collected Date: 8-6-07 Time: 2305

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	DW	MA	MA	TB	
Time	1010	0900	0910	0920	1700	1745	1520	
Therm. ID#	1	5	4	6	4	1	4	

Percent	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	7.6 / 8.0	7.9 / 8.1	7.9 / 8.0	7.9 / 8.1	8.0 / 8.3	7.7 / -		8.0	7.6 / 7.7	7.8 / 7.9	7.7 / 7.7	8.0 / 7.8	8.0 / 7.8	7.9 / -		25.1 / 308	24.8	24.5 / 311	24.3	25.1 / 306	24.7	24.5	
1.90 %	8.1	7.5 / 8.0	7.7 / 8.1	7.9 / 8.0	8.0 / 8.1	8.0 / 8.2	7.8 / -		8.0	7.5 / 7.6	7.7 / 7.9	7.7 / 7.7	7.9 / 7.8	8.0 / 7.8	7.9 / -		25.0 / -	24.6	24.3 / -	24.5	25.0 / -	24.9	24.9	
3.75 %	8.1	7.5 / 8.0	7.7 / 8.1	7.9 / 8.0	8.0 / 8.1	8.0 / 8.1	7.9 / -		8.0	7.5 / 7.6	7.7 / 7.8	7.7 / 7.7	7.9 / 7.8	8.0 / 7.7	7.8 / -		24.8 / -	25.1	24.8 / -	24.4	25.0 / -	24.4	24.9	
7.50 %	8.1	7.5 / 8.0	7.7 / 8.1	7.9 / 8.0	8.1 / 8.1	7.9 / 8.1	7.9 / -		7.9	7.5 / 7.6	7.7 / 7.8	7.7 / 7.6	7.9 / 7.6	8.0 / 7.6	7.8 / -		25.1 / -	24.6	24.5 / -	24.4	24.7 / -	24.5	24.8	
15.0 %	8.1	7.5 / 8.0	7.7 / 8.1	7.9 / 8.0	8.1 / 8.1	7.9 / 8.0	7.9 / -		7.9	7.5 / 7.6	7.7 / 7.7	7.7 / 7.6	7.9 / 7.6	8.0 / 7.6	7.8 / -		24.7 / -	24.6	24.6 / -	24.4	25.0 / -	24.5	24.9	
30.0 %	8.1	7.5 / 8.0	7.7 / 8.1	7.9 / 8.0	8.1 / 8.1	7.9 / 8.0	7.9 / -		7.8	7.5 / 7.6	7.6 / 7.6	7.6 / 7.6	7.9 / 7.6	8.1 / 7.5	7.8 / -		24.6 / 487	24.7	24.2 / 510	24.3	24.9 / 499	24.6	25.0	

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 17 Aug-07 8:42 AM
Test Link: 06-4489-2456/B186301cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	17-1112-8375	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 5h
Start Date:	07 Aug-07 10:10 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	13 Aug-07 03:20 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	07 Aug-07 10:10 AM	**Brine:**			

Sample No:	03-4767-9768	**Code:**	B1863-01	**Client:**	
Sample Date:	06 Aug-07 05:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Aug-07 10:25 AM	**Source:**	Siltronic Corporation		
Sample Age:	29h (0.8 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
16-8103-2399	6d Proportion Survived	30	> 30	N/A	N/A	Fisher Exact/Bonferroni-Holm
06-4990-1478	Reproduction	7.5	15	10.607	38.77%	Bonferroni Adj t

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
13-8651-9563	Reproduction	25	3.22655	1.315675	15.09997	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
06-4990-1478	Reproduction	Control Response	30.9	15 - NL	Yes	Passes acceptability criteria
13-8651-9563	Reproduction	Control Response	30.9	15 - NL	Yes	Passes acceptability criteria
06-4990-1478	Reproduction	PMSD	0.38772	0.13 - 0.47	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
15		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
30		10	0.60000	0.00000	1.00000	0.16330	0.51640	86.07%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.9	17	41	3.1427	9.9381	32.16%
1.9		10	27.8	0	44	4.1306	13.062	46.99%
3.75		10	20.8	5	38	4.4592	14.101	67.79%
7.5		10	21.9	15	42	2.7827	8.7996	40.18%
15		9	18.222	0	33	3.5931	10.779	59.15%
30		10	11.8	0	26	2.9242	9.2472	78.37%

SCOEPA00026687

CETIS Test Summary

Report Date: 17 Aug-07 8:42 AM
Test Link: 06-4489-2456/B186301cdc

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	0.00000	0.00000	1.00000	0.00000	0.00000	1.00000	1.00000	1.00000

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	41	17	17	18	39	30	34	34	40	39
1.9		22	44	13	0	31	34	34	29	40	31
3.75		14	34	20	37	6	13	36	5	5	38
7.5		17	16	17	15	42	16	26	15	27	28
15		14	10	16	25	12	0	22	33	32	
30		6	26	14	15	11	0	0	6	26	14

SCOEPA00026688

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	06-4489-2456	06-4489-2456	17 Aug-07 8:40 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Bonferroni Adj t	C > T	Untransformed		7.5	15	13.333	10.607	38.77%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	0.6207	2.39879	1.0000	11.9805	Non-Significant Effect
		3.75	2.02227	2.39879	0.1205	11.9805	Non-Significant Effect
		7.5	1.80202	2.39879	0.1931	11.9805	Non-Significant Effect
		15	2.4707	2.39879	0.0418	12.3088	Significant Effect
		30	3.82429	2.39879	0.0009	11.9805	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2311.777	462.3553	5	3.71	0.00597	Significant Effect
Error	6610.156	124.7199	53			
Total	8921.93237	587.07523	58			

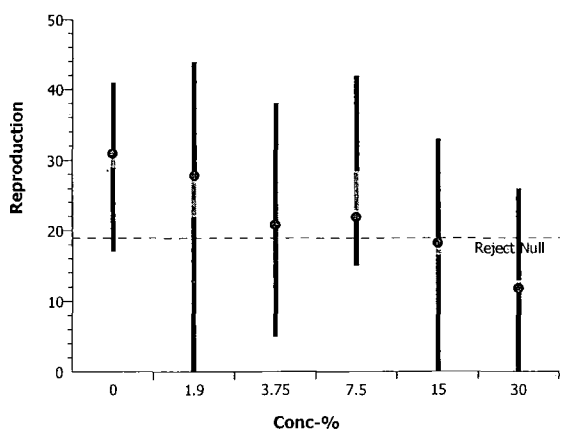
ANOVA Assumptions

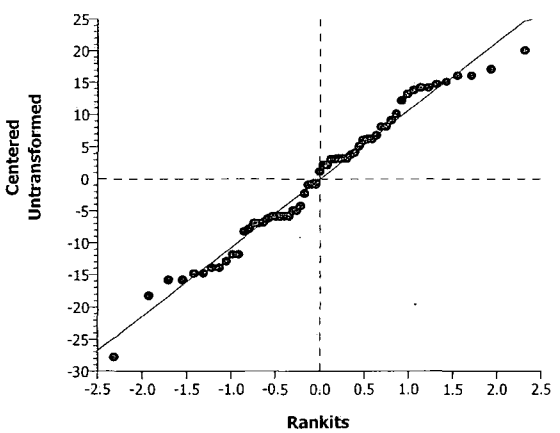
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	3.19356	15.08627	0.67017	Equal Variances
Distribution	Shapiro-Wilk W	0.97675		0.31726	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.9	17	41	9.9381				
1.9		10	27.8	0	44	13.062				
3.75		10	20.8	5	38	14.101				
7.5		10	21.9	15	42	8.7996				
15		9	18.222	0	33	10.779				
30		10	11.8	0	26	9.2472				

Graphics





SCOEPA00026689

CETIS Analysis Detail

Report Date: 17 Aug-07 8:42 AM
Analysis: 13-8651-9563/B186301cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	06-4489-2456	06-4489-2456	17 Aug-07 8:41 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5795186	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	3.22655	1.315675	15.09997

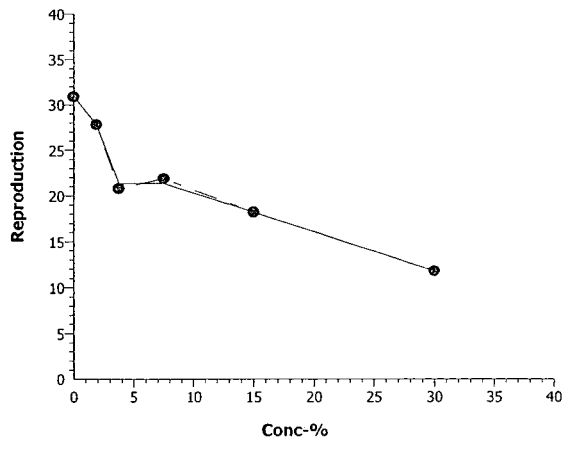
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	30.9	17	41	2.02861	9.93814
1.9		10	27.8	0	44	2.66632	13.0622
3.75		10	20.8	5	38	2.8784	14.1012
7.5		10	21.9	15	42	1.79622	8.79962
15		9	18.222222	0	33	2.20033	10.7794
30		10	11.8	0	26	1.88758	9.24722

Data 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	41	17	17	18	39	30	34	34	40	39
1.9		22	44	13	0	31	34	34	29	40	31
3.75		14	34	20	37	6	13	36	5	5	38
7.5		17	16	17	15	42	16	26	15	27	28
15		14	10	16	25	12	0	22	33	32	
30		6	26	14	15	11	0	0	6	26	14

Graphics



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CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	06-4489-2456	06-4489-2456	17 Aug-07 8:40 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact/Bonferroni-Holm	C > T	Untransformed		30	>30	3.3333	N/A	

Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		1.9	0.23684	0.94737	Non-Significant Effect
Dilution Water		3.75	1.00000	1.00000	Non-Significant Effect
Dilution Water		7.5	0.50000	1.00000	Non-Significant Effect
Dilution Water		15	0.50000	1.00000	Non-Significant Effect
Dilution Water		30	0.04334	0.21672	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		8	2	10
3.75		10	0	10
7.5		9	1	10
15		9	1	10
30		6	4	10

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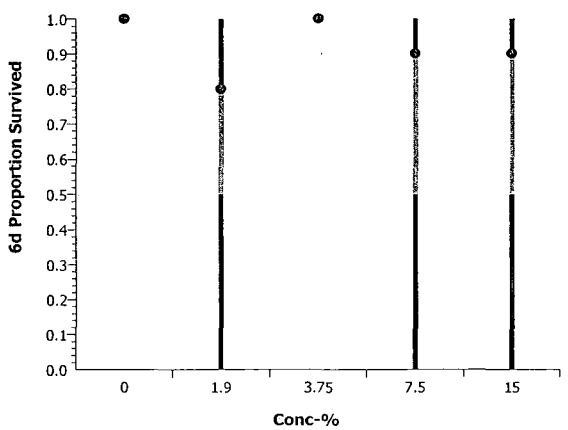


SCOEPA00026691

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics Corporation

Sample Description: _____ Sample ID: B 1863 -01

Test Start Date: 8/7/2007 Time: 11:20 Initials: FP

Test End Date: 8-11-07 Time: 15:25 Initials: VW

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 469

Age: 4 days

Dilution Water ID #: 2861

Source Water: 2859

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)	
# Cells	# Fields
432	225
MEAN	1.92

Culture Density = Mean # of Cells/Field x 250,000

	Culture Density
x 250,000 =	480,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	480,000	=	1.04 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	1	100	0.0100
Flask #2	4	100	0.0100
Flask #3	4	100	0.0100

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
409	395	402

Technician	0 hr	FP	24 hr	DW	48 hr	TP	72 hr	TP	96 hr	VW
Time	0 hr	11:20	24 hr	10:45	48 hr	0815	72 hr	0810	96 hr	1525
Ther. ID#	0 hr	1	24 hr	7	48 hr	7	72 hr	7	96 hr	7

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.0	7.2	8.0	8.0	8.4	9.0	25.1	24.4	24.1	25.2	25.1	392	106	82
1.90 %	8.0	7.2	8.0	8.0	8.3	9.0	25.1	24.5	24.3	25.6	24.8	404	110	78
3.75 %	8.1	7.3	8.0	8.0	8.3	8.9	25.1	24.2	24.5	24.5	25.2	414		
7.50 %	8.1	7.1	7.9	8.0	8.3	9.0	25.1	24.4	24.6	24.6	25.2	435	114	76
15.0 %	8.1	7.2	7.9	8.0	8.3	9.0	25.1	24.7	24.9	25.0	24.8	479		
30.0 %	8.2	7.1	7.8	8.0	8.3	9.2	25.1	25.1	25.4	24.7	25.5	567	118	66

Comments:

Raphidocelis subcapitata COUNT WORKSHEET

Client Siltronics

Sample Description

Test Start Date 8-7-07 Initials NJ

TEST CONCENTRATION		Control	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	416	23	4,522
REP B	413	22	4.693
REP C	418	20	5.225
REP D	430	21	5.119
	MEAN # CELLS / mL* =		4.890

TEST CONCENTRATION		15.0	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	402	23	4.370
REP B	411	20	5.138
REP C	404	22	4,591
REP D	391	23	4,250
	MEAN # CELLS / mL* =		4,587

TEST CONCENTRATION		1.90	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	431	22	4.900
REP B	361	23	3,924
REP C	404	23	4,391
REP D	404	21	4,810
	MEAN # CELLS / mL* =		4.506

TEST CONCENTRATION		30.0	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	383	23	4.163
REP B	383	23	4.163
REP C	368	23	4.000
REP D	293	23	3.185
	MEAN # CELLS / mL* =		3.878

TEST CONCENTRATION		3.75	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	401	20	5.013
REP B	402	21	4.786
REP C	413	21	4.917
REP D	420	20	5.250
	MEAN # CELLS / mL* =		4.992

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

TEST CONCENTRATION		7.50	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	436	23	4.739
REP B	375	23	4.076
REP C	414	23	4,500
REP D	395	23	4.293
	MEAN # CELLS / mL* =		4.402

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

ALGAE.XLS

Client Siltronics

Test Start Date 8-7-07

Sample Description

Initials NJ

TEST CONCENTRATION				Cont.			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
115	6	105	5	91	5	124	5
105	6	105	6	120	5	107	6
89	5	98	5	98	5	103	5
107	6	105	6	101	5	96	5

TEST CONCENTRATION				1.90			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
110	5	87	6	93	6	~~119~~ 117	5
99	6	112	6	98	6	100	5
99	5	93	6	117	6	100	6
123	6	69	5	96	5	87	5

TEST CONCENTRATION				3.75			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
105	5	104	6	104	5	99	5
98	5	116	5	107	5	106	5
97	5	89	NJ ~~5~~ 5	92	5	105	5
101	5	93	5	110	6	110	5

TEST CONCENTRATION				7.50			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
121	6	104	5	107	6	108	6
118	5	90	6	100	5	94	5
101	6	90	6	107	6	101	6
96	6	91	6	100	6	92	6

Client S.Itronics

Test Start Date 8-7-07

Sample Description

Initials NJ

TEST CONCENTRATION				15.0			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
110	6	114	5	98	5	107	6
97	5	95	5	104	6	100	6
98	5	NO ~~105~~ 103	5	106	6	104	6
97	7	99	5	96	5	80	5

TEST CONCENTRATION				30.0			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
83	5	83	5	94	6	52	6
84	6	107	6	89	6	50	6
83	6	92	6	103	6	92	5
133	6	101	6	82	5	99	6

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Test Summary

Report Date: 17 Aug-07 8:53 AM
Test Link: 05-4374-6611/B186301rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	12-4292-0784	**Test Type:**	Cell Growth	**Duration:**	4d 4h
Start Date:	07 Aug-07 11:20 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	11 Aug-07 03:25 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	07 Aug-07 11:20 AM	**Brine:**			

Sample No:	03-4767-9768	**Code:**	B1863-01	**Client:**	
Sample Date:	06 Aug-07 05:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Aug-07 10:25 AM	**Source:**	Siltronic Corporation		
Sample Age:	30h (0.8 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-2627-9252	Cell Density	15	30	21.213	12.75%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
04-8663-4670	Cell Density	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-8663-4670	Cell Density	Control CV	0.06874	NL - 0.2	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	Control CV	0.06874	NL - 0.2	Yes	Passes acceptability criteria
04-8663-4670	Cell Density	Control Response	4889750	1000000 - NL	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	Control Response	4889750	1000000 - NL	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	PMSD	0.12755	0.091 - 0.29	Yes	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	4.89E+6	4.52E+6	5.23E+6	1.68E+5	3.36E+5	6.87%
1.9		4	4.51E+6	3.92E+6	4.90E+6	2.24E+5	4.47E+5	9.92%
3.75		4	4.99E+6	4.79E+6	5.25E+6	9.79E+4	1.96E+5	3.92%
7.5		4	4.40E+6	4.08E+6	4.74E+6	1.42E+5	2.84E+5	6.44%
15		4	4.59E+6	4.25E+6	5.14E+6	1.97E+5	3.93E+5	8.58%
30		4	3.88E+6	3.19E+6	4.16E+6	2.34E+5	4.68E+5	12.07%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.52E+6	4.69E+6	5.23E+6	5.12E+6
1.9		4.90E+6	3.92E+6	4.39E+6	4.81E+6
3.75		5.01E+6	4.79E+6	4.92E+6	5.25E+6
7.5		4.74E+6	4.08E+6	4.50E+6	4.29E+6
15		4.37E+6	5.14E+6	4.59E+6	4.25E+6
30		4.16E+6	4.16E+6	4.00E+6	3.19E+6

SCOEPA00026696

CETIS Analysis Detail

Report Date: 17 Aug-07 8:53 AM
Analysis: 04-8663-4670/B186301rsc

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	05-4374-6611	05-4374-6611	17 Aug-07 8:53 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2895624	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

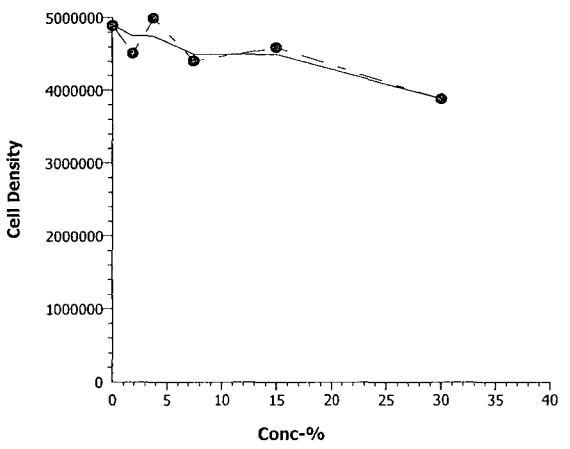
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	4.89E+6	4.52E+6	5.23E+6	6.86E+4	3.36E+5
1.9		4	4.51E+6	3.92E+6	4.90E+6	9.13E+4	4.47E+5
3.75		4	4.99E+6	4.79E+6	5.25E+6	4.00E+4	1.96E+5
7.5		4	4.40E+6	4.08E+6	4.74E+6	5.79E+4	2.84E+5
15		4	4.59E+6	4.25E+6	5.14E+6	8.03E+4	3.93E+5
30		4	3.88E+6	3.19E+6	4.16E+6	9.56E+4	4.68E+5

Data 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	4.52E+6	4.69E+6	5.23E+6	5.12E+6						
1.9		4.90E+6	3.92E+6	4.39E+6	4.81E+6						
3.75		5.01E+6	4.79E+6	4.92E+6	5.25E+6						
7.5		4.74E+6	4.08E+6	4.50E+6	4.29E+6						
15		4.37E+6	5.14E+6	4.59E+6	4.25E+6						
30		4.16E+6	4.16E+6	4.00E+6	3.19E+6						

Graphics



SCOEPA00026697

CETIS Analysis Detail

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	05-4374-6611	05-4374-6611	17 Aug-07 8:52 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		15	30	6.6667	21.213	12.75%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	1.48013	2.40711	0.2344	623678	Non-Significant Effect
		3.75	-0.3927	2.40711	0.9233	623678	Non-Significant Effect
		7.5	1.88249	2.40711	0.1270	623678	Non-Significant Effect
		15	1.16751	2.40711	0.3503	623678	Non-Significant Effect
		30	3.90585	2.40711	0.0023	623678	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	3.149E+12	6.3E+11	5	4.69	0.00645	Significant Effect
Error	2.417E+12	1.34E+11	18			
Total	5.5653E+12	7.64E+11	23			

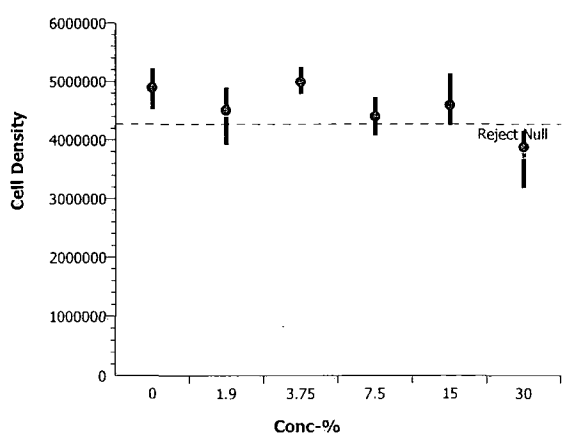
ANOVA Assumptions

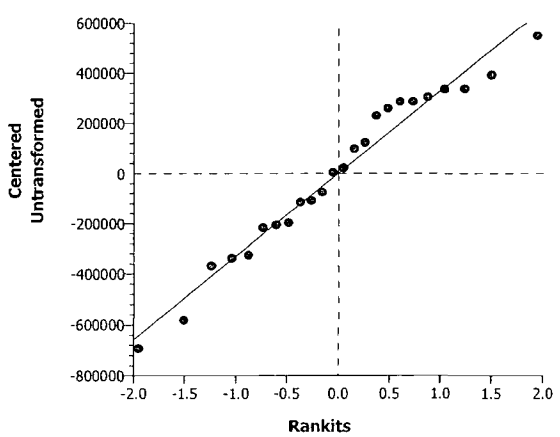
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	2.41100	15.08627	0.78983	Equal Variances
Distribution	Shapiro-Wilk W	0.96421		0.52859	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	4.89E+6	4.52E+6	5.23E+6	3.36E+5				
1.9		4	4.51E+6	3.92E+6	4.90E+6	4.47E+5				
3.75		4	4.99E+6	4.79E+6	5.25E+6	1.96E+5				
7.5		4	4.40E+6	4.08E+6	4.74E+6	2.84E+5				
15		4	4.59E+6	4.25E+6	5.14E+6	3.93E+5				
30		4	3.88E+6	3.19E+6	4.16E+6	4.68E+5				

Graphics





SCOEPA00026698

Test Solution Preparation and Dilution Record

Note: ☐ Indicates task not done, ☑ Indicates task was done. Temp adj. = Temperature adjusted

Client: Siltronics Corporation

Ditto marks ('') indicate that the same batch of dilution water or food as the previous day's entry was used.

Fathead minnow - Chronic

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0	→	2000
1.90	38	→	2000
3.75	75	→	2000
7.50	150	→	2000
15.0	300	→	2000
30.0	600	→	2000

Total Sample volume needed per day = 1163 mls

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	Date	Time	Initials
0	B 1863-01	☐ Temp adj, ☐ Aerated	ID # 2859	8.7.07	920	VW
1	B 1863-01	☐ Temp adj, ☐ Aerated	ID # ~~2859~~ 2863	8.8.07	0800	BRT
2	B 1863-02	☐ Temp adj, ☐ Aerated	ID # 2863	8.9.07	0715	BRT
3	B 1863-02	☐ Temp adj, ☐ Aerated	ID # 2863	8.10.07	0720	BRT
4	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2863	8.11.07	1150	VW
5	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2865	8.12.07	1035	VW
6	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2865	8.13.07	0930	BRT

Ceriodaphnia dubia - Chronic

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0	→	200
1.90	3.8	→	200
3.75	7.5	→	200
7.50	15	→	200
15.0	30	→	200
30.0	60	→	200

Total Sample volume needed per day = 116 mls

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	YCT ID Used	Algae ID Used	Date	Time	Initials
0 (Initiation)	B 1863-01	☐ Temp adj, ☐ Aerated	ID # 2859	# 730	# 731	8.7.07	930	VW
1	B 1863-01	☐ Temp adj, ☐ Aerated	ID # ~~2859~~ 2863	# 730	# 731	8.8.07	0820	BRT
2	B 1863-02	☐ Temp adj, ☐ Aerated	ID # 2863	# 730	# 731	8.9.07	0720	BRT
3	B 1863-02	☐ Temp adj, ☐ Aerated	ID # 2863	# 730	# 731	8.10.07	0730	BRT
4	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2865	# 730	# 731	8.11.07	1200	VW
5	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2865	# 730	# 732	8.12.07	1045	LW
6	B 1863-03	☐ Temp adj, ☐ Aerated	ID # 2865	# 730	# 732	8.13.07	0940	BRT
7	B -	☐ Temp adj, ☐ Aerated	ID #	#	#			

Algae - Chronic

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0	→	500
1.90	9.5	→	500
3.75	18.75	→	500
7.50	37.5	→	500
15.0	75	→	500
30.0	150	→	500

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	Date	Time	Initials
0	B 1863-01	☑ Temperature adjusted ☐ Aerated ☑ Nutrients added (incl. EDTA) ☑ 0.45 µm filtered ☐ 1.60 µm filtered (WDOE clients only)	ID # 7861	8-7-07	1030	

Total Sample volume needed = 291 mls

Ceriodaphnia dubia - Acute

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0	→	200
1.90	3.8	→	200
3.75	7.5	→	200
7.50	15	→	200
15.0	30	→	200
30.0	60	→	200

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	Date	Time	Initials
0	B 1863-01	☐ Temp adj, ☐ Aerated	ID # 2859	8.7.07	920	VW
1	B 1863-01	☐ Temp adj, ☐ Aerated	ID # ~~2859~~ 2863	8.8.07	0830	BRT

Total Sample volume needed per day = 116 mls

SCOEPA00026699

APPENDIX B

REFERENCE TOXICANT DATA SHEETS

REFERENCE TOXICANT DATA SHEET

Client	QA / QC	Reference Toxicant	NaCl	Test Begin: Date	8.7.07 Time 1330
Test Organism	*Pimephales promelas*	Stock Solution	20 g/L	Test End: Date	8-9-07 Time 1255
Source	Aquatox, Inc.	Solvent	Milli-Q water	Reagent Log ID #	1B 0608-02
ID#	FHM 1379	*Dilution Water Type	Recon MH (FHM)	Dilution Water ID#	2859
Age	<24 hrs.	Total Hardness as $CaCO_3$	94	Total Alkalinity as $CaCO_3$	70
Feeding:	none	Conductivity (µmhos/cm)	304	Temperature (°C)	20 ± 1 °C
Test Chamber Size	800 ml	Technician	0 hr DW	24 hr VW	48 hr NJ
Volume per Replicate	750 ml	Time	0 hr 1330	24 hr 810	48 hr 1255
		Therm. ID #	0 hr 5	24 hr 5	48 hr 5

Toxicant Concentration (g/L)	Test Chamber Number	Number of Live Organisms			Dissolved Oxygen (mg/l)			pH			Temperature (°C)			Conductivity (µS)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	A	10	10	10	8.7	8.6	8.7	8.0	7.4	8.2	19.9	19.3	19.6	311	312	334
4.0	A	10	10	10	8.7	8.7	8.7	8.0	7.8	7.9	20.2	19.3	19.7	7800	6850	7580
6.0	A	10	10	10	8.7	8.7	8.6	8.0	7.7	7.8	19.9	19.3	19.7	10400	10210	10860
8.0	A	10	7	2	8.7	8.7	8.7	7.8	7.6	7.7	19.7	19.4	19.8	13600	13430	14210
10.0	A	10	1	0	8.6	8.8	8.7	7.7	7.6	7.7	20.0	19.3	19.5	16580	16480	17330
12.0	A	10	0	—	8.6	8.8	—	7.6	7.5	—	20.0	19.3	—	19770	19830	—
Test Acceptability Criteria:		Survival in Controls: > or = 90%			(@ 20°C): >4.0 and <9.1			pH: > 6.0 and < 9.0			Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
S - soft
MH - moderately hard
H - hard
Art. Sea - Artificial Sea Water

48 Hour LC_{50}: 7.3

Cusum Chart Limits: 6.6 to 7.8

Statistical Method: Trimmed Spearman Karber

We verify this data is true and correct.

Task Manager: Doug Winn

Project Manager:

QA Officer:

SCOEPA00026701

CETIS Test Summary

Report Date: 15 Aug-07 8:55 AM
Test Link: 04-1997-4255/rppa1379

Fathead Minnow Acute Survival Test — **CH2M Hill**

Test No:	07-5340-7311	**Test Type:**	Survival (96h)	**Duration:**	47h
Start Date:	07 Aug-07 01:30 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	09 Aug-07 12:55 PM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	07 Aug-07 01:30 PM	**Brine:**			

Sample No:	04-1345-9318	**Code:**	1B068-02	**Client:**	
Sample Date:	24 Jul-07	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	14d 13h	**Station:**			

Comments: 20 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
12-1745-9124	48h Proportion Survived	50	7.291309	6.83508	7.77799	Trimmed Spearman-Karber

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
4		1	1.00000	1.00000	1.00000			
6		1	1.00000	1.00000	1.00000			
8		1	0.20000	0.20000	0.20000			
10		1	0.00000	0.00000	0.00000			0.00%
12		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1
0	Dilution Water	1.00000
4		1.00000
6		1.00000
8		0.20000
10		0.00000
12		0.00000

SCOEPA00026702

Report Date: 15 Aug-07 8:55 AM
Analysis: 12-1745-9124/rppa1379

CETIS Analysis Detail

Fathead Minnow Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	04-1997-4255	04-1997-4255	15 Aug-07 8:55 AM	CETISv1.1.2

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	Mu	Sigma
Control Threshold	0	0.00%	0.8628055	0.01403095

Point Estimates

EC50/LC50	95% LCL	95% UCL
7.29131	6.83508	7.77799

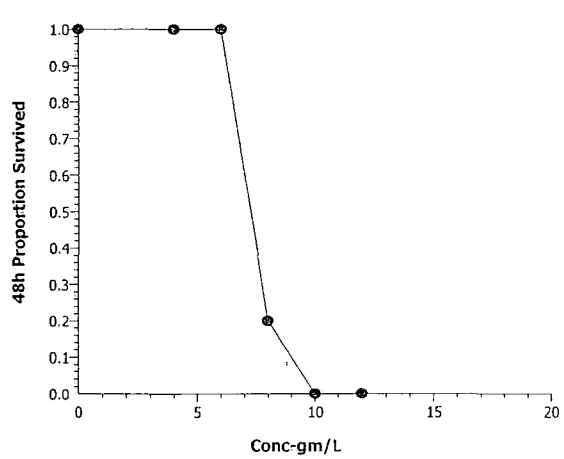
Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
4		1	1.00000	1.00000	1.00000			10	10
6		1	1.00000	1.00000	1.00000			10	10
8		1	0.20000	0.20000	0.20000			2	10
10		1	0.00000	0.00000	0.00000			0	10
12		1	0.00000	0.00000	0.00000			0	10

Data 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	1.00000									
4		1.00000									
6		1.00000									
8		0.20000									
10		0.00000									
12		0.00000									

Graphics



SCOEPA00026703

REFERENCE TOXICANT DATA SHEET

Client	QA / QC	Reference Toxicant	NaCl	Test Begin: Date 7-25-07	Time 1360
Test Organism	*Ceriodaphnia dubia*	Stock Solution	20 g/L	Test End: Date 7-27-07	Time 1425
Source	In-House culture	Solvent	Milli-Q water	Reagent Log ID #	IB 068-02
ID#	Cd 2076	*Dilution Water Type	Recon MH (FHM)	Dilution Water ID#	2853
Age	< 24 hours	Total Hardness as $CaCO_3$	84	Total Alkalinity as $CaCO_3$	66
Feeding:	none	Conductivity (µmhos/cm)	285	Temperature (°C)	20 ± 1 °C
Test Chamber Size	30 ml	Technician 0 hr	NJ (TP)	24 hr VW	48 hr NJ
Volume per Replicate	25 ml	Time 0 hr	1300	24 hr 1145	48 hr 1425
		Therm. ID # 0 hr	#5	24 hr 4	48 hr 4

Toxicant Concentration (g/L)	Test Chamber Number	Number of Live Organisms			Dissolved Oxygen (mg/l)			pH			Temperature (°C)			Conductivity (µS)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	A	5	5	5	8.3		8.2	8.1		8.1	19.8	20.3	20.2	290		307
	B	5	5	5												
1.0	A	5	5	5	8.3		8.3	8.1		8.0	19.8	20.2	20.3	2200		2160
	B	5	5	5												
1.5	A	5	5	5	8.3		8.3	8.0		8.0	19.8	20.2	20.5	3140		3100
	B	5	5	5												
2.0	A	5	5	3	8.3		8.3	8.0		8.0	19.7	20.2	20.6	4050		4030
	B	5	5	2												
3.0	A	5	3	0	8.3		8.3	8.0		7.9	19.7	20.2	20.7	5810		5740
	B	5	3	0												
4.0	A	5	0		8.3	8.5		8.0	7.8		19.7	20.2		7580	7180	
	B	5	0			8.6			7.8						7670	
Test Acceptability Criteria:		Survival in Controls: > or = 90%			(@ 20°C): >4.0 and <9.1			pH: > 6.0 and < 9.0			Temperature ± 1 °C					

*Dilution Water Code

Recon.	- reconstituted water
S	- soft
MH	- moderately hard
H	- hard
Art. Sea	- Artificial Sea Water

48 Hour LC_{50} 2.1

Cusum Chart Limits 1.6 to 3.0

Statistical Method Spearman - Kärber

We verify this data is true and correct.

Task Manager

Project Manager

QA Officer

SCOEPA00026704

CETIS Test Summary

Report Date: 30 Jul-07 3:48 PM
Test Link: 20-8101-1837/rcda2076

Ceriodaphnia 48-h Acute Survival Test — CH2M Hill

Test No:	02-7317-3521	**Test Type:**	Survival (48h)	**Duration:**	49h
Start Date:	25 Jul-07 01:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	27 Jul-07 02:25 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jul-07 01:00 PM	**Brine:**			

Sample No:	04-1345-9318	**Code:**	1B068-02	**Client:**	
Sample Date:	24 Jul-07	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	37h	**Station:**			

Comments: 20 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
15-8871-3880	48h Proportion Survived	50	2.059767	1.845955	2.298345	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-8871-3880	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		2	0.50000	0.40000	0.60000	0.10000	0.14142	28.28%
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	1.00000
1		1.00000	1.00000
1.5		1.00000	1.00000
2		0.60000	0.40000
3		0.00000	0.00000
4		0.00000	0.00000

SCOEPA00026705

CETIS Analysis Detail

Report Date: 30 Jul-07 3:48 PM
Analysis: 15-8871-3880/rcda2076

Ceriodaphnia 48-h Acute Survival Test — CH2M Hill

Sample No:	04-1345-9318	**Code:**	1B068-02	**Client:**	
Sample Date:	24 Jul-07	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	37h	**Station:**			

Comments: 20 g/L stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	20-8101-1837	20-8101-1837	30 Jul-07 3:48 PM	CETISv1.1.2

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	Mu	Sigma
Control Threshold	0	0.00%	0.3138181	0.02379851

Point Estimates

EC50/LC50	95% LCL	95% UCL
2.05977	1.84596	2.29834

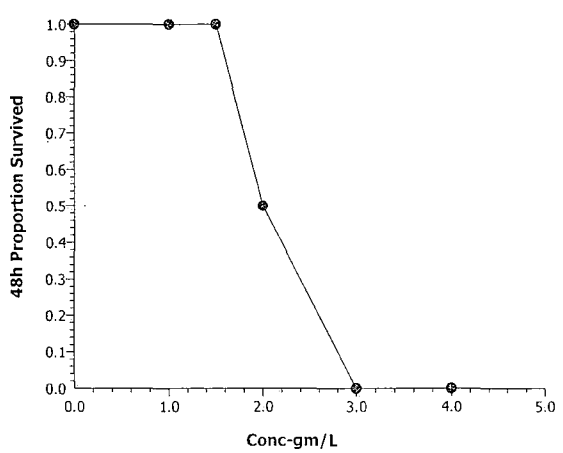
Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		2	0.50000	0.40000	0.60000	0.02887	0.14142	5	10
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000								
1		1.00000	1.00000								
1.5		1.00000	1.00000								
2		0.60000	0.40000								
3		0.00000	0.00000								
4		0.00000	0.00000								

Graphics



SCOEPA00026706

CHM HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Ref Tox | FHM #: 1381 | Date Initiated: 8-10-07 | Time: 1115
Sample Description: NaCl Reagent Log # 1B067-06 | Date Terminated: 8-17-07 | Time: 0930
Random Position Template: 6 conc. x 4 rep # 1 | Test Container Size: 800 ml | Solution Volume / rep: 500 ml

Technician: Day 0 DW | Day 1 VW | Day 2 VW | Day 3 BRT | Day 4 VW | Day 5 VW | Day 6 BRT | Day 7 BRT
Time: Day 0 1115 | Day 1 1520 | Day 2 1400 | Day 3 1415 | Day 4 1150 | Day 5 1000 | Day 6 1315 | Day 7 0930

Concentration or % / L	Day	Number of Live Organisms A	B	C	D	Dissolved O2 * (mg/l) Pre	Post	pH Pre	Post	Temp. (°C) Pre	Therm. ID #	Specific Conductivity (µmhos/cm)
Control	0	10	10	10	10		8.2		7.6	Post: 24.8	6	297
	1	10	10	10	10	6.6	7.3	7.8	8.1	25.7	6	315
	2	10	10	10	10 ✓	7.5	8.2	7.7	8.1	25.5	6	311
	3	10	10	10	10	7.4	8.1	7.6	8.1	25.4	5	306
	4	10	10	10	10	7.0	8.1	7.6	8.0	25.4	4	301
	5	10	10	10	10	7.2	8.1	7.5	8.0	25.8	4	292
	6	10	10	10	10	7.3	8.1	7.6	8.1	25.5	6	297
	7	10	10	10	10	7.4		7.5		25.1	5	—
0.3	0	10	10	10	10		8.2		7.6	Post: 25.1		841
	1	10	10	10	10	6.6	7.4	7.8	8.0	25.7		791
	2	10	10	10	10	7.5	8.2	7.7	8.0	25.5		827
	3	10	10	10	10	7.5	8.1	7.7	8.0	25.3		836
	4	10	10	10	10	6.9	8.1	7.6	8.0	25.2		815
	5	10	10	10	10	7.2	8.1	7.6	8.0	25.6		808
	6	10	10	10	10	7.3	8.1	7.7	8.1	25.5		837
	7	10	10	10	10	7.4		7.6		25.4		—
1.0	0	10	10	10	10		8.2		7.6	Post: 24.7		2060
	1	10	10	10	10	6.6	7.4	7.8	8.0	25.7		1972
	2	10	10	10	10	7.6	8.2	7.7	8.0	25.4		2040
	3	10 ✓	10	10	10	7.6	8.1	7.7	8.0	25.3		2040
	4	10	10 ✓	10	10	7.0	8.1	7.10	7.9	25.2		1944
	5	10	10	10	10	7.1	8.2	7.6	8.0	25.6		1990
	6	10	10	10	10	7.3	8.2	7.7	8.0	25.4		2030
	7	10	10	10	10	7.4		7.6		25.6		—
2.0	0	10	10	10	10		8.2		7.6	Post: 24.7		3750
	1	10	10	10 ✓	10	6.6	7.4	7.7	7.9	25.7		3680
	2	10	10	10	10	7.6	8.2	7.6	7.9	25.4		3700
	3	10	10	10	10	7.5	8.2	7.7	7.9	25.5		3720
	4	10	10	10	10	6.9	8.1	7.6	7.9	25.3		3020
	5	10 ✓	10 ✓	10	10	7.2	8.2	7.6	7.9	25.6		3560
	6	8	8	10	9	7.3	8.2	7.7	7.9	25.5		3680
	7	6	8	9	9	7.4		7.6		25.2		—
4.0	0	10	10	10	10		8.2		7.6	Post: 24.8		6910
	1	10	10	10 ✓	10	6.6	7.5	7.6	7.9	25.6		6750
	2	10	10	10	10	7.6	8.2	7.6	7.8	25.2		7000
	3	10	10	10	10	7.7	8.2	7.6	7.8	25.4		6930
	4	10	10	10	10	6.6	8.1	7.5	7.9	25.1		6870
	5	10 ✓	10	10	8	7.0	8.2	7.6	7.9	25.4		6580
	6	7	7	8	8	7.4	8.2	7.7	7.9	25.2		6860
	7	6	7	6	8	7.4		7.6		25.3		—
8.0	0	10	10	10	10		8.2		7.5	Post: 25.0		14870
	1	1	1	0	1	6.7	7.5	7.5	7.8	25.6		12680
	2	0	0	0	0	7.7	8.2	7.6	7.7	25.3		12530
	3					[illegible]	8.2			[illegible]		
	4											
	5											
	6											
	7											

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.
"F" = fungus noted on dead organisms. "M" = organism missing, start count reduced.

Endpoint	IC25	Cusum Chart Limits
Survival	2.4	1.6 to 4.8
Growth	2.4	1.4 to 3.5

Task Manager
Project Manager
QA Officer

* On day 1 DO meter found to be 0.8 mg/L low

SCOEPA00026707

CH2M HILL **FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA**

Client Ref Tox FHM # 1381 Date Initiated 8-10-07 Time 1115
Sample Description NaCl Reagent Log # 1B 067-06 Date Terminated 8-17-07 Time 0930
Random Position Template: 6 conc. x 4 rep # 1 Test Container Size: 800 ml Solution Volume / rep: 500 ml
Technician: Day 0 DW Day 1 VW Day 2 VW Day 3 BRT Day 4 VW Day 5 VW Day 6 BRT Day 7 BRT
Time Day 0 1115 Day 1 1520 Day 2 1400 Day 3 1415 Day 4 1150 Day 5 1200 Day 6 1315 Day 7 0930

Concentration or g/L Percent	Day	Number of Live Organisms A	B	C	D	Dissolved O2 (mg/l) Pre	Post	pH Pre	Post	Temp. (°C) Pre	Therm. ID #	Specific Conductivity (µmhos/cm)
Control	0	10	10	10	10		8.2		7.6	Post: 24.8	6	297
	1	10	10	10	10	6.6	7.3	7.8	8.1	25.7	6	315
	2	10	10	10	10 ✓	7.5	8.2	7.7	8.1	25.5	6	311
	3	10	10	10	10	7.4	8.1	7.6	8.1	25.4	5	306
	4	10	10	10	10	7.0	8.1	7.6	8.0	25.4	4	301
	5	10	10	10	10	7.2	8.1	7.5	8.0	25.8	4	292
	6	10	10	10	10	7.3	8.1	7.6	8.1	25.5	6	297
	7	10	10	10	10	7.4		7.5		25.1	5	—
0.3	0	10	10	10	10		8.2		7.6	Post: 25.1		841
	1	10	10	10	10	6.6	7.4	7.8	8.0	25.7		791
	2	10	10	10	10	7.5	8.2	7.7	8.0	25.5		827
	3	10	10	10	10	7.5	8.1	7.7	8.0	25.3		838
	4	10	10	10	10	6.9	8.1	7.6	8.0	25.2		815
	5	10	10	10	10	7.2	8.1	7.6	8.0	25.6		808
	6	10	10	10	10	7.3	8.1	7.7	8.1	25.5		837
	7	10	10	10	10	7.4		7.6		25.4		—
1.0	0	10	10	10	10		8.2		7.6	Post: 24.7		2060
	1	10	10	10	10	6.6	7.4	7.8	8.0	25.7		1972
	2	10	10	10	10	7.6	8.2	7.7	8.0	25.4		2040
	3	10 ✓	10	10	10	7.6	8.1	7.7	8.0	25.3		2040
	4	10	10 ✓	10	10	7.0	8.1	7.6	7.9	25.2		1944
	5	10	10	10	10	7.1	8.2	7.6	8.0	25.6		1990
	6	10	10	10	10	7.3	8.2	7.7	8.0	25.4		2050
	7	10	10	10	10	7.4		7.6		25.6		—
2.0	0	10	10	10	10		8.2		7.6	Post: 24.7		3750
	1	10	10	10 ✓	10	6.6	7.4	7.7	7.9	25.7		3680
	2	10	10	10	10	7.6	8.2	7.6	7.9	25.4		3700
	3	10	10	10	10	7.7	8.2	7.7	7.9	25.5		3720
	4	10 ✓	10 ✓	10	10	6.9	8.1	7.6	7.9	25.3		3620
	5	10 ✓	10 ✓	10	10	7.2	8.2	7.6	7.9	25.6		3560
	6	8	8	10	9	7.3	8.2	7.7	7.9	25.5		3680
	7	6	8	9	9	7.4		7.6		25.2		—
4.0	0	10	10	10	10		8.2		7.6	Post: 24.8		6910
	1	10	10	10 ✓	10	6.6	7.5	7.6	7.9	25.6		6750
	2	10	10	10	10	7.6	8.2	7.6	7.8	25.2		7000
	3	10	10	10	10	7.7	8.2	7.6	7.8	25.4		6930
	4	10	10	10	10	6.6	8.1	7.5	7.9	25.1		6970
	5	10 ✓	10	10	8	7.0	8.2	7.6	7.9	25.4		6580
	6	7	7	8	6	7.4	8.2	7.7	7.9	25.2		6860
	7	6	7	6	3	7.4		7.6		25.3		—
8.0	0	10	10	10	10		8.2		7.5	Post: 25.0		14870
	1	1	1	0	1	6.7	7.5	7.5	7.8	25.6		12680
	2	0	0	0	0	7.7	8.2	7.6	7.7	25.3		12530
	3					~~7.8~~	8.2			RES		
	4											
	5											
	6											
	7											

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.
"F" = fungus noted on dead organisms. "M" = organism missing, start count reduced.

Endpoint	IC25	Cusum Chart Limits
Survival	2.4	1.6 to 4.8
Growth	2.4	1.4 to 3.5

Task Manager
Project Manager Doug Winn
QA Officer

SCOEPA00026708

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC | Species ID# FHM 1381

Lab ID: na | Start Date: 8/8/2007

Sample Description: NaCl

Technician:	TP	VW
Date:	8/20/2007	8/2/2007
Balance Serial #:	50309851	50309851

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1194.83	1187.81	10
	B	1183.40	1175.71	10
	C	1191.65	1184.60	10
	D	1173.50	1166.32	10
0.3 g/L	A	1141.39	1134.16	10
	B	1162.65	1155.33	10
	C	1159.73	1152.56	10
	D	1185.26	1178.16	10
1.0 g/L	A	1192.61	1185.72	10
	B	1180.74	1172.73	10
	C	1190.04	1182.70	10
	D	1163.63	1155.44	10
2.0 g/L	A	1129.59	1125.53	6
	B	1190.47	1183.45	8
	C	1139.66	1133.27	9
	D	1176.85	1170.08	9
4.0 g/L	A	1139.83	1136.70	6
	B	1156.03	1152.20	7
	C	1149.40	1145.96	6
	D	1141.68	1139.81	3
8.0 g/L	A	1122.27	1122.27	0
	B	1131.44	1131.44	0
	C	1149.76	1149.76	0
	D	1134.78	1134.78	0

weigh to 0.01 mg

SCOEPA00026709

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC | Species ID# FHM 1381

Lab ID: na | Start Date: 8/8/2007

Sample Description: NaCl

Technician:		VW
Date:		8/2/2007
Balance Serial #:	50309851	50309851

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A		1187.81	10
	B		1175.71	10
	C		1184.60	10
	D		1166.32	10
0.3 g/L	A		1134.16	10
	B		1155.33	10
	C		1152.56	10
	D		1178.16	10
1.0 g/L	A		1185.72	10
	B		1172.73	10
	C		1182.70	10
	D		1155.44	10
2.0 g/L	A		1125.53	6
	B		1183.45	8
	C		1133.27	9
	D		1170.08	9
4.0 g/L	A		1136.70	6
	B		1152.20	~~6~~ 7
	C		1145.96	~~7~~ 6
	D		1139.81	3
8.0 g/L	A		1122.27	0
	B		1131.44	0
	C		1149.76	0
	D		1134.78	0

weigh to 0.01 mg

SCOEPA00026710

CETIS Test Summary

Report Date: 23 Aug-07 3:14 PM
Test Link: 07-7681-6974/rppc1381

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	12-4560-8820	**Test Type:**	Growth-Survival (7d)	**Duration:**	6d 22h
Start Date:	10 Aug-07 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	17 Aug-07 09:30 AM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	10 Aug-07 11:15 AM	**Brine:**			

Sample No:	05-9609-9507	**Code:**	1B067-06	**Client:**	
Sample Date:	13 Jul-07	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	28d 11h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
06-1715-6878	7d Proportion Survived	25	2.4	1.390769	3.36	Linear Interpolation
08-5263-4444	Mean Dry Biomass-mg	25	2.366328	1.278697	3.046634	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
06-1715-6878	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
08-5263-4444	Mean Dry Biomass-mg	Control Response	0.72350	0.25 - NL	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		4	0.80000	0.60000	0.90000	0.07071	0.14142	17.68%
4		4	0.55000	0.30000	0.70000	0.08660	0.17321	31.49%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.72350	0.70199	0.76901	0.01556	0.03112	4.30%
0.3		4	0.72050	0.71000	0.73201	0.00467	0.00933	1.30%
1		4	0.76075	0.68900	0.81901	0.03011	0.06021	7.91%
2		4	0.60600	0.40599	0.70200	0.06791	0.13583	22.41%
4		4	0.30675	0.18700	0.38301	0.04241	0.08482	27.65%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
0.3		1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
2		0.60000	0.80000	0.90000	0.90000
4		0.60000	0.70000	0.60000	0.30000
8		0.00000	0.00000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.70199	0.76901	0.70500	0.71801
0.3		0.72300	0.73201	0.71699	0.71000
1		0.68900	0.80100	0.73401	0.81901
2		0.40599	0.70200	0.63900	0.67700
4		0.31300	0.38301	0.34401	0.18700
8		0.00000	0.00000	0.00000	0.00000

SCOEPA00026711

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	07-7681-6974	07-7681-6974	23 Aug-07 3:14 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	2.4	1.390769	3.36

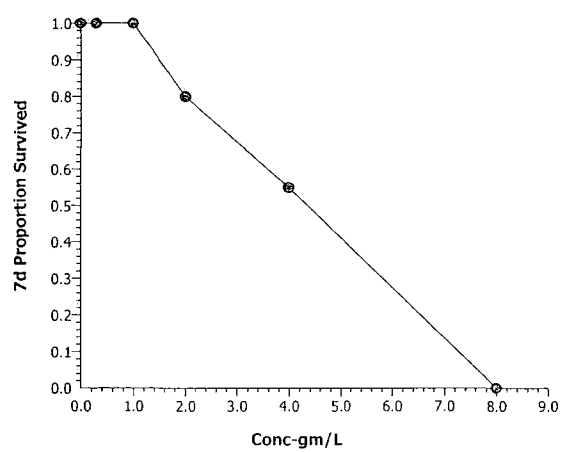
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
2		4	0.80000	0.60000	0.90000	0.02887	0.14142	32	40
4		4	0.55000	0.30000	0.70000	0.03536	0.17321	22	40
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Data 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	1.00000	1.00000	1.00000	1.00000						
0.3		1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
2		0.60000	0.80000	0.90000	0.90000						
4		0.60000	0.70000	0.60000	0.30000						
8		0.00000	0.00000	0.00000	0.00000						

Graphics



SCOEPA00026712

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	07-7681-6974	07-7681-6974	23 Aug-07 3:14 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	2.366328	1.278697	3.046634

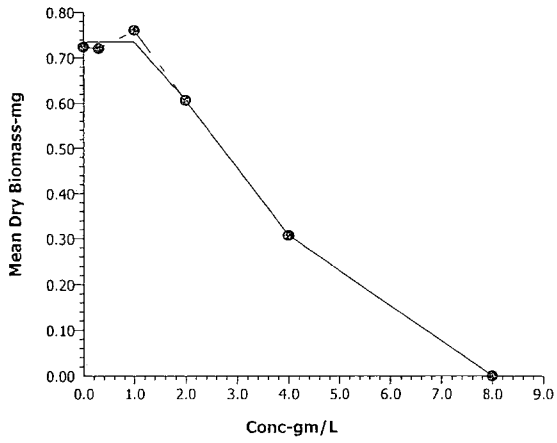
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.72350	0.70199	0.76901	0.00635	0.03112
0.3		4	0.72050	0.71000	0.73201	0.00190	0.00933
1		4	0.76075	0.68900	0.81901	0.01229	0.06021
2		4	0.60600	0.40599	0.70200	0.02773	0.13583
4		4	0.30675	0.18700	0.38301	0.01731	0.08482
8		4	0.00000	0.00000	0.00000	0.00000	0.00000

Data 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	0.70199	0.76901	0.70500	0.71801						
0.3		0.72300	0.73201	0.71699	0.71000						
1		0.68900	0.80100	0.73401	0.81901						
2		0.40599	0.70200	0.63900	0.67700						
4		0.31300	0.38301	0.34401	0.18700						
8		0.00000	0.00000	0.00000	0.00000						

Graphics



SCOEPA00026713

CETIS Test Summary

Report Date: 17 Aug-07 8:53 AM
Test Link: 05-4374-6611/B186301rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	12-4292-0784	**Test Type:**	Cell Growth	**Duration:**	4d 4h
Start Date:	07 Aug-07 11:20 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	11 Aug-07 03:25 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	07 Aug-07 11:20 AM	**Brine:**			

Sample No:	03-4767-9768	**Code:**	B1863-01	**Client:**	
Sample Date:	06 Aug-07 05:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Aug-07 10:25 AM	**Source:**	Siltronic Corporation		
Sample Age:	30h (0.8 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-2627-9252	Cell Density	15	30	21.213	12.75%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
04-8663-4670	Cell Density	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-8663-4670	Cell Density	Control CV	0.06874	NL - 0.2	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	Control CV	0.06874	NL - 0.2	Yes	Passes acceptability criteria
04-8663-4670	Cell Density	Control Response	4889750	1000000 - NL	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	Control Response	4889750	1000000 - NL	Yes	Passes acceptability criteria
05-2627-9252	Cell Density	PMSD	0.12755	0.091 - 0.29	Yes	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	4.89E+6	4.52E+6	5.23E+6	1.68E+5	3.36E+5	6.87%
1.9		4	4.51E+6	3.92E+6	4.90E+6	2.24E+5	4.47E+5	9.92%
3.75		4	4.99E+6	4.79E+6	5.25E+6	9.79E+4	1.96E+5	3.92%
7.5		4	4.40E+6	4.08E+6	4.74E+6	1.42E+5	2.84E+5	6.44%
15		4	4.59E+6	4.25E+6	5.14E+6	1.97E+5	3.93E+5	8.58%
30		4	3.88E+6	3.19E+6	4.16E+6	2.34E+5	4.68E+5	12.07%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.52E+6	4.69E+6	5.23E+6	5.12E+6
1.9		4.90E+6	3.92E+6	4.39E+6	4.81E+6
3.75		5.01E+6	4.79E+6	4.92E+6	5.25E+6
7.5		4.74E+6	4.08E+6	4.50E+6	4.29E+6
15		4.37E+6	5.14E+6	4.59E+6	4.25E+6
30		4.16E+6	4.16E+6	4.00E+6	3.19E+6

SCOEPA00026714

Test Solution Preparation and Dilution Record

Note: ☐ Indicates task not done, ☑ Indicates task was done. Temp adj. = Temperature adjusted

Client: Reftox

Ditto marks ('') indicate that the same batch of dilution water or food as the previous day's entry was used.

Fathead minnow - Chronic

Test Concentration (g/L)	Sample Volume (mls)		Final Volume (mls)	Test Day	50 g/L NaCl Stock Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	Date	Time	Initials
Control	0	→	2000	0	B067-06	☑ Temp Adj to 20 °C	ID # 2862	8/10/07	0835	BRT
0.3	12	→	2000	1	B067-06	☑ Temp Adj to 20 °C	ID # 2865	8-11-07	1220	WW
1.0	40	→	2000	2	B067-06	☑ Temp Adj to 20 °C	ID # 2865	8-12-07	1105	WW
2.0	80	→	2000	3	B067-06	☑ Temp Adj to 20 °C	ID # 2865	8-13-07	0815	BRT
4.0	160	→	2000	4	B067-06	☑ Temp Adj to 20 °C	ID # 2865	8-14-07	855	WW
8.0	320	→	2000	5	B067-06	☑ Temp Adj to 20 °C	ID # 2866	8-15-07	0915	BRT
				6	B067-06	☑ Temp Adj to 20 °C	ID # 2866	8-16-07	0930	BRT

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC — Test Start Date: 7-3-2007

Sample Description: NaCl (50 g/L stock) — Reagent ID#: 1B067-05

Ceriodaphnia Lot#: Cd 2067 — Statistician: [signature]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	21 AD?	25 AD?	33 AD?	35 AD?	28 AD?	30 AD?	42 AD?	31 AD?	38 AD?	31 AD?	10	314
0.25 g/L	3 AD?	28 AD?	28 AD?	21 AD?	26 AD?	35 AD?	31 AD?	29 AD?	26 AD?	30 AD?	10	257
0.50 g/L	23 AD?	9 AD? ✓	20 AD?	19 AD?	7 AD?	21 AD?	22 AD?	24 AD?	23 AD?	23 AD?	9	191
1.0 g/L	4 AD?	11 AD?	13 AD?	0 AD?	0 AD? ✓	12 AD?	0 AD? ✓	0 AD? ✓	11 AD?	9 AD?	7	60
1.5 g/L	4 AD?	2 AD?	5 AD?	2 AD?	3 AD?	1 AD?	DW 86 AD?	0 AD? ✓	4 AD?	2 AD?	9	29
2.0 g/L	3 AD?	1 AD?	0 AD?	0 AD?	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD?	0 AD? ✓	0 AD? ✓	5	4
4.0 g/L	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0 AD? ✓	0	0

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.58	1.30 to 1.80
Reproduction	0.33	0.24 to 0.78

Task Manager: [signature]

Project Manager: [signature]

QA Officer: [signature]

SCOEPA00026716

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC | Test Initiation : Date: 7-3-07 Time: 1015

Sample Description: NaCl | Test Termination : Date: 7-10-07 Time: 0855

Initial Sample ID #: 1BC67-05 | Ceriodaphnia Lot#: Cd 2067

Technician: Day 0 DN Day 1 (TP) Day 2 BM Day 3 (TP) Day 4 BM Day 5 BM Day 6 (TP) Day 7 DN

Time: Day 0 1015 Day 1 1130 Day 2 1055 Day 3 0750 Day 4 1550 Day 5 1410 Day 6 1030 Day 7 0855

Neonates were obtained from culture Board ID:

	A	B	C	D	E	F	G	H	I	J
Board ID:	W	W	W	W	W	W	W	W	W	W
Slot #:	10	16	20	22	25	26	27	28	29	31

Random Template Used: 7 Conc. # 1

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	5	6	6	5	0	6	6	6	5	5	10	50
	5	0	5	11	0	12	10	15	11	12	9	10	85
	6	16	0	0	13	0	14	0	0	0	0	10	43
	7	0	14	16	17	16	0	21	14	21	17	10	136
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	4	4	3	3	5	4	5	4	4	10	39
	5	0	0	0	6	9	13	11	10	8	0	10	57
	6	0	11	10	0	0	0	16	14	14	9	10	74
	7	0	13	14	12	14	17	0	0	0	17	10	87
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	4	3	2	3 0	4 3	2	3	3	3	10	28
	5	9	5 AD	0	6	0	9	0	7	10	9	9	55
	6	0	1	8	0	7	0	9	0	10	0	9	34
	7	10	1	9	11	0	8	11	14	0	11	9	74
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	1	2	0	0	0 AD	1	0 AD	0 AD	3	3	7	10
	5	0	0	2	0	|	4	|	|	0	0	7	6
	6	3	5	6	0	|	0	|	|	0	0		14
	7	0	4	5	0		7		)	8	6	7	30
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	0	0	0	1	0	0 AD	0	0	9	1
	5	0	0	0	0	0	0	0	|	0	0	9	0
	6	1	2	1	0	3	6	3	|	0	0	9	10
	7	3	0	4	2	0	0	3	)	4	2	9	18
2.0 g/L	1	0	0	0	0	0	0 AD	0 AD	0	0	0	8	0
	2	0	0	0	0	0	|	|	0	0 AD	0	7	0
	3	0	0	0	0	9 AD	|	|	0	|	0	6	0
	4	0	0	0	0	|	|	|	0	|	0 AD	5	0
	5	0	1	0	0	|	|	|	0	|	|	5	1
	6	3	0	0	0	|	|	|	0	|	|	3 5	3
	7	0	0	0	0	|	|	|	0	|	)	5	0
4.0 g/L	1	0 AD	0 AD	0 AD	0 AD	0 AD	0 AD	0 AD	0 AD	0 AD	0 AD	0	0
	2	|	|	|	|	|	|	|	|	|	|		
	3	|	|	|	|	|	|	|	|	|	|		

AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC — Initiated Date 7-3-07 Time 1015 — Adults Isolated Date 7-2-07 Time 2300

Sample Description NaCl (50 g/L stock) — Reagent Log # 1B067-05 — Neo's Collected Date 7-3-07 Time 0630

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	[illegible]	BM	[illegible]	BM	BM	[illegible]	DW
Time	1015	1130	1135	0750	1555	1430	1030	0855
Therm. ID#	5	6	3	3	6	6	6	#3

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.0	8.0 / 8.1	8.0 / 7.9	7.9 / 8.0	8.1 / 7.6	8.3 / 8.2	8.2 / 8.2	8.1
0.25 g/L	8.0	8.0 / 8.1	8.0 / 7.9	7.9 / 8.0	8.2 / 7.6	8.3 / 8.2	8.2 / 8.2	8.1
0.50 g/L	8.0	8.0 / 8.1	8.0 / 7.9	7.9 / 8.0	8.2 / 7.5	8.3 / 8.1	8.2 / 8.2	8.1
1.0 g/L	8.0	8.0 / 8.2	8.2 / 7.9	7.9 / 7.9	8.3 / 7.6	8.3 / 8.2	8.1 / 8.0	8.1
1.5 g/L	8.0	8.0 / 8.1	8.1 / 7.9	8.0 / 8.0	8.3 / 7.6	8.3 / 8.2	8.2 / 8.0	8.1
2.0 g/L	8.0	8.0 / 8.2	8.1 / 7.9	7.9 / 7.9	8.3 / 7.4	8.3 / 8.2	8.1 / 8.1	8.0
4.0 g/L	8.0	8.0 / –						

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.8	7.9 / 7.8	7.7 / 7.8	7.8 / 7.9	8.0 / 7.7	7.6 / 7.6	7.9 / 7.8	7.9
0.25 g/L	7.8	7.8 / 7.8	7.8 / 7.7	7.8 / 7.8	7.9 / 7.6	7.7 / 7.5	7.9 / 7.7	7.9
0.50 g/L	7.8	7.8 / 7.7	7.9 / 7.6	7.8 / 7.8	7.9 / 7.5	7.7 / 7.6	7.9 / 7.8	7.9
1.0 g/L	7.7	7.8 / 7.7	7.9 / 7.6	7.8 / 7.8	7.9 / 7.5	7.7 / 7.5	7.9 / 7.8	7.9
1.5 g/L	7.7	7.8 / 7.7	7.9 / 7.6	7.9 / 7.8	7.9 / 7.5	7.7 / 7.5	7.9 / 7.8	7.9
2.0 g/L	7.7	7.9 / 7.7	7.9 / 7.7	7.9 / 7.7	7.9 / 7.5	7.8 / 7.5	7.9 / 7.8	7.9
4.0 g/L	7.7	7.8 / –						

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.6 / 294	25.8 / 304	25.2 / 296	24.6 / 296	25.4 / 303	25.3 / 304	25.2 / 312	25.2
0.25 g/L	25.4 / 689	24.9 / 690	24.7 / 738	24.3 / 732	24.2 / 747	24.6 / 753	25.6 / 755	24.7
0.50 g/L	25.6 / 1127	24.9 / 1104	~~25.7~~ 24.9 / 1184	24.2 / 1190	24.9 / 1189	24.9 / 1195	25.6 / 1217 [illegible]	24.6
1.0 g/L	25.5 / 1941	24.7 / 2010	24.7 / 2040	24.0 / 2030	25.0 / 2050	24.4 / 2050	25.2 / 2110	24.6
1.5 g/L	25.5 / 2740	25.1 / 2830	24.1 / 2830	24.5 / 2910	24.5 / 2910	24.7 / 2900	25.7 / 2890	25.0
2.0 g/L	25.8 / 3520	25.6 / 3630	24.4 / 3550	24.0 / 3686	24.9 / 3750	25.2 / 3760	24.8 / 3720	24.7
4.0 g/L	25.6 / 6520	29.7 / –						

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 12 Jul-07 8:43 AM
Test Link: 06-7369-9670/rcdc2067

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Test No:	06-5867-6876	Test Type:	Reproduction-Survival (7d)	Duration:	6d 22h
Start Date:	03 Jul-07 10:15 AM	Protocol:	EPA/821/R-02-013 (2002)	Species:	Ceriodaphnia dubia
Ending Date:	10 Jul-07 08:55 AM	Dil Water:		Source:	In-House Culture
Setup Date:	03 Jul-07 10:15 AM	Brine:			

Sample No:	11-9841-2111	Code:	1B067-05	Client:	
Sample Date:	01 Jul-07	Material:	Sodium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	58h	Station:			

Comments: 50 g/l stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
01-5034-9247	7d Proportion Survived	25	1.583333	0.75	2.125	Linear Interpolation
09-8687-7981	Reproduction	25	0.3314394	0.16875	0.4791667	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
01-5034-9247	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
09-8687-7981	Reproduction	Control Response	31.4	15 - NL	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	0.70000	0.00000	1.00000	0.15275	0.48305	69.01%
1.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
2		10	0.50000	0.00000	1.00000	0.16667	0.52705	105.41
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	31.4	21	42	1.9276	6.0955	19.41%
0.25		10	25.7	3	35	2.7731	8.7693	34.12%
0.5		10	19.1	7	24	1.9175	6.0636	31.75%
1		10	6	0	13	1.8012	5.6960	94.93%
1.5		10	2.9	0	6	0.5859	1.8529	63.89%
2		10	0.4	0	3	0.3055	0.9661	241.52
4		10	0	0	0	0	0	0.00%

SCOEPA00026719

CETIS Test Summary

Report Date: 12 Jul-07 8:43 AM
Test Link: 06-7369-9670/rcdc2067

7d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	0.00000	0.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
2		1.00000	1.00000	1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	21	25	33	35	28	30	42	31	38	31
0.25		3	28	28	21	26	35	31	29	26	30
0.5		23	9	20	19	7	21	22	24	23	23
1		4	11	13	0	0	12	0	0	11	9
1.5		4	2	5	2	3	1	6	0	4	2
2		3	1	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

SCOEPA00026720

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Sample No:	11-9841-2111	Code:	1B067-05	Client:	
Sample Date:	01 Jul-07	Material:	Sodium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	58h	Station:			

Comments: 50 g/l stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	06-7369-9670	06-7369-9670	12 Jul-07 8:42 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.583333	0.75	2.125

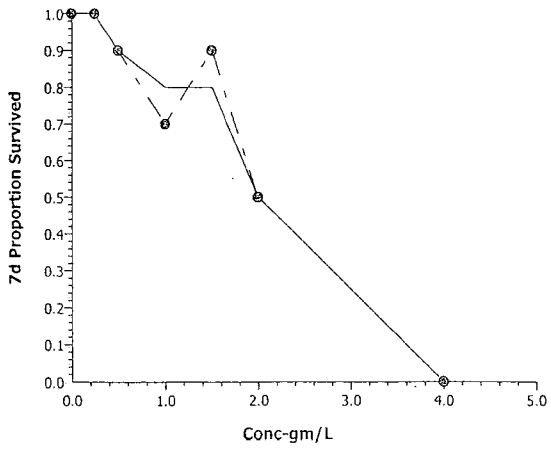
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	0.70000	0.00000	1.00000	0.09860	0.48305	7	10
1.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
2		10	0.50000	0.00000	1.00000	0.10758	0.52705	5	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	0.00000	0.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
2		1.00000	1.00000	1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Graphics



SCOEPA00026721

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Sample No:	11-9841-2111	Code:	1B067-05	Client:	
Sample Date:	01 Jul-07	Material:	Sodium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	58h	Station:			

Comments: 50 g/l stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	06-7369-9670	06-7369-9670	12 Jul-07 8:43 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5795186	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.3314394	0.16875	0.4791667

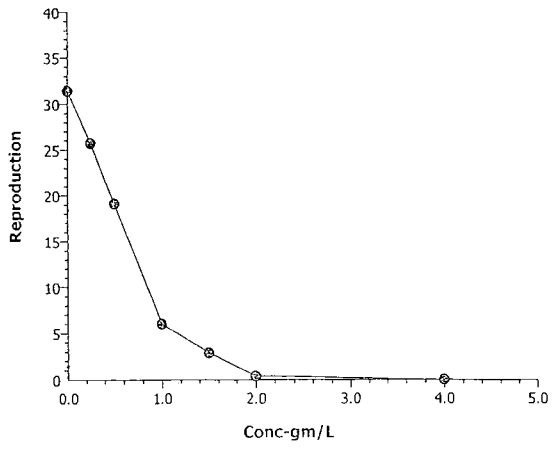
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	31.4	21	42	1.24425	6.09554
0.25		10	25.7	3	35	1.79002	8.76926
0.5		10	19.1	7	24	1.23772	6.06355
1		10	6	0	13	1.16269	5.69600
1.5		10	2.9	0	6	0.37823	1.85293
2		10	0.4	0	3	0.19720	0.96609
4		10	0	0	0	0	0

Data 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	21	25	33	35	28	30	42	31	38	31
0.25		3	28	28	21	26	35	31	29	26	30
0.5		23	9	20	19	7	21	22	24	23	23
1		4	11	13	0	0	12	0	0	11	9
1.5		4	2	5	2	3	1	6	0	4	2
2		3	1	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

Graphics



SCOEPA00026722

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl Reagent Log #: 1B067-05

Test Start Date: 7-31-2007 Time: 1110 Initials: DW

Test End Date: 8-4-07 Time: 1150 Initials: BRT

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 468

Age: 4 days

Dilution Water ID #: 2858

Source Water: 2855

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		
448	200		Culture Density
MEAN	2.24	x250,000 =	560,000

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	560,000	=	0.89 ml

Cell Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6 (cells/ml)
Flask #1	5	100	0.01250
Flask #2	5	↓	0.01250
Flask #3	6	↓	0.0150

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
406	392	414

Technician	0 hr	DW	24 hr	NJ	48 hr	BRT	72 hr	BRT	96 hr	BRT		
Time	0 hr	1110	24 hr	0920	48 hr	0850	72 hr	0930	96 hr	1150		
Thermometer ID:	0 hr	# 3	24 hr	# 6	48 hr	# 7	72 hr	# 7	96 hr	# 7		

Test Concen. (g/L)	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umhos/cm)	Hard	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.2	7.9	7.9	7.9	8.3	9.0	24.7	24.6	24.6	24.5	25.0	376		
0.25	8.2	7.9	8.0	7.9	8.2	8.8	24.4	24.8	25.0	25.7	25.1	835		
0.50	8.2	7.9	8.0	8.0	8.3	9.0	24.3	25.0	24.9	25.4	25.5	1278		
1.0	8.2	7.9	8.0	8.0	8.2	9.0	24.4	25.4	25.0	24.5	25.9	2180		
2.0	8.2	7.9	8.0	8.0	8.1	8.8	24.6	25.5	25.4	25.7	25.8	3640		
4.0	8.2	7.9	8.0	8.0	8.0	8.3	24.3	25.4	25.4	25.0	25.9	7210		

Task Manager

Project Manager

QA Officer

Endpoint : Growth

IC25 : 1.40

Cusum Chart Limits : 0.29 to 2.32

Comments:

SCOEPA00026723

Raphidocelis subcapitata COUNT WORKSHEET

Client QA/QC

Sample Description

Test Start Date 7-31-07 Initials

TEST CONCENTRATION	Control		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	401	32	3.133
REP B	410	32	3.203
REP C	410	33	3.106
REP D	434	34	3.191
	MEAN # CELLS / mL* =		3.158

TEST CONCENTRATION	2.0		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	270	40	1.688
REP B	300	40	1.875
REP C	336	40	2.100
REP D	242	40	1.513
	MEAN # CELLS / mL* =		1.794

TEST CONCENTRATION	0.25		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	440	36	3.056
REP B	454	29	3.914
REP C	419	32	3.273
REP D	429	33	3.250
	MEAN # CELLS / mL* =		3.373

TEST CONCENTRATION	4.0		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	214	40	1.338
REP B	254	40	1.588
REP C	112	40	0.700
REP D	69	40	0.431
	MEAN # CELLS / mL* =		1.014

TEST CONCENTRATION	0.50		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	413	32	3.227
REP B	473	38	3.112
REP C	454	35	3.243
REP D	421	30	3.508
	MEAN # CELLS / mL* =		3.273

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

TEST CONCENTRATION	1.0		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	421	34	3.096
REP B	426	39	2.731
REP C	405	38	2.664
REP D	403	33	3.053
	MEAN # CELLS / mL* =		2.886

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

ALGAE.XLS

SCOEPA00026724

Client QA/QC Test Start Date 7-31-07

Sample Description _____ Initials (TT)

TEST CONCENTRATION				Control			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
99	8	108	7	106	7	100	9
108	9	99	8	101	9	104	8
98	7	104	8	109	9	107	8
96	8	99	9	94	8	123	9

TEST CONCENTRATION				0.25%L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
101	7	137	8	97	7	114	8
113	10	100	8	106	8	101	7
111	9	104	6	109	7	108	9
115	10	113	7	107 ~~8 7~~	~~8~~ 10	106	9

TEST CONCENTRATION				0.50%L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
103	8	148	10	130	10	103	~~8~~ 8
105	7	110 ~~11~~	9	115	8	104	7
95	8	102	10	104	8	92	7
110	(11) 9	113	9	105	9	122	8

TEST CONCENTRATION				1.0%L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
111	8	104	10	106	9	106	9
102	8	97	10	93	9	96	7
104	9	116	9	90	10	102	9
104	9	109	10	116	10	99	8

Client QA/QC Test Start Date 7-31-07

Sample Description _____ Initials TR

TEST CONCENTRATION				2.0 s/c			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
74	10	82	10	77	10	74	10
72	10	61	10	90	10	60	10
69	10	79	10	82	10	58	10
55	10	78	10	87	10	50	10

TEST CONCENTRATION				4.0 s/c			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
63	10	56	10	51	10	34	10
64	10	71	10	25	10	12	10
37	10	63	10	10	10	8	10
50	10	64	10	26	10	15	10

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Test Summary

Report Date: 09 Aug-07 10:46 AM
Test Link: 16-6148-6010/rrsc468

Raphidocelis Growth Test — **CH2M Hill**

Test No:	07-0791-4277	**Test Type:**	Cell Growth	**Duration:**	4d 0h
Start Date:	31 Jul-07 11:10 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	04 Aug-07 11:50 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	31 Jul-07 11:10 AM	**Brine:**			

Sample No:	11-9841-2111	**Code:**	1B067-05	**Client:**	
Sample Date:	01 Jul-07	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	30d 11h	**Station:**			

Comments: 50 g/l stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
04-4853-6452	Cell Density	25	1.398352	1.140578	1.641959	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-4853-6452	Cell Density	Control CV	0.01467	NL - 0.2	Yes	Passes acceptability criteria
04-4853-6452	Cell Density	Control Response	3158250	1000000 - NL	Yes	Passes acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.16E+6	3.11E+6	3.20E+6	2.32E+4	4.63E+4	1.47%
0.25		4	3.37E+6	3.06E+6	3.91E+6	1.87E+5	3.73E+5	11.07%
0.5		4	3.27E+6	3.11E+6	3.51E+6	8.37E+4	1.67E+5	5.12%
1		4	2.89E+6	2.66E+6	3.10E+6	1.10E+5	2.20E+5	7.63%
2		4	1.79E+6	1.51E+6	2.10E+6	1.26E+5	2.52E+5	14.04%
4		4	1.01E+6	4.31E+5	1.59E+6	2.70E+5	5.39E+5	53.18%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	3.13E+6	3.20E+6	3.11E+6	3.19E+6
0.25		3.06E+6	3.91E+6	3.27E+6	3.25E+6
0.5		3.23E+6	3.11E+6	3.24E+6	3.51E+6
1		3.10E+6	2.73E+6	2.66E+6	3.05E+6
2		1.69E+6	1.88E+6	2.10E+6	1.51E+6
4		1.34E+6	1.59E+6	7.00E+5	4.31E+5

SCOEPA00026727

Report Date: 09 Aug-07 10:46 AM
Analysis: 04-4853-6452/rrsc468

CETIS Analysis Detail

Raphidocelis Growth Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	16-6148-6010	16-6148-6010	09 Aug-07 10:45 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.398352	1.140578	1.641959

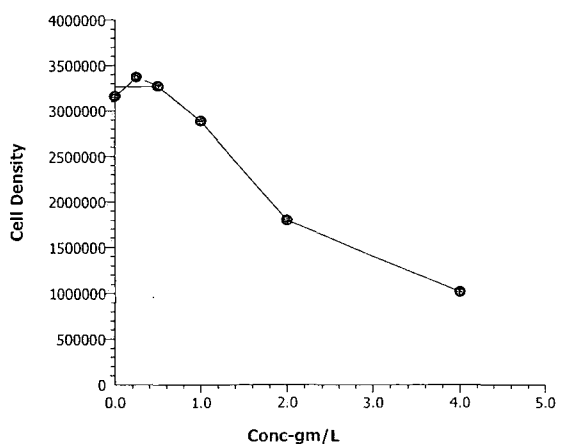
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.16E+6	3.11E+6	3.20E+6	9.46E+3	4.63E+4
0.25		4	3.37E+6	3.06E+6	3.91E+6	7.62E+4	3.73E+5
0.5		4	3.27E+6	3.11E+6	3.51E+6	3.42E+4	1.67E+5
1		4	2.89E+6	2.66E+6	3.10E+6	4.49E+4	2.20E+5
2		4	1.79E+6	1.51E+6	2.10E+6	5.14E+4	2.52E+5
4		4	1.01E+6	4.31E+5	1.59E+6	1.10E+5	5.39E+5

Data 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	3.13E+6	3.20E+6	3.11E+6	3.19E+6						
0.25		3.06E+6	3.91E+6	3.27E+6	3.25E+6						
0.5		3.23E+6	3.11E+6	3.24E+6	3.51E+6						
1		3.10E+6	2.73E+6	2.66E+6	3.05E+6						
2		1.69E+6	1.88E+6	2.10E+6	1.51E+6						
4		1.34E+6	1.59E+6	7.00E+5	4.31E+5						

Graphics



SCOEPA00026728

APPENDIX C

CHAIN OF CUSTODY

CH2MHILL
Analytical Services

Sample Receipt Record

SDG Number: B18623 Client/Project Siltronics Corp.

VERIFICATION OF SAMPLE CONDITIONS (verify all items)

Observation	-01 YES	-01 NO	-02 YES	-02 NO	-03 YES	-03 NO
Were custody seals intact and on the outside of the cooler?		X		✓		✓
If yes, Where? Front____Rear____Lt Side____Rt Side____		X		✓		✓
Was the Chain of Custody inside the cooler?		X	✓		✓	
Was the Chain of Custody properly filled out?	X		✓		✓	
Were the sample containers in good condition?	X		✓		✓	
Are all samples within 36 hours of collection? If not, contact LPM	X		✓		✓	
Was there ice in the cooler?	X		✓		✓	
Enter temperature	0.8 °C		4.2 °C		5.3 °C	

Login performed by: NJ DW

Date: 08-06-07 8-8-07

Time: 1025 11:00 AM

Sample Receipt Exception Report

The following exceptions were noted: Comments (write number of exception description and the impacted sample numbers)

X	1. No custody seal as required by project	Sample was hand delivered by woman who sampled the effluent.
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on reciept.	
	5. Temperature of samples inappropriate for analysis requested. (EPA recommends 0-6 °C for WET testing)	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requrested	
	10. Discrepancies between COC form and container labels.	
	11. Other.	

ACTION TAKEN (date/time):
Cient notified on (date/time):
Originator:
Client Contact:

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client Siltronic Corporation
Address 7200 NW Front Ave
Portland, OR 97210

Contact Person: Tom Rothschild
Phone: 503-219-7374

CH2M HILL Project # _____

NPDES# 101128
Composite Sample Information _____

Samples/Hour 1 Volume/Sample ~8L 600ml
Total Hours 24 Total Volume ~18L
Initiated: Date 8/5/07 Time 0500
Ended: Date 8/6/07 Time 0500
Chilled During Collection Yes ☒ No ☐

Ship Samples to: CH2M HILL, Inc.
P. O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) _____
Temp. Upon Arrival (°C) 0.8°C
Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
07-102	8/6/07		X		1	B1863-01	X	X	X	X	X													Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%

Sampled By & Title (Please sign and print name) Dianne Irish Lab Tech	Date/Time 8/6/07 0620	Relinquished By (Please sign and print name) Dianne Irish Dianne Irish	Date/Time 8-6-07 1017
Received By (Please sign and print name) Natisha Johnson	Date/Time 8-6-07 1025	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026731

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 NW Front Ave, Portland, OR 97210
Contact Person: Tom Rothschild
Phone: 503-219-7374
CH2M HILL Project #

NPDES# 101128
Composite Sample Information
Samples/Hour 1 Volume/Sample ~600ml
Total Hours 24 Total Volume ~15L
Initiated: Date 8.7.07 Time
Ended: Date 8.8.07 Time
Chilled During Collection Yes ☒ No ☐

Ship Samples to: CH2M HILL, Inc.
P. O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N)
Temp. Upon Arrival (°C)
Check Ammonia (Y/N) Dechlorinate (Y/N)

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
07-103	8.8.07	0720	X		1	B1863-02	X	X	X	X	X								X					Dilutions:
																								30%, 15%,
																								7.5%, 3.75%,
																								1.9%.

Sampled By & Title (Please sign and print name) Thomas J. Rothschild	Date/Time 8 Aug 2007 / 0720	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 8 Aug 2007 / 0835
Received By (Please sign and print name) MYRON BURR	Date/Time 8/8/07 0835	Relinquished By (Please sign and print name) MYRON BURR	Date/Time 8/8/07 1042
Received By (Please sign and print name) LINDA RISER	Date/Time 8/8/07 10:42	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name) Doug Winn / LAB	Date/Time 8-8-07 / 11:00	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026732

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 NW Front Ave, Portland, OR 97210
Contact Person: Tom Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES#: 101128
Composite Sample Information:
Samples/Hour: 1 Volume/Sample: ~600
Total Hours: 24 Total Volume: ~18L
Initiated: Date 8.9.07 Time:
Ended: Date 8.10.07 Time:
Chilled During Collection: Yes ☐ No ☐

Ship Samples to: CH2M HILL, Inc.
P. O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N): Y
Temp. Upon Arrival (°C): 5.3
Check Ammonia (Y/N): Y Dechlorinate (Y/N):

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
07-107	8.10.07	0720	X		1		X	X	X	X									X					Dilutions,
																								30%, 15%,
																								7.5%, 3.75%,
																								1.9 %

Sampled By & Title (Please sign and print name): Thomas J. Rothschild	Date/Time: 10 Aug 2007 / 0720	Relinquished By (Please sign and print name): Thomas J. Rothschild	Date/Time: 10 Aug 2007 / 1108
Received By (Please sign and print name): Brian Theobald	Date/Time: 8/10/07 / 1908	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name):	Date/Time:	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name):	Date/Time:	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #:
Work Authorized By (Please sign and print name):	Remarks:		

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Water Quality Source Control, DEQ
2020 SW 4th Ave., Suite 400
City, State
Portland, OR 97201-4987

B

PS Form

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monthly (Oct) report

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Dr. Elliot Zais
Water Quality Source Control, DEQ
2020 SW 4th Ave., Suite 400
Portland, OR 97201-4987

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7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
koreen.lail@siltronic.com

ER064:KL

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

2006-September-28

September 2006 Bioassay results

Dear Dr. Zais,

The Bioassay of Siltronic's effluent **passes the requirements** of our NPDES permit number 101128.

The Bioassay was performed on three species: *Ceriodaphnia dubia* (water flea), *Pimephales promelas* (fathead minnow) and *Raphidocelis subcapitata* (green algae). The analyses were performed at the following dilutions, which are based on the average of three mixing zone dilution studies[1], as percentage effluent: 1.90%, 3.75%, 7.5%, 15% and 30%. Samples were taken September 6 though September 13, 2006. The analytical methods used were "*Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002"* and *"Whole Effluent Toxicity Testing Guidance Document, Oregon Department of Environmental Quality, January 1993".*

Ceriodaphnia dubia

Acute Toxicity test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value (concentration of sample causing a 50% reduction in survival) was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's zone of immediate dilution (ZID) is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated a statistically significant reduction in reproduction at the 30% effluent concentration when compared to the control. The NOEC and LOEC were 15% and 30% effluent, respectively. Control survival was 100%. The IC_{25} value (concentration of sample causing a 25% reduction in biological measurement) calculated on reproduction was 16.1% effluent concentration. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Pimephales promelas (dual endpoint)

Acute Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The LC_{50} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's ZID is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The IC_{25} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Raphidocelis subcapitata

Chronic Toxicity test results indicated that there was no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% percent effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is ≥ 1.8% effluent[1].

Summary of CH2MHill results for August 2005

Acute (48-hour) Results:	Ceriodaphnia dubia	Pimephales promelas	
NOEC	30%	30% (% Effluent)	
ZID Pass Criteria[1]	≥13.4%	≥13.4%	
Chronic Results:	**Ceriodaphnia dubia**	**Pimephales promelas**	**Raphidocelis subcapitata**
NOEC	15%	30%	30% (% Effluent)
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%	≥ 1.8%

If you have any questions, please contact Koreen Lail at (503) 219-7994.

Regards,
Siltronic Corporation

Thomas McCue
Environmental Manager

cc: Tom Rothschild
NPDES Bioassay File

[1] CH2MHILL Mixing Zone Effluent Dilution Evaluations prepared for Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Siltronic's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The average of the three mixing zone dilution studies identified worst-case (0.1-feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$), respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. **Conversely, the effluent is in compliance for toxicity if the acute test NOEC is greater than or equal to (≥) 13.4% effluent and the chronic test NOEC is greater than or equal to (≥) 1.8% effluent.**

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 1 through 8, 2006 and August 17 through 21, 2006

RECEIVED AUG 2 9 2006
3JR

CH2MHILL

SCOEPA00026740

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 1 through 8, 2006 and August 17 through 21, 2006

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

August 24, 2006
Lab I.D. No. B1641

SCOEPA00026741

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SCOEPA00026742

INTRODUCTION

CH2M HILL conducted chronic and acute bioassays from August 1 through 8, 2006, on samples provided by the Siltronics Corporation, Portland, Oregon. The tests were conducted using the water flea (*Ceriodaphnia dubia*), the fathead minnow (*Pimephales promelas*), and algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum).*

The algae test initiated on August 3, 2006 involved the use of contaminated laboratory equipment. The algae test was repeated from August 17 through 21, 2006. See notation and corrective action in the Results and Discussion section on page 8.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. EPA/600/4-91/002, July 1994 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

The acute test was performed according to: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F; and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

Additional guidance was provided by:

- *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (EPA 2002); EPA-821-R-02-013.
- *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (EPA June 2000), EPA 833-R-00-003.
- *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*, (EPA July 2000), EPA 821-B-00-004.
- *Reasonable Potential Analysis for Toxic Pollutants, Internal Management Directive*, Oregon Department of Environmental Quality (September 2005).

A deviation from the cited protocol was a temperature deviation in the sampling procedures. See notation in Sample Collection below

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TEST ORGANISMS

The *Ceriodaphnia dubia* were obtained from CH2M HILL's in-house cultures and were less than 24 hours old for the acute test and less than 24 hours old and within an 8-hour age range for the chronic test. The fathead minnows were obtained from Aquatox Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. The *Raphidocelis* was obtained from CH2M HILL's in-house cultures and were 6 days old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (1994). The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used was reconstituted, moderately hard water with a total hardness of 80 to 100 mg/L as $CaCO_3$ and an alkalinity of 60 to 70 mg/L as $CaCO_3$. The dilution water used for the algae tests was reconstituted, moderately hard water with nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to use.

TEST CONCENTRATIONS

The concentrations for the acute test were 1.90, 3.75, 7.50, 15.0, 30.0 percent effluent with dilution water for the control. For the acute *Ceriodaphnia dubia* test, 20 organisms per concentration were used with four test vessels per concentration and five organisms per vessel.

The concentrations tested in the chronic tests were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent and dilution water for the control. For the chronic *Ceriodaphnia dubia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel. For the fathead minnow chronic test, 10 organisms per chamber, with four chambers per concentration for a total of 40 organisms per concentration were used. The algae test was run with four replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

Samples were collected by Siltronics Corporation personnel on July 31, August 2, August 4, and August 17, 2006. The samples were shipped by courier to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on July 31, August 2, August 4, and August 17, 2006, and tests were initiated within 36 hours of sample collection. All samples were received within 4 hours of sample collection and were 7.6, 13.0, 11.6 and 13.0 °C on arrival, respectively. EPA recommends cooling the samples to 4 °C during composite sample collection and shipping. On receipt, the samples were stored in the dark at 4°C until test solutions were prepared and tested. Chain of Custody for sample collection is provided in Appendix C.

SCOEPA00026744

SAMPLE PREPARATION

Samples used during these tests were filtered through a 60 µm net upon arrival and temperature was adjusted prior to each daily renewal.

The samples used for the algae test had nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to test initiation.

MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

The acute test was analyzed at initiation for dissolved oxygen, pH, and conductivity, and every 24 hours thereafter for mortality, dissolved oxygen, and pH. Conductivity was again taken at test termination. Temperature was monitored daily and in the incubator or waterbath continuously throughout the testing period.

For the fathead minnow and *Ceriodaphnia dubia* chronic tests, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in all the concentrations. Conductivity was measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was measured daily in the chronic tests. According to EPA (1994), *Ceriodaphnia dubia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia dubia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored in prerenewal solutions daily and in the incubator or waterbath continuously throughout the testing period.

For the chronic algae, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity were measured in the control, low, middle, and high test concentrations at test initiation. *Raphidocelis subcapitata* growth was determined by cell counts using a Coulter Counter. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period.

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DATA ANALYSIS

The effects measured during the *Ceriodaphnia dubia* acute test included survival over the exposure period. The acute dual endpoint test data included survival over the initial 48 hour exposure period in the fathead minnow chronic test. The statistical analyses performed were those outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F, using CETIS version 1.1.2. For definitive tests, Dunnett's Procedure or Bonferroni T-test was used to compare the survival data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data. LC_{50} values (the concentration of sample causing a 50 percent reduction in survival) were calculated for the acute tests using Probit, Trimmed Spearman-Karber, or Linear Interpolation statistical methods.

The effects measured during the *Ceriodaphnia dubia* chronic test included survival and reproduction over the exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the exposure period. The effect measured during the algae test was algae growth response. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-89/001, CETIS version 1.1.2. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the reproduction or growth data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

IC_{25} values (the concentration of sample causing a 25 percent reduction in biological measurement, e.g. growth) were calculated for growth effects in the chronic tests.

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RESULTS AND DISCUSSION

ACUTE RESULTS

The raw data sheets are presented in Appendix A and the results are summarized in Table 1 below. The survival in the 100 percent sample was 95.0 percent for the *Ceriodaphnia dubia* acute test.

Table 1
Summary of Acute Results
Percent Survival

Concentration (%)	0 hr	24 hr	48 hr
Ceriodaphnia dubia			
Control	100	100	100
1.90	100	100	100
3.75	100	100	100
7.50	100	100	100
15.0	100	100	35 [a]
30.0	100	0	0 [a]

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Steel's Many-One Rank test.

The test resulted in a statistically significant difference in the 15 and 30 percent effluent concentrations when compared to the control for the *Ceriodaphnia dubia* test. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 7.50 and 15.0 percent effluent. Acute

The LC_{50} value (the concentration of sample causing a 50 percent reduction in survival) was calculated on the *C. dubia* survival. The LC_{50} value was 13.5 percent effluent.

The dissolved oxygen concentration remained at 40 percent saturation or greater throughout the test period. Test temperatures remained in the range of 20±1°C. The test proceeded without interruption or incidence that could have affected test results.

The 48 hour dual endpoint (deriving of the acute mortality results from the chronic test) resulted in no statistically significant difference between the control and any effluent concentrations tested for the fathead minnow test. The NOEC and LOEC were 30 and greater than 30 percent effluent. The LC_{50} value calculated on fathead minnow survival was greater than 30 percent effluent.

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CHRONIC BIOASSAYS

Table 2 summarizes the survival and growth data for the fathead minnow chronic test.

Table 2
Summary of Chronic Results
Fathead Minnow

Sample Concentration (%)	Percent Survival	Mean Dry Weight Per Fish (mg)
Control	97.5	0.659
1.90	95.0	0.644
3.75	97.5	0.585 [a]
7.50	100	0.577 [a]
15.0	100	0.544 [a b]
30.0	95.0	0.529 [a b]

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Dunnett's test.
[b] Indicates a statistically significant reduction from control at p equal to 0.01 using Dunnett's test.

The fathead minnow test results showed no statistically significant reduction in survival at any effluent concentration tested and a statistically significant reduction in growth at the 3.75, 7.5, 15, and 30 percent effluent concentrations when compared to the control. Control survival was 97.5 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration LOEC) were 1.9 and 3.75 percent effluent, respectively.

However, the dose response observed in this data set was shallow (small increase in effect with increasing sample concentration) and the test sensitivity, at the p= 0.05 level, was unusually high (Percent Minimum Significant Difference (PMSD) equaled 10.4%). EPA-821-R-02-013 (section 10.2.8.2.5) recognizes this situations and states that "a test concentration shall not be considered toxic (i.e. significantly different from the control) if the relative difference from the control is less than the lower PMSD bounds [12 percent for FHM growth]." The reduction at the 3.75 percent effluent sample was 11 percent and therefore should not be considered statistically significant. The resulting NOEC and LOEC values were 3.75 and 7.5 percent effluent.

Also, EPA 821-B-00-004, Chapter 2, allows for reduction of alpha (p) levels from 0.05 to 0.01 in an effort to reduce Type I or "false positive" statistical errors. This approach is contingent on the test maintaining appropriate test sensitivity and allowances in the NPDES permit or by the regulating authority. Using p=0.01, the fathead minnow test results showed a statistically significant reduction in growth at the 15 and 30 percent effluent concentrations when compared to the control. Using this approach, the NOEC and the LOEC were 7.5 and

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15 percent effluent, respectively. All specified test sensitivity criteria were met for this data set.

Considering the uncertainty surrounding the hypothesis testing and DEQ's recommendation of using the IC_{25} analysis in the *Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive*, a point estimate likely provides a better measure of the toxicity of the effluent. The IC_{25} value for growth is independent of alpha level and was calculated as greater than 30 percent effluent.

Table 3 summarizes the survival and reproduction data for the *Ceriodaphnia dubia* test.

Table 3
Summary of Chronic Results
Ceriodaphnia dubia

Concentration (%)	Percent Survival	No. Young Per Adult
Control	100	23.5
1.90	100	20.7
3.75	100	18.3
7.50	100	9.5 [b]
15.0	50	0.4 [b]
30.0	0 [a]	0.0

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Fishers Exact Test.
[b] Indicates a statistically significant reduction from control at p equal to 0.05 using Steel's many-One Rank Test.

The *Ceriodaphnia dubia* test results indicated a statistically significant reduction in survival at the 30 percent effluent concentration and in reproduction at the 7.5 and 15 percent effluent concentrations when compared to the control. The NOEC and the LOEC were 3.75 and 7.50 percent effluent, respectively.

The IC_{25} value calculated on *Ceriodaphnia dubia* reproduction was 4.04 percent effluent.

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Note: For the algae test initiated on August 3, 2006, the plugs used to close the test chambers for the D replicate in the 3.75% concentration and all replicates in the 7.50, 15.0 and 30.0% concentrations were new. These new plugs were determined to have caused poor algae growth in culture water (see corrective action report dated August 22, 2006, in Appendix A). The test was repeated using fresh sample and uncontaminated plugs.

Table 4 summarizes the 96-hour algae growth response data for the *Raphidocelis subcapitata* retest initiated on August 17, 2006.

Table 4
Summary of Chronic Results
Raphidocelis subcapitata

Concentration (%)	**Growth (Cells/ml x 10^6)**
Control	4.064
1.90	3.773
3.75	4.103
7.50	4.004
15.0	4.480
30.0	4.068

The *Raphidocelis subcapitata* test results indicated no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The NOEC and the LOEC were 30 and greater than 30 percent effluent, respectively.

The IC_{25} value calculated on *Raphidocelis subcapitata* growth was greater than 30 percent effluent.

The dissolved oxygen levels in the chronic tests remained above 40 percent saturation throughout the test periods and test temperatures remained at 25±1°C. The tests proceeded without any interruption that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted using sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA 1994), The IC_{25} values, LC_{50} values, and control chart limits are listed in Tables 5 and 6. The data sheets for the reference toxicant tests are provided in Appendix B.

Table 5
Acute Reference Toxicant Tests (g/L)

Species	LC_{50}	Control Chart
Pimephales promelas (FHM 1310)	7.5	6.8 to 7.7
Ceriodaphnia dubia	2.4	1.6 to 2.7

Table 6
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
Pimephales promelas (survival)	4.30	1.51 to 4.83
Pimephales promelas (growth)	3.20	1.34 to 3.24
Ceriodaphnia dubia (survival)	1.58	1.33 to 1.77
Ceriodaphnia dubia (reproduction)	0.48	0.28 to 0.85
Raphidocelis subcapitata (growth)	0.99	0.29 to 2.38

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APPENDIX A
RAW DATA SHEETS

CH2M HILL TOXICITY TEST ORGANISM AND WATER QUALITY DATA

Client: Siltronics — Test Initiation: Date 8-1-06 Time 1420 — Test Termination: Date 8-2-06 Time 1340

Contact: — Technician: Winn, Pittenger, Johnson, Oldham, Muckey

Test Species/ID: *Pimephales promelas* / FHM 1310 — *Ceriodaphnia dubia* / Cd 1955

Ceriodaphnia dubia / Cd 1954 — *Raphidocelis subcapitata* / Rs 426

Sample Information								Test Species Information	ID# FHM 1310	ID# Cd 1955	ID# Cd 1954	ID# Rs 426
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	(Age) or Size	< 24 hours	< 24 hours within an 8 hour span	< 24 hours	6 days
B1641 -01	06-62	7-31-06	0800	0.01 / -	0.61	188	20	Test Container Size	400 ml	30 ml	30 ml	125 ml
-02	06-63	8-2-06	0800	0.02 / -	0.67	192	14	Test Volume	250 ml	15 ml	25 ml	50 ml
-03	06-67	8-4-06	0800	0.04 / -	0.63	192	12	Feeding: Type	0.15 ml *Artemia*	0.1 ml Algae &	none	1 ml of nutrients
				/				Amount	2 x daily	YCT daily	—	added per liter
				/				Aeration: Began	None	None	None	none
				/				Amount	—	—	—	—
				/				Dilution Water ID#	2675	2675	2675	2677
				/				Acclimation Period	< 24 hours	< 24 hours	< 24 hrs	6 days
				/				Test Location	# 3	# 5	# 10	# 2
				/				Condition of Survivors	—	—	—	—
				/				Size (mm)	—	—	—	—
				/				Loading Rate	—	—	—	—
				/				Comments	☑ Samples 60 µm filtered			

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	2675	90	64
Recon MH (Algae)	2677	98	70

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Temperature ____

Conductivity #2 Refractometer ____ Other ____

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CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # B1641-01

Sample Description

Test Species *Ceriodaphnia dubia* ID# Cd 19584 DW

Beginning, Date 8-1-2006 Time 1420

Ending, Date 8-3-2006 Time 1230

Technician 0 hr DW 24 hr TP 48 hr DW 72 hr ____ 96 hr ____

Time 0 hr 1420 24 hr 1045 48 hr 1230 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			8.7	8.7/8.4	8.5			7.9	7.9/7.9	8.0			20.3	20.7	19.5			311	316/328	338		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
1.9	A	5	5	5			8.7	8.7/8.4	8.4			7.9	7.8/8.0	8.0			20.1	20.7	19.3			326	333/345	354		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
3.75	A	5	5	5			8.7	8.9/8.4	8.4			7.9	7.8/8.0	7.9			20.4	20.3	19.3			340	349/340	375		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						

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CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # B164I-01

Sample Description

Test Species *Ceriodaphnia dubia* ID# Cd 19584 DW

Beginning, Date 8-1-2006 Time 1420

Ending, Date 8-3-2006 Time 1230

Technician 0 hr DW 24 hr TB 48 hr DW 72 hr ____ 96 hr ____

Time 0 hr 1420 24 hr 1045 48 hr 1230 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
7.5	A	5	5	5			8.7	8.8/8.4	8.4			7.8	7.8/7.9	7.9			20.4	20.4	19.4			370	379/388	399		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
15	A	5	5	2			8.8	8.8/8.5	8.4			7.7	7.8/7.9	7.9			20.3	20.3	19.6			426	429/444	447		
	B	5	5	1								7.7 DW														
	C	5	5	2																						
	D	5	5	2																						
30	A	5	0				8.9	8.8/-	8 DW/-	-		7.6	7.8/-	-			20.1	20.2	-			535	549/-	-		
	B	5	0																							
	C	5	0																							
	D	5	0																							

CETIS Test Summary

Report Date: 09 Aug-06 11:18 AM
Test Link: 15-5564-1450/B164101cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	19-6265-2467	**Test Type:**	Survival (48h)	**Duration:**	46h
Start Date:	01 Aug-06 02:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Aug-06 12:30 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	01 Aug-06 02:20 PM	**Brine:**			

Sample No:	09-5819-2288	**Code:**	B1641-01	**Client:**	
Sample Date:	31 Jul-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:		**Source:**	Siltronic Corporation		
Sample Age:	30h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
16-1531-6247	48h Proportion Survived	7.5	15	10.607	9.18%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
15-7847-8696	48h Proportion Survived	50	13.51876	11.66071	15.67287	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-7847-8696	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria
16-1531-6247	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	0.35000	0.20000	0.40000	0.05000	0.10000	28.57%
30		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		0.40000	0.20000	0.40000	0.40000
30		0.00000	0.00000	0.00000	0.00000

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CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	15-5564-1450	15-5564-1450	09 Aug-06 11:17 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		7.5	15	13.333	10.607	9.18%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8000	4	Non-Significant Effect
		3.75	18	10	0.8000	4	Non-Significant Effect
		7.5	18	10	0.8000	4	Non-Significant Effect
		15	10	10	0.0350	0	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.639728	0.409932	4	167.76	0.00000	Significant Effect
Error	0.0366545	0.002444	15			
Total	1.6763822	0.4123756	19			

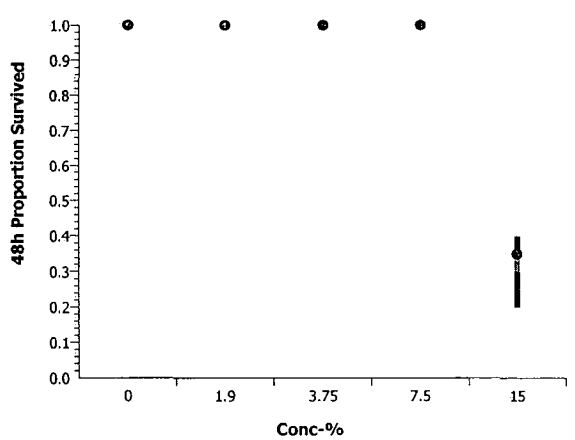
ANOVA Assumptions

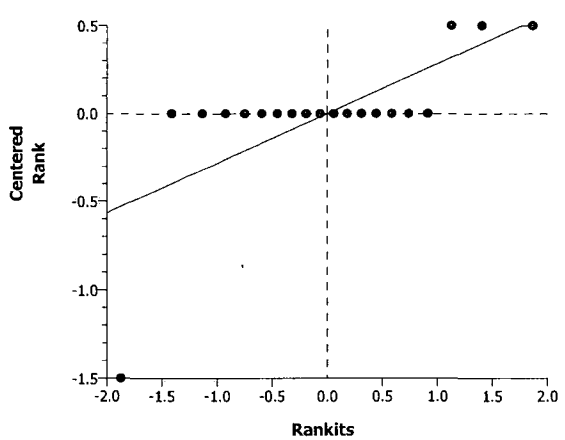
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	1.00000	4.89321	0.43800	Equal Variances
Distribution	Shapiro-Wilk W	0.50877		0.00000	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
1.9		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
3.75		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	12.5	12.5	12.5	0
15		4	0.35000	0.20000	0.40000	0.10000	2.5	1	3	1

Graphics





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CETIS Analysis Detail

Report Date: 09 Aug-06 11:18 AM
Analysis: 15-7847-8696/B164101cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	15-5564-1450	15-5564-1450	09 Aug-06 11:18 AM	CETISv1.1.2

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	Mu	Sigma
Control Threshold	0	0.00%	1.130937	0.03210595

Point Estimates

EC50/LC50	95% LCL	95% UCL
13.51876	11.66071	15.67287

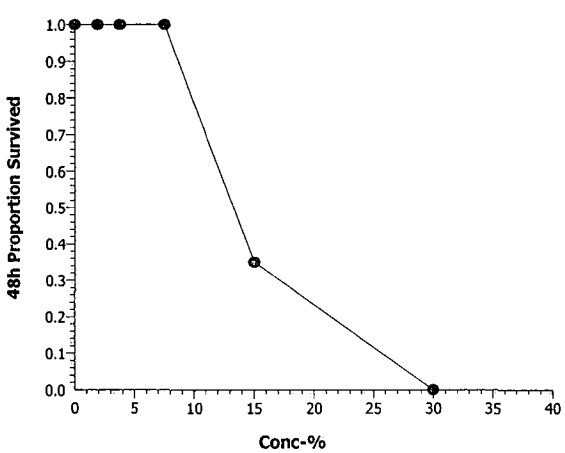
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
15		4	0.35000	0.20000	0.40000	0.02041	0.10000	7	20
30		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	20

Data 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	1.00000	1.00000	1.00000	1.00000						
1.9		1.00000	1.00000	1.00000	1.00000						
3.75		1.00000	1.00000	1.00000	1.00000						
7.5		1.00000	1.00000	1.00000	1.00000						
15		0.40000	0.20000	0.40000	0.40000						
30		0.00000	0.00000	0.00000	0.00000						

Graphics



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CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics — Date Initiated: 8-1-06 — Time: 1450
Sample Description: B1641 — Date Terminated: 8-8-06 — Time: 1340

Technician: Day 0 TP — Day 1 TP — Day 2 NJ — Day 3 TP — Day 4 NJ — Day 5 NJ — Day 6 NJ — Day 7 TP
Time: Day 0 1450 — Day 1 1145 — Day 2 1030 — Day 3 0900 — Day 4 1720 — Day 5 1120 — Day 6 1355 — Day 7 1340

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
CONTROL	0	10	10	10	10		8.2		7.9	24.9	310
	1	10	10	10	10	7.2	8.2	7.6	7.9	25.7	
	2	10	10	9	10	7.0	8.2	7.5	7.9	25.2	330
	3	10	10	9	10	6.9	8.2	7.7	8.1	24.3	
	4	10	10	9	10	7.0	8.1	7.5	7.8	25.2	311
	5	10	10	9	10	6.7	8.2	7.7	8.1	25.3	
	6	10	10	9	10	6.9	8.1	7.4	7.8	25.2	
	7	10	10	9	10	6.9		7.5		25.7	
1.90 %	0	10	10	10	10		8.2		7.9	25.4	322
	1	9	10	10	10	7.1	8.2	7.6	7.9	25.5	
	2	9	10	10	10	7.0	8.1	7.5	7.9	25.2	347
	3	9	10	10	10	6.8	8.1	7.5	8.0	24.6	
	4	8	10	10	10	7.2	8.2	7.4	7.8	25.2	350
	5	8	10	10	10	6.8	8.3	7.6	8.0	25.4	
	6	8	10	10	10	7.0	8.2	7.4	7.8	25.3	
	7	8	10	10	10	6.9		7.4		25.6	
3.75 %	0	10	10	10	10		8.2		7.9	25.2	336
	1	10	10	10	10	6.7	8.2	7.5	7.9	25.7	
	2	10	10	10	10	7.2	8.2	7.5	7.9	25.3	365
	3	10	10	10	10	6.6	8.1	7.4	7.8	24.6	
	4	10	10	10	10	7.2	8.2	7.4	7.8	25.2	362
	5	10	10	10	10	6.8	8.3	7.5	7.9	25.3	
	6	10	10	10	9	7.0	8.3	7.5	7.8	25.3	
	7	10	10	10	9	6.9		7.4		25.6	
7.50 %	0	10	10	10	10		8.2		7.8	25.2	366
	1	10	10	10	10	6.9	8.2	7.5	7.8	25.7	
	2	10	10	10	10	7.2	8.2	7.5	7.8	25.2	381
	3	10	10	10	10	6.7	8.2	7.4	7.8	24.5	
	4	10	10	10	10	7.3	8.1	7.5	7.8	25.1	386
	5	10	10	10	10	6.8	8.4	7.5	7.9	25.3	
	6	10	10	10	10	7.1	8.3	7.4	7.8	25.3	
	7	10	10	10	10	6.8		7.4		25.6	
15.0 %	0	10	10	10	10		8.2		7.8	25.4	424
	1	10	10	10	10	6.8	8.2	7.5	7.8	25.5	
	2	10	10	10	10	7.1	8.2	7.5	7.8	25.2	411
	3	10	10	10	10	6.9	8.3	7.4	7.8	24.4	
	4	10	10	10	10	7.3	8.1	7.4	7.8	25.1	446
	5	10	10	10	10	6.8	8.4	7.4	7.8	25.2	
	6	10	10	10	10	7.1	8.2	7.4	7.8	25.3	
	7	10	10	10	10	6.9		7.4		25.6	
30.0 %	0	10	10	10	10		8.2		7.8	25.4	534
	1	10	10	10	10	6.9	8.2	7.4	7.7	25.6	
	2	10	10	10	10	7.0	8.3	7.4	7.7	25.2	517
	3	10	10	10	10	6.8	8.3	7.3	7.7	24.6	
	4	9	9	10	10	7.3	8.1	7.4	7.7	25.2	522
	5	9	9	10	10	6.9	8.4	7.3	7.7	25.3	
	6	9	9	10	10	7.1	8.3	7.4	7.7	25.3	
	7	9	9	10	10	6.8		7.3		25.5	

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics | Species ID# FHM 1310

Lab ID: B 1641-01 | Start Date: 8/1/2006

Sample Description:

Technician: BM NJ

Date: 8/10/2006 7/31/2006

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1173.65	1166.94	10
	B	1176.42	1169.53	10
	C	1130.68	1125.05	9
	D	1146.81	1139.70	10
1.90%	A	1144.40	1137.65	8
	B	1137.73	1131.55	10
	C	1141.05	1134.68	10
	D	1140.86	1134.40	10
3.75%	A	1137.60	1131.81	10
	B	1147.03	1140.89	10
	C	1143.55	1137.54	10
	D	1137.06	1131.60	9
7.5%	A	1144.60	1139.01	10
	B	1140.95	1134.49	10
	C	1144.28	1138.93	10
	D	1146.51	1140.83	10
15%	A	1137.57	1131.94	10
	B	1132.12	1126.81	10
	C	1154.58	1148.81	10
	D	1135.93	1130.90	10
30%	A	1145.19	1139.96	9
	B	1144.95	1139.77	9
	C	1143.63	1138.54	10
	D	1129.95	1124.30	10
	A			
	B			
	C			
	D			

weigh to 0.01 mg

Siltronics_8-1-06.xls

SCOEPA00026760

CETIS Test Summary

Report Date: 10 Aug-06 1:57 PM
Test Link: 09-6620-0416/B164101ppc

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	08-3231-4435	**Test Type:**	Growth-Survival (7d)	**Duration:**	6d 22h
Start Date:	01 Aug-06 02:50 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	08 Aug-06 01:40 PM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	01 Aug-06 02:50 PM	**Brine:**			

Sample No:	09-5819-2288	**Code:**	B1641-01	**Client:**	
Sample Date:	31 Jul-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:		**Source:**	Siltronic Corporation		
Sample Age:	31h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
17-7644-6273	2d Proportion Survived	30	> 30	N/A	5.25%	Steel Many-One Rank
14-0206-6156	7d Proportion Survived	30	> 30	N/A	9.33%	Steel Many-One Rank
09-9870-0177	Mean Dry Biomass-mg	1.9	3.75	2.6693	10.44%	Dunnett's Multiple Comparison $\alpha = 0.05$
10-9934-1140		7.5	15	10.607	13.91%	Dunnett's Multiple Comparison $\alpha = 0.01$

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
05-8704-8496	2d Proportion Survived	50	> 30	N/A	N/A	Linear Interpolation
15-5132-0519	Mean Dry Biomass-mg	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
14-0206-6156	7d Proportion Survived	Control Response	0.975	0.8 - NL	Yes	Passes acceptability criteria
09-9870-0177	Mean Dry Biomass-mg	Control Response	0.65851	0.25 - NL	Yes	Passes acceptability criteria
10-9934-1140	Mean Dry Biomass-mg	Control Response	0.65851	0.25 - NL	Yes	Passes acceptability criteria
15-5132-0519	Mean Dry Biomass-mg	Control Response	0.65851	0.25 - NL	Yes	Passes acceptability criteria
09-9870-0177	Mean Dry Biomass-mg	PMSD	0.10444	0.12 - 0.3	Yes	Fails acceptability criteria
10-9934-1140	Mean Dry Biomass-mg	PMSD	0.13910	0.12 - 0.3	Yes	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1.9		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1.9		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
3.75		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV	% REDUCTION FROM CONTROL
0	Dilution Water	4	0.65851	0.56300	0.71101	0.03287	0.06574	9.98%	
1.9		4	0.64400	0.61799	0.67500	0.01187	0.02374	3.69%	2.2%
3.75		4	0.58500	0.54601	0.61400	0.01487	0.02974	5.08%	11.2%
7.5		4	0.57700	0.53500	0.64600	0.02403	0.04806	8.33%	12.4%
15		4	0.54350	0.50300	0.57699	0.01658	0.03316	6.10%	17.5%
30		4	0.52874	0.50900	0.56499	0.01242	0.02485	4.70%	14.7%

SCOEPA00026761

CETIS Test Summary

Report Date: 10 Aug-06 1:57 PM
Test Link: 09-6620-0416/B164101ppc

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	0.90000	1.00000
1.9		0.90000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	0.90000	1.00000
1.9		0.80000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	0.90000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		0.90000	0.90000	1.00000	1.00000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.67101	0.68900	0.56300	0.71101
1.9		0.67500	0.61799	0.63700	0.64600
3.75		0.57899	0.61400	0.60100	0.54601
7.5		0.55900	0.64600	0.53500	0.56801
15		0.56300	0.53099	0.57699	0.50300
30		0.52300	0.51799	0.50900	0.56499

SCOEPA00026762

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-6620-0416	09-6620-0416	10 Aug-06 1:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	5.25%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	3	Non-Significant Effect
		3.75	20	10	0.9516	3	Non-Significant Effect
		7.5	20	10	0.9516	3	Non-Significant Effect
		15	20	10	0.9516	3	Non-Significant Effect
		30	20	10	0.9516	3	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0088531	0.001771	5	0.80	0.56404	Non-Significant Effect
Error	0.039839	0.002213	18			
Total	0.04869211	0.0039839	23			

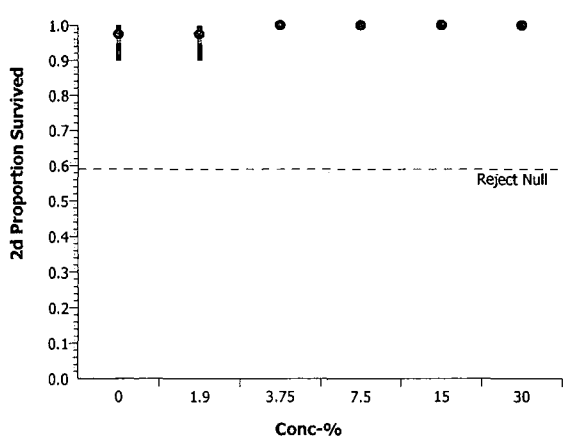
ANOVA Assumptions

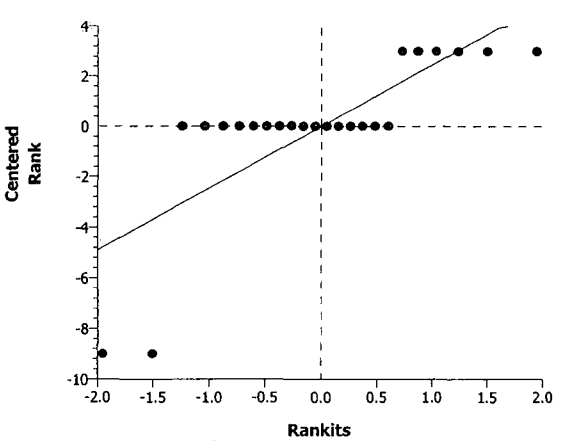
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	0.80000	4.24788	0.56404	Equal Variances
Distribution	Shapiro-Wilk W	0.61543		0.00000	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	10.5	1.5	13.5	6
1.9		4	0.97500	0.90000	1.00000	0.05000	10.5	1.5	13.5	6
3.75		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
15		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0
30		4	1.00000	1.00000	1.00000	0.00000	13.5	13.5	13.5	0

Graphics





SCOEPA00026763

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	09-6620-0416	09-6620-0416	10 Aug-06 1:53 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	8144900	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	> 30	N/A	N/A

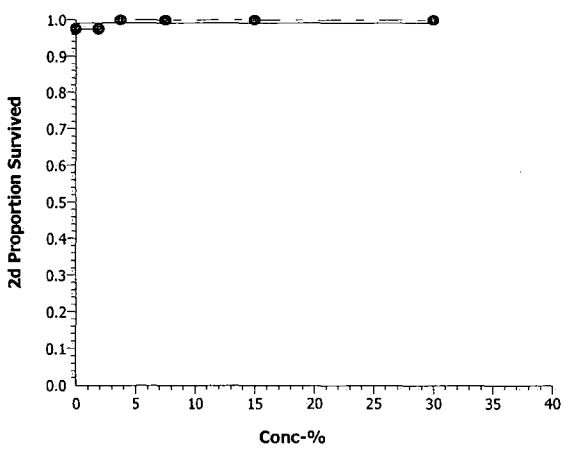
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1.9		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Data 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	1.00000	1.00000	0.90000	1.00000						
1.9		0.90000	1.00000	1.00000	1.00000						
3.75		1.00000	1.00000	1.00000	1.00000						
7.5		1.00000	1.00000	1.00000	1.00000						
15		1.00000	1.00000	1.00000	1.00000						
30		1.00000	1.00000	1.00000	1.00000						

Graphics



SCOEPA00026764

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-6620-0416	09-6620-0416	10 Aug-06 1:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	9.33%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	17.5	10	0.7867	3	Non-Significant Effect
		3.75	18	10	0.8333	3	Non-Significant Effect
		7.5	20	10	0.9516	3	Non-Significant Effect
		15	20	10	0.9516	3	Non-Significant Effect
		30	16	10	0.6105	4	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0249347	0.004987	5	0.66	0.65855	Non-Significant Effect
Error	0.1361064	0.007561	18			
Total	0.16104112	0.0125484	23			

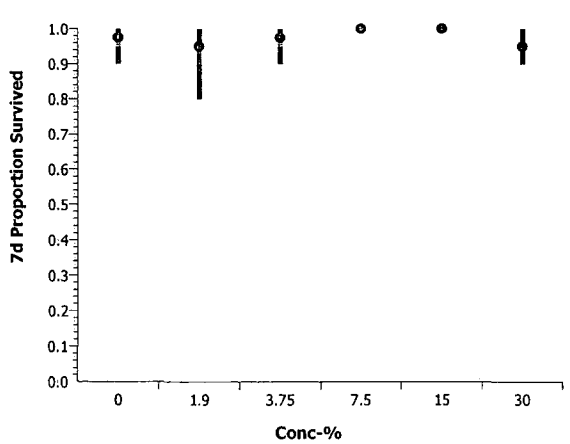
ANOVA Assumptions

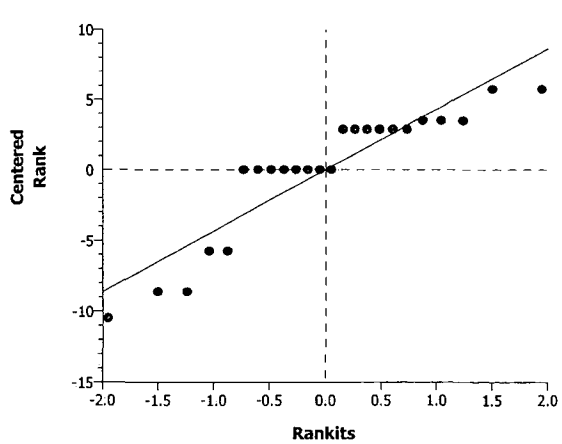
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	0.81942	4.24788	0.55165	Equal Variances
Distribution	Shapiro-Wilk W	0.83616		0.00122	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	12.125	3.5	15	5.75
1.9		4	0.95000	0.80000	1.00000	0.10000	11.5	1	15	7
3.75		4	0.97500	0.90000	1.00000	0.05000	12.125	3.5	15	5.75
7.5		4	1.00000	1.00000	1.00000	0.00000	15	15	15	0
15		4	1.00000	1.00000	1.00000	0.00000	15	15	15	0
30		4	0.95000	0.90000	1.00000	0.05773	9.25	3.5	15	6.6395

Graphics





SCOEPA00026765

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-6620-0416	09-6620-0416	10 Aug-06 1:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		1.9	3.75	52.632	2.6693	10.44%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	0.50778	2.40711	0.6442	0.06878	Non-Significant Effect
		3.75	2.57263	2.40711	0.0364	0.06878	Significant Effect
		7.5	2.85268	2.40711	0.0208	0.06878	Significant Effect
		15	4.02525	2.40711	0.0017	0.06878	Significant Effect
		30	4.54157	2.40711	0.0006	0.06878	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0548629	0.010973	5	6.72	0.00107	Significant Effect
Error	0.0293885	0.001633	18			
Total	0.08425138	0.0126053	23			

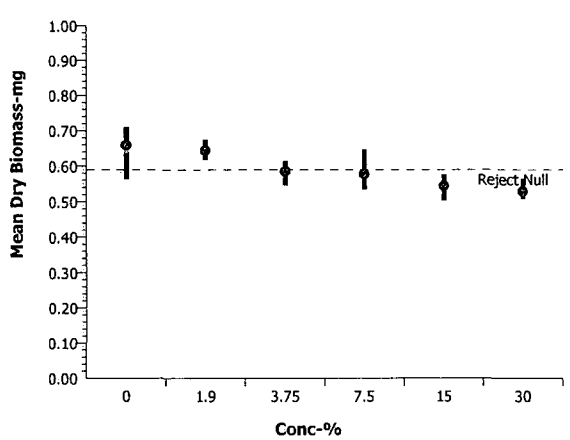
ANOVA Assumptions

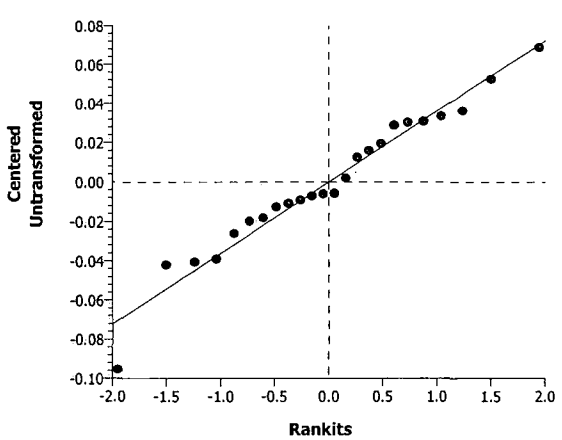
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	4.57947	15.08627	0.46932	Equal Variances
Distribution	Shapiro-Wilk W	0.96874		0.63591	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.65851	0.56300	0.71101	0.06574				
1.9		4	0.64400	0.61799	0.67500	0.02374				
3.75		4	0.58500	0.54601	0.61400	0.02974				
7.5		4	0.57700	0.53500	0.64600	0.04806				
15		4	0.54350	0.50300	0.57699	0.03316				
30		4	0.52874	0.50900	0.56499	0.02485				

Graphics





SCOEPA00026766

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-6620-0416	09-6620-0416	10 Aug-06 1:57 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		7.5	15	13.333	10.607	13.91%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.01)
Dilution Water		1.9	0.50778	3.20600	0.6442	0.09160	Non-Significant Effect
		3.75	2.57263	3.20600	0.0364	0.09160	Non-Significant Effect
		7.5	2.85268	3.20600	0.0208	0.09160	Non-Significant Effect
		15	4.02525	3.20600	0.0017	0.09160	Significant Effect
		30	4.54157	3.20600	0.0006	0.09160	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0548629	0.010973	5	6.72	0.00107	Significant Effect
Error	0.0293885	0.001633	18			
Total	0.08425138	0.0126053	23			

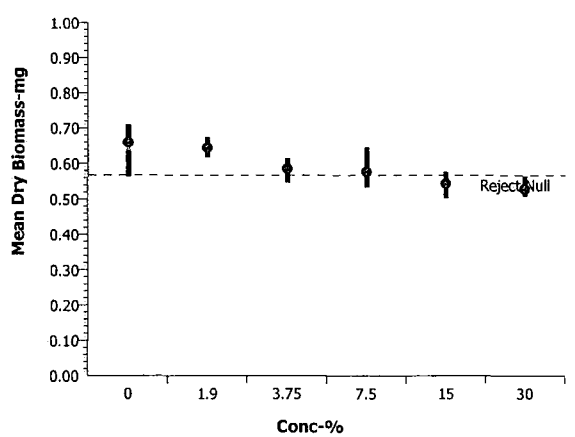
ANOVA Assumptions

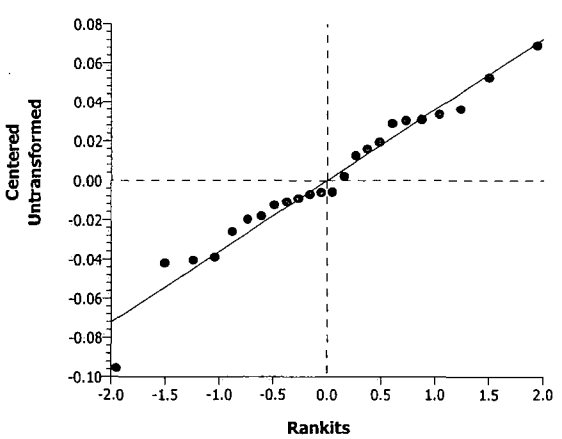
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	4.57947	15.08627	0.46932	Equal Variances
Distribution	Shapiro-Wilk W	0.96874		0.63591	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.65851	0.56300	0.71101	0.06574				
1.9		4	0.64400	0.61799	0.67500	0.02374				
3.75		4	0.58500	0.54601	0.61400	0.02974				
7.5		4	0.57700	0.53500	0.64600	0.04806				
15		4	0.54350	0.50300	0.57699	0.03316				
30		4	0.52874	0.50900	0.56499	0.02485				

Graphics





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CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	09-6620-0416	09-6620-0416	10 Aug-06 1:52 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7607235	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.65851	0.56300	0.71101	0.01342	0.06574
1.9		4	0.64400	0.61799	0.67500	0.00485	0.02374
3.75		4	0.58500	0.54601	0.61400	0.00607	0.02974
7.5		4	0.57700	0.53500	0.64600	0.00981	0.04806
15		4	0.54350	0.50300	0.57699	0.00677	0.03316
30		4	0.52874	0.50900	0.56499	0.00507	0.02485

Data 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	0.67101	0.68900	0.56300	0.71101						
1.9		0.67500	0.61799	0.63700	0.64600						
3.75		0.57899	0.61400	0.60100	0.54601						
7.5		0.55900	0.64600	0.53500	0.56801						
15		0.56300	0.53099	0.57699	0.50300						
30		0.52300	0.51799	0.50900	0.56499						

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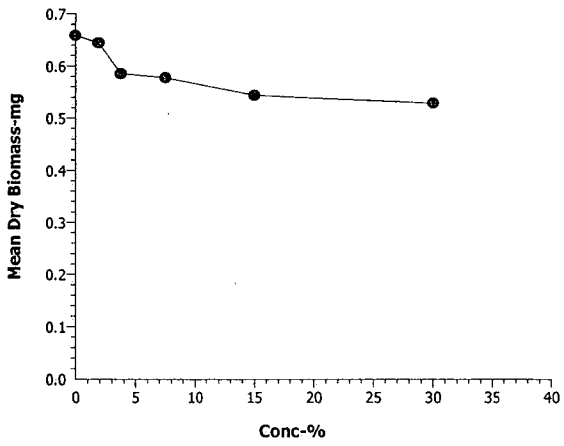

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CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics
Test Start Date: 8-1-2006
Sample Description:
Sample ID#: B1641
Ceriodaphnia Lot#: Cd 1955
Statistician:

Percent or Concentration	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	11	26	32	30	25	22	15	30	28	16	10	235
1.9	15	16	29	20	27	23	14	29	20	14	10	207
3.75	17	29	30	24	16	20	22	11	6	8	10	183
7.5	8	5	17	10	18	5	14	10	4	4	10	95
15	AD/0	0	0	0	AD/0	AD/0	0	4	0 AD	0 AD	5	4
30	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	0	0

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client Siltronics Test Beginning : Date 8-1-06 Time 1420

Sample Description B1641 Test Ending : Date 8-7-06 Time 1330

Ceriodaphnia Lot# Cd 1955 Dilution Water Recon MH (FHM) ID# 2675

Technician Day 1 DW Day 2 DW Day 3 DW Day 4 (A) Day 5 (A) Day 6 (A) Day 7 ____

Time Day 1 0950 Day 2 0925 Day 3 0940 Day 4 1130 Day 5 1515 Day 6 1330 Day 7 ____

Percent or Concentration	Day	Replicate										No. Live Adults	Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	5	5	6	6	5	4	4	5	6	6	10	52
	5	6	9	13	12	8	9	11	13	13	10	10	105
	6	0	12	13	11	12	9	0	12	9	0	10	78
	7												
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	4	4	4	6	5	5	4	7	4	10	47
	5	11	12	12	9	10	10	9	11	13	0	10	97
	6	0	0	13	7	11	8	0	14	0	10	10	63
	7												
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	6	5	4	4	4	4	4	5	0	4	10	40
	5	11	13	14	11	12	10	9	6	6	4	10	96
	6	0	11	12	9	0	6	9	0	0	0	10	47
	7												
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	4	0	4	3	6	5	0	0	10	24
	5	4	5	5	6	9	0	4	5	4	4	10	46
	6	4	0	8	4	5	0	4	0	0	0	10	25
	7												
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	AD/0	AD/0	8	0
	4	0	0	0	0	0	0	0	0			8	0
	5	0	0	0	0	0	0	0	480			8	4
	6	AD/0	0	0	0	AD/0	AD/0	0	0			5	6
	7	†				†	†			†	†		
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	3												
	4												
	5												
	6												
	7												

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics — Initiated: Date 8-1-06 Time 1420 — Adults Isolated: Date 7-31-06 Time 2205

Sample Description: B1641 — Terminated: Date 8-7-06 Time 1330 — Neo's Collected: Date 8-1-06 Time 0600

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	DW	DW	DW	DW	
Time	1420	0950	0925	1050	1130	1551	1330	

Dissolved Oxygen (mg/l)

Percent or Concentration	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	7.9 / 8.1	7.9 / 8.1	7.8 / 8.1	7.8 / 8.1	7.9 / 8.0	7.9 / —	—
1.9	8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.1	7.9 / —	—
3.75	8.1	7.9 / 8.1	7.9 / 8.1	7.8 / 8.1	7.9 / 8.1	7.8 / 8.1	8.0 / —	—
7.5	8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.0	7.9 / 8.1	7.8 / 8.1	8.1 / —	—
15	8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.0	7.9 / 8.0	7.9 / 8.1	8.0 / —	—
30	8.1	7.9 / 8.1	7.9 / —	~~7.9~~ 8.0				

pH

Percent or Concentration	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.7	7.7 / 7.7	8.0 / 7.9	8.0 / 7.8	8.0 / 7.9	7.9 / 7.9	8.0 / —	—
1.9	7.7	7.7 / 7.7	8.0 / 7.9	8.0 / 7.8	8.0 / 7.9	7.9 / 7.9	8.0 / —	—
3.75	7.7	7.7 / 7.7	8.0 / 7.9	8.0 / 7.8	8.0 / 7.8	8.0 / 7.8	8.0 / —	—
7.5	7.7	7.7 / 7.7	8.0 / 7.9	8.0 / 7.8	8.0 / 7.8	8.0 / 7.8	7.9 / —	—
15	7.6	7.7 / 7.6	8.0 / 7.8	7.9 / 7.7	7.9 / 7.8	8.0 / 7.8	7.9 / —	—
30	7.5	7.7 / 7.5	7.9 / —	~~7.7~~ 7.8				

Temperature (C) / Conductivity (µmhos/cm)

Percent or Concentration	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.3 / 307	25.7 / -	25.8 / 321	25.2 / -	25.0 / 337	25.7 / -	25.6 / -	—
1.9	24.9 / -	25.5 / -	25.9 / -	25.6 / -	25.0 / -	25.4 / -	25.4 / -	—
3.75	25.0 / -	25.7 / -	25.6 / -	25.3 / -	25.2 / -	25.4 / -	25.4 / -	—
7.5	24.9 / -	25.5 / -	25.9 / -	25.4 / -	25.1 / -	25.5 / -	25.4 / -	—
15	25.2 / -	25.3 / -	25.6 / 446	25.1 / -	25.1 / 479	25.4 / -	25.3 / -	—
30	25.4 / 531	25.4 / -	25.8					

COMMENTS:

CETIS Test Summary

Report Date: 09 Aug-06 11:45 AM
Test Link: 03-1486-8598/B164101cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	04-1623-5020	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	5d 23h
Start Date:	01 Aug-06 02:20 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	07 Aug-06 01:30 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	01 Aug-06 02:20 PM	**Brine:**			

Sample No:	09-5819-2288	**Code:**	B1641-01	**Client:**	
Sample Date:	31 Jul-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:		**Source:**	Siltronic Corporation		
Sample Age:	30h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-1993-1082	6d Proportion Survived	15	30	21.213	N/A	Fisher Exact/Bonferroni-Holm
04-6610-5259	Reproduction	3.75	7.5	5.3033	25.88%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
07-1546-3810	Reproduction	25	4.037642	1.659333	5.65194	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-6610-5259	Reproduction	Control Response	23.5	15 - NL	Yes	Passes acceptability criteria
07-1546-3810	Reproduction	Control Response	23.5	15 - NL	Yes	Passes acceptability criteria
04-6610-5259	Reproduction	PMSD	0.25885	0.13 - 0.47	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		10	0.50000	0.00000	1.00000	0.16667	0.52705	105.41
30		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	23.5	11	32	2.2913	7.2457	30.83%
1.9		10	20.7	14	29	1.9093	6.0378	29.17%
3.75		10	18.3	6	30	2.6206	8.2872	45.29%
7.5		10	9.5	4	18	1.675	5.2967	55.76%
15		10	0.4	0	4	0.4	1.2649	316.23
30		10	0	0	0	0	0	0.00%

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CETIS Test Summary

Report Date: 09 Aug-06 11:45 AM
Test Link: 03-1486-8598/B164101cdc

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		0.00000	1.00000	1.00000	1.00000	0.00000	0.00000	1.00000	1.00000	0.00000	0.00000
30		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	11	26	32	30	25	22	15	30	28	16
1.9		15	16	29	20	27	23	14	29	20	14
3.75		17	29	30	24	16	20	22	11	6	8
7.5		8	5	17	10	18	5	14	10	4	4
15		0	0	0	0	0	0	0	4	0	0
30		0	0	0	0	0	0	0	0	0	0

SCOEPA00026773

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	03-1486-8598	03-1486-8598	09 Aug-06 11:45 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact/Bonferroni-Holm	C > T	Untransformed		15	30	6.6667	21.213	

Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		1.9	1.00000	1.00000	Non-Significant Effect
Dilution Water		3.75	1.00000	1.00000	Non-Significant Effect
Dilution Water		7.5	1.00000	1.00000	Non-Significant Effect
Dilution Water		15	0.01625	0.06502	Non-Significant Effect
Dilution Water		30	0.00001	0.00003	Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		10	0	10
3.75		10	0	10
7.5		10	0	10
15		5	5	10
30		0	10	10

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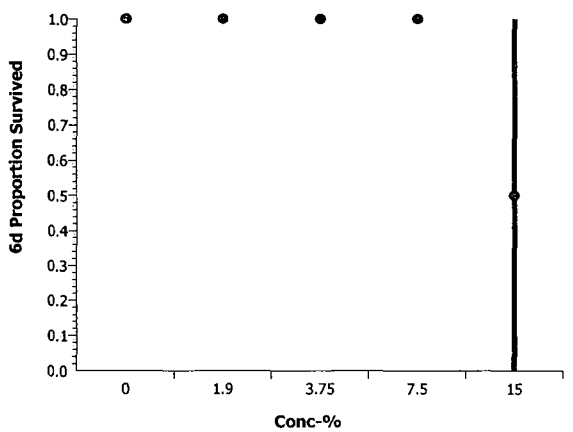

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CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	03-1486-8598	03-1486-8598	09 Aug-06 11:22 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		3.75	7.5	26.667	5.3033	25.88%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	91	76	0.3481	0	Non-Significant Effect
		3.75	86.5	76	0.2174	0	Non-Significant Effect
		7.5	62	76	0.0022	0	Significant Effect
		15	55	76	0.0003	0	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	3576.88	894.22	4	23.87	0.00000	Significant Effect
Error	1685.6	37.45778	45			
Total	5262.47986	931.67775	49			

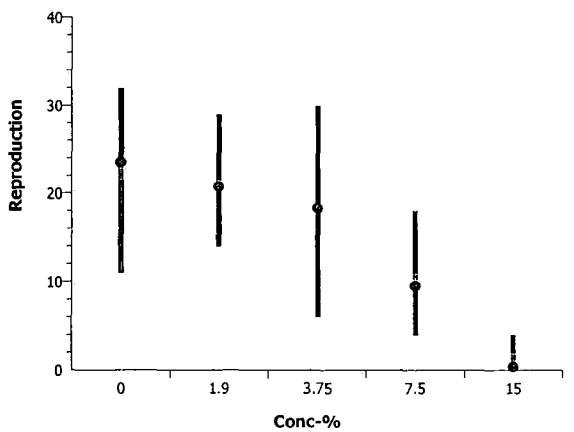
ANOVA Assumptions

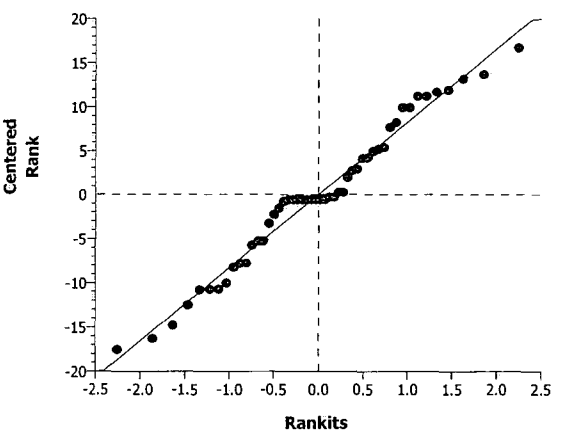
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	21.76271	13.27670	0.00022	Unequal Variances
Distribution	Shapiro-Wilk W	0.97661		0.41937	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	23.5	11	32	7.2457	38.05	20.5	50	10.256
1.9		10	20.7	14	29	6.0378	33.75	23	45	8.6386
3.75		10	18.3	6	30	8.2872	31.3	15	48	11.417
7.5		10	9.5	4	18	5.2967	18.8	11	32	7.5432
15		10	0.4	0	4	1.2649	5.6	5	11	1.8974

Graphics





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Report Date: 09 Aug-06 11:45 AM
Analysis: 07-1546-3810/B164101cdc

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	03-1486-8598	03-1486-8598	09 Aug-06 11:22 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	4.037642	1.659333	5.65194

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	23.5	11	32	1.47902	7.24569
1.9		10	20.7	14	29	1.23247	6.03784
3.75		10	18.3	6	30	1.69162	8.28721
7.5		10	9.5	4	18	1.08119	5.29675
15		10	0.4	0	4	0.2582	1.26491
30		10	0	0	0	0	0

Data 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	11	26	32	30	25	22	15	30	28	16
1.9		15	16	29	20	27	23	14	29	20	14
3.75		17	29	30	24	16	20	22	11	6	8
7.5		8	5	17	10	18	5	14	10	4	4
15		0	0	0	0	0	0	0	4	0	0
30		0	0	0	0	0	0	0	0	0	0

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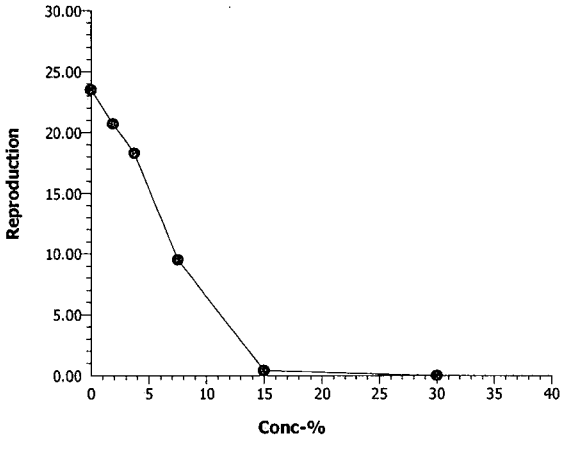


SCOEPA00026776

CORRECTIVE ACTION REPORT

Originator: Brett Muckey

Date: Aug 22, 2006

Subject (for example, test method, instrument, sample nos.): Algae test for S-Htronics B1641

Condition/Situation:

☐ : Sample not delivered on Saturday: Lab ID Number(s):

B_____

Was sample marked for Saturday Delivery? (Yes / No) _____

☐ : Reftox not in Cusum range: LC50/IC25 = _____, Cusum Range = _____ to _____

☐ : Temperature Deviation: _____

☒ : Other: 13 replicates showed growth less than 100,000 cells/mL, including rep D at 37.5%. Reps A, B, C at 37.5% showed > 4,000,000 cells/mL. Noted that 13 new foam plugs were used during testing. Suspect contamination of new plugs.

Recommended Action (s) (mark all that apply): ☐-Contact Regulatory Agency, ☒-Contact Client, ☐-Continue test(s), ☐-Discontinue test(s), ☒-Repeat test(s), ☒-Check for procedural errors, ☐-Document in test report, ☐-Other:

Tested new plugs in parallel w/ old plugs in control H2O: Old plugs ≈ 4,000,000 cells/mL (test ended 8.14) New plugs ≈ 100,000 cells/mL

⇒ New plugs did cause contamination

Approved by Department Manager/Designate: _____

Date: 8/22/06

Action Taken/Results: _____

New plugs discarded. Client contacted & new sample taken for algae retest initiated on Aug 18, 2006 → no toxicity observed.

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics

Sample Description:

Test Start Date: 8-3-06 Time: 1200 Initials: (10)

Test End Date: 8-7-06 Time: 1045 Initials: (TP)

TEST CONDITIONS AT INITIATION:

Species ID#: RS 426

Age: 6 days

Dilution Water ID #: 2677

Source Water: Recon MR (FHM) 2675

EDTA Added? Yes / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		
458	200		Culture Density
MEAN	2.29	x 250,000 =	572,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	572500	=	0.87 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	4	100	0.01
Flask #2	4	100	0.01
Flask #3	4	100	0.01

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
409	409	396

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	(10)	BM	(W)	(G)	(TP)
Time	1200	0940	1300	1845	1040

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.0	7.6	7.8	8.2	8.4	9.2	25.2	25.0	24.9	25.1	24.1	398	98	70
1.90 %	8.1	7.5	7.8	8.2	8.4	8.8	25.1	25.1	24.8	25.3	24.4	416	104	72
3.75 %	8.1	7.4	7.8	8.2	8.4	8.9	25.1	25.2	24.8	25.1	24.5	433		
7.50 %	8.0	7.4	7.8	8.1	8.4	8.1	25.1	25.1	25.0	25.0	24.8	458	108	66
15.0 %	8.0	7.4	7.8	8.0	8.3	8.0	25.1	25.1	24.8	25.4	25.2	523		
30.0 %	8.3	7.4	7.7	7.9	8.1	8.0	25.1	25.1	24.7	25.4	25.5	640	132	60

Comments:

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics

Sample Description:

Lab ID: B1641-02

Test Start Date: 8/3/2006

Test Count Date: 8/7/2006 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20
Dilution factor (DF) Default value:	41
Output:	Concentration
Metered volume (ml):	0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	6724
2	7954
3	9266
4	5494
5	
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.121	3.698	3.449	3.460
2	3.137	3.807	3.451	3.463
3	3.118	3.854	3.452	3.485
Replicate Average	**3.125**	**3.786**	**3.451**	**3.469**
CONCENTRATION MEAN # Cells / mL* =		**3.458**	CV % =	7.8%

TEST CONCENTRATION	1.9 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.874	3.519	4.062	3.453
2	3.789	3.477	4.049	3.456
3	3.872	3.536	4.102	3.455
Replicate Average	**3.845**	**3.511**	**4.071**	**3.455**
CONCENTRATION MEAN # Cells / mL* =		**3.720**	CV % =	7.8%

TEST CONCENTRATION	3.75 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.254	4.192	4.125	0.101
2	4.312	4.126	4.191	0.084
3	4.289	4.219	4.172	0.064
Replicate Average	**4.285**	**4.179**	**4.163**	**0.083**
CONCENTRATION MEAN # Cells / mL* =		**3.177**	CV % =	65.0%

TEST CONCENTRATION	7.5 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.018	0.051	0.071	0.017
2	0.015	0.047	0.065	0.012
3	0.019	0.064	0.062	0.016
Replicate Average	**0.017**	**0.054**	**0.066**	**0.015**
CONCENTRATION MEAN # Cells / mL* =		**0.038**	CV % =	68.0%

TEST CONCENTRATION	15 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.034	0.063	0.019	0.031
2	0.032	0.069	0.018	0.034
3	0.029	0.050	0.019	0.027
Replicate Average	**0.032**	**0.061**	**0.019**	**0.031**
CONCENTRATION MEAN # Cells / mL* =		**0.036**	CV % =	50.5%

TEST CONCENTRATION	30 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.026	0.021	0.099	0.055
2	0.027	0.016	0.082	0.061
3	0.030	0.016	0.078	0.044
Replicate Average	**0.027**	**0.018**	**0.086**	**0.053**
CONCENTRATION MEAN # Cells / mL* =		**0.046**	CV % =	66.5%

SCOEPA00026779

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: SiHronics

Sample Description:

Lab ID: B1641-02

Test Start Date: 8-3-2006

Test Count Date: 8-7-2006 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.2 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	6724
2	7954
3	9266
4	5454
5	
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION		Control		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.121	3,698	3,449	3,460
2	3,137	3.807	3,451	3,463
3	3.118	3.854	3,452	3,485
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		1,90		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3,874	3.519	4.062	3.453
2	3.789	3,477	4. 049	3.456
3	3,872	3,536	4,162	3,455
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		3.75		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4,254	4,192	4,125	0.1007
2	4,312	4,126	4,191	0.0835
3	4.289	4,219	4,172	0.06418
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		7.50		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.0182	0.0505	0.0714	0.6171
2	0.0150	0.0474	0.0654	0.0121
3	0.0185	0.0641	0.0619	0.0156
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		15.0		
Run	REP A	REP B	REP C	REP D
DF (if other than default)			0.0187	
1	0.0338	0.0632	~~0.0744~~	0.0311
2	0.0321	0.0690	~~0.0654~~	0.0344
3	0.0293	0.0504	~~0.0619~~ 0.0490	0.0274
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		30.0		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.0257	0.0212	0.0985	0.0554
2	0.0268	0.0155	0.0822	0.0611
3	0.0297	0.0163	0.0781	0.0435
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

SCOEPA00026780

CETIS Test Summary

Report Date: 08 Aug-06 11:52 AM
Test Link: 10-2627-4488/B164101rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	05-9391-9733	**Test Type:**	Cell Growth	**Duration:**	95h
Start Date:	03 Aug-06 12:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	07 Aug-06 10:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	03 Aug-06 12:00 PM	**Brine:**			

Sample No:	09-5819-2288	**Code:**	B1641-01	**Client:**	
Sample Date:	31 Jul-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:		**Source:**	Siltronic Corporation		
Sample Age:	76h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-2432-0634	Cell Density	3.75	7.5	5.3033	42.24%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
15-4198-3582	Cell Density	25	4.330317	1.515715	4.922898	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-2432-0634	Cell Density	Control CV	0.07807	NL - 0.2	Yes	Passes acceptability criteria
15-4198-3582	Cell Density	Control CV	0.07807	NL - 0.2	Yes	Passes acceptability criteria
10-2432-0634	Cell Density	Control Response	3457920	1000000 - NL	Yes	Passes acceptability criteria
15-4198-3582	Cell Density	Control Response	3457920	1000000 - NL	Yes	Passes acceptability criteria
10-2432-0634	Cell Density	PMSD	0.42239	0.091 - 0.29	Yes	Fails acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.46E+6	3.13E+6	3.79E+6	1.35E+5	2.70E+5	7.81%
1.9		4	3.72E+6	3.45E+6	4.07E+6	1.45E+5	2.90E+5	7.81%
3.75		4	3.18E+6	8.28E+4	4.29E+6	1.03E+6	2.06E+6	64.95%
7.5		4	3.81E+4	1.49E+4	6.62E+4	1.30E+4	2.59E+4	68.05%
15		4	3.55E+4	1.85E+4	6.09E+4	8.97E+3	1.79E+4	50.51%
30		4	4.62E+4	1.77E+4	8.63E+4	1.53E+4	3.07E+4	66.46%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	3.13E+6	3.79E+6	3.45E+6	3.47E+6
1.9		3.85E+6	3.51E+6	4.07E+6	3.45E+6
3.75		4.29E+6	4.18E+6	4.16E+6	8.28E+4
7.5		1.72E+4	5.40E+4	6.62E+4	1.49E+4
15		3.17E+4	6.09E+4	1.85E+4	3.10E+4
30		2.74E+4	1.77E+4	8.63E+4	5.33E+4

SCOEPA00026781

CETIS Analysis Detail

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	10-2627-4488	10-2627-4488	08 Aug-06 11:51 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		3.75	7.5	26.667	5.3033	42.24%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	23	10	0.9966	0	Non-Significant Effect
		3.75	22	10	0.9908	0	Non-Significant Effect
		7.5	10	10	0.0417	0	Significant Effect
		15	10	10	0.0417	0	Significant Effect
		30	10	10	0.0417	0	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	7.044E+13	1.41E+13	5	19.13	0.00000	Significant Effect
Error	1.325E+13	7.36E+11	18			
Total	8.3693E+13	1.482E+13	23			

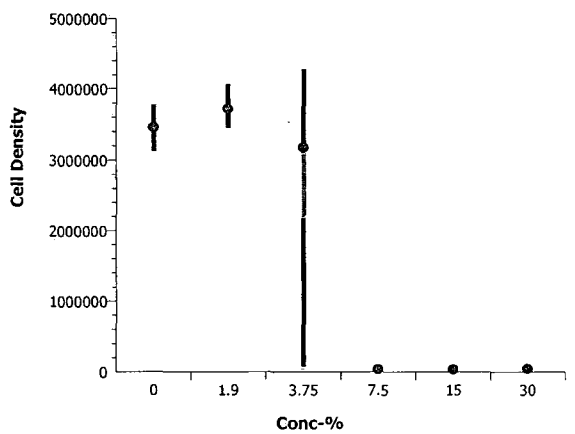
ANOVA Assumptions

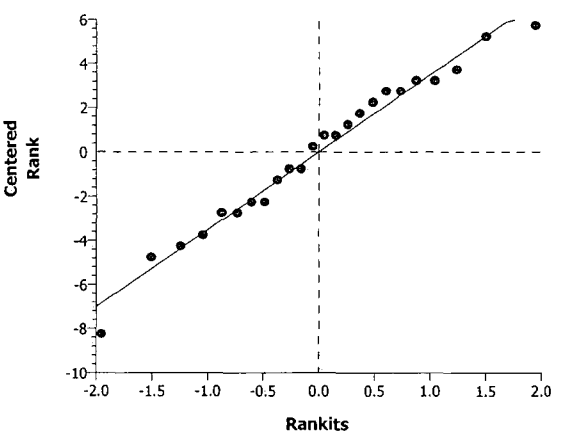
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	64.05836	15.08627	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.60914		0.00000	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	3.46E+6	3.13E+6	3.79E+6	2.70E+5	16.25	14	19	2.2174
1.9		4	3.72E+6	3.45E+6	4.07E+6	2.90E+5	18.75	16	21	2.2174
3.75		4	3.18E+6	8.28E+4	4.29E+6	2.06E+6	20.25	12	24	5.5603
7.5		4	3.81E+4	1.49E+4	6.62E+4	2.59E+4	5.75	1	11	4.9917
15		4	3.55E+4	1.85E+4	6.09E+4	1.79E+4	6.75	4	10	2.5
30		4	4.62E+4	1.77E+4	8.63E+4	3.07E+4	7.25	3	13	4.3493

Graphics





SCOEPA00026782

CETIS Analysis Detail

Report Date: 08 Aug-06 11:52 AM
Analysis: 15-4198-3582/B164101rsc

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	10-2627-4488	10-2627-4488	08 Aug-06 11:51 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	4.330317	1.515715	4.922898

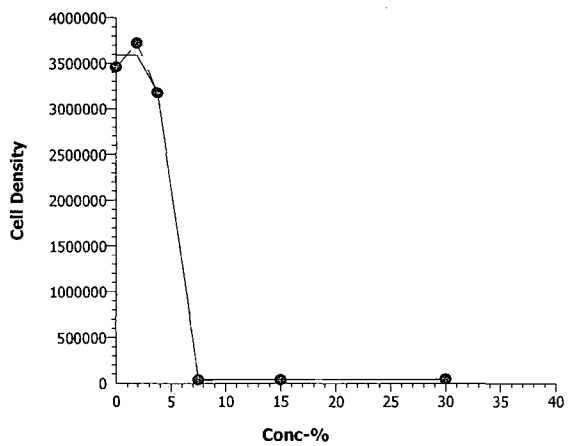
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.46E+6	3.13E+6	3.79E+6	5.51E+4	2.70E+5
1.9		4	3.72E+6	3.45E+6	4.07E+6	5.93E+4	2.90E+5
3.75		4	3.18E+6	8.28E+4	4.29E+6	4.21E+5	2.06E+6
7.5		4	3.81E+4	1.49E+4	6.62E+4	5.29E+3	2.59E+4
15		4	3.55E+4	1.85E+4	6.09E+4	3.66E+3	1.79E+4
30		4	4.62E+4	1.77E+4	8.63E+4	6.26E+3	3.07E+4

Data 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	3.13E+6	3.79E+6	3.45E+6	3.47E+6						
1.9		3.85E+6	3.51E+6	4.07E+6	3.45E+6						
3.75		4.29E+6	4.18E+6	4.16E+6	8.28E+4						
7.5		1.72E+4	5.40E+4	6.62E+4	1.49E+4						
15		3.17E+4	6.09E+4	1.85E+4	3.10E+4						
30		2.74E+4	1.77E+4	8.63E+4	5.33E+4						

Graphics



SCOEPA00026783

CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client Siltronics Test Initiation: Date 8-17-06 Time 1410 Test Termination: Date 8-21-06 Time 1425

Contact Tom Rothschild 503-219-7374 Technician P.Heager, Oldham, Muckey

Test Species/ID *Raphidocelis subcapitata* / Rs 428 / /

Sample Information								Test Species Information	ID# Rs 428	ID#	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Age or Size	6 days			
									—			
B1641 ~~01~~ 04	06-71	8-17-06	0800	0.02 / -	0.82	182	-	Test Container Size	125 ml			
				/				Test Volume	50 ml			
				/				Feeding: Type	1 ml of nutrients			
				/				Amount	added per liter			
				/				Aeration: Began	none			
				/				Amount	—			
				/				Dilution Water ID#	2695			
				/				Acclimation Period	6 days			
				/				Test Location	#TT2			
				/				Condition of Survivors	—			
				/				Size (mm)	—			
				/				Loading Rate	—			
				/				Comments * Repeat test of B1641-01 single.				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (Algae)	2695	102	72

Water Quality Meters Used/ID#

Dissolved Oxygen 2 pH 3 Temperature _____

Conductivity 2 Refractometer _____ Other _____

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics

Sample Description: 81641-04

Test Start Date: 8-17-06 Time: 1410 Initials: BM

Test End Date: 8-21-06 Time: 1425 Initials: FP

TEST CONDITIONS AT INITIATION:

Species ID#: RS 423

Age: 6 d-/s

Dilution Water ID #: 2685

Source Water: 2684

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		Culture Density
486	250		
MEAN	1.94	x 250,000 =	486,000

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	486,000	=	1.03 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	7	200	0.00875
Flask #2	7	200	0.00875
Flask #3	7	200	0.00875

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
396	369	401

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	BM	BM	BM	NJ	FP
Time	1410	0910	1220	1015	1425

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.0	7.4	7.9	8.3	8.2	9.2	25.6	24.9	24.8	24.0	24.0	358	102	72
1.90 %	8.0	7.4	7.9	8.3	8.2	9.2	25.6	24.5	24.4	24.1	24.1	378	108	74
3.75 %	8.0	7.4	7.9	8.3	8.1	9.0	25.7	24.8	24.4	24.2	24.4	393		
7.50 %	8.1	7.4	7.9	8.3	8.1	9.1	25.6	25.2	24.6	24.5	24.6	420	124	70
15.0 %	8.1	7.4	7.9	8.2	8.2	9.1	25.6	25.4	24.7	24.7	24.6	472		
30.0 %	8.1	7.4	7.9	8.1	8.2	9.3	25.5	25.9	25.1	25.1	25.0	580	140	62

Comments:

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics

Sample Description:

Lab ID: B1641-04

Test Start Date: 8/17/2006

Test Count Date: 8/21/2006 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	7052
2	9594
3	10496
4	8282
5	8938
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.493	3.413	3.750	4.551
2	4.537	3.423	3.760	4.515
3	4.592	3.421	3.779	4.537
Replicate Average	**4.541**	**3.419**	**3.763**	**4.534**
CONCENTRATION MEAN # Cells / mL* =		**4.064**	CV % =	13.9%

TEST CONCENTRATION	1.9 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.876	3.780	3.248	4.168
2	3.894	3.816	3.265	4.140
3	3.892	3.784	3.279	4.139
Replicate Average	**3.887**	**3.793**	**3.264**	**4.149**
CONCENTRATION MEAN # Cells / mL* =		**3.773**	CV % =	9.8%

TEST CONCENTRATION	3.75 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.230	4.360	3.681	4.148
2	4.176	4.365	3.696	4.199
3	4.204	4.327	3.699	4.156
Replicate Average	**4.203**	**4.351**	**3.692**	**4.168**
CONCENTRATION MEAN # Cells / mL* =		**4.103**	CV % =	7.0%

TEST CONCENTRATION	7.5 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.848	3.421	4.766	3.954
2	3.830	3.447	4.769	3.929
3	3.860	3.466	4.796	3.959
Replicate Average	**3.846**	**3.445**	**4.777**	**3.947**
CONCENTRATION MEAN # Cells / mL* =		**4.004**	CV % =	14.0%

TEST CONCENTRATION	15 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.678	4.127	4.550	4.541
2	4.708	4.135	4.554	4.568
3	4.735	4.156	4.499	4.503
Replicate Average	**4.707**	**4.139**	**4.534**	**4.537**
CONCENTRATION MEAN # Cells / mL* =		**4.480**	CV % =	5.4%

TEST CONCENTRATION	30 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.123	3.936	4.326	3.846
2	4.115	3.926	4.339	3.876
3	4.113	3.953	4.349	3.909
Replicate Average	**4.117**	**3.938**	**4.338**	**3.877**
CONCENTRATION MEAN # Cells / mL* =		**4.068**	CV % =	5.1%

SCOEPA00026786

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics

Sample Description:

Lab ID: B1641-04

Test Start Date: 8-17-06

Test Count Date: 8-21-06 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.2 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	7052
2	9594
3	10496
4	8282
5	8938
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION		Control		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.493	3.413	3.750	4.551
2	4.537	3.423	3.760	4.515
3	4.592	3.421	3.779	4.537
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		1.90		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.876	3.780	3.248	4.168
2	3.894	3.816	3.265	4.140
3	3.892	3.784	3.279	4.139
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		3.75		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.230	4.360	3.681	4.148
2	4.176	4.365	3.696	4.199
3	4.204	4.327	3.699	4.156
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		7.50		
Run	REP A	REP B	REP C	REP D
DF (if other than default)			4.766	
1	3.848	3.421	~~3.779~~ OR	3.954
2	3.830	3.447	4.769	3.929
3	3.860	3.466	4.796	3.959
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		15.0		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.678	4.127	4.550	4.541
2	4.708	4.135	4.554	4.568
3	4.735	4.156	4.499	4.503
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		30.0		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.123	3.936	4.326	3.846
2	4.115	3.926	4.339	3.876
3	4.113	3.953	4.349	3.909
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

SCOEPA00026787

CETIS Test Summary

Report Date: 22 Aug-06 8:52 AM
Test Link: 11-7323-5076/B164104rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	16-4688-1337	**Test Type:**	Cell Growth	**Duration:**	4d 0h
Start Date:	17 Aug-06 02:10 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	21 Aug-06 02:25 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	17 Aug-06 02:10 PM	**Brine:**			

Sample No:	04-5865-4997	**Code:**	B1641-04	**Client:**	
Sample Date:	16 Aug-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:		**Source:**	Siltronic Corporation		
Sample Age:	30h	**Station:**			

Comments: resampling for Algae test

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-3613-7426	Cell Density	30	> 30	N/A	16.68%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
16-1724-3487	Cell Density	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-3613-7426	Cell Density	Control CV	0.13883	NL - 0.2	Yes	Passes acceptability criteria
16-1724-3487	Cell Density	Control CV	0.13883	NL - 0.2	Yes	Passes acceptability criteria
13-3613-7426	Cell Density	Control Response	4064250	1000000 - NL	Yes	Passes acceptability criteria
16-1724-3487	Cell Density	Control Response	4064250	1000000 - NL	Yes	Passes acceptability criteria
13-3613-7426	Cell Density	PMSD	0.16677	0.091 - 0.29	Yes	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	4.06E+6	3.42E+6	4.54E+6	2.82E+5	5.64E+5	13.88%
1.9		4	3.77E+6	3.26E+6	4.15E+6	1.86E+5	3.71E+5	9.84%
3.75		4	4.10E+6	3.69E+6	4.35E+6	1.43E+5	2.85E+5	6.96%
7.5		4	4.00E+6	3.44E+6	4.78E+6	2.80E+5	5.59E+5	13.97%
15		4	4.48E+6	4.14E+6	4.71E+6	1.20E+5	2.41E+5	5.37%
30		4	4.07E+6	3.88E+6	4.34E+6	1.04E+5	2.07E+5	5.09%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.54E+6	3.42E+6	3.76E+6	4.53E+6
1.9		3.89E+6	3.79E+6	3.26E+6	4.15E+6
3.75		4.20E+6	4.35E+6	3.69E+6	4.17E+6
7.5		3.85E+6	3.44E+6	4.78E+6	3.95E+6
15		4.71E+6	4.14E+6	4.53E+6	4.54E+6
30		4.12E+6	3.94E+6	4.34E+6	3.88E+6

SCOEPA00026788

CETIS Analysis Detail

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	11-7323-5076	11-7323-5076	22 Aug-06 8:51 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.3333	N/A	16.68%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	1.03284	2.40711	0.4075	677809	Non-Significant Effect
		3.75	-0.1391	2.40711	0.8710	677809	Non-Significant Effect
		7.5	0.21485	2.40711	0.7624	677809	Non-Significant Effect
		15	-1.4747	2.40711	0.9955	677809	Non-Significant Effect
		30	-0.0118	2.40711	0.8368	677809	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.041E+12	2.08E+11	5	1.31	0.30247	Non-Significant Effect
Error	2.854E+12	1.59E+11	18			
Total	3.8958E+12	3.668E+11	23			

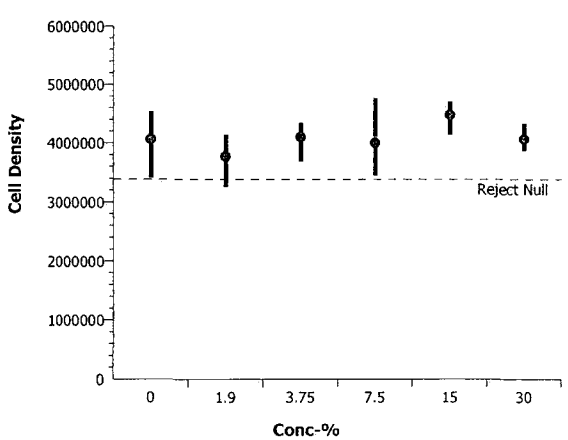
ANOVA Assumptions

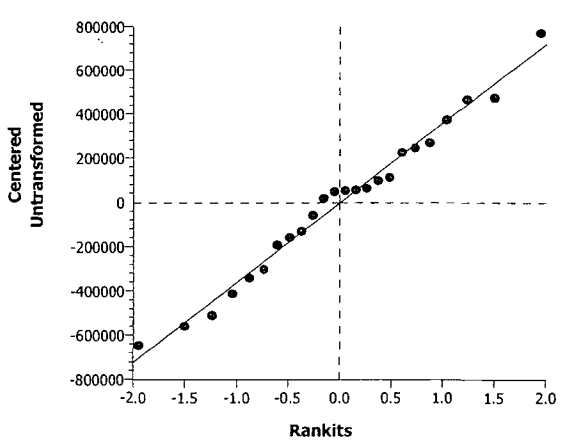
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	4.63034	15.08627	0.46264	Equal Variances
Distribution	Shapiro-Wilk W	0.98286		0.94211	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	4.06E+6	3.42E+6	4.54E+6	5.64E+5				
1.9		4	3.77E+6	3.26E+6	4.15E+6	3.71E+5				
3.75		4	4.10E+6	3.69E+6	4.35E+6	2.85E+5				
7.5		4	4.00E+6	3.44E+6	4.78E+6	5.59E+5				
15		4	4.48E+6	4.14E+6	4.71E+6	2.41E+5				
30		4	4.07E+6	3.88E+6	4.34E+6	2.07E+5				

Graphics





SCOEPA00026789

CETIS Analysis Detail

Report Date: 22 Aug-06 8:52 AM
Analysis: 16-1724-3487/B164104rsc

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	11-7323-5076	11-7323-5076	22 Aug-06 8:52 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

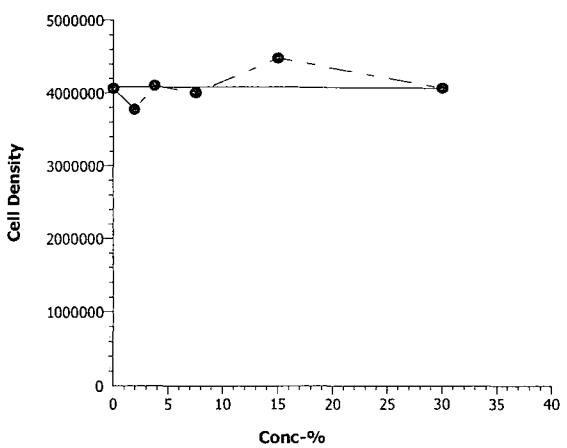
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	4.06E+6	3.42E+6	4.54E+6	1.15E+5	5.64E+5
1.9		4	3.77E+6	3.26E+6	4.15E+6	7.58E+4	3.71E+5
3.75		4	4.10E+6	3.69E+6	4.35E+6	5.83E+4	2.85E+5
7.5		4	4.00E+6	3.44E+6	4.78E+6	1.14E+5	5.59E+5
15		4	4.48E+6	4.14E+6	4.71E+6	4.91E+4	2.41E+5
30		4	4.07E+6	3.88E+6	4.34E+6	4.23E+4	2.07E+5

Data 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	4.54E+6	3.42E+6	3.76E+6	4.53E+6						
1.9		3.89E+6	3.79E+6	3.26E+6	4.15E+6						
3.75		4.20E+6	4.35E+6	3.69E+6	4.17E+6						
7.5		3.85E+6	3.44E+6	4.78E+6	3.95E+6						
15		4.71E+6	4.14E+6	4.53E+6	4.54E+6						
30		4.12E+6	3.94E+6	4.34E+6	3.88E+6						

Graphics



SCOEPA00026790

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

REFERENCE TOXICANT DATA SHEET

FHM 1310

Client: QA/QC
Test Organism: *Pimephales promelas*
Source: Aquatox Inc.
ID#: FHM 1310
Age: < 24 hrs
Size: na
Loading: na

Reference Toxicant: Sodium chloride
Solvent: distilled water Stock Solution: 20 g/L
Reagent Log ID #: 1-BOS3-01
*Dilution Water: RECON MH (FHM) ID#: 2675
Total Hardness as CaCO3: 90 Total Alkalinity as CaCO3: 64
Conductivity (µmhos/cm) Salinity (ppt): 302 Temperature: 20 ± 1 °C
Technician: 0 hr [illegible] 24 hr [illegible] 48 hr NJ 72 hr ____ 96 hr ____
Time: 0 hr 1130 24 hr 1200 48 hr 1005 72 hr ____ 96 hr ____

Test Begin: Date 8-1-06 Time 1130
Test End: Date 8-2-06 / 8-3-06 Time 1005

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving					Dissolved Oxygen (mg/l)					pH					Temperature °C					Cond.
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0
Control		10	10	10			8.4	8.4	8.3			7.8	7.7	7.8			19.9	19.7	19.4			311
4		10	10	10			8.4	8.4	8.3			7.9	7.7	7.8			19.8	19.7	19.3			7160
6		10	10	10			8.3	8.5	8.4			7.9	7.7	7.7			19.8	19.6	19.3			10580
8		10	8	3			8.4	8.5	8.5			7.9	7.6	7.6			19.8	19.7	19.3			14120
10		10	6	0			8.3	8.6	8.5			7.8	7.6	7.6			19.8	19.7	19.3			17080
12		10	0 **	–			8.3	8.7	–			7.8	7.5	–			19.6	19.8	–			20200
																	1					

Test Acceptability Limits:	Survival in Controls: > or = 90%	For RBT: >6.0 and <10.8 All Others (at 20°C): >4.0 and <9.1	pH: > 6.0 and < 9.0	Temperature ± 1 °C

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 75
Cusum Chart Limits: 62 & 77
Statistical Method: Trimmed Spearman-Karber

We verify this data is true and correct.
Task Manager: [signature]
Project Manager: [signature]
QA Officer: [signature]

SCOEPA00026792

CETIS Test Summary

Report Date: 03 Aug-06 12:52 PM
Test Link: 00-6246-4498/rppa1310

Fathead Minnow Acute Survival Test — **CH2M Hill**

Test No:	03-4570-3988	**Test Type:**	Survival (96h)	**Duration:**	47h
Start Date:	01 Aug-06 11:30 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	03 Aug-06 10:05 AM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	01 Aug-06 11:30 AM	**Brine:**			

Sample No:	14-5525-1466	**Code:**	1B053-01	**Client:**	
Sample Date:	18 Jul-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	14d 11h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
09-1636-7533	48h Proportion Survived	50	7.479937	6.946228	8.054653	Trimmed Spearman-Karber

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
4		1	1.00000	1.00000	1.00000			
6		1	1.00000	1.00000	1.00000			
8		1	0.30000	0.30000	0.30000			
10		1	0.00000	0.00000	0.00000			0.00%
12		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1
0	Dilution Water	1.00000
4		1.00000
6		1.00000
8		0.30000
10		0.00000
12		0.00000

SCOEPA00026793

CETIS Analysis Detail

Report Date: 03 Aug-06 12:52 PM
Analysis: 09-1636-7533/rppa1310

Fathead Minnow Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	00-6246-4498	00-6246-4498	03 Aug-06 12:50 PM	CETISv1.1.2

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	Mu	Sigma
Control Threshold	0	0.00%	0.8738979	0.01607447

Point Estimates

EC50/LC50	95% LCL	95% UCL
7.47994	6.94623	8.05465

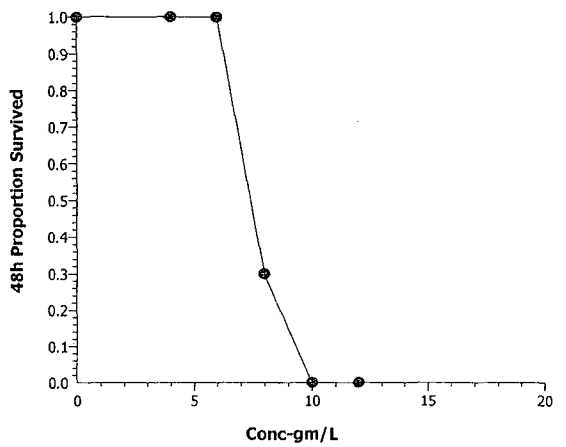
Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
4		1	1.00000	1.00000	1.00000			10	10
6		1	1.00000	1.00000	1.00000			10	10
8		1	0.30000	0.30000	0.30000			3	10
10		1	0.00000	0.00000	0.00000			0	10
12		1	0.00000	0.00000	0.00000			0	10

Data 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	1.00000									
4		1.00000									
6		1.00000									
8		0.30000									
10		0.00000									
12		0.00000									

Graphics



SCOEPA00026794

REFERENCE TOXICANT DATA SHEET

Client: QA/QC | Reference Toxicant: Sodium chloride | Test Begin: Date 8-8-06 Time 1045
Test Organism: *Ceriodaphnia dubia* | Solvent: distilled water | Stock Solution: 20 g/L | Test End: Date 8-10-06 Time 0945
Source: in house | Reagent Log ID #: 13053-01
ID#: Cd 1458 | *Dilution Water: Recon MH (FHM) ID# 2678
Age: < 24 hrs | Total Hardness as CaCO3: 88 | Total Alkalinity as CaCO3: 64
Size: na | Conductivity (µmhos/cm) / Salinity (ppt): 288 | Temperature: 20 ± 1 °C
Loading: na | Technician 0 hr: [illegible] 24 hr: TP 48 hr: NT 72 hr: 96 hr:
Time 0 hr: 1045 24 hr: 0940 48 hr: 0945 72 hr: 96 hr:

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen (mg/l) 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond. 0
Control	A	5	5	5			8.7		8.4			7.8		7.8			20.4	21.0	20.8			295
	B	5	5	5																		
1.0	A	5	5	5			8.7		8.4			7.9		7.8			20.3	20.9	20.8			2030
	B	5	5	5																		
1.5	A	5	5	5			8.5		8.5			7.9		7.8			20.3	20.8	21.0			2910
	B	5	5	5																		
2.0	A	5	5	4			8.5		8.5			7.9		7.8			20.2	20.8	21.0			3750
	B	5	5	4																		
3.0	A	5	4	1			8.5		8.3			7.9		7.8			20.2	20.9	21.0			5380
	B	5	5	0																		
4.0	A	5	0	–			8.5	8.5	~~0~~ NT			7.9	7.8	.			20.0	20.8	~~21.0~~ NT			6960
	B	5	2	0					8.4					7.8					21.0			
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 2.4
Cusum Chart Limits: 1.6 to 27
Statistical Method: Prob

We verify this data is true and correct.
Task Manager:
Project Manager:
QA Officer:

CETIS Test Summary

Report Date: 10 Aug-06 11:42 AM
Test Link: 13-4005-8364/rcda1958

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	09-3944-1449	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	08 Aug-06 10:45 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	10 Aug-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Aug-06 10:45 AM	**Brine:**			

Sample No:	14-5525-1466	**Code:**	1B053-01	**Client:**	
Sample Date:	18 Jul-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	21d 10h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
10-0198-5778	48h Proportion Survived	50	2.355635	2.05543	2.728357	Linear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-0198-5778	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		2	0.80000	0.80000	0.80000	0.00000	0.00000	0.00%
3		2	0.10000	0.00000	0.20000	0.10000	0.14142	141.42
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	1.00000
1		1.00000	1.00000
1.5		1.00000	1.00000
2		0.80000	0.80000
3		0.20000	0.00000
4		0.00000	0.00000

SCOEPA00026796

CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Regression	13-4005-8364	13-4005-8364	10 Aug-06 11:42 AM	CETISv1.1.2

Linear Regression Options

Model Function	Threshold Option	Threshold	Threshold Opt	Reweighted	Pooled Groups	Het Corr
Log-Normal [NED=A+B*log(X)]	Control Threshold	0	Yes	Yes	No	No

Regression Summary

Iters	Log Likelihood	Mu	Sigma	G	Chi-Sq	Critical	P-Value	Decision(0.05)
5	-8.34980	0.01834	0.07809	0.27133	1.34337	15.50731	0.99501	Non-Significant Heterogeneity

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
50	2.355635	2.05543	2.728357

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P-Value	Decision(0.05)
Slope	12.80592	3.403313	6.135425	19.47641	3.763	0.00552	Significant
Intercept	0.2348142	1.29157	-2.296663	2.766291	0.182	0.86026	Not Significant

Residual Analysis

Attribute	Method	Statistic	Critical	P-Value	Decision(0.05)
Variances	Modified Levene	65535	5.19217	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.8513583		0.06029	Normal Distribution

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		2	0.80000	0.80000	0.80000	0.00005	0.00023	8	10
3		2	0.10000	0.00000	0.20000	0.02887	0.14142	1	10
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

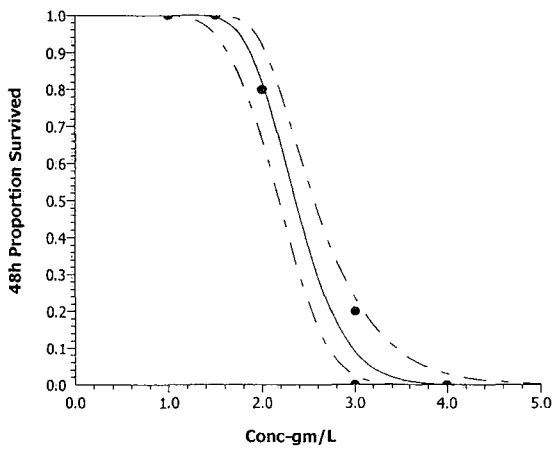
Data Detail

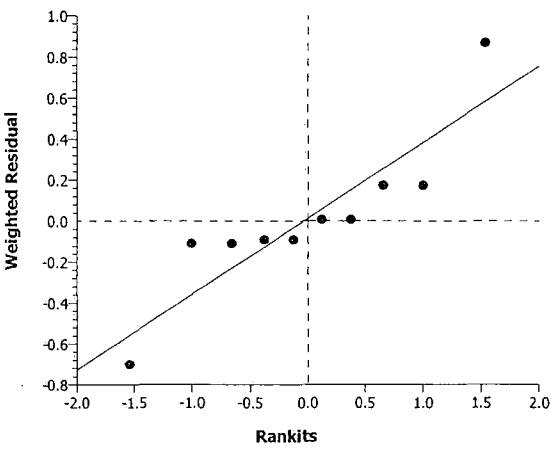
Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000								
1		1.00000	1.00000								
1.5		1.00000	1.00000								
2		0.80000	0.80000								
3		0.20000	0.00000								
4		0.00000	0.00000								

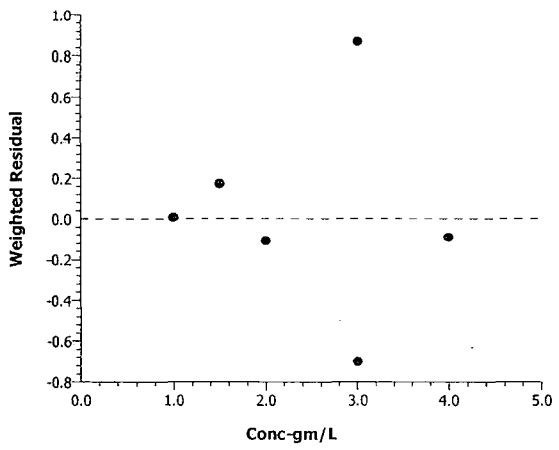
SCOEPA00026797

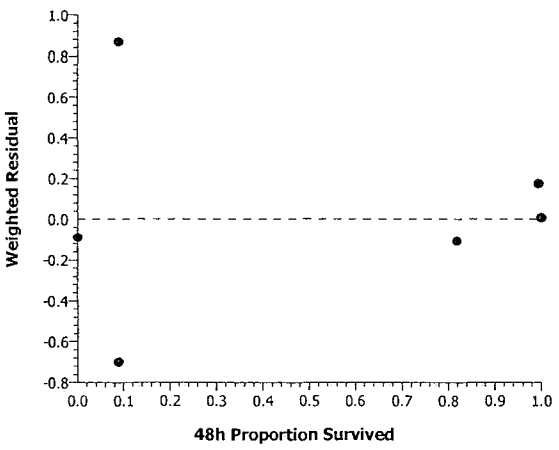
CETIS Analysis Detail

Graphics









SCOEPA00026798

Client Ref Tox FHM # 1311 Date Initiated 8-2-06 Time 1200

Sample Description NaCl Reagent Log # 1B053-06 Date Terminated 8-9-06 Time 1100

Technician: Day 0 NJ Day 1 NJ Day 2 [illegible] Day 3 NJ Day 4 NJ Day 5 NJ Day 6 NJ Day 7 [illegible]

Time Day 0 1200 Day 1 1220 Day 2 0925 Day 3 1425 Day 4 1220 Day 5 1110 Day 6 1105 Day 7 1100

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
Control	0	10	10	10	10		8.2		7.7	24.8	331
	1	10	9	10	10	6.9	8.1	7.6	7.9	24.8	355
	2	10	9	10	10	6.9	8.2	7.4	7.8		324
	3	10	9	10	10	7.1	8.2	7.5	8.1	24.7	332
	4	10	9	10	10	7.3	8.2	7.6	7.9	25.0	316
	5	10	9	10	9	7.0	8.2	7.7	7.9	25.1	276
	6	10	8	10	8	7.2	8.2	7.6	7.9	24.2	286
	7	10	8	10	8	7.2		7.6		25.2	310
0.3	0	10	10	10	10		8.2		7.8	24.8	934
	1	10	10	10	10	7.2	8.2	7.6	7.9	24.8	945
	2	10	10	10	10	7.1	8.2	7.5	7.9		918
	3	10	10	10	9	7.2	8.3	7.5	8.1	24.5	924
	4	10	10	10	9	7.3	8.3	7.6	8.0	25.0	930
	5	10	10	10	9	7.1	8.2	7.8	7.9	25.2	NH3 801 829
	6	9	10	10	9	7.5	8.3	7.6	7.9	24.2	859
	7	9	10	10	9	7.2		7.5		25.1	876
1.0	0	10	10	10	10		8.3		7.9	24.8	2260
	1	10	10	10	10	7.3	8.2	7.6	8.0	24.9	2010
	2	10	10	10	10	7.3	8.3	7.6	7.9		2130
	3	10	10	10	10	7.2	8.3	7.7	8.0	24.3	2340
	4	10	10	10	10	7.3	8.3	7.7	8.0	25.0	2020
	5	10	10	10	10	7.3	8.3	7.8	7.8	25.0	NH3 938 1994
	6	10	10	10	10	7.2	8.3	7.6	7.9	24.1	1980
	7	10	10	10	10	7.1		7.5		25.1	2010
2.0	0	10	10	10	10		8.3		7.9	24.9	4040
	1	10	10	10	10	7.3	8.2	7.6	8.0	24.9	4250
	2	10	10	10	10	7.3	8.2	7.6	7.9		3990
	3	10	10	10	10	7.4	8.2	7.6	8.0	24.6	4040
	4	10	10	10	10	7.5	8.3	7.7	8.0	25.1	4010
	5	10	10	10	10	7.4	8.3	7.7	7.9	25.2	NH3 1038 3780
	6	10	10	9	10	7.3	8.3	7.6	8.0	24.2	3750
	7	10	10	9	10	7.1		7.5		25.1	3800
4.0	0	10	10	10	10		8.3		7.9	24.6	7580
	1	10	10	10	10	7.4	8.2	7.7	8.0	24.6	7560
	2	10	10	10	10	7.5	8.2	7.7	7.9	25.4	7450
	3	10	10	10	10	7.4	8.2	7.7	7.9	24.1	7530
	4	10	10	10	10	7.5	8.3	7.7	8.0	25.0	7570
	5	10	10	10	10	7.4	NH3 1183	7.7	7.8	25.0	NH3 6650 6950
	6	9	10	9	9	7.3	8.2	7.6	8.0	24.0	6960
	7	7	9	8	7	7.1		7.5		25.1	6900
8.0	0	10	10	10	10		8.3		7.8	24.7	14060
	1	6	4	3	8	7.5	8.2	7.6	7.9	24.7	14030
	2	2	1	1	3	7.5	8.1	7.6	7.9		14100
	3	1	0	0	3	7.5	8.2	7.7	7.8	24.1	14340
	4	1	↓	↓	2	7.6	8.3	7.7	7.9	25.0	14120
	5	0	↓	↓	2	7.5	8.3	7.6	7.8	24.8	NH3 1047 13450
	6	↓	↓	↓	2	7.4	8.3	7.7	7.9	24.0	12960
	7	↓	↓	↓	0	7.2		7.5		25.0	12940

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.

"F" = fungus noted on dead organisms. "M" = organism missing, start count reduced.

Endpoint	IC25	Cusum Chart Limits	
Survival	4.30	1.51 to 4.93	
Growth	3.20	1.34 to 3.24	

Task Manager Natisha Johnson

Project Manager [signature]

QA Officer [signature]

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC Species ID#: FHM 1311

Lab ID: na Start Date:

Sample Description: NaCl

Technician:	BM	NJ
Date:	8/10/2006	8/3/2006

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1174.38	1168.61	10
	B	1154.89	1150.10	8
	C	1154.96	1149.23	10
	D	1151.03	1146.10	8
0.3 g/L	A	1169.45	1163.42	9
	B	1139.71	1132.22	10
	C	1132.97	1126.57	10
	D	1143.24	1136.43	9
1.0 g/L	A	1161.77	1154.94	10
	B	1156.60	1149.94	10
	C	1146.28	1138.81	10
	D	1157.09	1149.54	10
2.0 g/L	A	1151.83	1144.93	10
	B	1146.62	1139.24	10
	C	1153.56	1148.06	9
	D	1149.65	1143.39	10
4.0 g/L	A	1154.82	1151.35	7
	B	1131.65	1127.31	9
	C	1144.79	1141.63	8
	D	1155.02	1151.00	7
8.0 g/L	A		1144.48	0
	B		1149.16	0
	C		1169.88	0
	D		1162.22	0

weigh to 0.01 mg

SCOEPA00026800

CETIS Test Summary

Report Date: 10 Aug-06 11:12 AM
Test Link: 01-5643-2695/rppc1311

Fathead Minnow 7-d Larval Survival and Growth Test — CH2M Hill

Test No:	08-1260-6289	Test Type:	Growth-Survival (7d)	Duration:	6d 23h
Start Date:	02 Aug-06 12:00 PM	Protocol:	EPA/821/R-02-013 (2002)	Species:	Pimephales promelas
Ending Date:	09 Aug-06 11:00 AM	Dil Water:		Source:	Aquatox, AR
Setup Date:	02 Aug-06 12:00 PM	Brine:			

Sample No:	11-2184-7093	Code:	1B053-06	Client:	
Sample Date:	01 Aug-06	Material:	Sodium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	36h	Station:			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
11-8842-7808	7d Proportion Survived	25	4.298387	3.606333	4.856262	Linear Interpolation
15-2853-3673	Mean Dry Biomass-mg	25	3.204749	2.701061	3.615496	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
11-8842-7808	7d Proportion Survived	Control Response	0.90000	0.8 - NL	Yes	Passes acceptability criteria
15-2853-3673	Mean Dry Biomass-mg	Control Response	0.53050	0.25 - NL	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%
0.3		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
4		4	0.77500	0.70000	0.90000	0.04787	0.09574	12.35%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.53050	0.47900	0.57700	0.02586	0.05172	9.75%
0.3		4	0.66825	0.60299	0.74900	0.03128	0.06256	9.36%
1		4	0.71275	0.66600	0.75499	0.02241	0.04482	6.29%
2		4	0.65100	0.55000	0.73800	0.04074	0.08148	12.52%
4		4	0.37475	0.31600	0.43400	0.02657	0.05315	14.18%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	0.80000	1.00000	0.80000
0.3		0.90000	1.00000	1.00000	0.90000
1		1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.90000	1.00000
4		0.70000	0.90000	0.80000	0.70000
8		0.00000	0.00000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.57700	0.47900	0.57300	0.49301
0.3		0.60299	0.74900	0.64000	0.68099
1		0.68301	0.66600	0.74700	0.75499
2		0.68999	0.73800	0.55000	0.62600
4		0.34700	0.43400	0.31600	0.40200
8		0.00000	0.00000	0.00000	0.00000

SCOEPA00026801

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	01-5643-2695	01-5643-2695	10 Aug-06 11:12 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	4.298387	3.606333	4.856262

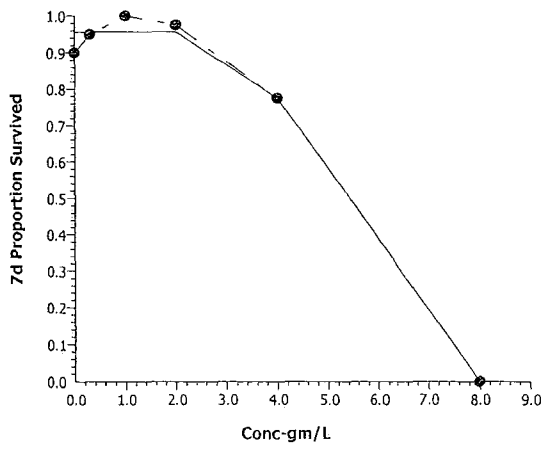
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.90000	0.80000	1.00000	0.02357	0.11547	36	40
0.3		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
2		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
4		4	0.77500	0.70000	0.90000	0.01954	0.09574	31	40
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Data 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	1.00000	0.80000	1.00000	0.80000						
0.3		0.90000	1.00000	1.00000	0.90000						
1		1.00000	1.00000	1.00000	1.00000						
2		1.00000	1.00000	0.90000	1.00000						
4		0.70000	0.90000	0.80000	0.70000						
8		0.00000	0.00000	0.00000	0.00000						

Graphics



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CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	01-5643-2695	01-5643-2695	10 Aug-06 11:12 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	3.204749	2.701061	3.615496

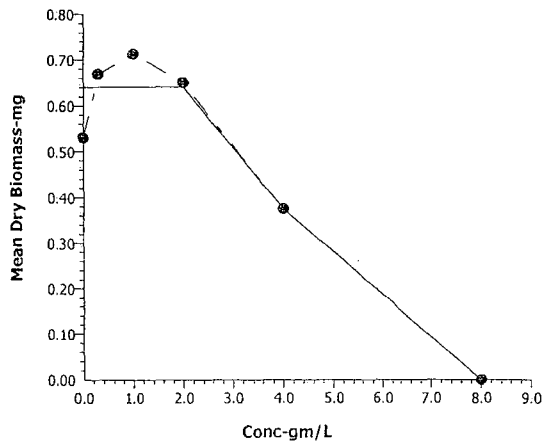
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.53050	0.47900	0.57700	0.01056	0.05172
0.3		4	0.66825	0.60299	0.74900	0.01277	0.06256
1		4	0.71275	0.66600	0.75499	0.00915	0.04482
2		4	0.65100	0.55000	0.73800	0.01663	0.08148
4		4	0.37475	0.31600	0.43400	0.01085	0.05315
8		4	0.00000	0.00000	0.00000	0.00000	0.00000

Data 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	0.57700	0.47900	0.57300	0.49301						
0.3		0.60299	0.74900	0.64000	0.68099						
1		0.68301	0.66600	0.74700	0.75499						
2		0.68999	0.73800	0.55000	0.62600						
4		0.34700	0.43400	0.31600	0.40200						
8		0.00000	0.00000	0.00000	0.00000						

Graphics



SCOEPA00026803

CHRONIC

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC
Test Start Date: 8-1-2006
Sample Description: NaCl
Reagent Sample ID#: IB052-05
Ceriodaphnia Lot#: Cd 1755
Statistician: JM

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	34	19	17	27	5 ✓	31	31	29	29	23	9	250
0.25 g/L	25	20	27	21	28	27	30	25	27 ✓	36	9	266
0.50 g/L	5	22	0 ✓	18	30	23	17	22	24	27	9	188
1.0 g/L	10	16	0 ✓	15	16	3	0 ✓	4	0 ✓	10	7	74
1.5 g/L	0 ✓	3	6	0	6	12	13	6	0	0	9	46
2.0 g/L	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0	0
4.0 g/L	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0 ✓	0	0

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.58	1.33 to 1.77
Reproduction	0.48	0.28 to 0.85

Task Manager
Project Manager
QA Officer

SCOEPA00026804

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC — Test Initiation: Date: 8-1-2006 Time: 1000

Sample Description: NaCl — Test Termination: Date: 8-8-06 Time: 0830

Initial Sample ID #: 1B052-04 — Ceriodaphnia Lot#: Cd 1955

Technician: Day 1 DW Day 2 DW Day 3 DW Day 4 @ Day 5 @ Day 6 @ Day 7 DW

Time: Day 1 0940 Day 2 0900 Day 3 0925 Day 4 1200 Day 5 1715 Day 6 1310 Day 7 0830

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	6	5	4	6	5	5	5	7	6	5	10	54
	5	10	0	0	11	0	9	12	12	10	8	10	72
	6	0	14	13	10	AD/0	0	14	10	13	0	9	74
	7	18	0	0	0	4	17	0	0	0	15	9	50
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	0	6	0	5	5	7	6	5	6	10	44
	5	4	4	11	9	12	10	10	9	11	12	10	92
	6	0	0	10	12	11	12	13	10	11	0	10	79
	7	17	16	0	0	0	0	0	0	0/AD	18	9	51
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0/AD	0	0	0	0	0	0	0	9	0
	4	0	4	|	4	5	4	4	7	5	5	9	38
	5	5	8	|	4	4	5	4	6	5	6	9	47
	6	0	10	|	10	0	0	9	9	0	0	9	38
	7	0	0	↓	0	21	14	0	0	14	16	9	65
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0/AD	0	0/AD	0	8	0
	4	0	4	0	4	4	0	|	4	|	4	8	20
	5	5	5	AY/0	3	4	0	|	0	|	0	7	17
	6	0	0	|	8	8	0	|	0	|	0	7	16
	7	5	7	↓	0	0	3	↓	0	↓	6	7	21
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0/AD	0	0	0	0	0	0	0	0	0	DW 109	0
	4	|	0	4	0	4	4	4	4	0	0	9	20
	5	|	0	0	0	0	4	4	0	0	0	9	8
	6	|	0	0	0	0	0	0	0	0	0	9	0
	7	↓	3	2	0	2	4	5	2	0	0	9	18
2.0 g/L	1	0	0/AD	0	0	0	0	0/AD	0/AD	0/AD	0	6	0
	2	0/AD	|	0/AD	0/AD	0/AD	0/AD	|	|	|	0/AD	0	0
	3	|	|	|	|	|	|	|	|	|	|	|	|
	4	|	|	|	|	|	|	|	|	|	|	|	|
	5	|	|	|	|	|	|	|	|	|	|	|	|
	6	|	|	|	|	|	|	|	|	|	|	|	|
	7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2												
	3												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC | Initiated Date 8-1-2006 Time 1000 | Adults Isolated Date 7-31-06 Time 2206

Sample Description NaCl (50 g/L stock) | Reagent Log # 1B052-04 | Neo's Collected Date 8-1-06 Time 0600

Technician Day 0 DW Day 1 DW Day 2 DW Day 3 DW Day 4 ~~DW~~ Day 5 ~~DW~~ Day 6 ~~DW~~ Day 7 DW

Time Day 0 1000 Day 1 0940 Day 2 0900 Day 3 0925 Day 4 ~~1230~~ 1200 Day 5 ~~1200~~ 1715 Day 6 ~~1315~~ 1310 Day 7 0830

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	7.9 / 8.1	7.9 / 8.1	8.0 / 8.1	7.9 / 8.0	7.7 / 8.0	8.1 / 8.0	8.0
0.25 g/L	8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.1	7.9 / 8.0	8.2 / 8.1	8.0
0.50 g/L	8.1	7.9 / 8.1	7.9 / 8.1	8.0 / 8.2	8.1 / 8.1	8.10 / 8.1	8.3 / 8.1	8.0
1.0 g/L	8.1	7.9 / 8.1	7.9 / 8.1	8.1 / 8.2	8.0 / 8.1	8.0 / 8.1	8.3 / 8.1	8.0
1.5 g/L	8.1	7.9 / 8.1	7.9 / 8.1	8.1 / 8.2	8.0 / 8.1	8.0 / 8.1	8.3 / 8.1	8.0
2.0 g/L	8.1	7.9 / 8.1	7.9 / –					
4.0 g/L	8.1	7.9 / –						

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.5	7.8 / 7.8	8.0 / 8.0	7.9 / 7.8	7.9 / 7.7	7.9 / 7.7	8.0 / 7.7	7.9
0.25 g/L	7.6	7.8 / 7.8	7.9 / 8.0	7.9 / 7.7	8.0 / 7.7	8.0 / 7.6	7.9 / 7.7	7.8
0.50 g/L	7.6	7.8 / 7.8	7.9 / 7.9	7.9 / 7.7	8.0 / 7.7	8.0 / 7.6	7.9 / 7.7	7.8
1.0 g/L	7.7	7.8 / 7.8	7.9 / 7.9	7.9 / 7.6	7.8 / 7.7	7.9 / 7.6	7.9 / 7.6	7.7
1.5 g/L	7.6	7.8 / 7.8	7.9 / 7.9	7.8 / 7.6	7.8 / 7.7	7.8 / 7.6	7.9 / 7.6	7.7
2.0 g/L	7.7	7.8 / 7.8	8.0 / –					
4.0 g/L	7.7	7.9 / –						

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.7 / 300	25.5 / 308	25.6 / 322	25.5 / 334	25.2 / 337	25.4 / 340	25.1 / 321	25.5
0.25 g/L	25.6 / 745	25.1 / 814	25.9 / 810	25.4 / 819	25.2 / 90	25.4 / 870	25.1 / 859	25.3
0.50 g/L	25.7 / 1284	24.9 / 1297	26.0 / 1285	25.2 / 1309	25.1 / 1320	25.4 / 1290	25.1 / 1260	25.6
1.0 g/L	25.5 / 2240	25.1 / 2270	25.3 / 2250	25.2 / 2260	25.1 / 2190	25.3 / 2230	25.0 / 2170	24.9
1.5 g/L	25.4 / 3190	24.7 / 3200	25.4 / 3190	24.8 / 3190	25.3 / 3200	25.2 / 3180	25.0 / 3180	24.7
2.0 g/L	25.8 / 4030	25.0 / 4100	25.3 / –					
4.0 g/L	25.6 / 7400	25.2 / –						

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 09 Aug-06 8:31 AM
Test Link: 14-9221-8436/rcdc1955

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	18-6835-1705	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	01 Aug-06 10:00 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	08 Aug-06 08:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	01 Aug-06 10:00 AM	**Brine:**			

Sample No:	09-2838-3608	**Code:**	1B052-04	**Client:**	
Sample Date:	13 Jul-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	19d 10h	**Station:**			

Comments: 50 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
00-1690-0523	7d Proportion Survived	25	1.578125	0.75	1.625	Linear Interpolation
14-4333-4386	Reproduction	25	0.4803571	0.356054	0.6654829	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
00-1690-0523	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
14-4333-4386	Reproduction	Control Response	25	15 - NL	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
0.25		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	0.70000	0.00000	1.00000	0.15275	0.48305	69.01%
1.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25	5	34	2.7849	8.8066	35.23%
0.25		10	26.6	20	36	1.4236	4.5019	16.92%
0.5		10	18.8	0	30	2.9918	9.4610	50.32%
1		10	7.4	0	16	2.1458	6.7856	91.70%
1.5		10	4.6	0	13	1.5578	4.9261	107.09
2		10	0	0	0	0	0	0.00%
4		10	0	0	0	0	0	0.00%

SCOEPA00026807

CETIS Test Summary

Report Date: 09 Aug-06 8:31 AM
Test Link: 14-9221-8436/rcdc1955

7d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000
0.5		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	0.00000	1.00000	0.00000	1.00000
1.5		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	34	19	17	27	5	31	31	29	29	28
0.25		25	20	27	21	28	27	30	25	27	36
0.5		5	22	0	18	30	23	17	22	24	27
1		10	16	0	15	16	3	0	4	0	10
1.5		0	3	6	0	6	12	13	6	0	0
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

SCOEPA00026808

CETIS Analysis Detail

Report Date: 09 Aug-06 8:31 AM
Analysis: 00-1690-0523/rcdc1955

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	14-9221-8436	14-9221-8436	09 Aug-06 8:30 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.578125	0.75	1.625

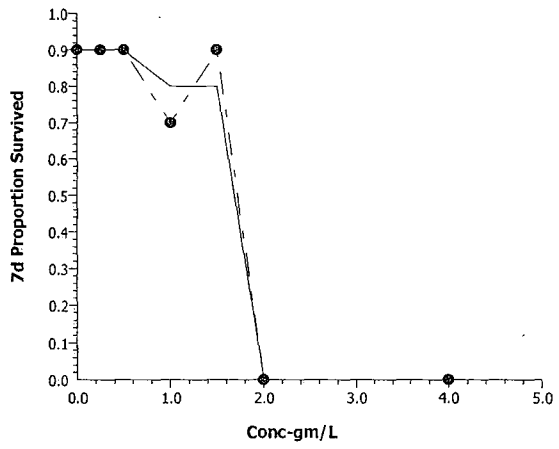
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
0.25		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	0.70000	0.00000	1.00000	0.09860	0.48305	7	10
1.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000
0.5		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	0.00000	1.00000	0.00000	1.00000
1.5		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Graphics



SCOEPA00026809

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	14-9221-8436	14-9221-8436	09 Aug-06 8:31 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.4803571	0.356054	0.6654829

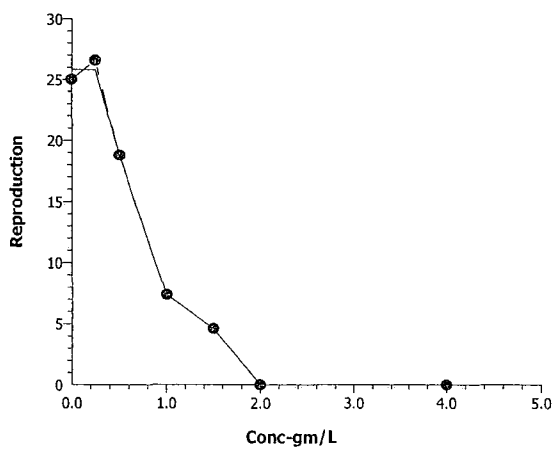
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	25	5	34	1.79763	8.80656
0.25		10	26.6	20	36	0.91894	4.50185
0.5		10	18.8	0	30	1.93122	9.46103
1		10	7.4	0	16	1.38511	6.78561
1.5		10	4.6	0	13	1.00554	4.92612
2		10	0	0	0	0	0
4		10	0	0	0	0	0

Data 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	34	19	17	27	5	31	31	29	29	28
0.25		25	20	27	21	28	27	30	25	27	36
0.5		5	22	0	18	30	23	17	22	24	27
1		10	16	0	15	16	3	0	4	0	10
1.5		0	3	6	0	6	12	13	6	0	0
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

Graphics



SCOEPA00026810

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl Reagent Log #: 18053-06

Test Start Date: 8-3-06 Time: 1200 Initials: AP

Test End Date: 8-7-06 Time: 1045 Initials: KP

TEST CONDITIONS AT INITIATION:

Species ID#: RS 426

Age: 6 days

Dilution Water ID #: 2677

Source Water: BECON MH (FHU) 2675

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		
458	200		
MEAN	2.29	x 250,000 =	Culture Density
			572,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45um filter	X
	1.6um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	572,500	≈	0.87 ml

Counting Counts			
	# Cells	# Fields	Cell Conc. x 10^6
Flask #1	4	100	0.01
Flask #2	4	100	0.01
Flask #3	4	100	0.01

Light Intensity at Test Initiation (foot candles)		
Location #1	Location #2	Location #3
409	409	396

Technician 0 hr (AP) 24 hr KP 48 hr (KP) 72 hr KP 96 hr (KP)

Time 0 hr 1200 24 hr 1210 48 hr 1300 72 hr 1345 96 hr 1045

Test Concen. (g/L)	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	9.2	7.6	7.7	8.1	8.3	9.0	25.4	24.2	25.1	25.2	25.9	396	98	70
0.25	8.3	7.5	7.7	8.1	8.3	8.9	25.0	24.2	24.9	25.3	25.8	914		
0.50	8.4	7.5	7.8	8.1	8.3	9.2	25.0	24.3	24.9	25.3	25.5	1396		
1.0	9.4	7.5	7.8	8.1	8.3	9.0	25.2	24.2	24.9	25.3	25.8	2360		
2.0	8.9	7.4	7.8	8.0	8.1	8.7	25.1	24.2	25.0	25.4	25.6	4270		
4.0	8.9	7.4	7.8	8.0	8.1	8.4	25.1	24.3	25.0	25.4	25.6	7420		

Task Manager [signature]

Project Manager [signature]

QA Officer [signature]

Endpoint : Growth

IC25 : 0.99

Cusum Chart Limits : 0.29 & 2.38

Comments:

SCOEPA00026811

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: QA / QC

Sample Description: NaCl

Lab ID:

Test Start Date: 8/3/2006

Test Count Date: 8/7/2006 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.50

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	6724
2	7954
3	9266
4	5494
5	
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.948	3.807	3.756	3.658
2	3.955	3.851	3.763	3.660
3	3.952	3.858	3.793	3.664
Replicate Average	**3.952**	**3.839**	**3.771**	**3.661**
CONCENTRATION MEAN # Cells / mL* =	**3.805**	CV % =		3.2%

TEST CONCENTRATION	0.25 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.438	3.376	3.703	4.055
2	3.454	3.353	3.733	4.055
3	3.428	3.418	3.741	4.086
Replicate Average	**3.440**	**3.382**	**3.726**	**4.065**
CONCENTRATION MEAN # Cells / mL* =	**3.653**	CV % =		8.6%

TEST CONCENTRATION	0.50 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.380	4.273	4.095	3.513
2	3.396	4.290	4.076	3.553
3	3.378	4.289	4.095	3.500
Replicate Average	**3.385**	**4.284**	**4.089**	**3.522**
CONCENTRATION MEAN # Cells / mL* =	**3.820**	CV % =		11.4%

TEST CONCENTRATION	1.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	2.659	2.952	2.771	2.985
2	2.719	2.911	2.754	2.982
3	2.682	2.943	2.763	2.981
Replicate Average	**2.687**	**2.935**	**2.763**	**2.983**
CONCENTRATION MEAN # Cells / mL* =	**2.842**	CV % =		4.9%

TEST CONCENTRATION	2.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	1.946	1.808	1.834	2.366
2	1.942	1.816	1.846	2.352
3	1.934	1.809	1.842	2.359
Replicate Average	**1.941**	**1.811**	**1.841**	**2.359**
CONCENTRATION MEAN # Cells / mL* =	**1.988**	CV % =		12.8%

TEST CONCENTRATION	4.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.465	0.695	1.224	0.938
2	0.465	0.689	1.213	0.934
3	0.472	0.690	1.212	0.917
Replicate Average	**0.467**	**0.691**	**1.216**	**0.930**
CONCENTRATION MEAN # Cells / mL* =	**0.826**	CV % =		38.9%

SCOEPA00026812

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client QA/QC

Sample Description

Lab ID

Test Start Date 8/3/2006

Test Count Date 8/7/2006 Initials TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.2 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	6724
2	7954
3	9266
4	5474
5	
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3,948	3.807	3.756	3,658
2	3.955	3.851	3.763	3.660
3	3.952	3.858	3.793	3.664
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	0.25			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.438	3.376	3.703	4,055
2	~~3.454~~	3.353	3.733	4.055
3	3.428	3.418	3.741	4.086
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	0.50			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.380	4.273	4.095	3.513
2	3.396	4.290	4.076	3.553
3	3.378	4.289	4.095	3.500
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	1.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	2.659	2.952	2.771	2.985
2	2.719	2.911	2.754	2.982
3	2.682	2.943	2.763	2981
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	2.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	1.946	1.808	1.834	2.366
2	1.942	1.816	1.846	2.352
3	1.934	1.809	1.842	2.359
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	4.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.465432	0.694540	1.224	0.937670
2	0.464530	0.689210	1.213	0.933980
3	0.472156	0.689948	1.212	0.917252
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

SCOEPA00026813

CETIS Test Summary

Report Date: 08 Aug-06 12:07 PM
Test Link: 05-8146-0940/rrsc426

Raphidocelis Growth Test — **CH2M Hill**

Test No:	06-5317-2721	**Test Type:**	Cell Growth	**Duration:**	95h
Start Date:	03 Aug-06 12:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	07 Aug-06 10:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	03 Aug-06 12:00 PM	**Brine:**			

Sample No:	11-2184-7093	**Code:**	1B053-06	**Client:**	
Sample Date:	01 Aug-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	60h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
15-3058-7858	Cell Density	25	0.9931661	0.8711822	1.179365	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-3058-7858	Cell Density	Control CV	0.03206	NL - 0.2	Yes	Passes acceptability criteria
15-3058-7858	Cell Density	Control Response	3805417	1000000 - NL	Yes	Passes acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.81E+6	3.66E+6	3.95E+6	6.10E+4	1.22E+5	3.21%
0.25		4	3.65E+6	3.38E+6	4.07E+6	1.57E+5	3.13E+5	8.57%
0.5		4	3.82E+6	3.38E+6	4.28E+6	2.17E+5	4.34E+5	11.37%
1		4	2.84E+6	2.69E+6	2.98E+6	7.01E+4	1.40E+5	4.93%
2		4	1.99E+6	1.81E+6	2.36E+6	1.27E+5	2.54E+5	12.76%
4		4	8.26E+5	4.67E+5	1.22E+6	1.61E+5	3.21E+5	38.90%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	3.95E+6	3.84E+6	3.77E+6	3.66E+6
0.25		3.44E+6	3.38E+6	3.73E+6	4.07E+6
0.5		3.38E+6	4.28E+6	4.09E+6	3.52E+6
1		2.69E+6	2.94E+6	2.76E+6	2.98E+6
2		1.94E+6	1.81E+6	1.84E+6	2.36E+6
4		4.67E+5	6.91E+5	1.22E+6	9.30E+5

SCOEPA00026814

CETIS Analysis Detail

Report Date: 08 Aug-06 12:07 PM
Analysis: 15-3058-7858/rrsc426

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	05-8146-0940	05-8146-0940	08 Aug-06 12:07 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.9931661	0.8711822	1.179365

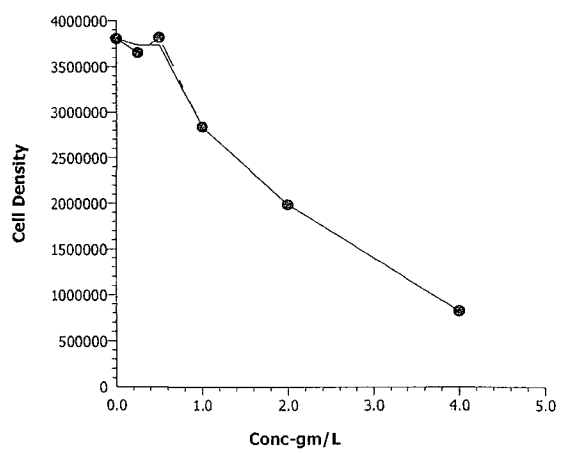
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.81E+6	3.66E+6	3.95E+6	2.49E+4	1.22E+5
0.25		4	3.65E+6	3.38E+6	4.07E+6	6.39E+4	3.13E+5
0.5		4	3.82E+6	3.38E+6	4.28E+6	8.86E+4	4.34E+5
1		4	2.84E+6	2.69E+6	2.98E+6	2.86E+4	1.40E+5
2		4	1.99E+6	1.81E+6	2.36E+6	5.18E+4	2.54E+5
4		4	8.26E+5	4.67E+5	1.22E+6	6.56E+4	3.21E+5

Data 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	3.95E+6	3.84E+6	3.77E+6	3.66E+6						
0.25		3.44E+6	3.38E+6	3.73E+6	4.07E+6						
0.5		3.38E+6	4.28E+6	4.09E+6	3.52E+6						
1		2.69E+6	2.94E+6	2.76E+6	2.98E+6						
2		1.94E+6	1.81E+6	1.84E+6	2.36E+6						
4		4.67E+5	6.91E+5	1.22E+6	9.30E+5						

Graphics



SCOEPA00026815

APPENDIX C
CHAIN OF CUSTODY

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 N.W. Front Avenue, Portland, Oregon 97210
Contact Person: Thomas J. Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES# 101128
Composite Sample Information:
Samples/Hour 1 Volume/Sample ~8L
Total Hours 24 Total Volume
Initiated: Date 30Jul06 Time 0800
Ended: Date 31Jul06 Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P. O.# 4500431902
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) Y
Temp. Upon Arrival (°C) 7.6°C
Check Ammonia (Y/N) Y Dechlorinate (Y/N) N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-62	31Jul 2006	0800	X		1	B1641-01	X	X	X	X	X													Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%

Sampled By & Title (Please sign and print name): Thomas J. Rothschild — Thomas J. Rothschild	Date/Time: 31Jul2006/ 0800	Relinquished By (Please sign and print name): Thomas J. Rothschild — Thomas J. Rothschild	Date/Time: 31Jul2006/ 0810
Received By (Please sign and print name): Doug Winn / LAB	Date/Time: 8-1-06/1200	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name):	Date/Time:	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name):	Date/Time:	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #:
Work Authorized By (Please sign and print name):	Remarks:		

Rev. 10/97

SCOEPA00026817

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 N.W. Front Avenue, Portland, Oregon 97210
Contact Person: Thomas J. Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES# 101128
Composite Sample Information:
Samples/Hour: Volume/Sample: ~8L
Total Hours: 24 Total Volume:
Initiated: Date 1 Aug 2006 Time 0800
Ended: Date 2 Aug 2006 Time 0800
Chilled During Collection: Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P. O.# 4500431902
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N): Y
Temp. Upon Arrival (°C): 13.0
Check Ammonia (Y/N): Y Dechlorinate (Y/N): N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-63	2 Aug 2006	0800	X		1	B1641-02	X	X	X	X	X													Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%

Sampled By & Title (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 2 Aug 2006 / 0800	Relinquished By (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 2 Aug 2006 0830
Received By (Please sign and print name): Paul Carney	Date/Time: 8/2/06 8:30	Relinquished By (Please sign and print name): Paul Carney 8/2/06 10:33	Date/Time
Received By (Please sign and print name): Linda D Riser Riser	Date/Time: 8/2/06 10:33	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026818

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 NW Front Ave
Portland, Oregon 97210
Contact Person: Tom Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES# 101128
Composite Sample Information:
Samples/Hour: Volume/Sample: 8L
Total Hours: 24 Total Volume:
Initiated: Date 8/3/06 Time 0800
Ended: Date 8/4/06 Time 0800
Chilled During Collection: Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160
P. O.# 4500431902

Check Chlorine (Y/N): 004
Temp. Upon Arrival (°C): 11.6
Check Ammonia (Y/N): Y Dechlorinate (Y/N): N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-67	8/4/06	0800	X		1	B1641-03	X	X	X	X	X													Dilutions: 30%,
																								15%, 7.5%, 3.75%,
																								1.9%

Sampled By & Title (Please sign and print name): Dianne Irish Dianne Irish	Date/Time: 8/4/06 0800 DI	Relinquished By (Please sign and print name): Dianne Irish Dianne Irish	Date/Time: 8/4/06 8:02
Received By (Please sign and print name): Paul Conroy CONROY	Date/Time: 8/4/06 8:03	Relinquished By (Please sign and print name): Paul Conroy CONROY	Date/Time: 8/4/06 11:12
Received By (Please sign and print name): Bunk	Date/Time: 8/4/06 8:03	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name): Nalisha Johnson	Date/Time: 8-4-06 11:20	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #:
Work Authorized By (Please sign and print name):	Remarks:		

Rev. 10/97

SCOEPA00026819

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation USA
Address: 7200 NW Front Avenue, Portland, Oregon 97210
Contact Person: Thomas J. Rothschild
Phone: 503-219-7374
CH2M HILL Project #

NPDES# 101128
Composite Sample Information
Samples/Hour 1 Volume/Sample ~8L
Total Hours 24 Total Volume ~190L
Initiated: Date 08-16-06 Time 0800
Ended: Date 08-16-06 Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.# ~~4504~~ 4500431902

Check Chlorine (Y/N)
Temp. Upon Arrival (°C) 13.0°C
Check Ammonia (Y/N) Dechlorinate (Y/N)

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-71	17 Aug 2006	0800	X		1	B1641-04													X					

Sampled By & Title (Please sign and print name) Thomas J. Rothschild	Date/Time 17 Aug 2006 / 0800	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 17 Aug 2006 / 0830
Received By (Please sign and print name) P. CONROY Paul Conroy	Date/Time 8-17-06 / 8:30	Relinquished By (Please sign and print name) Paul Conroy P. CONROY	Date/Time 8-17-06 / 10:40
Received By (Please sign and print name) Linda Riser RISER	Date/Time 8/17/06 10:41	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name) Scott Mackey	Date/Time 8/17/06 10:45	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026820

siltronic
perfect silicon solutions

DISTRIBUTION LOGISTICS

Siltronic Corporation
7200 NW Front Avenue, MS 20
Portland, OR 97210-3676, USA
Tel. 503-219-7650
Fax 503-219-4118
DistributionLogisticsTeam@Siltronic.com

To: CH2MHILL Incorporated
Aquatic Toxicology Laboratory
2300 NW Walnut Boulevard
Corvallis, OR 97330

Notify:

Weight lbs: 34

Attention: Mike Stanaway 503-541-0235

Reference:PO#4500431902

B1641-01

STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE

STEWART STILES TRUCK LINE, INC. (STST)
495 N. Holladay Street • Cornelius, OR. 97113
(503) 357-8238 or 1-800-248-8238 • Fax (503) 359-8493
Salem: (503) 362-3624 or 1-800-248-8236
E-Mail - (b) (6) [redacted]

Bill of Lading #: SS 234606

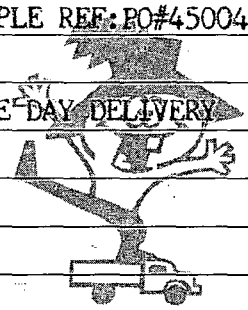
CONSIGNED TO: CH2MHILL, INCORPORATED ATTN: MIKE STANAWAY 503-541-0235
AQUATIC TOXICOLOGY LABORATORY
DESTINATION STREET CITY & STATE: 2300 NW WALNUT BOULEVARD CORVALLIS, OR 97330

Shipper #:

COD Amt: $

C.O.D. FEE. PREPAID ☐ COLLECT ☐ $

No. Pkgs.	HM ✪	Kind of Package, Description of Articles, Special marks and Exceptions	Weight (Sub. to Corr.)	Class or Rate
1		WATER SAMPLE REF:PO#4500431902	34 LBS	
		19X11X14		
		NOTE: SAME DAY DELIVERY		



DC 422
7/31

Freight charges are PREPAID unless marked collect.
CHECK BOX IF COLLECT ☐

FOR FREIGHT COLLECT SHIPMENTS:
If this shipment is to be delivered to the consignee, without recourse on the consignor, the consignor shall sign the following statement:

The carrier may decline to make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)
Driver: [signature] Date: [illegible]
Trk #: 1030 Trlr #:

Received in good order except noted:
[signature]
Linda D. Rizzo
Print Name Date

SHIPPER: SILTRONIC CORPORATION
STREET & CITY: 7200 NW FRONT AVENUE PORTLAND, OR 97210

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding NDV PER

SHIPPER'S SIGNATURE [signature] DATE SHIPPED 7/31/06

Mark "X" to designate Hazardous Materials as defined on DOT Regulations

Liability Limitation for loss or damage on this shipment may be applicable. See 49 U.S.C. § 14706(c)(1)(A) and (B).

Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation with ordinary care. See Sec. 2(e) of NMFC item 380.

SHIPPING REQUEST FORM

Ship To: Aquatic Toxicology Laboratory
Company Name

2300 NW Walnut
Street Address

Suite/Room Number

Corvalis, Oregon 97330-3535
City, State, Country, Zip Code

Attn: Mike Stanaway Phone: 541-758-0265
Phone Number Required for International Shipments

Sender: Dianne Irish Ext: 7274

Cost Center/P.O.# 4500431902

Number of Pieces: 1

Description: Water for Bioassay

Special Instructions:

Service Level:

Required for International Shipments

Customs Value: $ Origin

To Be Completed by Shipping Personnel

Skids Boxes Lbs x x Dims

All shipments are PREPAID unless otherwise noted by requestor. COLLECT shipments require consignee's account Number

N:P&L-Distribution Logistics Team-DLT Forms-Shipping Request Form.doc
Revision Date: 08/03/05 7:08 AM

SCOEPA00026822

SHIPPING REQUEST FORM

Ship To: CH2MHill, Incorporated
Company Name

2300 NW Walnut Boulevard
Street Address

Aquatic Toxicology Laboratory
Suite/Room Number

Corvallis Oregon 97330
City, State, Country, Zip Code

Attn: mike Stanaway Phone: 541-752-4271
Phone Number Required for International Shipments

Sender: Thomas J. Rothschild Ext: 7374

Cost Center/P.O.# 75922 / 4500431902

Number of Pieces: 1

Description: Bioassay Sample

Special Instructions:

Service Level:

Required for International Shipments

Customs Value: $ Origin

To Be Completed by Shipping Personnel

Skids Boxes Lbs x x Dims

All shipments are PREPAID unless otherwise noted by requestor. COLLECT shipments require consignee's account Number

SCOEPA00026823

Siltronic Corporation

Purchase Order

PO Number: 4500431902
Date: 07/11/2006

cc; TOM R.
4144

CH2M HILL
PO Box 428
CORVALLIS OR 97339-0428

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 706311
FAX: 541-752-0276
TEL: 541-752-4271

B1641-01

We await your order acknowledgment for the following items:

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	3,550 AU	08/04/2006	Bioassay Analyses: Ceriodaphnia Dubia - Acute and Chronic (separate); Pimephales Promelas -Acute and Chronic (combined); Raphidocelis Subcapitata - Growth Test. Test is scheduled for 31 Jul thru 4 Aug 2006. Three samples are to be collected and delivered to CH2MHill in Corvallis, Oregon, one each day on 31 Jul 2006, 2 Aug 2006, and 4 Aug 2006. Contact person is Mike Stanaway, biologist, Aquatic Toxicology Laboratory, 2300 NW Walnut, Corvalis, Oregon 97330-3535. Phone 541-758-0235, Ext 3161. Delivery and/or Shipping will be accomplished by Siltronic's Shipping Department. Similar to Purchase Requisition #4500348001, dated 13 Jul 2005.	1.00	3,550.00

Total net value excl. tax USD 3,550.00

Dieter Balzat/503-219-7170
FAX:(503) 219-7596
EMAIL:Dieter.Balzat@siltronic.com

Siltronic Corporation

Purchase Order

PO Number: 4500431902 *Page* 02
Date: 07/11/2006

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PLS. SEE DETAILS BELOW
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B1641-01

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BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
September 6 through 13, 2006

RECEIVED SEP 2 8 2006
JR

CH2MHILL

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
September 6 through 13, 2006

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Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

September 26, 2006
Lab I.D. No. B1668

SCOEPA00026827

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INTRODUCTION

CH2M HILL conducted chronic and acute bioassays from September 6 through 13, 2006, on samples provided by the Siltronics Corporation, Portland, Oregon. The tests were conducted using the water flea (*Ceriodaphnia dubia*), the fathead minnow (*Pimephales promelas*), and algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum)*.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. EPA/600/4-91/002, July 1994 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

The acute test was performed according to: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F; and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

Additional guidance was provided by:

- *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (EPA 2002); EPA-821-R-02-013.
- *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (EPA June 2000), EPA 833-R-00-003.
- *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*, (EPA July 2000), EPA 821-B-00-004.
- *Reasonable Potential Analysis for Toxic Pollutants, Internal Management Directive*, Oregon Department of Environmental Quality (September 2005).

A deviation from the cited protocol was a temperature deviation in the sampling procedures. See notation in Sample Collection below

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TEST ORGANISMS

The *Ceriodaphnia dubia* were obtained from CH2M HILL's in-house cultures and were less than 24 hours old for the acute test and less than 24 hours old and within an 8-hour age range for the chronic test. The fathead minnows were obtained from Aquatox Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. The *Raphidocelis* was obtained from CH2M HILL's in-house cultures and were 6 days old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (1994). The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used was reconstituted, moderately hard water with a total hardness of 80 to 100 mg/L as $CaCO_3$ and an alkalinity of 60 to 70 mg/L as $CaCO_3$. The dilution water used for the algae tests was reconstituted, moderately hard water with nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to use.

TEST CONCENTRATIONS

The concentrations for the acute test were 1.90, 3.75, 7.50, 15.0, 30.0 percent effluent with dilution water for the control. For the acute *Ceriodaphnia dubia* test, 20 organisms per concentration were used with four test vessels per concentration and five organisms per vessel.

The concentrations tested in the chronic tests were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent and dilution water for the control. For the chronic *Ceriodaphnia dubia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel. For the fathead minnow chronic test, 10 organisms per chamber, with four chambers per concentration for a total of 40 organisms per concentration were used. The algae test was run with four replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

Samples were collected by Siltronics Corporation personnel on September 6, 8, and 11, 2006. The samples were shipped by courier to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on September 6, 8, and 11, 2006, and tests were initiated within 36 hours of sample collection. All samples were received within 4 hours of sample collection and were 7.6, 8.9 and 8.4 °C on arrival, respectively. EPA recommends cooling the samples to 4 °C during composite sample collection and shipping. On receipt, the samples were stored in the dark at 4°C until test solutions were prepared and tested. Chain of Custody for sample collection is provided in Appendix C.

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SAMPLE PREPARATION

Samples used during these tests were filtered through a 60 μm net upon arrival and temperature was adjusted prior to each daily renewal.

The samples used for the algae test had nutrients, including EDTA, added and was passed through a 0.45 micron filter prior to test initiation.

MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

The acute test was analyzed at initiation for dissolved oxygen, pH, and conductivity, and every 24 hours thereafter for mortality, dissolved oxygen, and pH. Conductivity was again taken at test termination. Temperature was monitored daily and in the incubator or waterbath continuously throughout the testing period.

For the fathead minnow and *Ceriodaphnia dubia* chronic tests, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in all the concentrations. Conductivity was measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was measured daily in the chronic tests. According to EPA (1994), *Ceriodaphnia dubia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia dubia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored in prerenewal solutions daily and in the incubator or waterbath continuously throughout the testing period.

For the chronic algae, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity were measured in the control, low, middle, and high test concentrations at test initiation. *Raphidocelis subcapitata* growth was determined by cell counts using a Coulter Counter. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period.

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DATA ANALYSIS

The effects measured during the *Ceriodaphnia dubia* acute test included survival over the exposure period. The acute dual endpoint test data included survival over the initial 48 hour exposure period in the fathead minnow chronic test. The statistical analyses performed were those outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F, using CETIS version 1.1.2. For definitive tests, Dunnett's Procedure or Bonferroni T-test was used to compare the survival data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data. LC_{50} values (the concentration of sample causing a 50 percent reduction in survival) were calculated for the acute tests using Probit, Trimmed Spearman-Karber, or Linear Interpolation statistical methods.

The effects measured during the *Ceriodaphnia dubia* chronic test included survival and reproduction over the exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the exposure period. The effect measured during the algae test was algae growth response. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-89/001, CETIS version 1.1.2. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the reproduction or growth data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

IC_{25} values (the concentration of sample causing a 25 percent reduction in biological measurement, e.g. growth) were calculated for growth effects in the chronic tests.

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RESULTS AND DISCUSSION

ACUTE RESULTS

The raw data sheets are presented in Appendix A and the results are summarized in Table 1 below. The survival in the 30 percent sample was 90.0 percent for the *Ceriodaphnia dubia* acute test.

Table 1
Summary of Acute Results
Percent Survival

Concentration (%)	0 hr	24 hr	48 hr
Ceriodaphnia dubia			
Control	100	100	100
1.90	100	100	100
3.75	100	100	95
7.50	100	95	95
15.0	100	100	95
30.0	100	100	90

The test resulted in no statistically significant difference in any effluent concentration tested when compared to the control for the *Ceriodaphnia dubia* test. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30 and greater than 30 percent effluent.

The LC_{50} value (the concentration of sample causing a 50 percent reduction in survival) was calculated on the *C. dubia* survival. The LC_{50} value was greater than 30 percent effluent.

The dissolved oxygen concentration remained at 40 percent saturation or greater throughout the test period. Test temperatures remained in the range of 20±1°C. The test proceeded without interruption or incidence that could have affected test results.

The 48 hour dual endpoint (deriving of the acute mortality results from the chronic test) resulted in no statistically significant difference between the control and any effluent concentrations tested for the fathead minnow test. The NOEC and LOEC were 30 and greater than 30 percent effluent. The LC_{50} value calculated on fathead minnow survival was greater than 30 percent effluent.

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CHRONIC BIOASSAYS

Table 2 summarizes the survival and growth data for the fathead minnow chronic test.

Table 2
Summary of Chronic Results
Fathead Minnow

Sample Concentration (%)	Percent Survival	Mean Dry Weight Per Fish (mg)
Control	97.5	0.858
1.90	95.0	0.784
3.75	100	0.788
7.50	92.5	0.781
15.0	95.0	0.803
30.0	100	0.860

The fathead minnow test results showed no statistically significant reduction in survival or growth at any effluent concentration tested when compared to the control. Control survival was 97.5 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration LOEC) were 30 and greater than 30 percent effluent, respectively.

The IC_{25} value for growth is independent of alpha level and was calculated as greater than 30 percent effluent.

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Table 3 summarizes the survival and reproduction data for the *Ceriodaphnia dubia* test.

Table 3
Summary of Chronic Results
Ceriodaphnia dubia

Concentration (%)	Percent Survival	No. Young Per Adult
Control	100	30.5
1.90	100	30.9
3.75	100	32.8
7.50	80	26.5
15.0	100	25.3
30.0	50	1.9 [a]

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Dunnett's Test.

The *Ceriodaphnia dubia* test results indicated a statistically significant reduction in survival at the 30 percent effluent concentration when compared to the control. The NOEC and the LOEC were 15 and 30 percent effluent, respectively.

The IC_{25} value calculated on *Ceriodaphnia dubia* reproduction was 16.1 percent effluent.

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Table 4 summarizes the 96-hour algae growth response data for the *Raphidocelis subcapitata* test.

Table 4 **Summary of Chronic Results** ***Raphidocelis subcapitata***	
Concentration (%)	**Growth (Cells/ml x 10^6)**
Control	3.828
1.90	4.195
3.75	4.308
7.50	3.837
15.0	3.803
30.0	3.412

The *Raphidocelis subcapitata* test results indicated no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The NOEC and the LOEC were 30 and greater than 30 percent effluent, respectively.

The IC_{25} value calculated on *Raphidocelis subcapitata* growth was greater than 30 percent effluent.

The dissolved oxygen levels in the chronic tests remained above 40 percent saturation throughout the test periods and test temperatures remained at 25±1°C. The tests proceeded without any interruption that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted using sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA 1994), with the exception of the chronic *Ceriodaphnia dubia* survival, which was slightly out of the cusum chart range.

However, EPA recognizes that it is expected that 1 out every 20 tests will fall outside of the control limits due only to chance variation (EPA/600/4-91/002, Section 4.16). The previous 59 chronic *Ceriodaphnia dubia* survival reference toxicant tests were within cusum chart range. EPA also recognizes that laboratories that develop very narrow control limits may be unfairly penalized if a test which falls just outside the control limits is rejected *de facto*. For this reason, the width of the control chart limits should be considered by the permitting authority in determining whether the outliers should be rejected. CH2M Hill's reference toxicant control chart coefficient of variation was 0.06 percent for the September 2006 reftox test indicating the control chart width is narrow (see attached chart in Appendix B). EPA 833-R-00-003 June 2000, *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (Table B-2), lists a control chart coefficient of variation of 0.11 percent as the 25th quartile for the within-laboratory reference toxicant *Ceriodaphnia dubia* chronic survival endpoint. This can also be stated as 25 percent of the laboratories involved in the study had control chart coefficients of variance equal to or greater than 0.11.

The IC_{25} values, LC_{50} values, and control chart limits are listed in Tables 5 and 6. The data sheets for the reference toxicant tests are provided in Appendix B.

Table 5
Acute Reference Toxicant Tests (g/L)

Species	LC_{50}	Control Chart
Pimephales promelas (FHM 1320)	7.5	6.5 to 8.0
Ceriodaphnia dubia	2.4	1.7 to 2.8

Table 6
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
Pimephales promelas (survival)	4.3	1.5 to 4.9
Pimephales promelas (growth)	3.2	1.4 to 3.3
Ceriodaphnia dubia (survival)	1.80	1.38 to 1.77
Ceriodaphnia dubia (reproduction)	0.53	0.29 to 0.80
Raphidocelis subcapitata (growth)	1.35	0.29 to 2.38

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APPENDIX A
RAW DATA SHEETS

CH2M HILL *TOXICITY TEST: SAMPLE, TEST ORGANISM, AND DILUTION WATER DATA*

Client: Siltronics Corporation — Test Initiation: Date 9-6-2006

Contact: Tom Rothschild (503) 219-7374 — Test Termination: Date 9-13-2006

Technician(s): Pittenger, Unin, Johnson, Dalta-atha, Stanaway

Sample ID Number	Field ID	Collected Date (mm/dd/yy)	Collected Time	Date Received	Date of 1st Use	Total Residual Chlorine (mg/l) as Rc'vd	as Tested	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1668 -01	06-76	9-6-2006	0800	9-6-2006	9-6-2006	0.00	-	0.82	388	32
-02	06-80-B-9/06	9-8-2006	0700	9-8-2006	9-8-2006	0.04	-	1.00	204	28
-03	06-81-B-9/06	9-11-06	0800	9-11-06	9-11-06	0.01	-	1.18	360	48

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	2694	88	64
Recon MH (Algae)	2690	104	74

Comments: ☑ Indicates the action was taken, (☐= action not taken):

☑ Sample(s) filtered through 60 µm mesh prior to use.

☑ Subsample for algae test had nutrients added and was 0.45 mg/L filtered

Test Species Information	Cd # 1970 *Ceriodaphnia dubia* Chronic	FHM # 1320 *Pimephales promelas* Chronic	Rs # 431 *Raphidocelis subcapitata* Chronic	Cd # 1971 *Ceriodaphnia dubia* Acute	
Organism Age at Initiation	<24 hrs, within an 8 hr span	<24 hrs	6 Days	<24 hrs	
Test Container Size	30 ml	400 ~~800~~ ml	125 ml	30 ml	
Test Volume	15 ml	250 ~~500~~ ml	50 ml	25 ml	
Feeding: Type and Amount	0.10 ml Algae and 0.10 ml YCT daily	0.15 ml *Artemia*, 2 x Daily	1 ml/L Nutrients, incl. EDTA, added	Algae and YCT during acclimation	
Aeration: In Test Chambers via Slow Bubble :	☒ None ☐ Prior to use	☒ None ☐ Prior to use ☐ @ ____ hrs	☒ None ☐ Prior to use	☒ None ☐ Prior to use	
Dilution Water ID#	2694	2694	2690	2694	
Acclimation Period	<24 hrs	<24 hrs	6 Days	<24 hrs	
Test Location	# 5	# 4	# 2	# 7	
Organism Source	In-House	Aquatox	In-House	In-House	
Size	-	-	-	-	
Loading Rate	-	-	-	-	

Water Quality Meters Used/ID#: Dissolved Oxygen # 2 pH # 3 Conductivity # 2

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation Sample ID #: B1668-01

Sample Description:

Test Species: *Ceriodaphnia dubia* ID#: Cd 1971

Beginning, Date: 9-6-2006 Time: 1215

Ending, Date: 9-8-2006 Time: 1100

Technician: 0 hr DW 24 hr (TP) 48 hr (TP) 72 hr ____ 96 hr ____

Time: 0 hr 1215 24 hr 1000 48 hr 1100 72 hr ____ 96 hr ____

Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			8.2	8.5/8.5	8.5			8.1	7.8/8.2	7.7			20.2	19.6	20.3			289	291/286	287		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
1.90	A	5	5	5			8.2	8.5/8.5	8.5			8.1	7.8/8.2	7.8			19.9	19.6	20.3							
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
3.75	A	5	5	5			8.3	8.5/8.6	8.5			8.1	7.8/8.2	7.8			19.8	19.6	20.3							
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	5																						

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation Sample ID #: B1668-01 Beginning, Date: 9-6-2006 Time: 1215

Sample Description: Ending, Date: 9-8-2006 Time: 1100

Technician: 0 hr DW 24 hr [illegible] 48 hr [illegible] 72 hr ____ 96 hr ____

Test Species: *Ceriodaphnia dubia* ID#: Cd 1971 Time: 0 hr 1215 24 hr 1000 48 hr 1100 72 hr ____ 96 hr ____

Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
7.50	A	5	5	5			8.3	8.7/8.5	8.6			8.1	7.8/8.2	7.9			20.0	19.5	20.2							
	B	5	5	5																						
	C	5	5	5																						
	D	5	4	4																						
15.0	A	5	5	5			8.4	8.7/8.6	8.6			8.0	7.8/8.0	7.8			20.1	19.4	20.1							
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	5																						
30.0	A	5	5	5			8.4	8.7/8.7	8.7			7.9	7.8/7.8	7.8			19.9	19.4	20.1			580	574/602	612		
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	4																						

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 14 Sep-06 10:35 AM
Test Link: 07-9899-4806/B166801cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	14-0665-0976	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	06 Sep-06 12:15 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	08 Sep-06 11:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	06 Sep-06 12:15 PM	**Brine:**			

Sample No:	12-6268-5775	**Code:**	B1668-01	**Client:**	
Sample Date:	05 Sep-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Sep-06 10:45 AM	**Source:**	Siltronic Corporation		
Sample Age:	28h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-8229-7942	48h Proportion Survived	30	> 30	N/A	15.00%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
05-6799-1496	48h Proportion Survived	50	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-6799-1496	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria
05-8229-7942	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
7.5		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
15		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
30		4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%

48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	0.80000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	0.80000
15		1.00000	0.80000	1.00000	1.00000
30		1.00000	0.80000	1.00000	0.80000

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CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	07-9899-4806	07-9899-4806	14 Sep-06 10:35 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	15.00%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	4	Non-Significant Effect
		3.75	16	10	0.6105	4	Non-Significant Effect
		7.5	16	10	0.6105	4	Non-Significant Effect
		15	16	10	0.6105	4	Non-Significant Effect
		30	14	10	0.3451	4	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0401681	0.008034	5	0.78	0.57399	Non-Significant Effect
Error	0.1843007	0.010239	18			
Total	0.22446877	0.0182725	23			

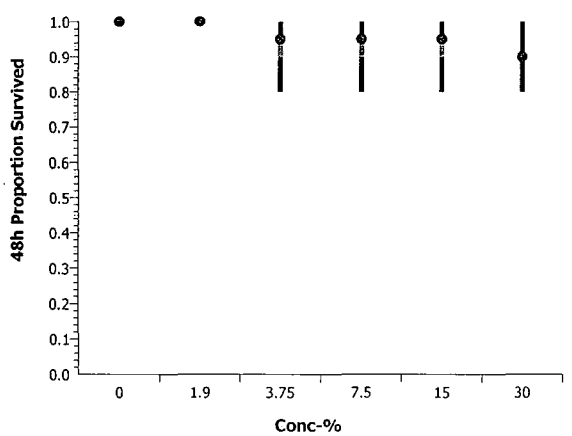
ANOVA Assumptions

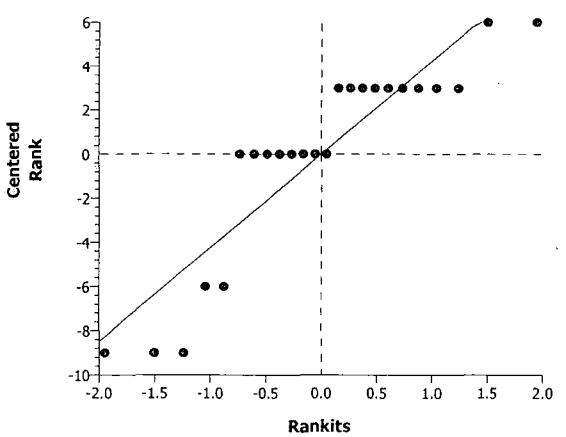
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	1.13333	4.24788	0.37861	Equal Variances
Distribution	Shapiro-Wilk W	0.82386		0.00074	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	15	15	15	0
1.9		4	1.00000	1.00000	1.00000	0.00000	15	15	15	0
3.75		4	0.95000	0.80000	1.00000	0.10000	12	3	15	6
7.5		4	0.95000	0.80000	1.00000	0.10000	12	3	15	6
15		4	0.95000	0.80000	1.00000	0.10000	12	3	15	6
30		4	0.90000	0.80000	1.00000	0.11547	9	3	15	6.9282

Graphics





SCOEPA00026843

CETIS Analysis Detail

Report Date: 14 Sep-06 10:35 AM
Analysis: 05-6799-1496/B166801cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	07-9899-4806	07-9899-4806	14 Sep-06 10:35 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	> 30	N/A	N/A

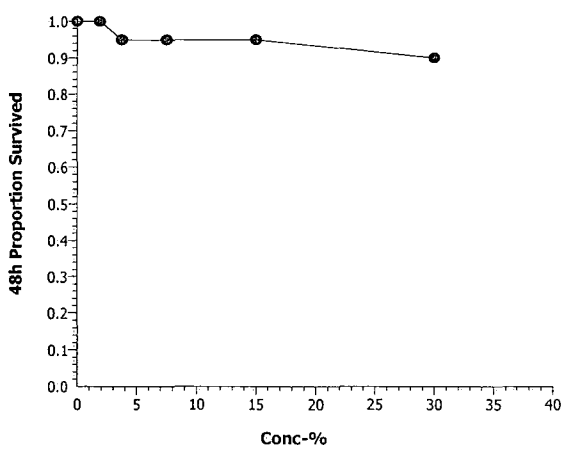
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
3.75		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
7.5		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
15		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
30		4	0.90000	0.80000	1.00000	0.02357	0.11547	18	20

Data 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	1.00000	1.00000	1.00000	1.00000						
1.9		1.00000	1.00000	1.00000	1.00000						
3.75		1.00000	0.80000	1.00000	1.00000						
7.5		1.00000	1.00000	1.00000	0.80000						
15		1.00000	0.80000	1.00000	1.00000						
30		1.00000	0.80000	1.00000	0.80000						

Graphics



SCOEPA00026844

CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics Corporation — Date Initiated: 9-6-06 — Time: 1330

Sample Description: B1668 - — Date Terminated: 9-13-06 — Time: 1145

Technician: Day 0 NJ Day 1 NJ Day 2 NJ Day 3 MW Day 4 MW Day 5 NJ Day 6 (TP) Day 7 (TP)

Time: Day 0 1330 Day 1 0900 Day 2 1310 Day 3 1300 Day 4 1530 Day 5 1310 Day 6 0920 Day 7 1145

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post	(pre)	Post
Control	0	10	10	10	10		8.1		8.1	25.4	289
	1	10	10	10	10	7.1	8.1	7.4	8.1	24.4	
	2	10	10	10	10	7.1	8.2	7.3	8.0	24.5	288
	3	10	10	10	F9*	6.7	8.1	7.1	7.9	24.3	
	4	10	10	10	9	7.1	8.0	7.5	7.9	24.5	
	5	10	10	10	9	7.2	8.1	7.4	7.8	25.2	296
	6	10	10	10	9	6.4	8.0	7.4	7.7	24.9	
	7	10	10	10	9	6.3		7.3		25.3	
1.90 %	0	10	10	10	10		8.2		8.1	25.4	
	1	10	10	10	10	7.0	8.2	7.4	8.1	24.4	
	2	10	10	10	10	7.0	8.2	7.4	8.0	24.8	
	3	10	10	10	10	6.6	8.1	7.1	7.9	24.4	
	4	10	10	10	10	7.1	8.0	7.4	7.8	24.6	
	5	9F	10	10	10	7.1	8.2	7.4	7.9	25.3	
	6	8F	10	10	10	10.4	8.0	7.4	7.7	24.9	
	7	8	10	10	10	6.3		7.3		25.4	
3.75 %	0	10	10	10	10		8.2		8.1	25.4	
	1	10	10	10	10	6.8	8.2	7.5	8.1	24.4	
	2	10	10	10	10	7.2	8.2	7.4	8.1	24.8	
	3	10	10	10	10	6.6	8.1	7.1	7.8	24.3	
	4	10	10	10	10	7.1	8.0	7.5	7.9	24.7	
	5	10	10	10	10	6.9	8.2	7.4	7.9	25.3	
	6	10	10	10	10	6.4	8.2	7.4	7.8	24.7	
	7	10	10	10	10	6.3		7.3		25.4	
7.50 %	0	10	10	10	10		8.2		8.1	25.3	
	1	10	9	10	10	6.8	8.2	7.4	8.1	24.3	
	2	10	9	10	10	7.2	8.2	7.5	8.1	24.8	
	3	10	9	10	10	6.6	8.2	7.1	7.8	24.4	
	4	10	9	10	10	7.1	8.0	7.4	7.9	24.7	
	5	9F	9	10	10	7.0	8.2	7.4	7.8	25.1	
	6	9	9	10	9F	6.3	8.2	7.5	7.8	24.3	
	7	9	9	10	9	6.3		7.3		25.5	
15.0 %	0	10	10	10	10		8.2		8.0	25.3	
	1	10	10	10	10	6.8	8.2	7.4	7.9	24.4	
	2	10	10	10	10	7.2	8.2	7.5	8.0	24.7	
	3	9F	10	10	10	6.6	8.2	7.1	7.8	24.5	
	4	9	10	10	10	7.1	8.1	7.4	7.9	24.6	
	5	9	10	10	10	6.9	8.2	7.4	7.8	25.2	
	6	9	10	10	10	6.2	8.2	7.5	7.8	24.3	
	7	9	10	10	9*	6.3		7.2		25.5	
30.0 %	0	10	10	10	10		8.2		7.9	25.3	577
	1	10	10	10	10	6.8	8.2	7.4	7.8	24.6	
	2	10	10	10	10	7.2	8.2	7.4	7.9	24.7	468
	3	10	10	10	10	6.6	8.2	7.1	7.8	24.4	
	4	10	10	10	10	7.1	8.1	7.3	7.9	24.5	
	5	10	10	10	10	7.0	8.2	7.3	7.7	25.3	632
	6	10	10	10	10	6.3	8.2	7.4	7.8	24.3	
	7	10	10	10	10	6.4		7.1		25.6	

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.

"F" = fungus noted on dead organisms. "M" = organism missing, start count reduced.

* Fish dead (TP) 9/13/06 above water

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics | Species ID# FHM 1320

Lab ID: B 1668 | Start Date: 9/6/2006

Sample Description:

Technician: TP NJ

Date: 9/14/2006 9/4/2006

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1173.29	1165.11	10
	B	1145.00	1135.29	10
	C	1143.98	1135.11	10
	D	1166.74	1159.18	9
1.90%	A	1131.12	1124.01	8
	B	1128.99	1121.25	10
	C	1131.11	1122.48	10
	D	1138.31	1130.44	10
3.75%	A	1125.75	1117.71	10
	B	1134.90	1126.62	10
	C	1194.51	1186.90	10
	D	1195.94	1188.36	10
7.5%	A	1144.78	1137.77	9
	B	1139.74	1132.26	9
	C	1128.24	1118.74	10
	D	1154.37	1147.11	9
15%	A	1149.58	1141.69	9
	B	1172.82	1163.78	10
	C	1171.11	1162.78	10
	D	1133.59	1126.75	9
30%	A	1153.90	1144.29	10
	B	1126.25	1117.48	10
	C	1252.99	1244.93	10
	D	1168.42	1160.48	10
	A			
	B			
	C			
	D			

weigh to 0.01 mg

SCOEPA00026846

CETIS Test Summary

Report Date: 14 Sep-06 10:37 AM
Test Link: 00-6197-8852/B166801ppc

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	12-9039-4263	**Test Type:**	Growth-Survival (7d)	**Duration:**	6d 22h
Start Date:	06 Sep-06 01:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	13 Sep-06 11:45 AM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	06 Sep-06 01:30 PM	**Brine:**			

Sample No:	12-6268-5775	**Code:**	B1668-01	**Client:**	
Sample Date:	05 Sep-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Sep-06 10:45 AM	**Source:**	Siltronic Corporation		
Sample Age:	29h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
16-3453-4940	2d Proportion Survived	30	> 30	N/A	4.57%	Steel Many-One Rank
08-1585-5507	7d Proportion Survived	30	> 30	N/A	9.33%	Dunnett's Multiple Comparison
08-1406-6748	Mean Dry Biomass-mg	30	> 30	N/A	16.40%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
20-9638-9787	2d Proportion Survived	50	> 30	N/A	N/A	Linear Interpolation
01-4514-4832	Mean Dry Biomass-mg	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-1585-5507	7d Proportion Survived	Control Response	0.975	0.8 - NL	Yes	Passes acceptability criteria
01-4514-4832	Mean Dry Biomass-mg	Control Response	0.858	0.25 - NL	Yes	Passes acceptability criteria
08-1406-6748	Mean Dry Biomass-mg	Control Response	0.858	0.25 - NL	Yes	Passes acceptability criteria
08-1406-6748	Mean Dry Biomass-mg	PMSD	0.16403	0.12 - 0.3	Yes	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1.9		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	0.92500	0.90000	1.00000	0.02500	0.05000	5.41%
15		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.85800	0.75599	0.97100	0.04620	0.09240	10.77%
1.9		4	0.78375	0.71100	0.86300	0.03120	0.06239	7.96%
3.75		4	0.78775	0.75800	0.82800	0.01704	0.03409	4.33%
7.5		4	0.78125	0.70100	0.95000	0.05706	0.11413	14.61%
15		4	0.80250	0.68400	0.90399	0.04606	0.09212	11.48%
30		4	0.85950	0.79401	0.96100	0.03847	0.07694	8.95%

SCOEPA00026847

CETIS Test Summary

Report Date: 14 Sep-06 10:37 AM
Test Link: 00-6197-8852/B166801ppc

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	0.90000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	0.90000
1.9		0.80000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		0.90000	0.90000	1.00000	0.90000
15		0.90000	1.00000	1.00000	0.90000
30		1.00000	1.00000	1.00000	1.00000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.81801	0.97100	0.88700	0.75599
1.9		0.71100	0.77400	0.86300	0.78701
3.75		0.80400	0.82800	0.76100	0.75800
7.5		0.70100	0.74800	0.95000	0.72600
15		0.78900	0.90399	0.83300	0.68400
30		0.96100	0.87700	0.80599	0.79401

SCOEPA00026848

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	00-6197-8852	00-6197-8852	14 Sep-06 10:37 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	4.57%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	18	10	0.8333	4	Non-Significant Effect
		3.75	18	10	0.8333	4	Non-Significant Effect
		7.5	16	10	0.6105	4	Non-Significant Effect
		15	18	10	0.8333	4	Non-Significant Effect
		30	18	10	0.8333	4	Non-Significant Effect

ANOVA Table

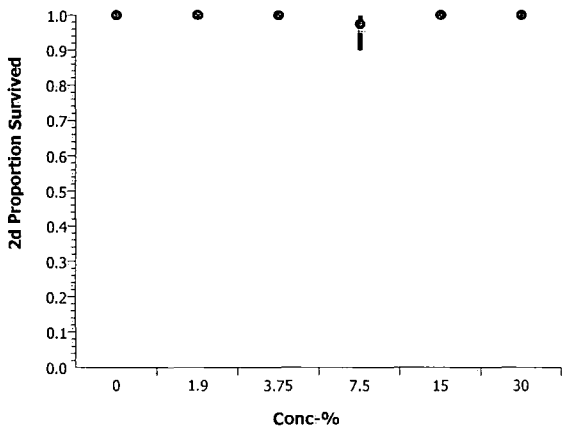
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0055332	0.001107	5	1.00	0.44569	Non-Significant Effect
Error	0.0199195	0.001107	18			
Total	0.02545269	0.0022133	23			

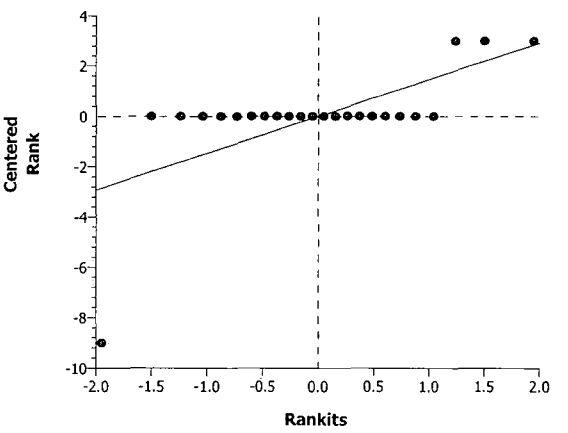
ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	1.00000	4.24788	0.44569	Equal Variances
Distribution	Shapiro-Wilk W	0.46339		0.00000	Non-normal Distribution

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
1.9		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
3.75		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
7.5		4	0.97500	0.90000	1.00000	0.05000	10	1	13	6
15		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
30		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0

Graphics





SCOEPA00026849

Report Date: 14 Sep-06 10:37 AM
Analysis: 20-9638-9787/B166801ppc

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	00-6197-8852	00-6197-8852	14 Sep-06 10:37 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	> 30	N/A	N/A

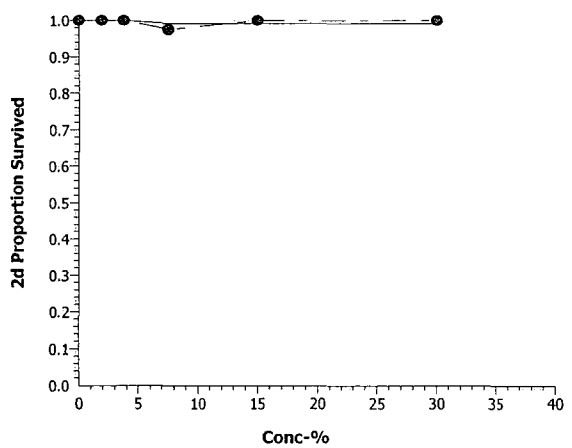
Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
7.5		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Data 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	1.00000	1.00000	1.00000	1.00000						
1.9		1.00000	1.00000	1.00000	1.00000						
3.75		1.00000	1.00000	1.00000	1.00000						
7.5		1.00000	0.90000	1.00000	1.00000						
15		1.00000	1.00000	1.00000	1.00000						
30		1.00000	1.00000	1.00000	1.00000						

Graphics



SCOEPA00026850

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	00-6197-8852	00-6197-8852	14 Sep-06 10:37 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		30	>30	3.3333	N/A	9.33%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	0.57693	2.40711	0.6136	0.14801	Non-Significant Effect
		3.75	-0.6626	2.40711	0.9589	0.14801	Non-Significant Effect
		7.5	1.32523	2.40711	0.2885	0.14801	Non-Significant Effect
		15	0.66261	2.40711	0.5750	0.14801	Non-Significant Effect
		30	-0.6626	2.40711	0.9589	0.14801	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0476399	0.009528	5	1.26	0.32336	Non-Significant Effect
Error	0.1361064	0.007561	18			
Total	0.18374628	0.0170894	23			

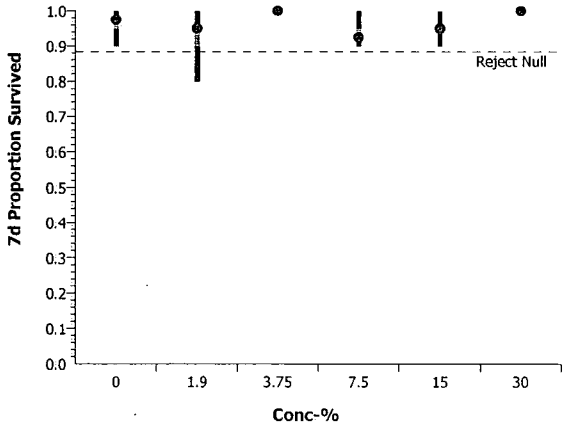
ANOVA Assumptions

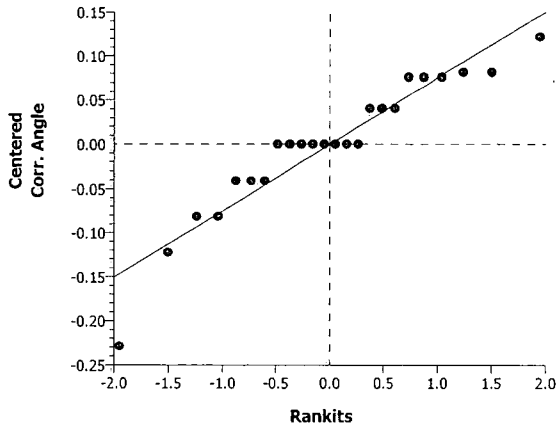
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	0.81942	4.24788	0.55165	Equal Variances
Distribution	Shapiro-Wilk W	0.91172		0.03843	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1.9		4	0.95000	0.80000	1.00000	0.10000	1.33580	1.10715	1.41202	0.15243
3.75		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
7.5		4	0.92500	0.90000	1.00000	0.05000	1.28979	1.24905	1.41202	0.08149
15		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
30		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Graphics





SCOEPA00026851

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	00-6197-8852	00-6197-8852	14 Sep-06 10:37 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.3333	N/A	16.40%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	1.26984	2.40711	0.3095	0.14074	Non-Significant Effect
		3.75	1.20147	2.40711	0.3365	0.14074	Non-Significant Effect
		7.5	1.31264	2.40711	0.2932	0.14074	Non-Significant Effect
		15	0.94926	2.40711	0.4444	0.14074	Non-Significant Effect
		30	-0.0257	2.40711	0.8408	0.14074	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0271756	0.005435	5	0.79	0.56730	Non-Significant Effect
Error	0.1230696	0.006837	18			
Total	0.15024519	0.0122723	23			

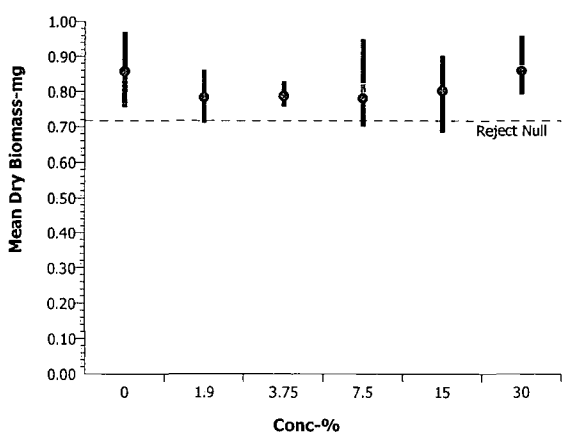
ANOVA Assumptions

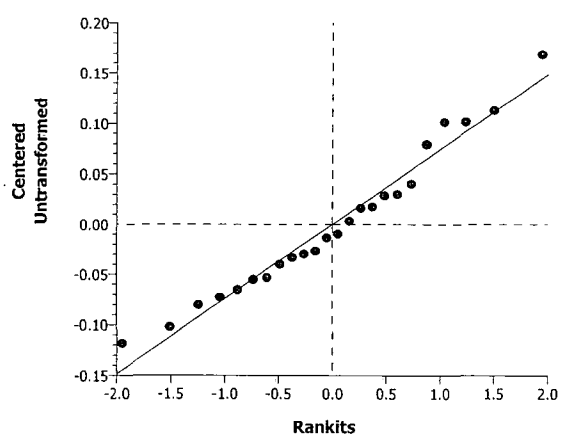
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	3.71007	15.08627	0.59187	Equal Variances
Distribution	Shapiro-Wilk W	0.96610		0.57225	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.85800	0.75599	0.97100	0.09240				
1.9		4	0.78375	0.71100	0.86300	0.06239				
3.75		4	0.78775	0.75800	0.82800	0.03409				
7.5		4	0.78125	0.70100	0.95000	0.11413				
15		4	0.80250	0.68400	0.90399	0.09212				
30		4	0.85950	0.79401	0.96100	0.07694				

Graphics





SCOEPA00026852

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	00-6197-8852	00-6197-8852	14 Sep-06 10:37 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5795186	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

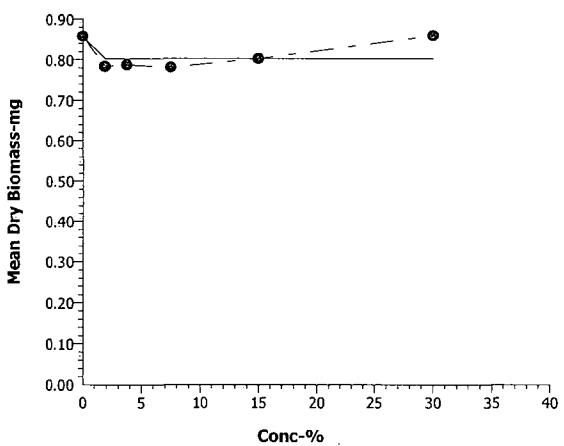
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.85800	0.75599	0.97100	0.01886	0.09240
1.9		4	0.78375	0.71100	0.86300	0.01274	0.06239
3.75		4	0.78775	0.75800	0.82800	0.00696	0.03409
7.5		4	0.78125	0.70100	0.95000	0.02330	0.11413
15		4	0.80250	0.68400	0.90399	0.01880	0.09212
30		4	0.85950	0.79401	0.96100	0.01571	0.07694

Data 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	0.81801	0.97100	0.88700	0.75599						
1.9		0.71100	0.77400	0.86300	0.78701						
3.75		0.80400	0.82800	0.76100	0.75800						
7.5		0.70100	0.74800	0.95000	0.72600						
15		0.78900	0.90399	0.83300	0.68400						
30		0.96100	0.87700	0.80599	0.79401						

Graphics



SCOEPA00026853

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics Corporation — Test Start Date: 9-6-2006

Sample Description: _____ — Sample ID#: B 1668

Ceriodaphnia Lot#: Cd 1970 — Statistician: [signature]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	26 AD?	33 AD?	26 AD?	30 AD?	18 AD?	33 AD?	33 AD?	34 AD?	37 AD?	35 AD?	10	30.5
1.90 %	14 AD?	40 AD?	31 AD?	27 AD?	25 AD?	30 AD?	34 AD?	31 AD?	39 AD?	38 AD?	10	309
3.75 %	31 AD?	24 AD?	27 AD?	32 AD?	30 AD?	34 AD?	39 AD?	35 AD?	36 AD?	40 AD?	10	328
7.50 %	16 AD?	28 AD?	36 AD?	21 AD?	26 AD?	16 AD? ✓	26 AD? ✓	27 AD?	38 AD?	31 AD?	8	265
15.0 %	15 AD?	23 AD?	36 AD?	26 AD?	22 AD?	24 AD?	31 AD?	32 AD?	14 AD?	30 AD?	10	253
30.0 %	0 AD? ✓	0 AD? ✓	0 AD? ✓	1 AD?	9 AD?	0 AD? ✓	0 AD?	0 AD? ✓	~~0~~ 4 ms AD?	~~0~~ 5 ms AD?	5	19

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-600-4-91-002 and EPA-821-R-02-013, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Siltronics Corporation — Test Initiation: Date: 9-6-2006 Time: 1215

Sample Description: — Test Termination: Date: 9-12-06 Time: 1300

Initial Sample ID #: B 1668 — Ceriodaphnia Lot#: Cd 1970

Technician: Day 1 (HP) Day 2 (HP) Day 3 (HP) Day 4 (HP) Day 5 DN Day 6 MS Day 7 ____

Time: Day 1 0830 Day 2 1450 Day 3 1100 Day 4 1346 Day 5 1310 Day 6 1300 Day 7 ____

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	6	6	5	6	7	5	5	6	3	10	52
	4	0	10	6	9	4	11	10	10	12	0	10	72
	5	12	0	0	0	9	15	0	0	0	12	10	48
	6	10	17	14	16	0	0	18	19	~~17~~ 19	20	10	133
	7												
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	6	6	5	6	7	6	5	5	6	10	52
	4	0	0	10	10	5	10	10	8	0	0	10	53
	5	4	12	15	12	14	13	0	0	14	13	10	97
	6	10	22	0	0	0	0	18	18	20	19	10	107
	7												
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	4	5	5	6	6	3	6	7	10	49
	4	0	7	6	8	11	13	13	0	0	0	10	58
	5	13	0	0	0	0	15	0	12	11	13	10	64
	6	14	14	17	19	14	0	30 BA MS	20	19	20	10	157
	7												
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	6	6	5	5	6	5	6	4	10	51
	4	0	7	0	3	6	11	7	8	10	0	10	52
	5	8	0	12	0	0	0/AD	13	0	0	9	9	42
	6	4AD	17	18	12	15	↓	0AD	14	22	18	~~8~~ 6	120
	7	↓						↓					
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	5	3	5	5	5	5	5	4	10	40
	4	1	8	11	8	7	8	9	11	0	0	10	63
	5	10	0	0	0	10	0	0	0	9	12	10	41
	6	4	12	20	15	0	11	17	16	0	14	10	109
	7												
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0/AD	0/AD	0	0	0	0/AD	0	0	0	0	7	0
	3	|	|	0	1	3	|	0	0	4	5	7	13
	4	|	|	0/AD	0	2	|	0	0	0	0	6	2
	5	|	|	|	0	0	|	0	0/AD	0	0	5	0
	6	|	|	|	0	4	|	0	↓	0	0	5	4
	7	↓	↓	↓			↓		↓				

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics Corporation | Initiated Date: 9-6-06 Time: 1215 | Adults Isolated Date: 9-5-06 Time: 0700

Sample Description: | Initial Sample ID #: B1668 | Neo's Collected Date: 9-5-06 Time: 1500

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	TP	TP	TP	TP	DW	MS	
Time	1215	0830	1450	1100	1345	1310	1300	

Percent	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	8.0 / 8.2	8.1 / 8.2	8.0 / 8.2	8.1 / 8.1	7.8 / 7.9	7.5 / —	—
1.90 %	8.1	7.9 / 8.2	8.0 / 8.2	8.0 / 8.1	8.1 / 8.1	7.8 / 7.9	7.5 / —	—
3.75 %	8.1	8.0 / 8.2	8.0 / 8.2	7.9 / 8.1	8.0 / 8.1	7.8 / 7.9	7.5 / —	—
7.50 %	8.1	8.0 / 8.2	8.0 / 8.2	8.0 / 8.1	8.0 / 8.1	7.8 / 7.9	7.2 / —	—
15.0 %	8.1	8.0 / 8.2	8.0 / 8.2	7.9 / 8.1	8.0 / 8.0	7.9 / 7.8	7.4 / —	—
30.0 %	8.1	8.0 / 8.2	8.0 / 8.2	8.0 / 8.1	8.0 / 8.2	7.9 / 7.8	7.4 / —	—

Percent	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.8	7.8 / 7.8	7.9 / 7.9	7.7 / 7.8	8.1 / 7.8	7.8 / 7.8	7.7 / —	—
1.90 %	7.9	7.7 / 7.9	7.9 / 7.9	~~7.5~~ 7.8 / 7.8	8.1 / 7.8	7.8 / 7.8	7.7 / —	—
3.75 %	7.8	7.7 / 7.9	8.4 / 7.8	7.8 / 7.8	8.1 / 7.8	7.8 / 7.8	7.8 / —	—
7.50 %	7.8	7.7 / 7.9	8.4 / 7.8	7.8 / 7.8	8.0 / 7.8	7.8 / 7.7	7.7 / —	—
15.0 %	7.7	7.8 / 7.8	8.4 / 7.7	7.8 / 7.7	8.0 / 7.7	7.8 / 7.6	7.7 / —	—
30.0 %	7.6	7.8 / 7.6	8.4 / 7.6	7.8 / 7.6	8.0 / 7.6	7.7 / 7.6	7.7 / —	—

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.6 / 296	25.3 /	25.7 / ~~275~~ ~~325~~	25.1 /	25.4 /	25.2 / 299	25.0 /	—
1.90 %	25.5 / -	25.4 / -	24.6 / -	25.3 / -	25.4 / -	25.0 / -	25.1 / -	—
3.75 %	25.5 / -	25.5 / -	24.5 / -	25.3 / -	25.3 / -	25.6 / -	25.3 / -	—
7.50 %	25.4 / -	25.3 / -	24.9 / -	25.3 / -	25.5 / -	25.4 / -	25.4 / -	—
15.0 %	25.4 / -	25.2 / -	25.3 / -	25.3 / -	25.6 / -	25.1 / -	25.2 / -	—
30.0 %	25.5 / 584	25.1 /	24.9 / 467 ~~650~~	25.4 /	25.7 /	25.6 / 637	25.1 /	—

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

SCOEPA00026856

CETIS Test Summary

Report Date: 14 Sep-06 10:41 AM
Test Link: 12-0815-1425/B166801cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	03-6583-2089	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 0h
Start Date:	06 Sep-06 12:15 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	12 Sep-06 01:00 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	06 Sep-06 12:15 PM	**Brine:**			

Sample No:	12-6268-5775	**Code:**	B1668-01	**Client:**	
Sample Date:	05 Sep-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Sep-06 10:45 AM	**Source:**	Siltronic Corporation		
Sample Age:	28h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
00-8395-6572	6d Proportion Survived	30	> 30	N/A	N/A	Fisher Exact/Bonferroni-Holm
18-3842-5579	Reproduction	15	30	21.213	21.00%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
14-3740-1495	Reproduction	25	16.1218	7.213115	17.79005	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
14-3740-1495	Reproduction	Control Response	30.5	15 - NL	Yes	Passes acceptability criteria
18-3842-5579	Reproduction	Control Response	30.5	15 - NL	Yes	Passes acceptability criteria
18-3842-5579	Reproduction	PMSD	0.21004	0.13 - 0.47	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%
15		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		10	0.50000	0.00000	1.00000	0.16667	0.52705	105.41

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.5	18	37	1.7966	5.6814	18.63%
1.9		10	30.9	14	40	2.4606	7.7810	25.18%
3.75		10	32.8	24	40	1.5972	5.0509	15.40%
7.5		10	26.5	16	38	2.3488	7.4274	28.03%
15		10	25.3	14	36	2.2757	7.1964	28.44%
30		10	1.9	0	9	0.9826	3.1073	163.54

SCOEPA00026857

CETIS Test Summary

Report Date: 14 Sep-06 10:41 AM
Test Link: 12-0815-1425/B166801cdc

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	0.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30		0.00000	0.00000	0.00000	1.00000	1.00000	0.00000	1.00000	0.00000	1.00000	1.00000

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	26	33	26	30	18	33	33	34	37	35
1.9		14	40	31	27	25	30	34	31	39	38
3.75		31	24	27	32	30	34	39	35	36	40
7.5		16	28	36	21	26	16	26	27	38	31
15		15	23	36	26	22	24	31	32	14	30
30		0	0	0	1	9	0	0	0	4	5

SCOEPA00026858

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	12-0815-1425	12-0815-1425	14 Sep-06 10:40 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact/Bonferroni-Holm	C > T	Untransformed		30	>30	3.3333	N/A	

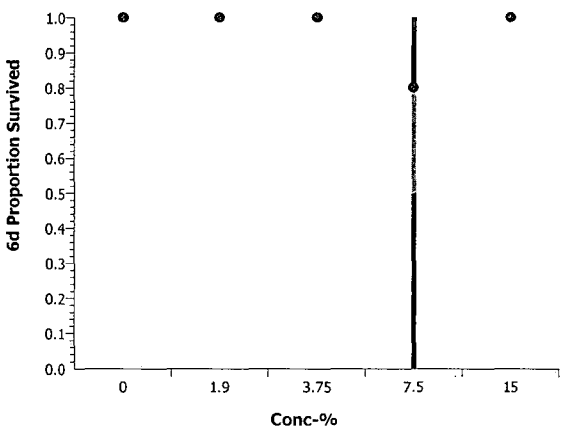
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		1.9	1.00000	1.00000	Non-Significant Effect
Dilution Water		3.75	1.00000	1.00000	Non-Significant Effect
Dilution Water		7.5	0.23684	0.94737	Non-Significant Effect
Dilution Water		15	1.00000	1.00000	Non-Significant Effect
Dilution Water		30	0.01625	0.08127	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		10	0	10
3.75		10	0	10
7.5		8	2	10
15		10	0	10
30		5	5	10

Graphics



SCOEPA00026859

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	12-0815-1425	12-0815-1425	14 Sep-06 10:41 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		15	30	6.6667	21.213	21.00%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	-0.1429	2.28915	0.8723	6.40614	Non-Significant Effect
		3.75	-0.8219	2.28915	0.9740	6.40614	Non-Significant Effect
		7.5	1.42935	2.28915	0.2413	6.40614	Non-Significant Effect
		15	1.85815	2.28915	0.1190	6.40614	Non-Significant Effect
		30	10.2198	2.28915	0.0000	6.40614	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	6611.15	1322.23	5	33.77	0.00000	Significant Effect
Error	2114.5	39.15741	54			
Total	8725.64990	1361.3874	59			

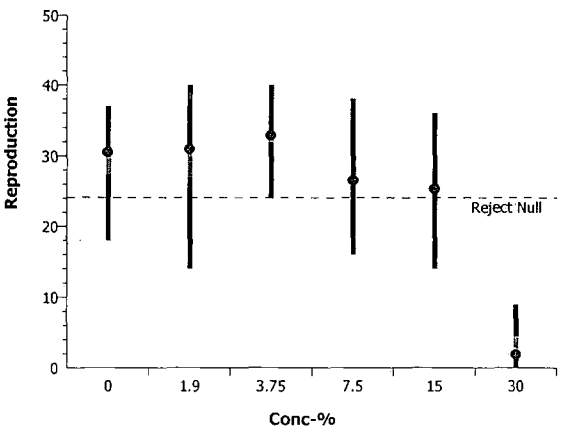
ANOVA Assumptions

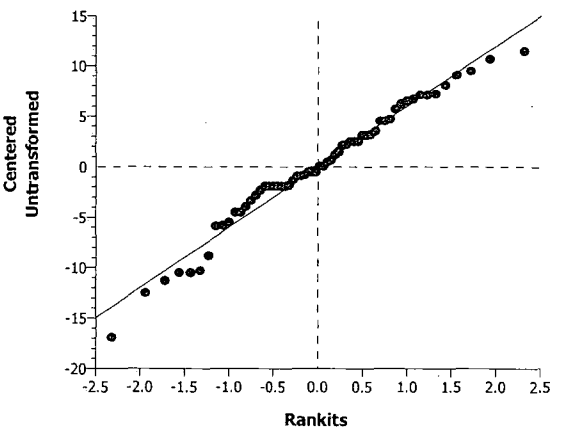
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	8.31318	15.08627	0.13980	Equal Variances
Distribution	Shapiro-Wilk W	0.97522		0.26041	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.5	18	37	5.6814				
1.9		10	30.9	14	40	7.7810				
3.75		10	32.8	24	40	5.0509				
7.5		10	26.5	16	38	7.4274				
15		10	25.3	14	36	7.1964				
30		10	1.9	0	9	3.1073				

Graphics





SCOEPA00026860

CETIS Analysis Detail

Report Date: 14 Sep-06 10:41 AM
Analysis: 14-3740-1495/B166801cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	12-0815-1425	12-0815-1425	14 Sep-06 10:41 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2895624	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	16.1218	7.213115	17.79005

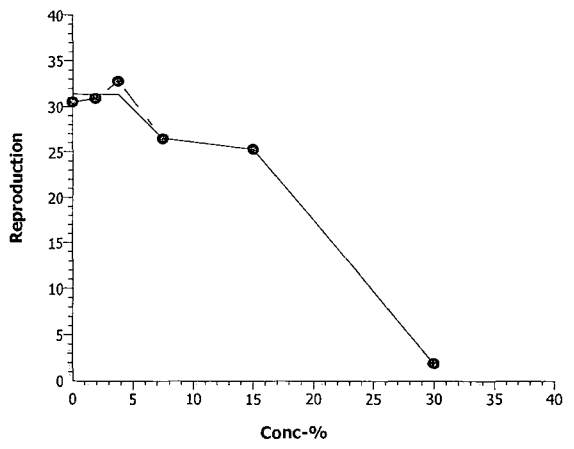
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	30.5	18	37	1.15970	5.68135
1.9		10	30.9	14	40	1.5883	7.78103
3.75		10	32.8	24	40	1.03100	5.05085
7.5		10	26.5	16	38	1.51612	7.42743
15		10	25.3	14	36	1.46897	7.19645
30		10	1.9	0	9	0.63428	3.10734

Data 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	26	33	26	30	18	33	33	34	37	35
1.9		14	40	31	27	25	30	34	31	39	38
3.75		31	24	27	32	30	34	39	35	36	40
7.5		16	28	36	21	26	16	26	27	38	31
15		15	23	36	26	22	24	31	32	14	30
30		0	0	0	1	9	0	0	0	4	5

Graphics



SCOEPA00026861

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics Corporation

Sample Description: _____ Sample ID: B 1668 - 02 01 (TP)

Test Start Date: 9-7-06 Time: 1315 Initials: (A)

Test End Date: 9-13-06 Time: 1345 Initials: NJ

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 431

Age: 6 days

Dilution Water ID #: 2690

Source Water: RECON MH (AHM) 2684

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		Culture Density
406	200		
MEAN	2.03	x 250,000 =	507,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	507,500	≈	0.99 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc x10^6
Flask #1	4	100	0.01
Flask #2	3	100	0.0075
Flask #3	4	100	0.01

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
409	412	416

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	(RB)	(TP)	MM	MM	NJ
Time	1315	1415	1220	1600	1345

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.0	7.8	8.1	8.2	8.3	9.0	24.9	24.1	24.4	24.8	24.0	365	104	74
1.90 %	8.2	7.8	8.0	8.2	8.3	9.0	24.9	24.3	24.3	24.6	24.0	386	104	74
3.75 %	8.2	7.7	8.0	8.2	8.3	8.9	25.0	24.6	24.7	24.6	24.0	408		
7.50 %	8.3	7.7	8.0	8.2	8.3	9.1	24.8	24.9	24.1	24.6	24.0	440	—	—
15.0 %	8.3	7.7	8.0	8.2	8.3	9.3	25.0	25.6	24.2	24.4	24.5	520		
30.0 %	8.3	7.7	8.0	8.2	8.3	9.3	25.0	26.0	24.3	24.5	25.1	666	190	66

Comments: (TP) 15 % 7.5 Hardness & Alk not taken

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics

Sample Description:

Lab ID: B1668

Test Start Date: 9/7/2006

Test Count Date: 9/12/2006 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	94792
2	61992
3	58056
4	29684
5	20582
6	16892

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

The Algae looked clumpy (observed from the naked eye)

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.968	3.894	3.770	3.806
2	3.966	3.890	3.864	3.794
3	3.661	3.870	3.655	3.800
Replicate Average	**3.865**	**3.885**	**3.763**	**3.800**
CONCENTRATION MEAN # Cells / mL* =	**3.828**	CV % =		1.5%

TEST CONCENTRATION	1.9 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.595	4.586	3.872	3.612
2	4.635	4.630	3.925	3.626
3	4.623	4.673	3.897	3.667
Replicate Average	**4.618**	**4.630**	**3.898**	**3.635**
CONCENTRATION MEAN # Cells / mL* =	**4.195**	CV % =		12.1%

TEST CONCENTRATION	3.75 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.262	3.680	4.930	4.486
2	4.205	3.613	4.913	4.425
3	4.218	3.588	4.945	4.428
Replicate Average	**4.228**	**3.627**	**4.929**	**4.446**
CONCENTRATION MEAN # Cells / mL* =	**4.308**	CV % =		12.5%

TEST CONCENTRATION	7.5 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.752	3.641	3.656	4.224
2	3.802	3.684	3.627	4.211
3	3.811	3.702	3.666	4.273
Replicate Average	**3.788**	**3.676**	**3.650**	**4.236**
CONCENTRATION MEAN # Cells / mL* =	**3.837**	CV % =		7.1%

TEST CONCENTRATION	15 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.213	3.862	3.152	4.000
2	4.164	3.841	3.166	3.991
3	4.169	3.918	3.155	4.001
Replicate Average	**4.182**	**3.874**	**3.158**	**3.997**
CONCENTRATION MEAN # Cells / mL* =	**3.803**	CV % =		11.8%

TEST CONCENTRATION	30 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.470	3.348	3.509	3.311
2	3.458	3.331	3.519	3.343
3	3.464	3.311	3.503	3.372
Replicate Average	**3.464**	**3.330**	**3.510**	**3.342**
CONCENTRATION MEAN # Cells / mL* =	**3.412**	CV % =		2.6%

SCOEPA00026863

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics Corporation

Sample Description:

Lab ID: B1668-01

Test Start Date: 9-7-06

Test Count Date: 9-11-06 Initials: [illegible]

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.2 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	94792
2	61992
3	58056
4	29684
5	20582
6	16892

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION		Control		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.968	3.894	3.770	3.806
2	3.966	3.890	3.864	3.794
3	3.661	3.870	3.655	~~[illegible]~~ 3.80
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		1.90%		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.595	4.586	3.872	3.612
2	4.635	4.630	3.925	3.626
3	4.623	4.673	3.897	3.667
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		3.75%		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.262	3.680	4.930	4.486
2	4.205	3.613	4.913	4.425
3	4.218	3.588	4.945	4.428
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		7.50%		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.752	3.641	3.656	4.224
2	3.802	3.684	3.627	4.211
3	3.811	3.702	3.666	4.273
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		15.0%		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.213	3.862	3.152	4.000
2	4.164	3.841	3.166	3.991
3	4.169	3.918	3.155	4.001
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION		30.0%		
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.470	3.348	3.509	3.311
2	3.458	3.331	3.519	3.343
3	3.464	3.311	3.503	3.372
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

A A A Blank Sheet.XLS

CETIS Test Summary

Report Date: 14 Sep-06 10:43 AM
Test Link: 04-0286-4842/B166801rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	06-6132-7552	**Test Type:**	Cell Growth	**Duration:**	6d 0h
Start Date:	07 Sep-06 01:15 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	13 Sep-06 01:45 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	07 Sep-06 01:15 PM	**Brine:**			

Sample No:	12-6268-5775	**Code:**	B1668-01	**Client:**	
Sample Date:	05 Sep-06 08:00 AM	**Material:**	Industrial Effluent	**Project:**	
Receive Date:	06 Sep-06 10:45 AM	**Source:**	Siltronic Corporation		
Sample Age:	53h (7.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
14-0720-8493	Cell Density	30	> 30	N/A	16.58%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
10-5207-4974	Cell Density	25	> 30	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-5207-4974	Cell Density	Control CV	0.01477	NL - 0.2	Yes	Passes acceptability criteria
14-0720-8493	Cell Density	Control CV	0.01477	NL - 0.2	Yes	Passes acceptability criteria
10-5207-4974	Cell Density	Control Response	3828170	1000000 - NL	Yes	Passes acceptability criteria
14-0720-8493	Cell Density	Control Response	3828170	1000000 - NL	Yes	Passes acceptability criteria
14-0720-8493	Cell Density	PMSD	0.16583	0.091 - 0.29	Yes	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.83E+6	3.76E+6	3.88E+6	2.83E+4	5.65E+4	1.48%
1.9		4	4.20E+6	3.64E+6	4.63E+6	2.53E+5	5.06E+5	12.07%
3.75		4	4.31E+6	3.63E+6	4.93E+6	2.70E+5	5.40E+5	12.54%
7.5		4	3.84E+6	3.65E+6	4.24E+6	1.36E+5	2.72E+5	7.10%
15		4	3.80E+6	3.16E+6	4.18E+6	2.24E+5	4.48E+5	11.79%
30		4	3.41E+6	3.33E+6	3.51E+6	4.47E+4	8.94E+4	2.62%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	3.87E+6	3.88E+6	3.76E+6	3.80E+6
1.9		4.62E+6	4.63E+6	3.90E+6	3.64E+6
3.75		4.23E+6	3.63E+6	4.93E+6	4.45E+6
7.5		3.79E+6	3.68E+6	3.65E+6	4.24E+6
15		4.18E+6	3.87E+6	3.16E+6	4.00E+6
30		3.46E+6	3.33E+6	3.51E+6	3.34E+6

SCOEPA00026865

CETIS Analysis Detail

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	04-0286-4842	04-0286-4842	14 Sep-06 10:43 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.3333	N/A	16.58%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	-1.3913	2.40711	0.9943	634813	Non-Significant Effect
		3.75	-1.8185	2.40711	0.9984	634813	Non-Significant Effect
		7.5	-0.0351	2.40711	0.8435	634813	Non-Significant Effect
		15	0.09669	2.40711	0.8033	634813	Non-Significant Effect
		30	1.57962	2.40711	0.2034	634813	Non-Significant Effect

ANOVA Table

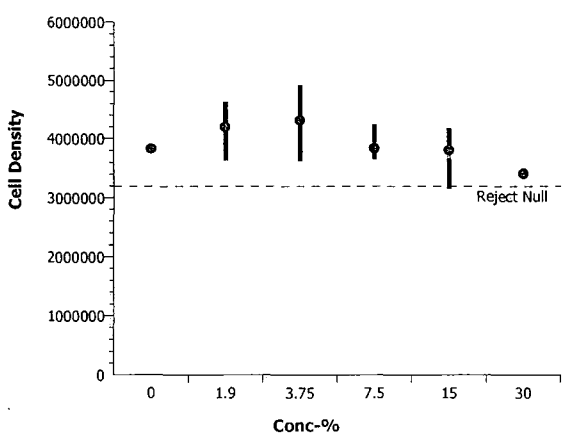
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.042E+12	4.08E+11	5	2.94	0.04139	Significant Effect
Error	2.504E+12	1.39E+11	18			
Total	4.5454E+12	5.474E+11	23			

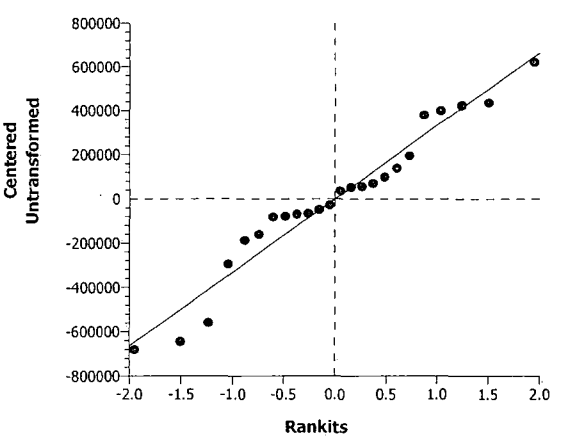
ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	14.70408	15.08627	0.01170	Equal Variances
Distribution	Shapiro-Wilk W	0.95107		0.28569	Normal Distribution

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	3.83E+6	3.76E+6	3.88E+6	5.65E+4				
1.9		4	4.20E+6	3.64E+6	4.63E+6	5.06E+5				
3.75		4	4.31E+6	3.63E+6	4.93E+6	5.40E+5				
7.5		4	3.84E+6	3.65E+6	4.24E+6	2.72E+5				
15		4	3.80E+6	3.16E+6	4.18E+6	4.48E+5				
30		4	3.41E+6	3.33E+6	3.51E+6	8.94E+4				

Graphics





SCOEPA00026866

CETIS Analysis Detail

Report Date: 14 Sep-06 10:43 AM
Analysis: 10-5207-4974/B166801rsc

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	04-0286-4842	04-0286-4842	14 Sep-06 10:43 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	3019480	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A

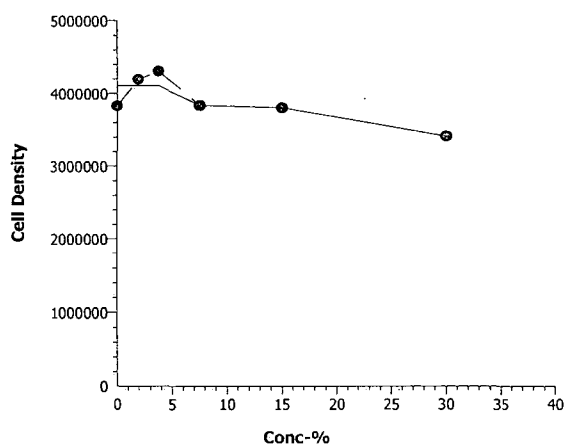
Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.83E+6	3.76E+6	3.88E+6	1.15E+4	5.65E+4
1.9		4	4.20E+6	3.64E+6	4.63E+6	1.03E+5	5.06E+5
3.75		4	4.31E+6	3.63E+6	4.93E+6	1.10E+5	5.40E+5
7.5		4	3.84E+6	3.65E+6	4.24E+6	5.56E+4	2.72E+5
15		4	3.80E+6	3.16E+6	4.18E+6	9.15E+4	4.48E+5
30		4	3.41E+6	3.33E+6	3.51E+6	1.83E+4	8.94E+4

Data 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	3.87E+6	3.88E+6	3.76E+6	3.80E+6						
1.9		4.62E+6	4.63E+6	3.90E+6	3.64E+6						
3.75		4.23E+6	3.63E+6	4.93E+6	4.45E+6						
7.5		3.79E+6	3.68E+6	3.65E+6	4.24E+6						
15		4.18E+6	3.87E+6	3.16E+6	4.00E+6						
30		3.46E+6	3.33E+6	3.51E+6	3.34E+6						

Graphics



SCOEPA00026867

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

REFERENCE TOXICANT DATA SHEET

Client: QA/QC
Test Organism: *Ceriodaphnia dubia*
Source: in house
ID#: Cd 1983
Age: < 24 hrs
Size: na
Loading: na

Reference Toxicant: Sodium chloride
Solvent: distilled water Stock Solution: 20 g/L
Reagent Log ID #: 10054-02
*Dilution Water: Recon MH (FHM) ID#: 2703
Total Hardness as CaCO3: 88
Conductivity (µmhos/cm) Salinity (ppt): 283
Technician: 0 hr TP 24 hr TP 48 hr RQ 72 hr 96 hr
Time: 0 hr 1130 24 hr 1130 48 hr 1100 72 hr 96 hr

Test Begin: Date 9-19-06 Time 1130
Test End: Date 9-21-06 Time 1100
Total Alkalinity as CaCO3: 64
Temperature: 20 ± 1 °C

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen (mg/l) 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond 0
Control	A	5	5	5			8.4	/	8.5			7.7	-	8.1			20.4	19.8	19.9			285
	B	5	5	5																		
1.0	A	5	5	5			8.4	-	8.7			7.9	-	8.0			20.4	20.1	19.9			1750
	B	5	5	4																		
1.5	A	5	5	5			8.4	-	8.7			7.9	-	8.0			20.4	20.0	19.8			2780
	B	5	5	5																		
2.0	A	5	5	5			8.4	-	8.6			7.9	-	8.0			20.5	20.0	19.8			3560
	B	5	5	5																		
3.0	A	5	4	0			8.4	-	8.6			7.9	-	8.0			20.5	20.0	19.8			5282
	B	5	5	0																		
4.0	A	5	1	0			8.4	8.8	8.6			7.9	8.0	8.0			20.5	19.9	19.9			6580
	B	5	0	-																		
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 2.4
Cusum Chart Limits: 1.7 to 2.8
Statistical Method: Spearman-Kaber

We verify this data is true and correct.
Task Manager: [signature]
Project Manager: Daniel W. [signature]
QA Officer: [signature]

SCOEPA00026869

CETIS Test Summary

Report Date: 21 Sep-06 3:51 PM
Test Link: 15-8892-7274/rcda1983

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	02-3835-8923	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	19 Sep-06 11:30 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	21 Sep-06 11:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Sep-06 11:30 AM	**Brine:**			

Sample No:	04-4309-7362	**Code:**	1B054-02	**Client:**	
Sample Date:	24 Aug-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	26d 11h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
06-1010-9633	48h Proportion Survived	50	2.432426	2.373245	2.493082	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
06-1010-9633	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	0.90000	0.80000	1.00000	0.10000	0.14142	15.71%
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	1.00000
1		1.00000	0.80000
1.5		1.00000	1.00000
2		1.00000	1.00000
3		0.00000	0.00000
4		0.00000	0.00000

SCOEPA00026870

CETIS Analysis Detail

Report Date: 21 Sep-06 3:51 PM
Analysis: 06-1010-9633/rcda1983

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	15-8892-7274	15-8892-7274	21 Sep-06 3:51 PM	CETISv1.1.2

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	Mu	Sigma
Control Threshold	0	3.33%	0.3860396	0.00534850

Point Estimates

EC50/LC50	95% LCL	95% UCL
2.43243	2.37325	2.49308

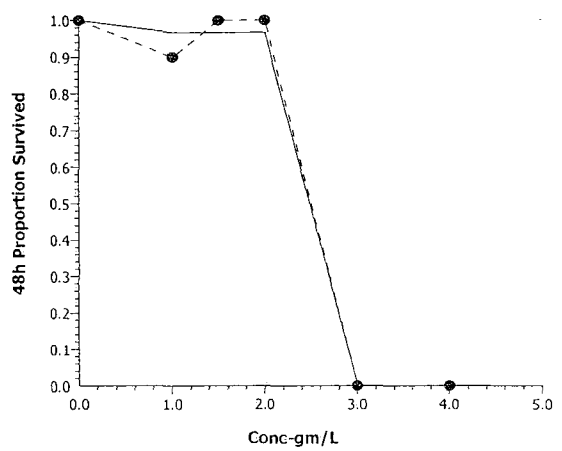
Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	0.90000	0.80000	1.00000	0.02887	0.14142	9	10
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000								
1		1.00000	0.80000								
1.5		1.00000	1.00000								
2		1.00000	1.00000								
3		0.00000	0.00000								
4		0.00000	0.00000								

Graphics



SCOEPA00026871

CORRECTIVE ACTION REPORT

Originator: Brett Mudrey

Date: 9-12-2006

Subject (for example, test method, instrument, sample nos.): Chronic Reftox

Cerio # 1969 initiated Sept 5, 2006.

Condition/Situation:

☐ : Sample not delivered on Saturday: Lab ID Number(s):

B

Was sample marked for Saturday Delivery? (Yes / No)

☒ : Reftox not in Cusum range: LC50/IC25 (SURVIVAL) = 1.80, Cusum Range = 1.38 to 1.77

☐ : Temperature Deviation:

☒ : Other: Previous 59 tests were within cusum chart range.

Chem lab CV% = 0.06, Intra-lab study 25th Quintile CV% = 0.11 (EPA 833-R-00-003)

↳ Chem has narrow CV% limits, if 25th Quintile was used, limits would be 1.23 to 1.93.

EPA recognized that 1 in 20 tests will fall outside of cusum range due to chance,

Recommended Action (s) (mark all that apply): ☐-Contact Regulatory Agency,

☐-Contact Client, ☐-Continue test(s), ☐-Discontinue test(s), ☐-Repeat test(s),

☒-Check for procedural errors, ☐-Document in test report, ☐-Other:

Conductivity values within historical norms,

Cusum limit historical norms = 0.90 to 2.10 mg/L

Approved by Department Manager/Designate:

Date: 9/13/06

Action Taken/Results:

Results will be documented in all client reports.

SCOEPA00026872

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA/QC – September Test Start Date: 9-5-2006

Sample Description: NaCl Reagent ID#: 1B053-06

Ceriodaphnia Lot#: Cd 1969 Statistician: JH

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	28	39	35	34	33	41	33	34	34	36	10	347
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.25 g/L	14	27	32	40	30	35	26	28	36	34	10	302
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.50 g/L	16	35	30	31	26	32	14	29	27	25	9	265
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		
1.0 g/L	16	24	21	19	23	21	21	13	16	2	10	176
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
1.5 g/L	4	4	7	6	8	6	11	4	10	4	10	64
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
2.0 g/L	1	0	0	1	0	1	1	0	0	0	6	4
	AD?	AD?	AD? ✓	AD? ✓	AD? ✓	AD?	AD?	AD?	AD?	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.80 #	1.38 to 1.77
Reproduction	0.53	0.29 to 0.80

Task Manager

Project Manager

QA Officer

OUTSIDE OF CUSUM RANGE, SEE CAR DATED 9-12-2006 JH

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC — Test Initiation: Date: 9-5-06 Time: 0915

Sample Description: NaCl — Test Termination: Date: 9-11-06 Time: 0845

Initial Sample ID #: 1B053-06 — Ceriodaphnia Lot#: Cd 1969

Technician: Day 1 DW Day 2 DW Day 3 DW Day 4 TP Day 5 TP Day 6 DW Day 7 ____

Time: Day 1 0930 Day 2 1045 Day 3 1000 Day 4 1000 Day 5 1530 Day 6 0845 Day 7 ____

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	5	6	4	5	5	5	5	10	49
	4	0	6	0	13	11	0	11	11	12	0	10	58
	5	12	12	13	16	16	15	0	0	0	12	10	96
	6	12	22	17	0	0	22	17	18	17	19	10	144
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	5	4	5	5	5	6	5	10	43
	4	5	0	0	0	0	0	8	0	11	0	10	24
	5	9	13	12	14	11	14	13	8	6	12	10	MS94 106
	6	0	10	16	21	15	16	0	15	19	17	10	129
	7												
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	5	5	5	5	4	5	4	4	10	42
	4	5	0	0	0	9	12	0	0	0	0	10	26
	5	0	13	10	12	12	15	3	10	6	10	10	91
	6	11	17	15	14	0	0	T/AD	14	17	11	9	106
	7												
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	2	2	4	4	3	3	0	3	0	10	21
	4	0	0	0	7	0	9	8	0	0	0	10	24
	5	8	10	10	0	8	0	0	6	7	AY	10	49
	6	8	12	9	8	11	9	10	7	6	2	10	82
	7												
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	2	0	1	0	1	0	0	0	10	4
	4	0	0	0	0	0	0	6	0	0	0	10	6
	5	4	4	3	6	3	6	6	0	3	4	10	33
	6	0	0	2	0	4	0	4	4	7	0	10	21
	7												
2.0 g/L	1	0	0	0	0	0	0	0	0	0	0/AD	9	0
	2	0	0	0	0	0/AD	0	0	0	0	|	8	0
	3	0	0	0	0	|	0	0	0	0	|	8	0
	4	0	0	0	0	|	0	0	0	0	|	8	0
	5	1	0	1	1	|	1	0	0	0	|	8	4
	6	0	0	0/AD	0/AD	|	0	1	0	0	|	6	1
	7			↓	↓	↓					↓		
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2												
	3												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

SCOEPA00026874

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC — Initiated Date 9-5-06 Time 0915 — Adults Isolated Date 9-4-06 Time 0700

Sample Description NaCl (50 g/L stock) — Reagent Log # 1B053-06 — Neo's Collected Date 9-5-06 Time 1230

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	TP	DW	DW	DW	TP	TP	DW	
Time	0915	0930	1045	1000	1000	1530	0845	

Dissolved Oxygen (mg/l) — Day

Percent or Concentration	0	1	2	3	4	5	6	7
Control	8.1	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	7.9 / 8.2	8.0 / 8.1	8.0 / —	—
0.25 g/L	8.1	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
0.50 g/L	8.0	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
1.0 g/L	8.0	7.8 / 8.0	8.0 / 8.0	8.1 / 8.0	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
1.5 g/L	8.0	7.8 / 8.0	8.0 / 8.0	8.1 / 8.0	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
2.0 g/L	8.1	7.8 / 8.0	8.0 / 8.0	8.2 / 8.1	8.2 / 8.2	8.0 / 8.2	7.9 / —	—
4.0 g/L	8.1	7.9 / —	— / —	— / —	— / —	— / —	— / —	—

pH — Day

	0	1	2	3	4	5	6	7
Control	7.8	7.6 / 7.9	7.8 / 8.0	7.9 / 8.1	7.9 / 7.9	7.9 / 7.9	7.9 / —	—
0.25 g/L	7.8	7.7 / 7.8	7.8 / 8.0	7.9 / 8.0	7.9 / 7.9	8.0 / 7.9	7.9 / —	—
0.50 g/L	7.8	7.8 / 7.8	7.8 / 7.9	7.9 / 7.9	7.9 / 7.9	8.0 / 7.9	8.0 / —	—
1.0 g/L	7.8	7.9 / 7.7	7.9 / 7.9	7.9 / 7.9	8.0 / 7.9	8.0 / 7.9	8.0 / —	—
1.5 g/L	7.9	8.0 / 7.8	7.9 / 7.9	8.0 / 7.8	8.0 / 8.0	8.0 / 7.9	8.0 / —	—
2.0 g/L	7.9	8.0 / 7.8	8.0 / 7.9	8.1 / 7.9	8.1 / 8.0	8.1 / 7.9	8.0 / —	—
4.0 g/L	7.9	8.0 / —	— / —	— / —	— / —	— / —	— / —	—

Temperature (C) / Conductivity (µmhos/cm) — Day

	0	1	2	3	4	5	6	7
Control	25.9 / 292	25.5 / 295	25.1 / 289	24.5 / 291	25.3 / 286	25.7 / 292	25.1	—
0.25 g/L	25.9 / 731	24.9 / 768	25.0 / 728	24.5 / 702	25.2 / 733	25.7 / 741	25.4	—
0.50 g/L	25.9 / 1175	25.2 / 1190	25.1 / 1142	24.5 / 1136	25.3 / 1170	25.6 / 1183	25.2	—
1.0 g/L	25.9 / 2010	25.0 / 2020	24.8 / 2060	25.0 / 1910	25.2 / 2030	25.5 / 2050	24.9	—
1.5 g/L	25.9 / 3360	25.2 / 2940	25.1 / 2870	25.2 / 2860	25.4 / 2870	25.4 / 2890	25.3	—
2.0 g/L	25.9 / 3650	25.1 / 3690	25.3 / 3710	24.8 / 3700	25.4 / 3730	25.3 / 3730	25.1	—
4.0 g/L	25.9 / 6880	24.9 / —	— / —	— / —	— / —	— / —	— / —	—

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 12 Sep-06 2:57 PM
Test Link: 09-7117-7544/rcdc1969

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	04-0617-7379	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	5d 23h
Start Date:	05 Sep-06 09:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	11 Sep-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	05 Sep-06 09:15 AM	**Brine:**			

Sample No:	11-2184-7093	**Code:**	1B053-06	**Client:**	
Sample Date:	01 Aug-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	35d 9h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
09-9635-1371	6d Proportion Survived	25	1.795455	1.6625	2.333333	Linear Interpolation
15-3570-9226	Reproduction	25	0.5266854	0.3297872	0.6881068	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-3570-9226	Reproduction	Control Response	34.7	15 - NL	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		10	0.60000	0.00000	1.00000	0.16330	0.51640	86.07%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	34.7	28	41	1.1160	3.5292	10.17%
0.25		10	30.2	14	40	2.2745	7.1926	23.82%
0.5		10	26.5	14	35	2.1357	6.7536	25.49%
1		10	17.6	2	24	2.0450	6.4670	36.74%
1.5		10	6.4	4	11	0.8192	2.5906	40.48%
2		10	0.4	0	1	0.1633	0.5164	129.10
4		10	0	0	0	0	0	0.00%

SCOEPA00026876

CETIS Test Summary

Report Date: 12 Sep-06 2:57 PM
Test Link: 09-7117-7544/rcdc1969

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	28	39	35	34	33	41	33	34	34	36
0.25		14	27	32	40	30	35	26	28	36	34
0.5		16	35	30	31	26	32	14	29	27	25
1		16	24	21	19	23	21	21	13	16	2
1.5		4	4	7	6	8	6	11	4	10	4
2		1	0	0	1	0	1	1	0	0	0
4		0	0	0	0	0	0	0	0	0	0

SCOEPA00026877

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	09-7117-7544	09-7117-7544	12 Sep-06 2:57 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.795455	1.6625	2.333333

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		10	0.60000	0.00000	1.00000	0.10541	0.51640	6	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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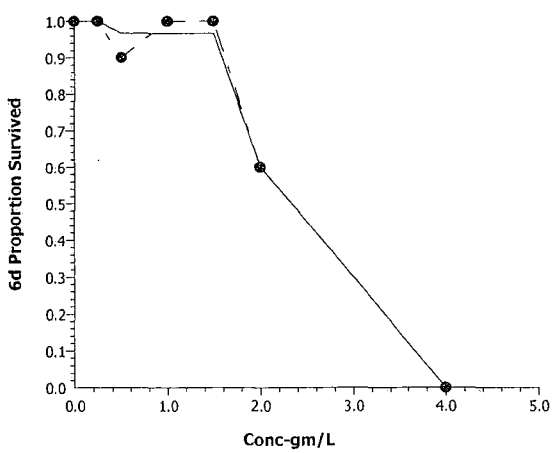


SCOEPA00026878

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	09-7117-7544	09-7117-7544	12 Sep-06 2:57 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.5266854	0.3297872	0.6881068

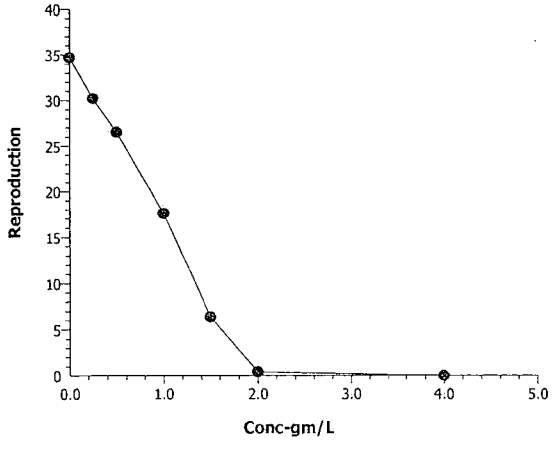
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	34.7	28	41	0.72040	3.52924
0.25		10	30.2	14	40	1.46818	7.19259
0.5		10	26.5	14	35	1.37857	6.7536
1		10	17.6	2	24	1.32007	6.46701
1.5		10	6.4	4	11	0.52880	2.59058
2		10	0.4	0	1	0.10541	0.5164
4		10	0	0	0	0	0

Data 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	28	39	35	34	33	41	33	34	34	36
0.25		14	27	32	40	30	35	26	28	36	34
0.5		16	35	30	31	26	32	14	29	27	25
1		16	24	21	19	23	21	21	13	16	2
1.5		4	4	7	6	8	6	11	4	10	4
2		1	0	0	1	0	1	1	0	0	0
4		0	0	0	0	0	0	0	0	0	0

Graphics



SCOEPA00026879

Client: Ref Tox | FHM #: 1311 | Date Initiated: 8-2-06 | Time: 1200

Sample Description: NaCl | Reagent Log # 1B053-06 | Date Terminated: 8-9-06 | Time: 1100

Technician: Day 0 NJ Day 1 NJ Day 2 [illegible] Day 3 NJ Day 4 NJ Day 5 NJ Day 6 NJ Day 7 [illegible]

Time: Day 0 1200 Day 1 1220 Day 2 0925 Day 3 1425 Day 4 1220 Day 5 1110 Day 6 1105 Day 7 1100

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
Control	0	10	10	10	10		8.2		7.7	24.8	331
	1	10	9	10	10	6.9	8.1	7.6	7.9	24.8	355
	2	10	9	10	10	6.9	8.2	7.4	7.8		324
	3	10	9	10	10	7.1	8.2	7.5	8.1	24.7	332
	4	10	9	10	10	7.3	8.2	7.6	7.9	25.0	316
	5	10	9 8	10	9	7.0	8.2	7.7	7.9	25.1	276
	6	10	8	10	8	7.2	8.2	7.6	7.9	24.2	236
	7	10	8	10	8	7.2		7.6		25.2	310
0.3	0	10	10	10	10		8.2		7.8	24.8	934
	1	10	10	10	10	7.2	8.2	7.6	7.9	24.8	945
	2	10	10	10	10	7.1	8.2	7.5	7.9		918
	3	10	10	10	9	7.2	8.3	7.5	8.1	24.5	924
	4	10	10	10	9	7.3	8.3	7.6	8.0	25.0	930
	5	10 10	10	10	9	7.1	8.2	7.8	7.9	25.2	NB 1 829
	6	9	10	10	9	7.3	8.3	7.6	7.9	24.2	839
	7	9	10	10	9	7.2		7.5		25.1	846
1.0	0	10	10	10	10		8.3		7.9	24.8	2260
	1	10	10	10	10	7.3	8.2	7.6	8.0	24.9	2010
	2	10	10	10	10	7.3	8.3	7.6	7.9		2130
	3	10	10	10	10	7.2	8.3	7.7	8.0	24.3	2340
	4	10	10	10	10	7.3	8.3	7.7	8.0	25.0	2020
	5	10	10	10	10	7.3	8.3	7.8	7.8	25.0	NB 1936 1944
	6	10	10	10	10	7.2	8.3	7.6	7.9	24.1	1980
	7	10	10	10	10	7.1		7.5		25.1	2010
2.0	0	10	10	10	10		8.3		7.9	24.9	4040
	1	10	10	10	10	7.3	8.2	7.6	8.0	24.9	4250
	2	10	10	10	10	7.3	8.2	7.6	7.9		3990
	3	10	10	10	10	7.4	8.2	7.6	8.0	24.6	4040
	4	10	10	10	10	7.5	8.3	7.7	8.0	25.1	4010
	5	10	10	10	10	7.4	8.3	7.7	7.9	25.2	NB 3780 3780
	6	10	10	9	10	7.3	8.3	7.6	8.0	24.2	3750
	7	10	10	9	10	7.1		7.5		25.1	3800
4.0	0	10	10	10	10		8.3		7.9	24.6	7580
	1	10	10	10	10	7.4	8.2	7.7	8.0	24.6	7560
	2	10	10	10	10	7.5	8.2	7.7	7.9	25.4	7450
	3	10	10	10	10	7.4	8.2	7.7	7.9	24.1	7530
	4	10	10	10	10	7.5	8.3	7.7	8.0	25.0	7570
	5	10	10	10	10	7.4	8.3	7.7	7.8	25.0	NB 6650 6950
	6	9	10	9	9	7.3	8.2	7.6	8.0	24.0	6960
	7	7	9	8	7	7.1		7.5		25.1	6900
8.0	0	10	10	10	10		8.3		7.8	24.7	14060
	1	6	4	3	8	7.5	8.2	7.6	7.9	24.7	14030
	2	2	1	1	3	7.5	8.1	7.6	7.9		14100
	3	1	0	0	3	7.5	8.2	7.7	7.8	24.1	14340
	4	1	|	|	2	7.6	8.3	7.7	7.9	25.0	14120
	5	0	|	|	2	7.5	8.3	7.6	7.8	24.8	NB 13450 13450
	6	|	|	|	2	7.4	8.3	7.7	7.9	24.0	12960
	7	↓	↓	↓	0	7.2		7.5		25.0	12940

✓ Indicates one FHM inadvertently poured off during solution renewal, FHM replaced into container.

"F" = fungus noted on dead organisms. "M" = organism missing, start count reduced.

Endpoint	IC25	Cusum Chart Limits	
Survival	4.30	1.51	to 4.93
Growth	3.20	1.34	to 3.24

Task Manager: Natisha Johnson

Project Manager: [signature]

QA Officer: [signature]

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC Species ID# FHM 1311

Lab ID: na Start Date

Sample Description: NaCl

Technician:	BM	NJ
Date:	8/10/2006	8/3/2006

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1174.38	1168.61	10
	B	1154.89	1150.10	8
	C	1154.96	1149.23	10
	D	1151.03	1146.10	8
0.3 g/L	A	1169.45	1163.42	9
	B	1139.71	1132.22	10
	C	1132.97	1126.57	10
	D	1143.24	1136.43	9
1.0 g/L	A	1161.77	1154.94	10
	B	1156.60	1149.94	10
	C	1146.28	1138.81	10
	D	1157.09	1149.54	10
2.0 g/L	A	1151.83	1144.93	10
	B	1146.62	1139.24	10
	C	1153.56	1148.06	9
	D	1149.65	1143.39	10
4.0 g/L	A	1154.82	1151.35	7
	B	1131.65	1127.31	9
	C	1144.79	1141.63	8
	D	1155.02	1151.00	7
8.0 g/L	A		1144.48	0
	B		1149.16	0
	C		1169.88	0
	D		1162.22	0

weigh to 0.01 mg

SCOEPA00026881

CETIS Test Summary

Report Date: 10 Aug-06 11:12 AM
Test Link: 01-5643-2695/rppc1311

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	08-1260-6289	Test Type:	Growth-Survival (7d)	Duration:	6d 23h
Start Date:	02 Aug-06 12:00 PM	Protocol:	EPA/821/R-02-013 (2002)	Species:	Pimephales promelas
Ending Date:	09 Aug-06 11:00 AM	Dil Water:		Source:	Aquatox, AR
Setup Date:	02 Aug-06 12:00 PM	Brine:			

Sample No:	11-2184-7093	Code:	1B053-06	Client:	
Sample Date:	01 Aug-06	Material:	Sodium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	36h	Station:			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
11-8842-7808	7d Proportion Survived	25	4.298387	3.606333	4.856262	Linear Interpolation
15-2853-3673	Mean Dry Biomass-mg	25	3.204749	2.701061	3.615496	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
11-8842-7808	7d Proportion Survived	Control Response	0.90000	0.8 - NL	Yes	Passes acceptability criteria
15-2853-3673	Mean Dry Biomass-mg	Control Response	0.53050	0.25 - NL	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%
0.3		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
4		4	0.77500	0.70000	0.90000	0.04787	0.09574	12.35%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.53050	0.47900	0.57700	0.02586	0.05172	9.75%
0.3		4	0.66825	0.60299	0.74900	0.03128	0.06256	9.36%
1		4	0.71275	0.66600	0.75499	0.02241	0.04482	6.29%
2		4	0.65100	0.55000	0.73800	0.04074	0.08148	12.52%
4		4	0.37475	0.31600	0.43400	0.02657	0.05315	14.18%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	0.80000	1.00000	0.80000
0.3		0.90000	1.00000	1.00000	0.90000
1		1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.90000	1.00000
4		0.70000	0.90000	0.80000	0.70000
8		0.00000	0.00000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.57700	0.47900	0.57300	0.49301
0.3		0.60299	0.74900	0.64000	0.68099
1		0.68301	0.66600	0.74700	0.75499
2		0.68999	0.73800	0.55000	0.62600
4		0.34700	0.43400	0.31600	0.40200
8		0.00000	0.00000	0.00000	0.00000

SCOEPA00026882

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	01-5643-2695	01-5643-2695	10 Aug-06 11:12 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	4.298387	3.606333	4.856262

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.90000	0.80000	1.00000	0.02357	0.11547	36	40
0.3		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
2		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
4		4	0.77500	0.70000	0.90000	0.01954	0.09574	31	40
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Data 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	1.00000	0.80000	1.00000	0.80000						
0.3		0.90000	1.00000	1.00000	0.90000						
1		1.00000	1.00000	1.00000	1.00000						
2		1.00000	1.00000	0.90000	1.00000						
4		0.70000	0.90000	0.80000	0.70000						
8		0.00000	0.00000	0.00000	0.00000						

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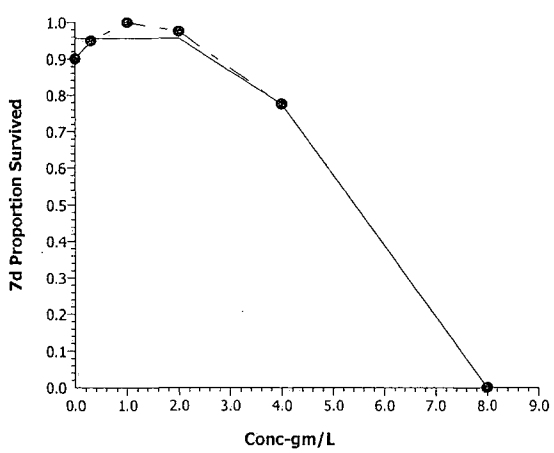


SCOEPA00026883

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	01-5643-2695	01-5643-2695	10 Aug-06 11:12 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	3.204749	2.701061	3.615496

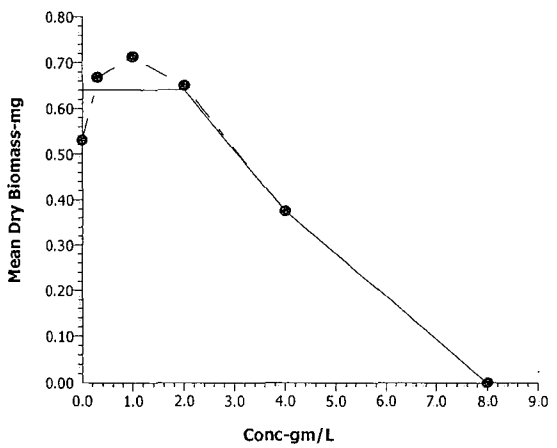
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.53050	0.47900	0.57700	0.01056	0.05172
0.3		4	0.66825	0.60299	0.74900	0.01277	0.06256
1		4	0.71275	0.66600	0.75499	0.00915	0.04482
2		4	0.65100	0.55000	0.73800	0.01663	0.08148
4		4	0.37475	0.31600	0.43400	0.01085	0.05315
8		4	0.00000	0.00000	0.00000	0.00000	0.00000

Data 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	0.57700	0.47900	0.57300	0.49301						
0.3		0.60299	0.74900	0.64000	0.68099						
1		0.68301	0.66600	0.74700	0.75499						
2		0.68999	0.73800	0.55000	0.62600						
4		0.34700	0.43400	0.31600	0.40200						
8		0.00000	0.00000	0.00000	0.00000						

Graphics



SCOEPA00026884

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl Reagent Log #: 1B053-06

Test Start Date: 8-29-06 Time: 1145 Initials: LR

Test End Date: 9-3-06 Time: 1030 Initials: NT

TEST CONDITIONS AT INITIATION:

Species ID#: RS 430

Age: 4 days

Dilution Water ID#: 2690

Source Water: Regon MH (Filtered) #2684

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)		Culture Density = Mean # of Cells/Field x 250,000	
# Cells	# Fields		Culture Density
438	200		
MEAN	2.19	x 250,000 =	547,500

Filtration	0.45 um filter	X
	0.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density x Test Volume / Culture Density = Inoculum Volume

10,000 x 50 ml / 547,500 = 0.91 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x 10^6
Flask #1	4	100	0.01
Flask #2	4	100	0.01
Flask #3	4	100	0.01

Light Intensity at Test Initiation (foot candles)		
Location #1	Location #2	Location #3
389	393	397

Technician 0 hr LR 24 hr JT 48 hr JT 72 hr LR 96 hr NT

Time 0 hr 1145 24 hr 0840 48 hr 0825 72 hr 0915 96 hr 1030

Test Concen. (g/L)	DO (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.7	7.8	7.9	8.0	8.1	8.9	25.1	25.7	25.0	25.1	24.0	365	104	74
0.25	7.7	7.8	7.9	8.0	8.1	8.8	25.1	25.6	24.9	25.1	24.0	848		
0.50	7.8	7.8	8.0	8.1	8.3	8.9	25.2	25.6	24.3	25.2	24.2	1282		
1.0	7.9	7.8	8.0	8.1	8.3	8.8	25.4	25.4	24.6	25.4	24.6	2220		
2.0	7.9	7.7	8.1	8.1	8.2	8.6	25.6	25.3	24.1	25.1	25.0	3870		
4.0	7.9	7.7	8.1	8.1	8.2	8.3	25.4	25.1	24.0	25.1	25.5	7070		

Task Manager [signature]

Project Manager [signature]

QA Officer [signature]

Endpoint : Growth

IC25 : 1.35

Cusum Chart Limits : 0.29 to 2.38

Comments:

SCOEPA00026885

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: QA / QC

Ref. Tox.

Sample Description: NaCl

1B053-06

Lab ID:

Test Start Date: 8/29/2006

Test Count Date: 9/5/2006 Initials: DO

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.50

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	32144
2	26650
3	20090
4	13940
5	11726
6	12464

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.005	3.399	3.764	4.073
2	4.005	3.425	3.762	4.047
3	4.057	3.442	3.795	4.074
Replicate Average	**4.022**	**3.422**	**3.774**	**4.065**
CONCENTRATION MEAN # Cells / mL* =		**3.821**	CV % =	7.7%

TEST CONCENTRATION	0.25 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.775	3.517	4.271	3.762
2	3.676	3.532	4.270	3.746
3	3.715	3.565	4.299	3.803
Replicate Average	**3.722**	**3.538**	**4.280**	**3.770**
CONCENTRATION MEAN # Cells / mL* =		**3.828**	CV % =	8.3%

TEST CONCENTRATION	0.50 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.500	4.254	3.763	3.667
2	3.498	4.252	3.694	3.678
3	3.518	4.249	3.708	3.657
Replicate Average	**3.505**	**4.252**	**3.722**	**3.667**
CONCENTRATION MEAN # Cells / mL* =		**3.787**	CV % =	8.5%

TEST CONCENTRATION	1.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.166	3.468	3.132	3.112
2	3.130	3.485	3.169	3.147
3	3.148	3.471	3.098	3.140
Replicate Average	**3.148**	**3.475**	**3.133**	**3.133**
CONCENTRATION MEAN # Cells / mL* =		**3.222**	CV % =	5.2%

TEST CONCENTRATION	2.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	2.199	1.870	2.184	2.619
2	2.168	1.800	2.165	2.620
3	2.168	1.822	2.187	2.644
Replicate Average	**2.178**	**1.831**	**2.179**	**2.628**
CONCENTRATION MEAN # Cells / mL* =		**2.204**	CV % =	14.8%

TEST CONCENTRATION	4.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.651	1.003	0.776	1.365
2	0.614	0.970	0.751	1.301
3	0.631	0.965	0.746	1.329
Replicate Average	**0.632**	**0.979**	**0.758**	**1.332**
CONCENTRATION MEAN # Cells / mL* =		**0.925**	CV % =	33.2%

SCOEPA00026886

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: QA/QC

REF. TOX.

Sample Description: NaCl

(1B053-06)

Lab ID:

Test Start Date: 8-29-06

Test Count Date: 9-5-06 Initials: (illegible)

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.2 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	32144
2	26650
3	20090
4	13940
5	11726
6	12464

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.25 ml sample to 10mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.005	3.399	3.764	4.073
2	4.005	3.425	3.762	4.047
3	4.057	3.442	3.795	4.074
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	0.25			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.775	3.517	4.271	3.762
2	3.676	3.532	4.270	3.746
3	3.715	3.565	4.299	3.803
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	0.5			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.500	4.254	3.763	3.667
2	3.498	4.252	3.694	3.678
3	3.518	4.249	3.708	3.657
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	1.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.166	3.468	3.132	3.112
2	3.130	3.485	3.169	3.147
3	3.148	3.471	3.098	3.140
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	2.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	2.199	1.870	2.184	2.619
2	2.168	1.800	2.165	2.620
3	2.168	1.822	2.187	2.644
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

TEST CONCENTRATION	4.0			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	650752	1.003	776130	1.365
2	614344	969752	750956	1.301
3	603072	965222	745626	1.329
Replicate Average				
CONCENTRATION MEAN # Cells / mL* =			CV % =	

SCOEPA00026887

CETIS Test Summary

Report Date: 05 Sep-06 4:02 PM
Test Link: 12-2316-5603/rrsc430

Raphidocelis Growth Test — **CH2M Hill**

Test No:	12-4318-2335	**Test Type:**	Cell Growth	**Duration:**	95h
Start Date:	29 Aug-06 11:45 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	02 Sep-06 10:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	29 Aug-06 11:45 AM	**Brine:**			

Sample No:	11-2184-7093	**Code:**	1B053-06	**Client:**	
Sample Date:	01 Aug-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	28d 11h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
16-1299-1713	Cell Density	25	1.347699	0.999799	1.703697	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
16-1299-1713	Cell Density	Control CV	0.07725	NL - 0.2	Yes	Passes acceptability criteria
16-1299-1713	Cell Density	Control Response	3820670	1000000 - NL	Yes	Passes acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.82E+6	3.42E+6	4.06E+6	1.48E+5	2.95E+5	7.73%
0.25		4	3.83E+6	3.54E+6	4.28E+6	1.59E+5	3.18E+5	8.30%
0.5		4	3.79E+6	3.51E+6	4.25E+6	1.62E+5	3.23E+5	8.54%
1		4	3.22E+6	3.13E+6	3.47E+6	8.42E+4	1.68E+5	5.23%
2		4	2.20E+6	1.83E+6	2.63E+6	1.63E+5	3.27E+5	14.82%
4		4	9.25E+5	6.32E+5	1.33E+6	1.53E+5	3.07E+5	33.15%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.02E+6	3.42E+6	3.77E+6	4.06E+6
0.25		3.72E+6	3.54E+6	4.28E+6	3.77E+6
0.5		3.51E+6	4.25E+6	3.72E+6	3.67E+6
1		3.15E+6	3.47E+6	3.13E+6	3.13E+6
2		2.18E+6	1.83E+6	2.18E+6	2.63E+6
4		6.32E+5	9.79E+5	7.58E+5	1.33E+6

SCOEPA00026888

CETIS Analysis Detail

Report Date: 05 Sep-06 4:02 PM
Analysis: 16-1299-1713/rrsc430

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	12-2316-5603	12-2316-5603	05 Sep-06 4:02 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.347699	0.999799	1.703697

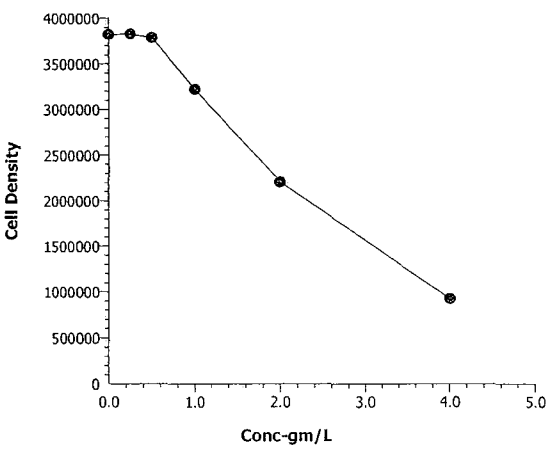
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.82E+6	3.42E+6	4.06E+6	6.02E+4	2.95E+5
0.25		4	3.83E+6	3.54E+6	4.28E+6	6.49E+4	3.18E+5
0.5		4	3.79E+6	3.51E+6	4.25E+6	6.60E+4	3.23E+5
1		4	3.22E+6	3.13E+6	3.47E+6	3.44E+4	1.68E+5
2		4	2.20E+6	1.83E+6	2.63E+6	6.67E+4	3.27E+5
4		4	9.25E+5	6.32E+5	1.33E+6	6.26E+4	3.07E+5

Data 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	4.02E+6	3.42E+6	3.77E+6	4.06E+6						
0.25		3.72E+6	3.54E+6	4.28E+6	3.77E+6						
0.5		3.51E+6	4.25E+6	3.72E+6	3.67E+6						
1		3.15E+6	3.47E+6	3.13E+6	3.13E+6						
2		2.18E+6	1.83E+6	2.18E+6	2.63E+6						
4		6.32E+5	9.79E+5	7.58E+5	1.33E+6						

Graphics



SCOEPA00026889

CORRECTIVE ACTION REPORT

Originator: Brett Mudkey

Date: 9-12-2006

Subject (for example, test method, instrument, sample nos.): Chronic Reftox

Cerio # 1969 initiated Sept 5, 2006.

Condition/Situation:

☐ : Sample not delivered on Saturday: Lab ID Number(s):

B_____

Was sample marked for Saturday Delivery? (Yes / No) _____

☒ : Reftox not in Cusum range: LC50/IC25 (Survival) = 1.80, Cusum Range = 1.38 to 1.77

☐ : Temperature Deviation: _____

_____

☒ : Other: Previous 59 tests were within cusum chart range.

Chem lab CV% = 0.06, Inter-lab study 25th Quartile CV% = 0.11 (EPA 833-R-00-003)

Chem has narrow CV% limits, if 25th Quartile was used, limits would be 1.33 to 1.93.

EPA recognized that 1 in 20 tests will fall outside of cusum range due to chance,

Recommended Action (s) (mark all that apply): ☐-Contact Regulatory Agency,

☐-Contact Client, ☐-Continue test(s), ☐-Discontinue test(s), ☐-Repeat test(s),

☒Check for procedural errors, ☐-Document in test report, ☐-Other:

Conductivity values within historical norms,

Cusum limit historical norms = 0.90 to 2.10 mg/L

_____

Approved by Department Manager/Designate: _____

Date: 9/13/06

Action Taken/Results: _____

Results will be documented in all client reports.

_____

_____

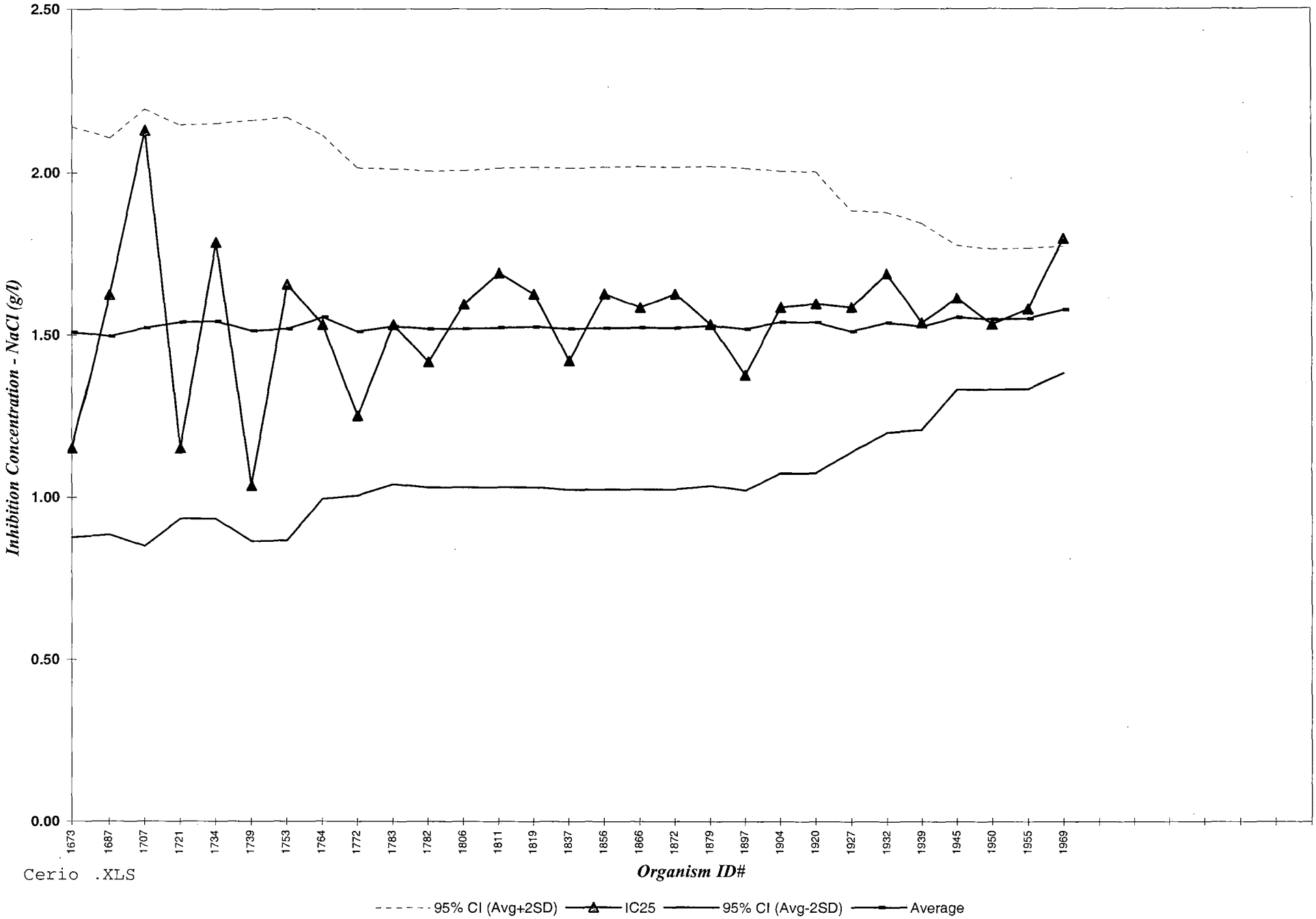
_____

SCOEPA00026890

REFERENCE TOXICANT QA/QC CHART

Ceriodaphnia dubia - Chronic Survival

IC25 Values



Cerio .XLS

SCOEPA00026891

CH2MHILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA/QC – September Test Start Date: 9-5-2006

Sample Description: NaCl Reagent ID#: 1B053-06

Ceriodaphnia Lot#: Cd 1965 Statistician: JM

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	28	39	35	34	33	41	33	34	34	36	10	347
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.25 g/L	14	27	32	40	30	35	26	28	36	34	10	302
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.50 g/L	16	35	30	31	26	32	14	29	27	25	9	265
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		
1.0 g/L	16	24	21	19	23	21	21	13	16	2	10	176
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
1.5 g/L	4	4	7	6	8	6	11	4	10	4	10	64
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
2.0 g/L	1	0	0	1	0	1	1	0	0	0	6	4
	AD?	AD?	AD? ✓	AD? ✓	AD? ✓	AD?	AD?	AD?	AD?	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.80 #	1.38 to 1.77
Reproduction	0.53	0.29 to 0.80

Task Manager

Project Manager

QA Officer

OUTSIDE OF CUSUM RANGE, SEE CAR DATED 9-12-2006 JM

SCOEPA00026892

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC — Test Initiation: Date: 9-5-06 Time: 0915

Sample Description: NaCl — Test Termination: Date: 9-11-06 Time: 0845

Initial Sample ID #: 1B053-06 — Ceriodaphnia Lot#: Cd 1969

Technician: Day 1 DW Day 2 DW Day 3 DW Day 4 (TP) Day 5 (TP) Day 6 DW Day 7 ____

Time: Day 1 0930 Day 2 1045 Day 3 1000 Day 4 1000 Day 5 1530 Day 6 0845 Day 7 ____

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	5	6	4	5	5	5	5	10	49
	4	0	6	0	13	11	0	11	11	12	0	10	58
	5	12	12	13	16	16	15	0	0	0	12	10	96
	6	12	22	17	0	0	22	17	18	17	19	10	144
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	5	4	5	5	5	6	5	10	43
	4	5	0	0	0	0	0	8	0	11	0	10	24
	5	9	13	12	14	11	14	13	8	6	12	10	M 94 106
	6	0	10	16	21	15	16	0	15	19	17	10	129
	7												
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	5	5	5	5	4	5	4	4	10	42
	4	5	0	0	0	9	12	0	0	0	0	10	26
	5	0	13	10	12	12	15	3	10	6	10	10	91
	6	11	17	15	14	0	0	7/AD	14	17	11	9	106
	7							↓					
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	2	2	4	4	3	3	0	3	0	10	21
	4	0	0	0	7	0	9	8	0	0	0	10	24
	5	8	10	10	0	8	0	0	6	7	AY	10	49
	6	8	12	9	8	11	9	10	7	6	2	10	82
	7												
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	2	0	1	0	1	0	0	0	10	4
	4	0	0	0	0	0	0	6	0	0	0	10	6
	5	4	4	3	6	3	6	0	0	3	4	10	33
	6	0	0	2	0	4	0	4	4	7	0	10	21
	7												
2.0 g/L	1	0	0	0	0	0	0	0	0	0	0/AD	9	0
	2	0	0	0	0	0/AD	0	0	0	0	↓	8	0
	3	0	0	0	0	↓	0	0	0	0	↓	8	0
	4	0	0	0	0	↓	0	0	0	0	↓	8	0
	5	1	0	1	1	↓	1	0	0	0	↓	8	4
	6	0	0	0/AD	0/AD	↓	0	1	0	0	↓	6	1
	7			↓	↓	↓					↓		
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2												
	3												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC — Initiated Date 9-5-06 Time 0915 — Adults Isolated Date 9-4-06 Time 0700

Sample Description NaCl (50 g/L stock) — Reagent Log # 1B053-06 — Neo's Collected Date 9-5-06 Time 1230

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	TP	DW	DW	DW	TP	TP	DW	
Time	0915	0930	1045	1000	1000	1530	0845	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	7.9 / 8.2	8.0 / 8.1	8.0 / —	—
0.25 g/L	8.1	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
0.50 g/L	8.0	7.7 / 8.0	8.0 / 8.0	8.1 / 8.1	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
1.0 g/L	8.0	7.8 / 8.0	8.0 / 8.0	8.1 / 8.0	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
1.5 g/L	8.0	7.8 / 8.0	8.0 / 8.0	8.1 / 8.0	8.0 / 8.2	8.0 / 8.2	7.9 / —	—
2.0 g/L	8.1	7.8 / 8.0	8.0 / 8.0	8.2 / 8.1	8.2 / 8.2	8.0 / 8.2	7.9 / —	—
4.0 g/L	8.1	7.9 / —	- / -	- / -	- / -	- / -	- / -	-

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.8	7.6 / 7.9	7.8 / 8.0	7.9 / 8.1	7.9 / 7.9	7.9 / 7.9	7.9 / —	—
0.25 g/L	7.8	7.7 / 7.8	7.8 / 8.0	7.9 / 8.0	7.9 / 7.9	8.0 / 7.9	7.9 / —	—
0.50 g/L	7.8	7.8 / 7.8	7.8 / 7.9	7.9 / 7.9	7.9 / 7.9	8.0 / 7.9	8.0 / —	—
1.0 g/L	7.8	7.9 / 7.7	7.9 / 7.9	7.9 / 7.9	8.0 / 7.9	8.0 / 7.9	8.0 / —	—
1.5 g/L	7.9	8.0 / 7.8	7.9 / 7.9	8.0 / 7.8	8.0 / 8.0	8.0 / 7.9	8.0 / —	—
2.0 g/L	7.9	8.0 / 7.8	8.0 / 7.9	8.1 / 7.9	8.1 / 8.0	8.1 / 7.9	8.0 / —	—
4.0 g/L	7.9	8.0 / —	- / -	- / -	- / -	- / -	- / -	-

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.9 / 292	25.5 / 295	25.1 / 289	24.5 / 291	25.3 / 286	25.7 / 292	25.1	—
0.25 g/L	25.9 / 731	24.9 / 768	25.0 / 728	24.5 / 702	25.2 / 733	25.7 / 741	25.4	—
0.50 g/L	25.9 / 1175	25.2 / 1190	25.1 / 1142	24.5 / 1136	25.3 / 1170	25.6 / 1183	25.2	—
1.0 g/L	25.9 / 2010	25.0 / 2020	24.8 / 2060	25.0 / 1910	25.2 / 2030	25.5 / 2050	24.9	—
1.5 g/L	25.9 / 3360	25.2 / 2940	25.1 / 2870	25.2 / 2860	25.4 / 2870	25.4 / 2870	25.3	—
2.0 g/L	25.9 / 3650	25.1 / 3690	25.3 / 3710	24.8 / 3700	25.4 / 3730	25.3 / 3730	25.1	—
4.0 g/L	25.9 / 6882	24.9 / —	- / -	- / -	- / -	- / -	- / -	-

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 12 Sep-06 2:57 PM
Test Link: 09-7117-7544/rcdc1969

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	04-0617-7379	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	5d 23h
Start Date:	05 Sep-06 09:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	11 Sep-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	05 Sep-06 09:15 AM	**Brine:**			

Sample No:	11-2184-7093	**Code:**	1B053-06	**Client:**	
Sample Date:	01 Aug-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	35d 9h	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
09-9635-1371	6d Proportion Survived	25	1.795455	1.6625	2.333333	Linear Interpolation
15-3570-9226	Reproduction	25	0.5266854	0.3297872	0.6881068	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-3570-9226	Reproduction	Control Response	34.7	15 - NL	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		10	0.60000	0.00000	1.00000	0.16330	0.51640	86.07%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	34.7	28	41	1.1160	3.5292	10.17%
0.25		10	30.2	14	40	2.2745	7.1926	23.82%
0.5		10	26.5	14	35	2.1357	6.7536	25.49%
1		10	17.6	2	24	2.0450	6.4670	36.74%
1.5		10	6.4	4	11	0.8192	2.5906	40.48%
2		10	0.4	0	1	0.1633	0.5164	129.10
4		10	0	0	0	0	0	0.00%

SCOEPA00026895

CETIS Test Summary

Report Date: 12 Sep-06 2:57 PM
Test Link: 09-7117-7544/rcdc1969

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	28	39	35	34	33	41	33	34	34	36
0.25		14	27	32	40	30	35	26	28	36	34
0.5		16	35	30	31	26	32	14	29	27	25
1		16	24	21	19	23	21	21	13	16	2
1.5		4	4	7	6	8	6	11	4	10	4
2		1	0	0	1	0	1	1	0	0	0
4		0	0	0	0	0	0	0	0	0	0

SCOEPA00026896

CETIS Analysis Detail

Report Date: 12 Sep-06 2:57 PM
Analysis: 09-9635-1371/rcdc1969

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	09-7117-7544	09-7117-7544	12 Sep-06 2:57 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.795455	1.6625	2.333333

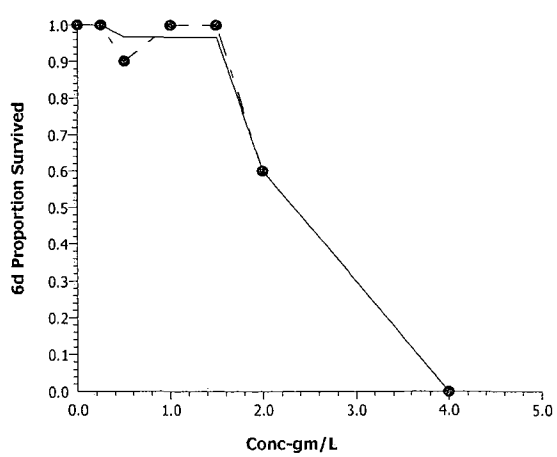
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		10	0.60000	0.00000	1.00000	0.10541	0.51640	6	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Graphics



SCOEPA00026897

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	09-7117-7544	09-7117-7544	12 Sep-06 2:57 PM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.5266854	0.3297872	0.6881068

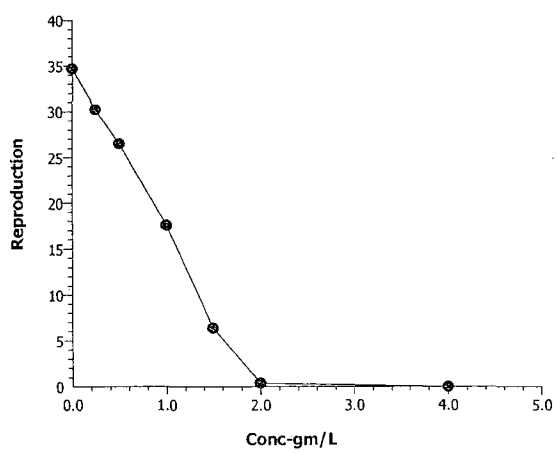
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	34.7	28	41	0.72040	3.52924
0.25		10	30.2	14	40	1.46818	7.19259
0.5		10	26.5	14	35	1.37857	6.7536
1		10	17.6	2	24	1.32007	6.46701
1.5		10	6.4	4	11	0.52880	2.59058
2		10	0.4	0	1	0.10541	0.5164
4		10	0	0	0	0	0

Data 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	28	39	35	34	33	41	33	34	34	36
0.25		14	27	32	40	30	35	26	28	36	34
0.5		16	35	30	31	26	32	14	29	27	25
1		16	24	21	19	23	21	21	13	16	2
1.5		4	4	7	6	8	6	11	4	10	4
2		1	0	0	1	0	1	1	0	0	0
4		0	0	0	0	0	0	0	0	0	0

Graphics



SCOEPA00026898

APPENDIX C
CHAIN OF CUSTODY

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: SiTronic Corporation
Address: 7200 N.W. Front Avenue, Portland, Oregon 97216
Contact Person: Thomas J. Rothschild
Phone: 503-2A-7374

NPDES# 101128
Composite Sample Information
Samples/Hour 1 Volume/Sample 6L
Total Hours 24 Total Volume 144L
Initiated: Date 5Sep Time 0800
Ended: Date 6Sep Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P. O.# In Process
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) Y
Temp. Upon Arrival (°C) 7.6°C
Check Ammonia (Y/N) Y Dechlorinate (Y/N) N

CH2M HILL Project #

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-76	6Sep 2006		X		1	R1668-01	X	X	X	X														Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%

Sampled By & Title (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 6Sep2006/0730	Relinquished By (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 6Sep2006/0820
Received By (Please sign and print name) PAUL CONROY	Date/Time 9-6-06 8:12A.	Relinquished By (Please sign and print name) PAUL CONROY	Date/Time 9-6-06 /1014
Received By (Please sign and print name) Bill Bunk	Date/Time 9-6-06	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name) Doug Winn / LAB	Date/Time 9-6-06/1045	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026900

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 N.W. Front Avenue, Portland, Oregon 97210
Contact Person: Thomas J. Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES#: 101128
Composite Sample Information:
Samples/Hour: 1 Volume/Sample: ~8L
Total Hours: 24 Total Volume: ~190
Initiated: Date: 7Sep Time: 0800
Ended: Date: 8Sep Time: 0700
Chilled During Collection: Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160
P. O.#: In Process

Check Chlorine (Y/N): Y
Temp. Upon Arrival (°C): 8.9
Check Ammonia (Y/N): Y Dechlorinate (Y/N): N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-80-B-9/06	8 Sep 2006	0740	X		1	B1d68-02	X	X	X	X									X					

Sampled By & Title (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 8Sep2006/0740	Relinquished By (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 8 Sep 2006/0825
Received By (Please sign and print name): Paul Conroy PAUL CONROY	Date/Time: 9-8-06/08:25	Relinquished By (Please sign and print name): PAUL CONROY	Date/Time: 9-8-06/10:57
Received By (Please sign and print name): Jim Watterpaugh Jim Watterpaugh	Date/Time: 9-8-06/10:57	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name):	Date/Time:	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #:
Work Authorized By (Please sign and print name):	Remarks:		

Rev. 10/97

SCOEPA00026901

CH2MHILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation
Address: 7200 N.W. Front Avenue, Portland, Oregon 97210
Contact Person: Thomas J. Rothschild
Phone: 503-219-7374
CH2M HILL Project #:

NPDES#: 101128
Composite Sample Information:
Samples/Hour: 1 Volume/Sample: ~8L
Total Hours: 24 Total Volume: ~190L
Initiated: Date: 10Sep Time: 0800
Ended: Date: 11Sep Time: 0800
Chilled During Collection: Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P.O.#: In Process
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N): Y
Temp. Upon Arrival (°C): 8.4°C
Check Ammonia (Y/N): Y Dechlorinate (Y/N): N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
06-81-B-9/06	11Sep 2006	0800	X		1	B1668-03	X	X	X	X									X					Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%

Sampled By & Title (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 11Sep2006/0740	Relinquished By (Please sign and print name): Thomas J. Rothschild Thomas J. Rothschild	Date/Time: 11Sep2006/0830
Received By (Please sign and print name): Paul Conroy PAUL CONROY	Date/Time: 9-11-06/8:30	Relinquished By (Please sign and print name): Paul Conroy PAUL CONROY	Date/Time: 9-11-06/10:55
Received By (Please sign and print name): Jim Wakeyaugh Jim Wakeyaugh	Date/Time: 9-11-06/10:55	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name): LAB	Date/Time: 9-11-06/1110	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name):	Remarks:		

Rev. 10/97

SCOEPA00026902

6 Sep 2006
TJR

SHIPPING REQUEST FORM

Ship To: CH2M Hill
Company Name

2300 N.W. Walnut Boulevard
Street Address

Aquatic Toxicology Laboratory
Suite/Room Number

Corvallis, Oregon 97330
City, State, Country, Zip Code

Attn: Mike Stanaway Phone:
Phone Number Required for International Shipments

Sender: Thomas J. Rothschild Ext: 7374

Cost Center/P.O.# 75952 / In Process

Number of Pieces: 1

Description: Water Sample

Special Instructions: Same Day Delivery

Service Level:

Required for International Shipments

Customs Value: $ Origin

To Be Completed by Shipping Personnel

Skids Boxes Lbs x x Dims

All shipments are PREPAID unless otherwise noted by requestor. COLLECT shipments require consignee's account Number

N:P&L-Distribution Logistics Team-DLT Forms-Shipping Request Form.doc
Revision Date: 08/03/05 7:08 AM

SCOEPA00026903

8 Sep 2006
3JR

SHIPPING REQUEST FORM

Ship To: CH2MHill, Incorporation
Company Name

2300 N.W. Walnut Boulevard
Street Address

Aquatic Toxicology Laboratory
Suite/Room Number

Corvallis, Oregon 97330
City, State, Country, Zip Code

Attn: Mike Hanaway Phone: 541-768-3160
Phone Number Required for International Shipments

Sender: Thomas J. Rothschild Ext: 7374

Cost Center/P.O.# 75952/ In Process

Number of Pieces: 1

Description: Outfall Sample for Bioassay

* Special Instructions: Same Day Delivery *

Service Level:

Required for International Shipments

Customs Value: $_____ Origin _____

To Be Completed by Shipping Personnel

Skids Boxes Lbs x x Dims

All shipments are PREPAID unless otherwise noted by requestor. COLLECT shipments require consignee's account Number

SCOEPA00026904

11Sep2006 JJR

SHIPPING REQUEST FORM

Ship To: CH2 MHill, Incorporated
Company Name

2300 NW. Walnut Boulevard
Street Address

Aquatic ~~Toxito~~ Toxicology Laboratory
Suite/Room Number

Corvallis, Oregon 97330
City, State, Country, Zip Code

Attn: mike Stanaway Phone: 541-768-3160
Phone Number Required for International Shipments

Sender: Thomas J. Rothschild Ext: 7374

Cost Center/P.O.# 75952 / In Process

Number of Pieces: 1

Description: outfall sample for Bioassay

Special Instructions: Same Day Delivery *

Service Level:

Required for International Shipments

Customs Value: $_____ Origin _____

To Be Completed by Shipping Personnel

Skids ____ Boxes ____ Lbs ____ x ____ x ____ Dims

All shipments are PREPAID unless otherwise noted by requestor. COLLECT shipments require consignee's account Number

N:P&L-Distribution Logistics Team-DLT Forms-Shipping Request Form.doc
Revision Date: 08/03/05 7:08 AM

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7003 2260 0001 3454 3565

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9/12/05

B10455A-Y

Sent To: Dr. Elliot Zais
Street, or PO: Oregon Department of Environmental Quality
City, S: 2020 SW 4th Ave. Suite 400
Portland, Oregon 97201-4987

PS Form 3800, June 2002 ... Instructions

Certified Mail Provides:

- ☐ A mailing receipt
- ☐ A unique identifier for your mailpiece
- ☐ A record of delivery kept by the Postal Service for two years

PS Form 3800, June 2002 (Reverse)

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- ☐ NO INSURANCE COVERAGE IS PROVIDED with Certified Mail. For valuables, please consider Insured or Registered Mail.
- ☐ For an additional fee, a *Return Receipt* may be requested to provide proof of delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the fee. Endorse mailpiece "Return Receipt Requested". To receive a fee waiver for a duplicate return receipt, a USPS® postmark on your Certified Mail receipt is required.
- ☐ For an additional fee, delivery may be restricted to the addressee or addressee's authorized agent. Advise the clerk or mark the mailpiece with the endorsement *"Restricted Delivery"*.
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SCOEPA00026907

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dr. Elliot Zais
Oregon Department of Environmental Quality
2020 SW 4th Ave. Suite 400
Portland, Oregon 97201-4987

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X DEQ/NWR ☐ Agent ☐ Addressee

B. Received by (Printed Name) SEP 14 2005 C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7003 2260 0001 3454 3565

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

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Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Jim Claxton
Siltronic Corporation
7200 NW Front Ave.
Portland, OR 97210-3676

C024

Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

ER044:JC

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

2005-September-12

August 2005 Bioassay results

Dear Dr. Zais,

The Bioassay of Siltronic's effluent **passes the requirements** of our NPDES permit number 101128.

The Bioassay was performed on three species: *Ceriodaphnia dubia* (water flea), *Pimephales promelas* (fathead minnow) and *Raphidocelis subcapitata* (green algae). The analyses were performed at the following dilutions, which are based on the average of three mixing zone dilution studies[1], as percentage effluent: 1.90%, 3.75%, 7.5%, 15% and 30%. Samples were taken August 9 though 16, 2005. The analytical methods used were "*Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002"* and *"Whole Effluent Toxicity Testing Guidance Document, Oregon Department of Environmental Quality, January 1993".*

Ceriodaphnia dubia

Acute Toxicity test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30% and greater than 30% effluent, respectively. Control survival was 95%. The LC_{50} value (concentration of sample causing a 50% reduction in survival) was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's zone of immediate dilution (ZID) is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results show a statistically significant reduction in reproduction at 15% and 30% effluent concentrations when compared to the control. The NOEC and LOEC were 7.5% and 15% effluent, respectively. Control survival was 100%. The IC_{25} value (concentration of sample causing a 25% reduction in biological measurement) calculated on reproduction was 8.6% effluent concentration. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Pimephales promelas (dual endpoint)

Acute Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's ZID is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 100%. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Raphidocelis subcapitata

Chronic Toxicity test results indicated a statistically significant reduction in growth at the 7.5, 15.0 and 30.0 percent effluent concentrations when compared to the control. The NOEC and LOEC were 3.75 and 7.5 percent effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is ≥ 1.8% effluent[1].

Summary of CH2MHill results for August 2005

Acute (48-hour) Results:	Ceriodaphnia dubia	Pimephales promelas	
NOEC	30%	30% (% Effluent)	
ZID Pass Criteria[1]	≥13.4%	≥13.4%	
Chronic Results:	**Ceriodaphnia dubia**	**Pimephales promelas**	**Raphidocelis subcapitata**
NOEC	7.5%	30%	3.75% (% Effluent)
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%	≥ 1.8%

If you have any questions, please contact me.

Regards,
Siltronic Corporation

J Claxton

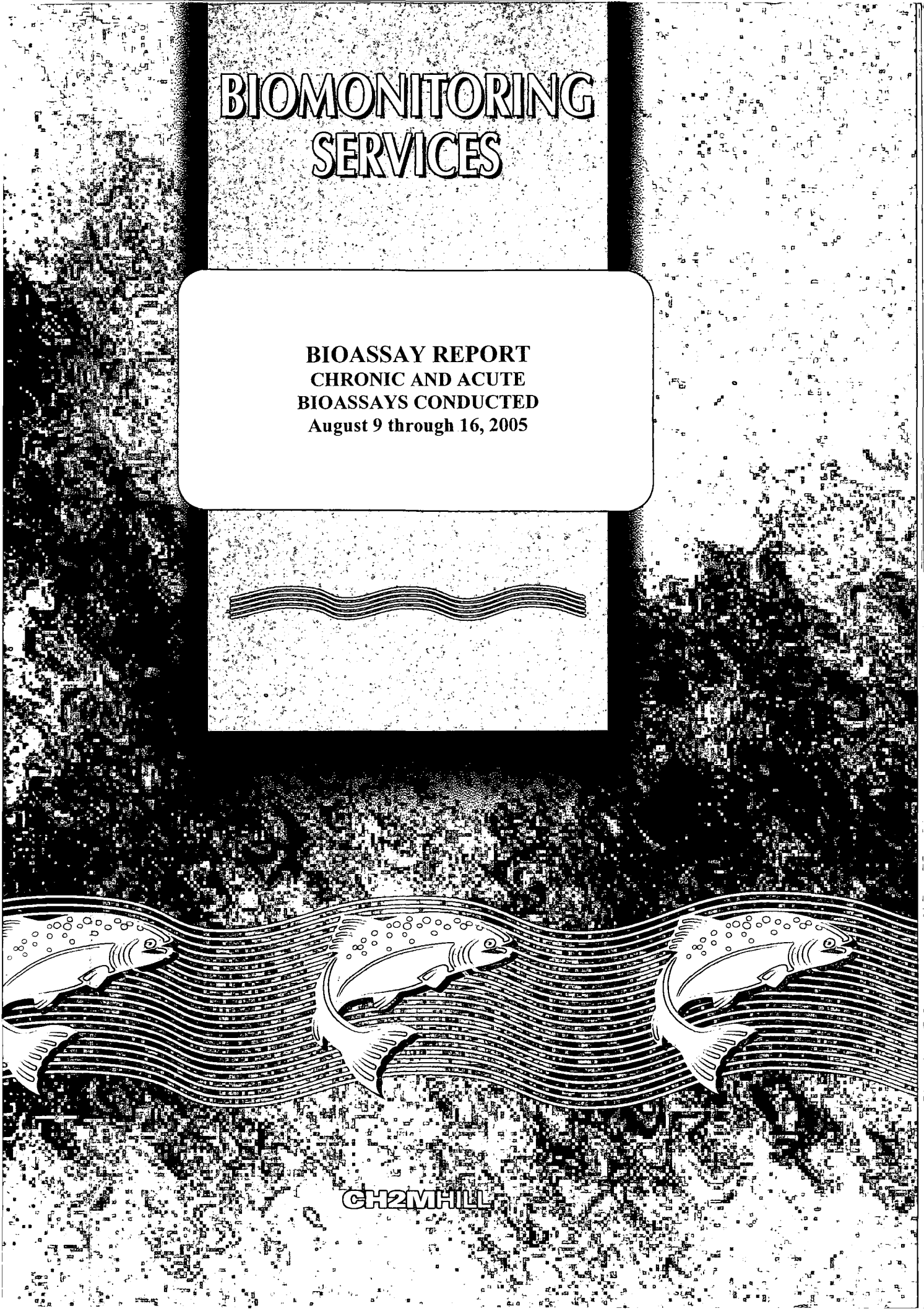
Jim Claxton
Environmental Engineer

cc: Tom Rothschild
Tom McCue
NPDES Bioassay File

[1] CH2MHILL Mixing Zone Effluent Dilution Evaluations prepared for Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Siltronic's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The average of the three mixing zone dilution studies identified worst-case (0.1-feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$), respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. **Conversely, the effluent is in compliance for toxicity if the acute test NOEC is greater than or equal to (≥) 13.4% effluent and the chronic test NOEC is greater than or equal to (≥) 1.8% effluent.**

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 9 through 16, 2005



CH2MHILL

SCOEPA00026912

BIOASSAY REPORT
CHRONIC AND ACUTE BIOASSAYS CONDUCTED
August 9 through 16, 2005

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

August 19, 2005
Lab I.D. No. B1440

SCOEPA00026913

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SCOEPA00026914

INTRODUCTION

CH2M HILL conducted chronic and acute bioassays from August 9 through 16, 2005, on samples provided by the Siltronics Corporation, Portland, Oregon. The tests were conducted using the water flea (*Ceriodaphnia dubia*), the fathead minnow (*Pimephales promelas*), and algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum)*.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. EPA/600/4-91/002, July 1994 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

The acute test was performed according to: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F; and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, April 1993.

Additional guidance was provided by: *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (EPA June 2000), EPA 833-R-00-003: and *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*, (EPA July 2000), EPA 821-B-00-004.

A deviation from the cited protocol was a temperature deviation in the sampling procedures. See notation in Sample Collection below

TEST ORGANISMS

The *Ceriodaphnia dubia* were obtained from CH2M HILL's in-house cultures and were less than 24 hours old for the acute test and less than 24 hours old and within an 8-hour age range for the chronic test. The fathead minnows were obtained from Aquatox Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. The *Raphidocelis* was obtained from CH2M HILL's in-house cultures and were 4 days old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (1994). The test organisms appeared vigorous and in good condition prior to testing.

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DILUTION WATER

Moderately hard, reconstituted water with a hardness of 90 mg/L as $CaCO_3$, alkalinity of 64 mg/L as $CaCO_3$ and pH of 7.7 was used as dilution water for the fathead minnow and *Ceriodaphnia dubia* tests. For the algae, the dilution water used was moderately hard, reconstituted water with nutrients added (including EDTA) with a hardness of 106, alkalinity of 74 mg/L as $CaCO_3$ and pH of 7.4.

TEST CONCENTRATIONS

The concentrations for the acute test were 1.90, 3.75, 7.50, 15.0, 30.0 percent effluent with dilution water for the control. For the acute *Ceriodaphnia dubia* test, 20 organisms per concentration were used with four test vessels per concentration and five organisms per vessel.

The concentrations tested in the chronic tests were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent and dilution water for the control. For the chronic *Ceriodaphnia dubia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel. For the fathead minnow chronic test, 10 organisms per chamber, with four chambers per concentration for a total of 40 organisms per concentration were used. The algae test was run with four replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

Samples were collected by Siltronics Corporation personnel on August 8, 10, and 12, 2005. The samples were shipped by courier to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on August 8, 10, and 12, 2005, and tests were initiated within 36 hours of sample collection. The samples were received within 5 hours of sample collection and were 19.2, 19.0, and 19.6 °C on arrival, respectively. EPA recommends cooling the samples to 4 °C during composite sample collection and shipping. On receipt, the samples were stored in the dark at 4°C until test solutions were prepared and tested. Chain of Custody for sample collection is provided in Appendix C.

SAMPLE PREPARATION

Samples used during these tests were filtered through a 60 µm net upon arrival and temperature was adjusted prior to each daily renewal.

The sample used for the algae test was passed through a 0.45 micron filter and nutrients, with EDTA, added prior to test initiation.

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MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

The acute test was analyzed at initiation for dissolved oxygen, pH, and conductivity, and every 24 hours thereafter for mortality, dissolved oxygen, and pH. Conductivity was again taken at test termination. Temperature was monitored daily and in the incubator or waterbath continuously throughout the testing period.

For the fathead minnow and *Ceriodaphnia dubia* chronic tests, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in all the concentrations. Conductivity was measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was measured daily in the chronic tests. According to EPA (1994), *Ceriodaphnia dubia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia dubia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored in prerenewal solutions daily and in the incubator or waterbath continuously throughout the testing period.

For the chronic algae, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity were measured in the control, low, middle, and high test concentrations at test initiation. *Raphidocelis subcapitata* growth was determined by cell counts using a Coulter Counter. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period.

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DATA ANALYSIS

The effects measured during the *Ceriodaphnia dubia* acute test included survival over the exposure period. The statistical analyses performed were those outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Weber C., et. al. (1993); EPA/600/4-90/027F, using CETIS version 1.1.1. For definitive tests, Dunnett's Procedure or Bonferroni T-test was used to compare the survival data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data. LC_{50} values (the concentration of sample causing a 50 percent reduction in survival) were calculated for the acute tests using Probit, Trimmed Spearman-Karber, or Linear Interpolation statistical methods.

The effects measured during the *Ceriodaphnia dubia* chronic test included survival and reproduction over the exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the exposure period. The effect measured during the algae test was algae growth response. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-89/001, CETIS version 1.025B. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the reproduction or growth data between the control and each sample treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

IC_{25} values (the concentration of sample causing a 25 percent reduction in biological measurement, e.g. growth) were calculated for growth effects in the chronic tests.

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RESULTS AND DISCUSSION

ACUTE RESULTS

The raw data sheets are presented in Appendix A and the results are summarized in Table 1 below. The survival in the 100 percent sample was 95.0 percent for the *Ceriodaphnia dubia* acute test.

Table 1
Summary of Acute Results
Percent Survival

Concentration (%)	0 hr	24 hr	48 hr
Ceriodaphnia dubia			
Control	100	95.0	90.0
1.9	100	100	95.0
3.75	100	100	95.0
7.5	100	100	90.0
15	100	100	95.0
30	100	90.0	90.0

The test resulted in no statistically significant difference between the control and any of the effluent concentrations tested for the *Ceriodaphnia dubia* test.

The dissolved oxygen concentration remained at 40 percent saturation or greater throughout the test period. Test temperatures remained in the range of 20±1°C. The test proceeded without interruption or incidence that could have affected test results.

The dual endpoint (deriving of the acute mortality results from the chronic test) resulted in no statistically significant difference between the control and any effluent concentrations tested for the fathead minnow test.

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CHRONIC BIOASSAYS

Table 2 summarizes the survival and growth data for the fathead minnow chronic test.

Table 2
Summary of Chronic Results
Fathead Minnow

Sample Concentration (%)	Percent Survival	Mean Dry Weight Per Fish (mg)
Control	100	0.650
1.9	95.0	0.691
3.75	100	0.641
7.5	100	0.664
15	97.5	0.606
30	97.2	0.625

The fathead minnow test results showed no statistically significant reduction in survival or growth at any effluent concentration tested when compared to the control. Control survival was 100 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration LOEC) were 30 and greater than 30 percent effluent, respectively.

The IC_{25} value calculated on the fathead minnow growth was greater than 30 percent effluent.

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Table 3 summarizes the survival and reproduction data for the *Ceriodaphnia dubia* test.

Table 3
Summary of Chronic Results
Ceriodaphnia dubia

Concentration (%)	Percent Survival	No. Young Per Adult
Control	100	28.2
1.9	100	29.1
3.75	90	25.1
7.5	100	23.7
15	60 [a]	8.5
30	0 [a]	0.0

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Fishers Exact Test.

The *Ceriodaphnia dubia* test results indicated a statistically significant reduction in survival at the 15 and 30 percent effluent concentrations when compared to the control. The NOEC and the LOEC were 7.5 and 15.0 percent effluent, respectively.

The IC_{25} value calculated on *Ceriodaphnia dubia* reproduction was 8.6 percent effluent.

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Table 4 summarizes the 96-hour algae growth response data for the *Raphidocelis subcapitata.*

Table 4
Summary of Chronic Results
Raphidocelis subcapitata

Concentration (%)	Growth (Cells/ml x 10^6)
Control	4.233
1.9	4.050
3.75	3.864
7.5	3.682 [a]
15	3.801 [a]
30	3.800 [a]

[a] Indicates a statistically significant reduction from control at p equal to 0.05 using Dunnett's Test.

The results using Dunnett's Test for the *Raphidocelis subcapitata* test showed a statistically significant reduction in growth at the 7.50, 15.0, and 30.0 percent effluent concentrations when compared to the control. The NOEC and the LOEC were 3.75 and 7.50 percent effluent, respectively.

The IC_{25} value calculated on *Raphidocelis subcapitata* growth was greater than 30 percent effluent.

The dissolved oxygen levels in the chronic tests remained above 40 percent saturation throughout the test periods and test temperatures remained at 25±1°C. The tests proceeded without any interruption that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted using sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA 1994), The IC_{25} values, LC_{50} values, and control chart limits are listed in Tables 5 and 6. The data sheets for the reference toxicant tests are provided in Appendix B.

Table 5
Acute Reference Toxicant Tests (g/L)

Species	LC_{50}	Control Chart
Pimephales promelas (FHM 1236)	7.5	6.0 to 8.1
Ceriodaphnia dubia	2.1	1.6 to 2.5

Table 6
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
Pimephales promelas (survival)	2.3	1.7 to 4.4
Pimephales promelas (growth)	1.7	1.3 to 3.1
Ceriodaphnia dubia (survival)	1.63	1.03 to 2.02
Ceriodaphnia dubia (reproduction)	0.59	0.22 to 0.88
Raphidocelis subcapitata (growth)	0.73	0.13 to 2.07

SCOEPA00026923

APPENDIX A
RAW DATA SHEETS

CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client Siltronics — Test Initiation: Date 8-9-05 Time 0900 Test Termination: Date 8-16-05 Time 0945

Contact Tom Rothschild — Technician Pittenger, Winn, Oldham, Stanaway

Test Species/ID: *Pimephales promelas* / FHM 1236 — *Ceriodaphnia dubia* / Cd 1825

Ceriodaphnia dubia / Cd 1824 — *Raphidocelis subcapitata* / Rs 375

Sample Information								Test Species Information	ID# FHM 1236	ID# Cd 1824	ID# Cd 1825	ID# Rs 375
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	(Age) or Size	< 24 hours —	< 24 hours within an 8 hour span	< 24 hours —	4 days —
B1440 -01	05-73	8/8/05	0800	0.02 / -	0.74	286	22	Test Container Size	400 ml	30 ml	30 ml	125 ml
-02	05-74	8/10/05	0800	0.03 / -	0.66	222	22	Test Volume	250 ml	15 ml	25 ml	50 ml
-03	05-76	8-12-05	0800	0.02 / -	0.83	124	—	Feeding: Type	0.15 ml *Artemia*	0.1 ml Algae &	none	1 ml of nutrients
				/				Amount	2 x daily	YCT daily	—	added per liter
				/				Aeration: Began	None	None	None	none
				/				Amount	—	—	—	—
				/				Dilution Water ID#	2530	2530	2530	2532
				/				Acclimation Period	< 24 hours	< 24 hours	< 24 hrs	days
				/				Test Location	# 3	# 5	# 10	# 2
				/				Condition of Survivors				
				/				Size (mm)	—	—		
				/				Loading Rate	—	—		
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	2530	90	64
Recon MH (Algae)	2532	106	74

Water Quality Meters Used/ID#

Dissolved Oxygen 2 pH 3 Temperature _____

Conductivity 2 Refractometer _____ Other _____

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CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # B1440-01

Sample Description

Test Species *Ceriodaphnia dubia* ID# Cd 1825

Beginning, Date 8-9-05 Time 0955

Ending, Date 8-11-05 Time 0930

Technician 0 hr BM 24 hr BM 48 hr DL 72 hr ____ 96 hr ____

Time 0 hr 0955 24 hr 1000 48 hr 0930 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	4			8.5	9.4 / 8.6	8.3			7.9	7.9 / 7.9	8.0			20.4	19.6	20.3			287		294		
	B	5	5	5																						
	C	5	4	4																						
	D	5	5	5																						
1.9	A	5	5	5			8.6	8.4 / 8.6	8.3			7.9	8.0 / 8.0	8.0			20.4	19.6	20.3							
	B	5	5	5																						
	C	5	5	4																						
	D	5	5	5																						
3.75	A	5	5	5			8.6	9.5 / 9.6	8.3			7.9	8.0 / 7.9	8.0			20.4	19.6	20.2							
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	4																						

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # 371440-01

Sample Description

Test Species ~~Ceriodaphnia dubia~~ ID# Cd 1825

Beginning, Date 8-9-05 Time 0955

Ending, Date 8-11-05 Time 0930

Technician 0 hr Bm 24 hr Bm 48 hr Bm 72 hr ____ 96 hr ____

Time 0 hr 0955 24 hr 1000 48 hr 0930 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
7.5	A	5	5	5			8.6	2.5 / 8.6	8.3			7.9	7.9 / 7.9	8.0			20.3	19.6	20.3							
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	4																						
15	A	5	5	5			8.6	2.5 / 8.7	8.3			7.9	7.9 / 7.9	7.9			20.4	19.6	20.3							
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	5																						
30	A	5	4	4			8.6	2.5 / 8.7	8.4			7.8	7.9 / 7.9	7.9			20.4	19.6	20.3			544		557		
	B	5	4	4																						
	C	5	5	5																						
	D	5	5	5																						

CETIS Test Summary

Report Date: 19 Aug-05 1:39 PM
Test Link: 10-3821-9265/B144001cda

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	16-7416-7005	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	09 Aug-05 09:55 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	11 Aug-05 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Aug-05 09:55 AM	**Brine:**			

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	26h	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-7311-5676	48h Proportion Survived	30	> 30	N/A	20.59%	Steel Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
12-0761-2858	48h Proportion Survived	25	> 30	N/A	N/A	Linear Interpolation
		50	> 30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-7311-5676	48h Proportion Survived	Control Response	0.90000	0.9 - NL	Yes	Passes acceptability criteria
12-0761-2858	48h Proportion Survived	Control Response	0.90000	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%
1.9		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
3.75		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
7.5		4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%
15		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
30		4	0.90000	0.80000	1.00000	0.05774	0.11547	12.83%

48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.80000	1.00000	0.80000	1.00000
1.9		1.00000	1.00000	0.80000	1.00000
3.75		1.00000	1.00000	1.00000	0.80000
7.5		1.00000	0.80000	1.00000	0.80000
15		1.00000	0.80000	1.00000	1.00000
30		0.80000	0.80000	1.00000	1.00000

SCOEPA00026928

CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	26h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	10-3821-9265	10-3821-9265	19 Aug-05 1:39 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	20.59%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	0.16428	15.08627	0.99945	Equal Variances
Distribution	Shapiro-Wilk W	0.79340		0.00023	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0212655	0.0042531	5	0.26	0.93059	Non-Significant Effect
Error	0.2977165	0.0165398	18			
Total	0.31898193	0.0207929	23			

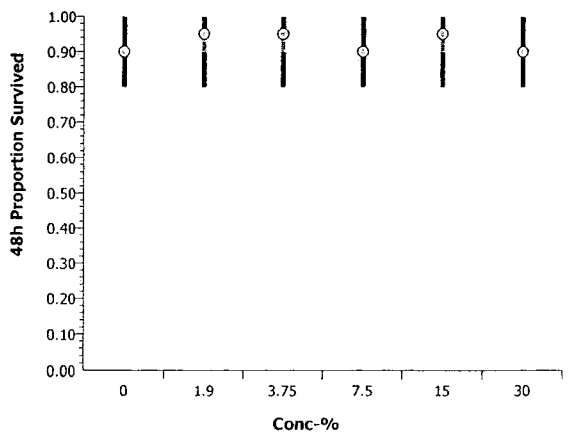
Group Comparisons

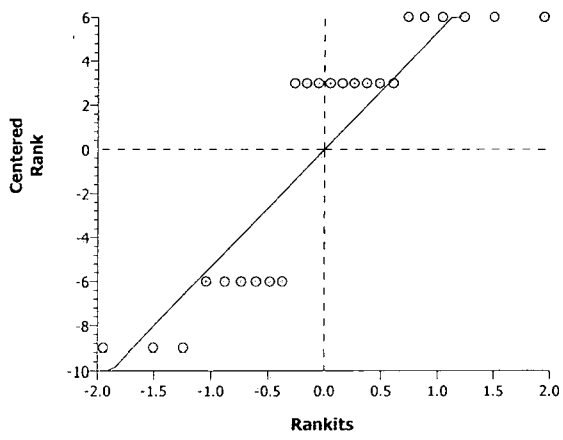
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	20	10	0.9516	2	Non-Significant Effect
		3.75	20	10	0.9516	2	Non-Significant Effect
		7.5	18	10	0.8333	4	Non-Significant Effect
		15	20	10	0.9516	2	Non-Significant Effect
		30	18	10	0.8333	4	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.90000	0.80000	1.00000	0.11547	11	5	17	6.9282
1.9		4	0.95000	0.80000	1.00000	0.10000	14	5	17	6
3.75		4	0.95000	0.80000	1.00000	0.10000	14	5	17	6
7.5		4	0.90000	0.80000	1.00000	0.11547	11	5	17	6.9282
15		4	0.95000	0.80000	1.00000	0.10000	14	5	17	6
30		4	0.90000	0.80000	1.00000	0.11547	11	5	17	6.9282

Graphics





SCOEPA00026929

CETIS Analysis Detail

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	26h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	10-3821-9265	10-3821-9265	19 Aug-05 1:39 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

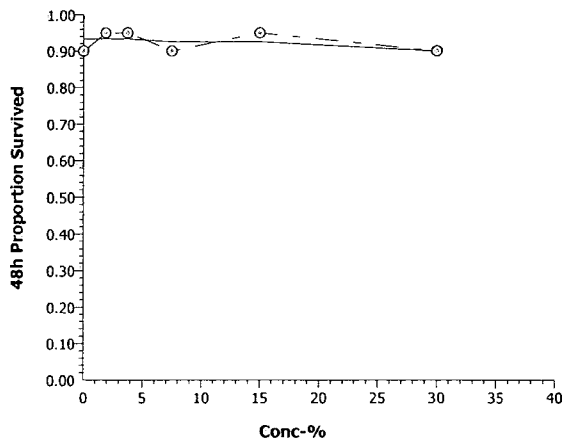
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A
50	> 30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.90000	0.80000	1.00000	0.02357	0.11547	18	20
1.9		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
3.75		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
7.5		4	0.90000	0.80000	1.00000	0.02357	0.11547	18	20
15		4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
30		4	0.90000	0.80000	1.00000	0.02357	0.11547	18	20

Graphics



SCOEPA00026930

CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics — Date Initiated: 8-9-05 — Time: 1050

Sample Description: B1490 — Date Terminated: 8-16-05 — Time: 0945

Technician: Day 0 DN — Day 1 TP — Day 2 TP — Day 3 BM — Day 4 DW — Day 5 DW — Day 6 BM — Day 7 TP

Time: Day 0 1050 — Day 1 1300 — Day 2 1300 — Day 3 1030 — Day 4 1305 — Day 5 ~~1500~~ 1700 — Day 6 1045 — Day 7 0915

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
CONTROL	0	10	10	10	10		8.2		7.9	24.3	293
	1	10	10	10	10	6.9	8.0	7.8	7.9	25.9	
	2	10	10	10	10	6.9	8.1	7.8	7.9	26.0	289
	3	10	10	10	10	7.2	8.2	7.6	8.0	24.8	
	4	10	10	10	10	7.1	8.1	7.4	7.9	25.4	295
	5	10	10	10	10	6.9	8.0	7.7	8.0	25.0	
	6	10	10	10	10	7.4	8.2	7.4	7.8	24.4	
	7	10	10	10	10	8.4		7.3		24.3	
1.90 %	0	10	10	10	10		8.2		7.9	24.6	
	1	10	10	10	9	6.6	8.1	7.8	8.0	25.9	
	2	10	10	10	9	6.7	8.1	7.7	8.0	25.9	
	3	10	10	10	9	7.3	8.2	7.7	8.0	24.8	
	4	10	10	10	9	7.2	8.1	7.7	7.9	25.3	
	5	10	10	10	9	7.1	8.1	7.6	7.9	24.7	
	6	10	10	10	9	7.2	8.2	7.4	7.8	24.5	
	7	10	9	10	9	6.0		7.3		24.4	
3.75 %	0	10	10	10	10		8.2		7.9	24.5	
	1	10	10	10	10	6.7	8.1	7.7	7.9	26.0	
	2	10	10	10	10	6.7	8.2	7.5	8.0	26.0	
	3	10	10	10	10	7.2	8.2	7.6	8.0	24.7	
	4	10	10	10	10	7.2	8.1	7.4	7.9	25.3	
	5	10	10	10	10	7.1	8.1	7.4	7.9	24.7	
	6	10	10	10	10	7.2	8.2	7.4	7.8	24.5	
	7	10	10	10	10	6.0		7.3		24.4	
7.50 %	0	10	10	10	10		8.2		7.9	24.6	
	1	10	10	10	10	6.6	8.2	7.7	8.0	25.8	
	2	10	10	10	10	6.6	8.1	7.7	8.0	25.9	
	3	10	10	10	10	7.2	8.2	7.6	8.0	24.7	
	4	10	10	10	10	7.2	8.2	7.4	7.9	25.2	
	5	10	10	10	10	7.1	8.1	7.6	7.9	24.7	
	6	10	10	10	10	7.0	8.2	7.4	7.8	24.5	
	7	10	10	10	10	6.1		7.3		24.5	
15.0 %	0	10	10	10	10		8.2		7.9	24.3	
	1	10	10	10	10	6.5	~~8.08~~	7.6	7.9	25.9	
	2	10	10	10	10	6.5	8.2	7.6	8.0	25.9	
	3	10	10	10	10	7.2	8.2	7.6	8.0	24.6	
	4	10	10	10	10	7.2	8.2	7.4	7.9	25.2	
	5	10	10	10	10	7.1	8.2	7.6	7.9	24.4	
	6	10	10	10	10	7.2	8.2	7.4	7.8	24.5	
	7	10	10	10	9	6.1		7.3		24.5	
30.0 %	0	10	10	~~9~~ 10	10		8.2		7.8	24.5	559
	1	10	10	9/9	10	6.4	8.1	7.6	7.8	25.9	
	2	10	10	9/9	10	6.4	8.1	7.5	7.9	25.9	500
	3	10	10	9/9	10	7.2	8.2	7.5	7.9	24.7	
	4	10	10	9/9	10	7.2	8.2	7.5	7.9	25.2	571
	5	10	10	9/9	10	7.2	8.2	7.4	7.9	24.6	
	6	10	10	9/9	10	7.3	8.2	7.3	7.7	24.6	
	7	10	10	8	10	6.0		7.2		24.4	

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics Species ID# FHM 1236

Lab ID: B 1440 Start Date: 08/09/2005

Sample Description:

Technician:	TP	TP
Date:	08/17/2005	08/11/2005

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1174.36	1167.79	10
	B	1155.99	1149.12	10
	C	1165.36	1159.18	10
	D	1150.04	1143.66	10
1.90%	A	1159.73	1153.02	10
	B	1172.59	1165.27	9
	C	1153.52	1146.42	10
	D	1159.28	1152.78	9
3.75%	A	1146.57	1140.42	10
	B	1163.31	1157.29	10
	C	1177.73	1170.74	10
	D	1162.69	1156.22	10
7.5%	A	1156.28	1149.48	10
	B	1156.90	1150.10	10
	C	1156.22	1150.68	10
	D	1172.00	1164.57	10
15%	A	1161.91	1155.45	10
	B	1154.20	1148.43	10
	C	1165.16	1158.81	10
	D	1152.67	1147.02	9
30%	A	1152.37	1145.49	10
	B	1141.05	1134.71	10
	C	1139.70	1135.19	8
	D	1161.31	1154.55	10

weigh to 0.01 mg

SCOEPA00026932

CETIS Test Summary

Report Date: 17 Aug-05 4:04 PM
Test Link: 06-8499-8917/B144001ppc

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	12-3419-1524	**Test Type:**	Growth-Survival (7d)	**Duration:**	6d 22h
Start Date:	09 Aug-05 10:50 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	16 Aug-05 09:45 AM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	09 Aug-05 10:50 AM	**Brine:**			

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-6995-7604	2d Proportion Survived	30	> 30	N/A	4.57%	Steel Many-One Rank
13-3494-7526	7d Proportion Survived	30	> 30	N/A	6.90%	Steel Many-One Rank
03-8264-1730	Mean Dry Biomass-mg	30	> 30	N/A	14.88%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
03-8671-9807	2d Proportion Survived	25	> 30	N/A	N/A	Linear Interpolation
		50	> 30	N/A	N/A	
10-4328-3761	Mean Dry Biomass-mg	25	> 30	N/A	N/A	Linear Interpolation
		50	> 30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-3494-7526	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
03-8264-1730	Mean Dry Biomass-mg	Control Response	0.65	0.25 - NL	Yes	Passes acceptability criteria
10-4328-3761	Mean Dry Biomass-mg	Control Response	0.65	0.25 - NL	Yes	Passes acceptability criteria
03-8264-1730	Mean Dry Biomass-mg	PMSD	0.14880	0.12 - 0.3	Yes	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
30		4	0.97222	0.88889	1.00000	0.02778	0.05556	5.71%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.65000	0.61799	0.68700	0.01468	0.02936	4.52%
1.9		4	0.69075	0.65000	0.73199	0.01853	0.03707	5.37%
3.75		4	0.64075	0.60200	0.69900	0.02160	0.04319	6.74%
7.5		4	0.66425	0.55399	0.74301	0.03964	0.07928	11.94%
15		4	0.60575	0.56500	0.64601	0.02034	0.04068	6.72%
30		4	0.62478	0.50111	0.68800	0.04282	0.08563	13.71%

SCOEPA00026933

CETIS Test Summary

Report Date: 17 Aug-05 4:04 PM
Test Link: 06-8499-8917/B144001ppc

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	0.90000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	0.90000	1.00000	0.90000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	0.90000
30		1.00000	1.00000	0.88889	1.00000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.65699	0.68700	0.61799	0.63800
1.9		0.67100	0.73199	0.71000	0.65000
3.75		0.61499	0.60200	0.69900	0.64700
7.5		0.68000	0.68000	0.55399	0.74301
15		0.64601	0.57699	0.63500	0.56500
30		0.68800	0.63401	0.50111	0.67600

SCOEPA00026934

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	06-8499-8917	06-8499-8917	17 Aug-05 4:04 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	4.57%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	0.97879	4.24788	0.45724	Equal Variances
Distribution	Shapiro-Wilk W	0.49355		0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0054311	0.0010862	5	0.98	0.45724	Non-Significant Effect
Error	0.0199759	0.0011098	18			
Total	0.02540698	0.002196	23			

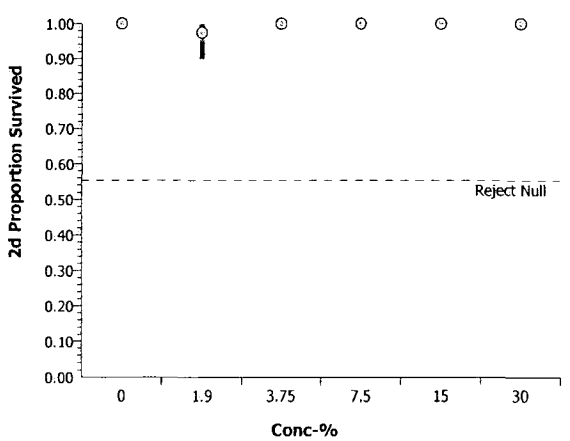
Group Comparisons

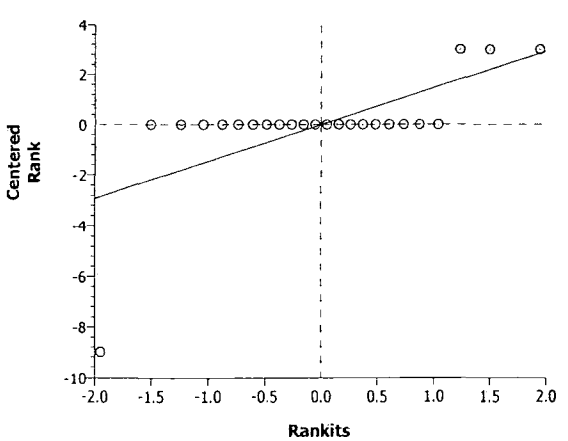
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	16	10	0.6105	4	Non-Significant Effect
		3.75	18	10	0.8333	4	Non-Significant Effect
		7.5	18	10	0.8333	4	Non-Significant Effect
		15	18	10	0.8333	4	Non-Significant Effect
		30	18	10	0.8333	4	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
1.9		4	0.97500	0.90000	1.00000	0.05000	10	1	13	6
3.75		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
7.5		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
15		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0
30		4	1.00000	1.00000	1.00000	0.00000	13	13	13	0

Graphics





SCOEPA00026935

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	06-8499-8917	06-8499-8917	17 Aug-05 4:04 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

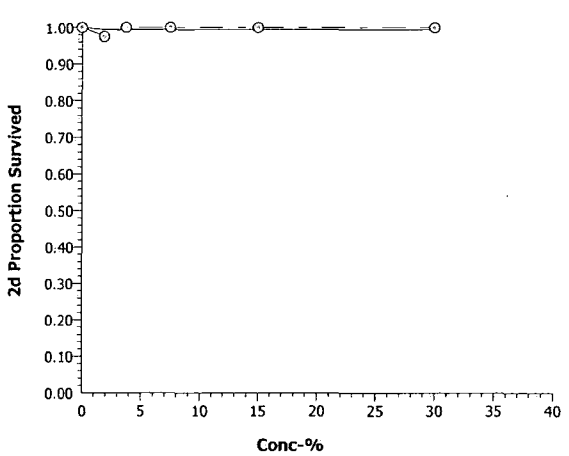
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A
50	> 30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1.9		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	39	39

Graphics



SCOEPA00026936

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	06-8499-8917	06-8499-8917	17 Aug-05 4:04 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		30	>30	3.3333	N/A	6.90%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	1.83554	4.24788	0.15652	Equal Variances
Distribution	Shapiro-Wilk W	0.83747		0.00129	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0226922	0.0045384	5	1.15	0.37110	Non-Significant Effect
Error	0.071065	0.0039481	18			
Total	0.09375716	0.0084865	23			

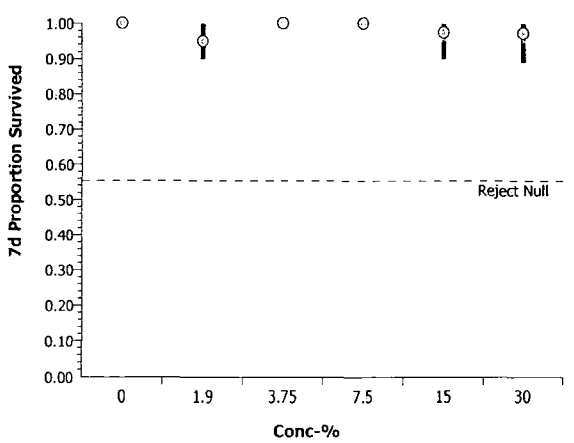
Group Comparisons

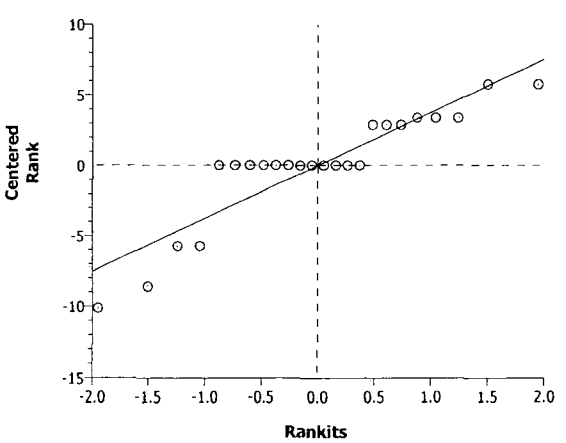
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		1.9	14	10	0.3451	4	Non-Significant Effect
		3.75	18	10	0.8333	4	Non-Significant Effect
		7.5	18	10	0.8333	4	Non-Significant Effect
		15	16	10	0.6105	4	Non-Significant Effect
		30	16	10	0.6105	4	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	14.5	14.5	14.5	0
1.9		4	0.95000	0.90000	1.00000	0.05773	8.75	3	14.5	6.6395
3.75		4	1.00000	1.00000	1.00000	0.00000	14.5	14.5	14.5	0
7.5		4	1.00000	1.00000	1.00000	0.00000	14.5	14.5	14.5	0
15		4	0.97500	0.90000	1.00000	0.05000	11.625	3	14.5	5.75
30		4	0.97222	0.88889	1.00000	0.05556	11.125	1	14.5	6.75

Graphics





SCOEPA00026937

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	06-8499-8917	06-8499-8917	17 Aug-05 4:04 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.3333	N/A	14.88%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	5.06209	15.08627	0.40835	Equal Variances
Distribution	Shapiro-Wilk W	0.93955		0.15940	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0177974	0.0035595	5	1.10	0.39338	Non-Significant Effect
Error	0.0581244	0.0032291	18			
Total	0.07592173	0.0067886	23			

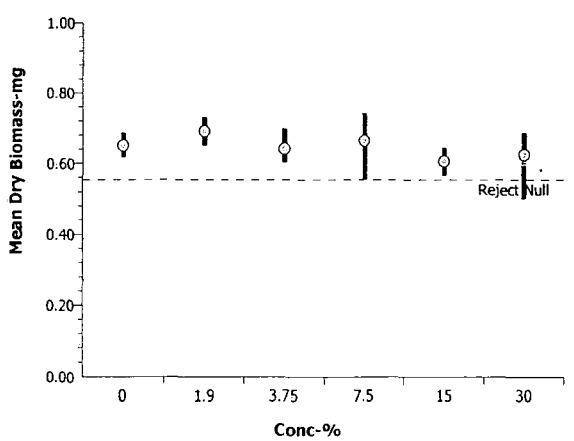
Group Comparisons

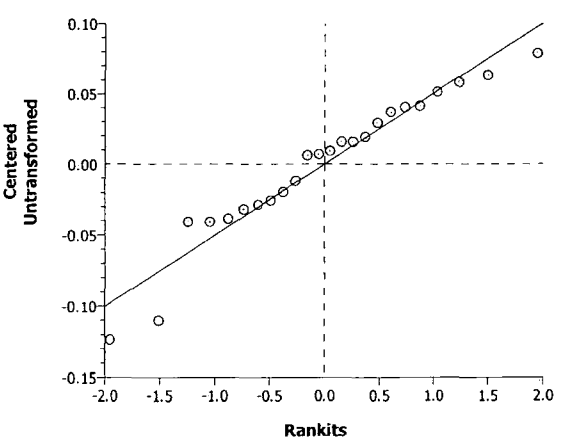
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	-1.0141	2.40711	0.9834	0.09672	Non-Significant Effect
		3.75	0.23020	2.40711	0.7567	0.09672	Non-Significant Effect
		7.5	-0.3548	2.40711	0.9167	0.09672	Non-Significant Effect
		15	1.10119	2.40711	0.3780	0.09672	Non-Significant Effect
		30	0.62756	2.40711	0.5909	0.09672	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.65000	0.61799	0.68700	0.02936				
1.9		4	0.69075	0.65000	0.73199	0.03707				
3.75		4	0.64075	0.60200	0.69900	0.04319				
7.5		4	0.66425	0.55399	0.74301	0.07928				
15		4	0.60575	0.56500	0.64601	0.04068				
30		4	0.62478	0.50111	0.68800	0.08563				

Graphics





SCOEPA00026938

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	06-8499-8917	06-8499-8917	17 Aug-05 4:04 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

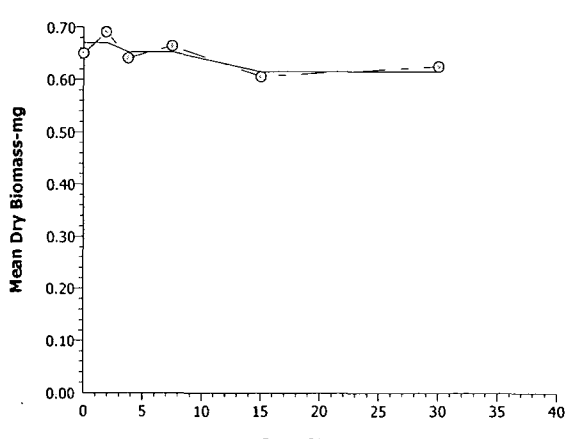
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A
50	> 30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.65000	0.61799	0.68700	0.00599	0.02936
1.9		4	0.69075	0.65000	0.73199	0.00757	0.03707
3.75		4	0.64075	0.60200	0.69900	0.00882	0.04319
7.5		4	0.66425	0.55399	0.74301	0.01618	0.07928
15		4	0.60575	0.56500	0.64601	0.00830	0.04068
30		4	0.62478	0.50111	0.68800	0.01748	0.08563

Graphics



SCOEPA00026939

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics
Test Start Date: 8-9-05
Sample Description:
Sample ID#: B1440-01
Ceriodaphnia Lot#: Cd 1824
Statistician:

Percent or Concentration	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	29	30	28	29	24	24	26	32	30	30	10	282
1.9	27	29	33	30	31	28	25	21	32	35	10	291
3.75	24	27	32	26	14 (AD)	15	25	27	32	29	9	251
7.5	31	29	25	15	18	19	18	19	~~25~~ 31 ms	32	10	237
15	19	13	10	(AD) 0	(AD) 0	(AD) 2	14	~~(AD) 9~~ 9 ms	~~4~~ 11 ms	~~H~~ 7 ms	6	85
30	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	0	0

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

(AD) = adult dead

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client Siltronics Test Beginning : Date 8-9-05 Time 0900

Sample Description B1440-01 Test Ending : Date 8-15-05 Time 0940

Ceriodaphnia Lot# Cd 1024 Dilution Water Recon MH (FHM) ID# 2830

Technician Day 1 (KD) Day 2 DW Day 3 DW Day 4 (KD) Day 5 (KD) Day 6 MS Day 7 ____

Time Day 1 1020 Day 2 1655 Day 3 0915 Day 4 1235 Day 5 1500 Day 6 0940 Day 7 ____

(Percent) or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	6	5	4	5	5	6	5	5	5	10	51
	4	10	8	6	6	5	6	7	9	8	10	10	75
	5	0	0	0	4	0	0	0	4	0	0	10	8
	6	14	16	17	15	14	13	13	14*	17	15	10	148
	7												
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	5	5	5	6	5	6	6	5	5	10	54
	4	0	0	10	9	11	8	7	6	7	12	10	70
	5	4	8	0	0	0	0	0	9	0	0	10	21
	6	17	16	18	16	14	15	12	0	20	18	10	~~197~~ 146
	7												
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	5	4	5	5	4	5	5	6	5	10	49
	4	0	7	8	7	9	4	6	7	7	10	10	65
	5	7	0	0	0	AD	0	0	0	0	0	~~10~~ 9	7
	6	12	15	20	14	↓	7	14	15	19	14	9	130
	7					↓							
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	4	6	DW Ø3	5	5	4	5	6	5	10	48
	4	0	0	4	0	5	0	0	8	7	10	10	34
	5	7	8	0	0	8	0	0	6	6	0	10	35
	6	19	17	15	12	0	14	14	0	12	17	10	120
	7												
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	0	0/AD	0/AD	2	2	0	0	3	8	14
	4	5	0	0	↓	↓	AD 6	5	4	0	0	8	14
	5	0	4	0	↓	↓	↓	0	0	3	0	7	7
	6	10	6	10	↓	↓	↓	7	5 AD	8	4	6	50
	7				↓	↓	↓		↓				
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	4												
	5												
	6												
	7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

* appears to be split brood

CH2MHILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics | Initiated Date: 8-4-05 Time: 0900 | Adults Isolated Date: 8-8-05 Time: 0800

Sample Description: B1440-01 | Terminated Date: 8-15-05 Time: 0940 | Neo's Collected Date: 8-8-05 Time: 1140

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	B	DO	DW	DW	DO	DO	MS	
Time	0925	1020	1055	0915	1235	1500	0940	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.5	7.8 / 8.1	7.8 / 8.0	7.9 / 8.0	8.0 / 8.0	7.9 / 7.9	7.4 / —	—
1.9	8.5	7.9 / 8.1	7.8 / 8.0	7.9 / 8.0	7.9 / 8.0	8.0 / 8.0	7.5 / —	—
3.75	8.5	8.0 / 8.1	7.8 / 8.0	7.9 / 7.9	7.9 / 7.9	7.9 / 8.0	7.5 / —	—
7.5	8.5	8.0 / 8.2	7.8 / 8.1	7.9 / 7.9	7.9 / 7.9	7.9 / 8.0	7.6 / —	—
15	8.6	8.0 / 8.4	7.8 / 8.1	7.9 / 7.9	7.8 / 7.8	7.8 / 8.0	7.4 / —	—
30	8.5	8.0 / 8.4	7.8 / —	— / —	— / —	— / —	— / —	—

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.4	7.6 / 7.7	7.9 / 7.8	8.1 / 7.9	8.0 / 7.9	8.1 / 8.0	7.9 / —	—
1.9	7.5	7.8 / —	7.9 / 7.8	8.0 / 7.8	8.0 / 7.8	8.1 / 7.9	7.9 / —	—
3.75	7.5	7.4 / 7.7	7.9 / 7.7	8.0 / 7.8	8.0 / 7.8	8.0 / 7.9	7.9 / —	—
7.5	7.6	7.7 / 7.7	7.9 / 7.7	8.0 / 7.8	8.0 / 7.8	8.0 / 7.8	7.9 / —	—
15	7.6	7.7 / 7.6	7.9 / 7.6	8.0 / 7.8	8.1 / 7.7	8.0 / 7.8	7.9 / —	—
30	7.5	7.8 / 7.6	7.9 / —	— / —	— / —	— / —	— / —	—

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	24.2 / 299	24.7	24.3 / 284	24.7	25.1 / 291	25.0	24.9 / —	
1.9	24.2 / -	24.5 / -	24.5 / -	24.7 / -	25.2 / -	25.0 / -	25.1 / -	-
3.75	24.2 / -	24.5 / -	24.2 / -	24.8 / -	25.4 / -	25.1 / -	24.8 / -	-
7.5	24.3 / -	24.4 / -	24.3 / -	24.5 / -	25.1 / -	25.0 / -	25.1 / -	-
15	24.2 / -	24.4 / -	24.3 / -	24.4 / -	25.0 / -	25.0 / -	26.3 / -	-
30	24.2 / 542	24.4	24.5 / -	- / -	- / -	- / -	- / -	-

COMMENTS:

CETIS Test Summary

Report Date: 15 Aug-05 4:45 PM
Test Link: 08-7526-4349/B144001cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	07-2894-0036	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 0h
Start Date:	09 Aug-05 09:00 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Aug-05 09:40 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Aug-05 09:00 AM	**Brine:**			

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-9426-2320	2d Proportion Survived	15	30	21.213	N/A	Fisher Exact/Bonferroni-Holm
02-5161-4222	6d Proportion Survived	15	30	21.213	N/A	Fisher Exact/Bonferroni-Holm
15-0854-4443	Reproduction	7.5	15	10.607	19.02%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
09-4606-4057	2d Proportion Survived	50	22.5	22.5	22.5	Linear Interpolation
07-8574-7044	Reproduction	25	8.591694	5.758929	9.713542	Linear Interpolation
		50	12.12582	10.86614	13.65	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
07-8574-7044	Reproduction	Control Response	28.2	15 - NL	Yes	Passes acceptability criteria
15-0854-4443	Reproduction	Control Response	28.2	15 - NL	Yes	Passes acceptability criteria
15-0854-4443	Reproduction	PMSD	0.19016	0.13 - 0.47	Yes	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		10	0.60000	0.00000	1.00000	0.16330	0.51640	86.07%
30		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	28.2	24	32	0.8537	2.6998	9.57%
1.9		10	29.1	21	35	1.2949	4.0947	14.07%
3.75		10	25.1	14	32	1.9576	6.1905	24.66%
7.5		10	23.7	15	32	2.0819	6.5836	27.78%
15		10	8.5	0	19	1.9958	6.3114	74.25%
30		10	0	0	0	0	0	0.00%

SCOEPA00026943

CETIS Test Summary

Report Date: 15 Aug-05 4:45 PM
Test Link: 08-7526-4349/B144001cdc

2d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	0.00000	1.00000	1.00000
30		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	29	30	28	29	24	24	26	32	30	30
1.9		27	29	33	30	31	28	25	21	32	35
3.75		24	27	32	26	14	15	25	27	32	29
7.5		31	29	25	15	18	19	18	19	31	32
15		19	13	10	0	0	2	14	9	11	7
30		0	0	0	0	0	0	0	0	0	0

SCOEPA00026944

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	08-7526-4349	08-7526-4349	15 Aug-05 4:41 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact/Bonferroni-Holm	C > T	Untransformed		15	30	6.6667	21.213	

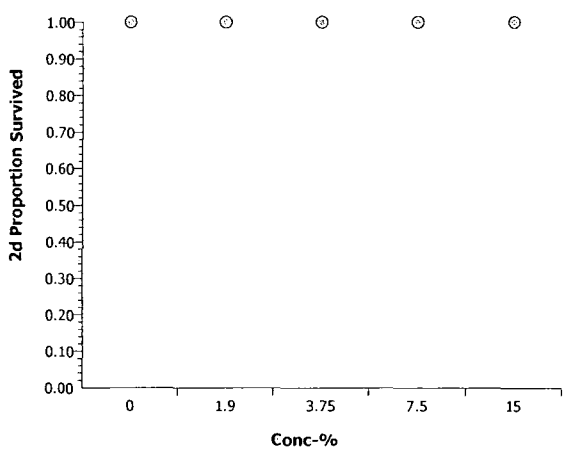
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		1.9	1.00000	1.00000	Non-Significant Effect
Dilution Water		3.75	1.00000	1.00000	Non-Significant Effect
Dilution Water		7.5	1.00000	1.00000	Non-Significant Effect
Dilution Water		15	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		10	0	10
3.75		10	0	10
7.5		10	0	10
15		10	0	10

Graphics



SCOEPA00026945

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	08-7526-4349	08-7526-4349	15 Aug-05 4:41 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747400	280	Yes	Two-Point Interpolation

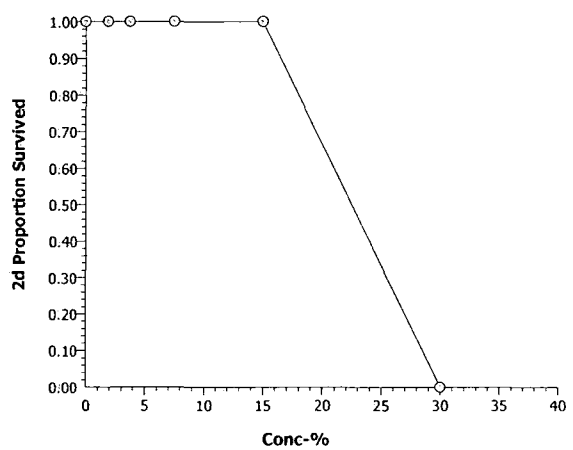
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
50	22.5	22.5	22.5

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
15		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
30		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Graphics



SCOEPA00026946

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	08-7526-4349	08-7526-4349	15 Aug-05 4:40 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact/Bonferroni-Holm	C > T	Untransformed		15	30	6.6667	21.213	

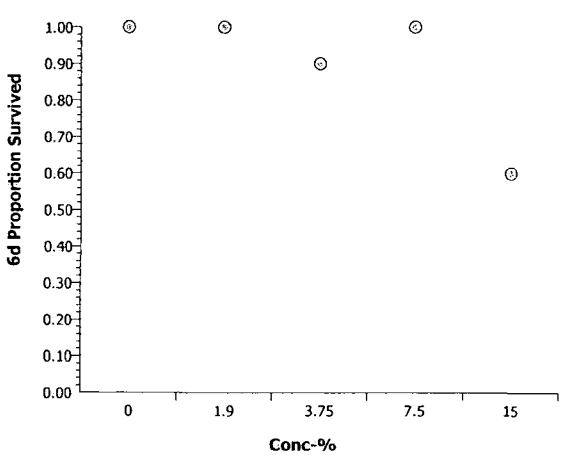
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		1.9	1.00000	1.00000	Non-Significant Effect
Dilution Water		3.75	0.50000	1.00000	Non-Significant Effect
Dilution Water		7.5	1.00000	1.00000	Non-Significant Effect
Dilution Water		15	0.04334	0.17337	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		10	0	10
3.75		9	1	10
7.5		10	0	10
15		6	4	10

Graphics



SCOEPA00026947

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	08-7526-4349	08-7526-4349	15 Aug-05 4:40 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		7.5	15	13.333	10.607	19.02%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	8.18568	13.27670	0.08501	Equal Variances
Distribution	Shapiro-Wilk W	0.97415		0.33851	Normal Distribution

ANOVA Table

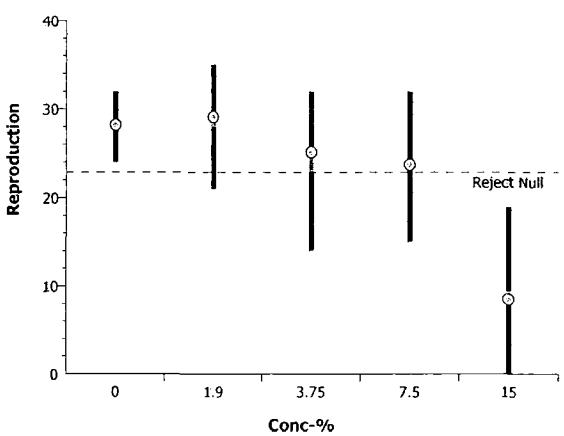
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2793.68	698.42	4	23.99	0.00000	Significant Effect
Error	1310	29.11111	45			
Total	4103.67993	727.53109	49			

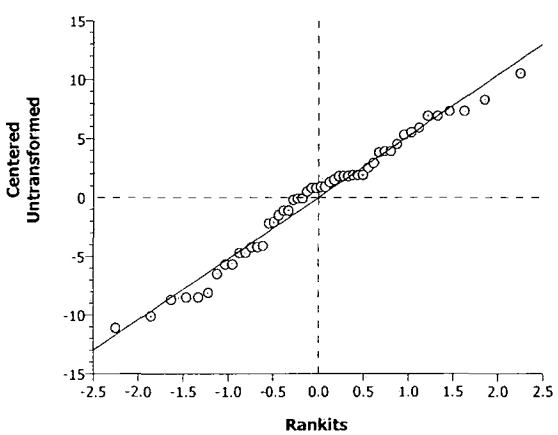
Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	-0.373	2.22241	0.8993	5.36253	Non-Significant Effect
		3.75	1.28475	2.22241	0.2628	5.36253	Non-Significant Effect
		7.5	1.86495	2.22241	0.1023	5.36253	Non-Significant Effect
		15	8.16435	2.22241	0.0000	5.36253	Significant Effect

Data Summary			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	28.2	24	32	2.6998				
1.9		10	29.1	21	35	4.0947				
3.75		10	25.1	14	32	6.1905				
7.5		10	23.7	15	32	6.5836				
15		10	8.5	0	19	6.3114				

Graphics





SCOEPA00026948

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	25h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	08-7526-4349	08-7526-4349	15 Aug-05 4:41 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	3019480	280	Yes	Two-Point Interpolation

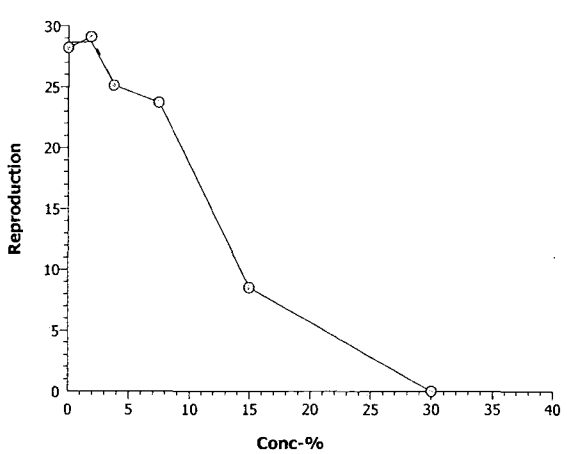
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	8.591694	5.758929	9.713542
50	12.12582	10.86614	13.65

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	28.2	24	32	0.55109	2.69979
1.9		10	29.1	21	35	0.83583	4.09471
3.75		10	25.1	14	32	1.26363	6.19049
7.5		10	23.7	15	32	1.34388	6.58365
15		10	8.5	0	19	1.28830	6.31137
30		10	0	0	0	0	0

Graphics



SCOEPA00026949

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics

Sample Description: B1440-01

Test Start Date: 8-9-05 Time: 1115 Initials: DO

Test End Date: 8-13-05 Time: 1330 Initials: CW

TEST CONDITIONS AT INITIATION:

Species ID#: RS 375

Age: 4 days

Dilution Water ID #: 2532

Source Water: RECON MH(FHM) #2530

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		Culture Density
414	200		
MEAN	2.07	x 250,000 =	517,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	517,500	=	0.97 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	4	100	0.01
Flask #2	4	100	0.01
Flask #3	5	100	0.0125

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
386	399	391

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	DO	DO	BW	BW	CW
Time	1115	0920	0830	0910	1330

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.3	7.8	8.2	8.3	8.6	8.8	25.4	25.5	25.8	25.9	25.3	356	106	74
1.90 %	8.1	8.0	8.2	8.3	8.7	8.9	25.6	25.4	25.9	25.8	25.3	379	110	72
3.75 %	8.1	8.0	8.2	8.3	8.8	8.9	25.4	25.5	26.0	25.7	25.2	396		
7.50 %	8.1	8.0	8.1	8.3	8.7	9.1	25.5	25.4	25.8	25.3	25.3	430	126	68
15.0 %	8.1	7.9	8.1	8.3	8.7	9.0	25.5	25.4	25.9	25.4	25.2	489		
30.0 %	8.0	7.9	8.1	8.2	8.7	9.0	25.5	25.3	25.8	25.3	25.2	616	162	60

Comments:

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: Siltronics

Sample Description:

Lab ID: B1440

Test Start Date: 08/09/2005

Test Count Date: 08/15/2005 Initials: TP

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20
Dilution factor (DF) Default value:	41
Output:	Concentration
Metered volume (ml):	0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF:	41
1	6560
2	4838
3	8528
4	
5	
6	

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.50 ml sample to 20mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.403	4.159	4.345	4.000
2	4.567	4.233	4.313	4.046
3	4.206	4.198	4.316	4.004
Replicate Average	**4.392**	**4.197**	**4.325**	**4.017**
CONCENTRATION MEAN # Cells / mL* =		**4.233**	CV % =	3.9%

TEST CONCENTRATION	1.9 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.055	3.931	4.095	4.047
2	4.047	3.938	4.140	4.027
3	4.266	3.923	4.129	3.999
Replicate Average	**4.123**	**3.931**	**4.121**	**4.024**
CONCENTRATION MEAN # Cells / mL* =		**4.050**	CV % =	2.3%

TEST CONCENTRATION	3.75 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.089	3.433	3.961	3.916
2	4.109	3.481	3.948	3.853
3	4.150	3.496	4.054	3.879
Replicate Average	**4.116**	**3.470**	**3.988**	**3.883**
CONCENTRATION MEAN # Cells / mL* =		**3.864**	CV % =	7.2%

TEST CONCENTRATION	7.5 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.311	4.096	3.627	3.711
2	3.502	3.823	3.675	3.753
3	3.413	3.855	3.655	3.761
Replicate Average	**3.409**	**3.925**	**3.652**	**3.742**
CONCENTRATION MEAN # Cells / mL* =		**3.682**	CV % =	5.8%

TEST CONCENTRATION	15 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	4.151	3.541	3.996	3.586
2	4.143	3.601	3.784	3.588
3	4.146	3.612	3.815	3.644
Replicate Average	**4.147**	**3.585**	**3.865**	**3.606**
CONCENTRATION MEAN # Cells / mL* =		**3.801**	CV % =	6.9%

TEST CONCENTRATION	30 %			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.516	3.970	4.071	3.539
2	3.514	4.000	4.116	3.557
3	3.506	4.028	4.140	3.646
Replicate Average	**3.512**	**3.999**	**4.109**	**3.581**
CONCENTRATION MEAN # Cells / mL* =		**3.800**	CV % =	7.8%

SCOEPA00026951

CETIS Test Summary

Report Date: 15 Aug-05 4:20 PM
Test Link: 07-2855-5797/B144001rsc

Raphidocelis Growth Test — **CH2M Hill**

Test No:	08-4266-8043	**Test Type:**	Cell Growth	**Duration:**	4d 2h
Start Date:	09 Aug-05 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	13 Aug-05 01:30 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Aug-05 11:15 AM	**Brine:**			

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-4644-1487	Cell Density	3.75	7.5	5.3033	9.26%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
10-7362-4579	Cell Density	25	> 30	N/A	N/A	Linear Interpolation
		50	> 30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
09-4644-1487	Cell Density	Control CV	0.03902	NL - 0.2	Yes	Passes acceptability criteria
10-7362-4579	Cell Density	Control CV	0.03902	NL - 0.2	Yes	Passes acceptability criteria
09-4644-1487	Cell Density	Control Response	4232500	1000000 - NL	Yes	Passes acceptability criteria
10-7362-4579	Cell Density	Control Response	4232500	1000000 - NL	Yes	Passes acceptability criteria
09-4644-1487	Cell Density	PMSD	0.09259	0.091 - 0.29	Yes	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	4.23E+6	4.02E+6	4.39E+6	8.26E+4	1.65E+5	3.90%
1.9		4	4.05E+6	3.93E+6	4.12E+6	4.59E+4	9.18E+4	2.27%
3.75		4	3.86E+6	3.47E+6	4.12E+6	1.40E+5	2.80E+5	7.23%
7.5		4	3.68E+6	3.41E+6	3.92E+6	1.07E+5	2.15E+5	5.83%
15		4	3.80E+6	3.58E+6	4.15E+6	1.32E+5	2.64E+5	6.93%
30		4	3.80E+6	3.51E+6	4.11E+6	1.49E+5	2.98E+5	7.84%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.39E+6	4.20E+6	4.32E+6	4.02E+6
1.9		4.12E+6	3.93E+6	4.12E+6	4.02E+6
3.75		4.12E+6	3.47E+6	3.99E+6	3.88E+6
7.5		3.41E+6	3.92E+6	3.65E+6	3.74E+6
15		4.15E+6	3.58E+6	3.87E+6	3.61E+6
30		3.51E+6	4.00E+6	4.11E+6	3.58E+6

SCOEPA00026952

CETIS Analysis Detail

Raphidocelis Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	07-2855-5797	07-2855-5797	15 Aug-05 4:20 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Untransformed		3.75	7.5	26.667	5.3033	9.26%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	3.90961	15.08627	0.56250	Equal Variances
Distribution	Shapiro-Wilk W	0.96697		0.59306	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	8.062E+11	1.612E+11	5	3.04	0.03663	Significant Effect
Error	9.542E+11	5.301E+10	18			
Total	1.7604E+12	2.143E+11	23			

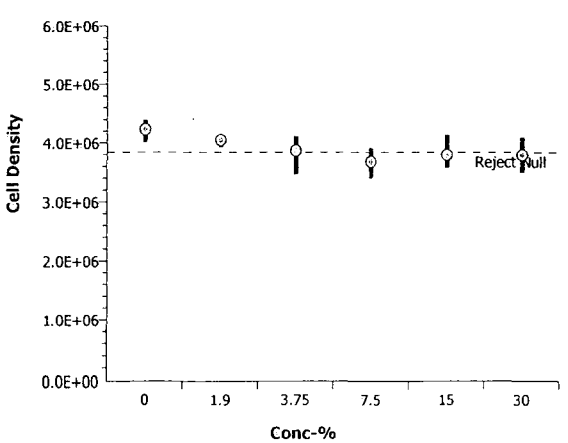
Group Comparisons

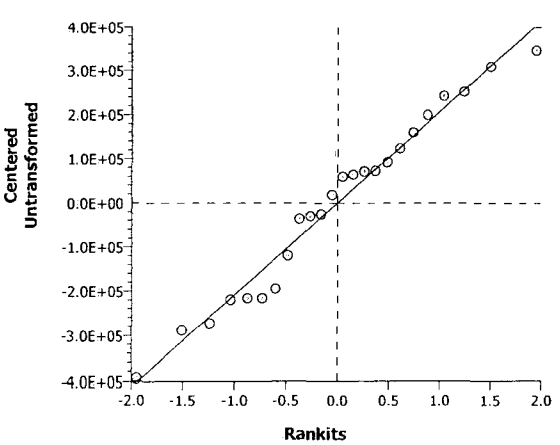
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.9	1.12253	2.40711	0.3690	391882	Non-Significant Effect
		3.75	2.26297	2.40711	0.0654	391882	Non-Significant Effect
		7.5	3.38243	2.40711	0.0069	391882	Significant Effect
		15	2.65302	2.40711	0.0311	391882	Significant Effect
		30	2.65507	2.40711	0.0310	391882	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	4.23E+6	4.02E+6	4.39E+6	1.65E+5				
1.9		4	4.05E+6	3.93E+6	4.12E+6	9.18E+4				
3.75		4	3.86E+6	3.47E+6	4.12E+6	2.80E+5				
7.5		4	3.68E+6	3.41E+6	3.92E+6	2.15E+5				
15		4	3.80E+6	3.58E+6	4.15E+6	2.64E+5				
30		4	3.80E+6	3.51E+6	4.11E+6	2.98E+5				

Graphics





SCOEPA00026953

CETIS Analysis Detail

Report Date: 15 Aug-05 4:20 PM
Analysis: 10-7362-4579/B144001rsc

Raphidocelis Growth Test — **CH2M Hill**

Sample No:	08-2803-4072	**Material:**	Industrial Effluent	**Client:**	
Sample Date:	08 Aug-05 08:00 AM	**Code:**	B1440-01	**Project:**	
Receive Date:	08 Aug-05 10:45 AM	**Source:**	Siltronics		
Sample Age:	27h	**Station:**			

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	07-2855-5797	07-2855-5797	15 Aug-05 4:20 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

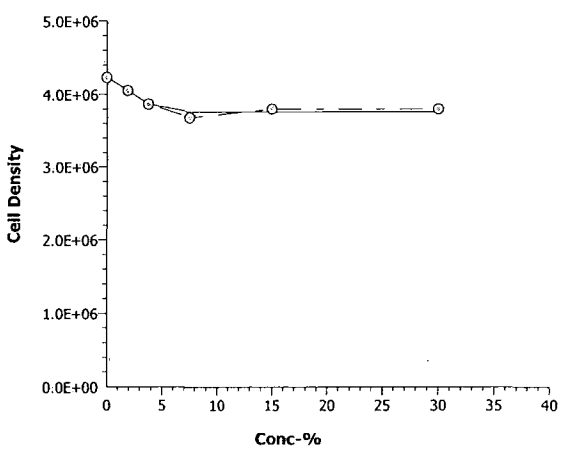
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	> 30	N/A	N/A
50	> 30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	4.23E+6	4.02E+6	4.39E+6	3.37E+4	1.65E+5
1.9		4	4.05E+6	3.93E+6	4.12E+6	1.87E+4	9.18E+4
3.75		4	3.86E+6	3.47E+6	4.12E+6	5.71E+4	2.80E+5
7.5		4	3.68E+6	3.41E+6	3.92E+6	4.38E+4	2.15E+5
15		4	3.80E+6	3.58E+6	4.15E+6	5.38E+4	2.64E+5
30		4	3.80E+6	3.51E+6	4.11E+6	6.08E+4	2.98E+5

Graphics



SCOEPA00026954

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

REFERENCE TOXICANT DATA SHEET

Client: QA/QC | Reference Toxicant: Sodium chloride | Test Begin: Date 8-9-05 Time 1045
Test Organism: *Pimephales promelas* | Solvent: distilled water | Stock Solution: 20 g/L | Test End: Date 8-11-05 Time 1035
Source: Aquatox Inc. | Reagent Log ID #: 13029-09
ID#: FHM 1236 | *Dilution Water: ____ ID#: 2530
Age: <24 hrs | Total Hardness as CaCO3: 90 | Total Alkalinity as CaCO3: 64
Size: na | Conductivity (µmhos/cm) / Salinity (ppt): 261 | Temperature: 20 ± 1 °C
Loading: na | Technician: 0 hr DW 24 hr [illegible] 48 hr [illegible] 72 hr ____ 96 hr ____
Time: 0 hr 1045 24 hr 0945 48 hr 1035 72 hr ____ 96 hr ____

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving					Dissolved Oxygen (mg/l)					pH					Temperature °C					Cond.
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0
Control		10	10	10			8.3	8.2	8.5			7.7	7.7	8.0			19.1	19.9	20.2			285
4		10	10	10			8.3	8.3	8.6			7.7	7.7	7.9			19.1	19.8	20.1			7050
6		10	10	10			8.9	8.3	8.6			7.8	7.7	7.8			19.1	19.8	20.1			10010
8		10	7	3			8.9	8.4	8.6			7.7	7.6	7.8			19.1	19.9	20.0			12970
10		10	0	–			8.8	8.5	–			7.6	7.6	–			19.1	19.9	–			15250
12		10	0	–			8.8	8.7	–			7.6	7.5	–			19.1	19.7	–			18930
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 7.5
Cusum Chart Limits: 6.0 & 9.1
Statistical Method: Spearman-Kaber

We verify this data is true and correct.
Task Manager: [signature]
Project Manager: [signature]
QA Officer: [signature]

CETIS Test Summary

Report Date: 15 Aug-05 4:12 PM
Test Link: 05-0079-7901/rppa1236

Fathead Minnow Acute Survival Test — **CH2M Hill**

Test No:	10-0593-1453	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	09 Aug-05 10:45 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	11 Aug-05 10:35 AM	**Dil Water:**		**Source:**	Aquatox, AR
Setup Date:	09 Aug-05 10:45 AM	**Brine:**			

Sample No:	10-3124-1184	**Material:**	Sodium chloride	**Client:**	
Sample Date:	03 Aug-05	**Code:**	1B029-09	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	6d 10h	**Station:**			

Comments: 20 g/L

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
15-2979-5130	48h Proportion Survived	50	7.479937	6.946228	8.054653	Trimmed Spearman-Karber

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
4		1	1.00000	1.00000	1.00000			
6		1	1.00000	1.00000	1.00000			
8		1	0.30000	0.30000	0.30000			
10		1	0.00000	0.00000	0.00000			0.00%
12		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1
0	Dilution Water	1.00000
4		1.00000
6		1.00000
8		0.30000
10		0.00000
12		0.00000

SCOEPA00026957

CETIS Analysis Detail

Report Date: 15 Aug-05 4:12 PM
Analysis: 15-2979-5130/rppa1236

Fathead Minnow Acute Survival Test — **CH2M Hill**

Sample No:	10-3124-1184	**Material:**	Sodium chloride	**Client:**	
Sample Date:	03 Aug-05	**Code:**	1B029-09	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	6d 10h	**Station:**			

Comments: 20 g/L

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	05-0079-7901	05-0079-7901	15 Aug-05 4:12 PM	CETISv1.1.1

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	μ	σ
Control Threshold	0	0.00%	0.8738979	0.01607447

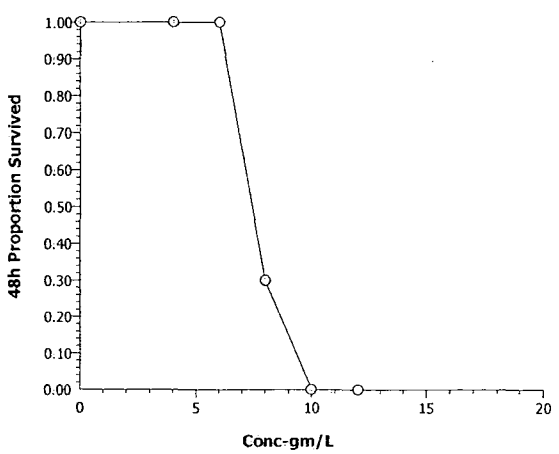
Point Estimates

EC50/LC50	95% LCL	95% UCL
7.47994	6.94623	8.05465

Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
4		1	1.00000	1.00000	1.00000			10	10
6		1	1.00000	1.00000	1.00000			10	10
8		1	0.30000	0.30000	0.30000			3	10
10		1	0.00000	0.00000	0.00000			0	10
12		1	0.00000	0.00000	0.00000			0	10

Graphics



SCOEPA00026958

REFERENCE TOXICANT DATA SHEET

Client: QA/QC | Reference Toxicant: Sodium chloride | Test Begin: Date 8-12-05 Time 1215
Test Organism: *Ceriodaphnia dubia* | Solvent: distilled water | Stock Solution: 20 g/L | Test End: Date 8-14-05 Time 1415
Source: in house (CH2M Hill) | Reagent Log ID #: 1B079-09
ID#: Cd 1926 | *Dilution Water: Recon MH (FHM) ID# 2530
Age: < 24 hrs | Total Hardness as CaCO3: 90 | Total Alkalinity as CaCO3: 64
Size: na | Conductivity (µmhos/cm) / Salinity (ppt): 261 | Temperature: 20 ± 1 °C
Loading: na | Technician: 0 hr [illegible] 24 hr [illegible] 48 hr [illegible] 72 hr 96 hr
Time: 0 hr 1215 24 hr 1400 48 hr 1415 72 hr 96 hr

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen (mg/l) 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond. 0
Control	A	5	5	Ø5			8.2		8.1			7.9		7.8			20.8	20.1	19.8			285
	B	5	5	Ø5																		
0.5	A	5	5	Ø5			8.2		8.1			7.9		7.9			20.9	20.1	19.8			1164
	B	5	5	Ø5																		
1.0	A	5	5	Ø5			8.2		8.0			7.9		7.9			20.8	20.2	19.8			2030
	B	5	5	Ø5																		
1.5	A	5	5	Ø5			8.2		8.0			7.9		7.9			20.8	20.3	19.7			2820
	B	5	5	Ø5																		
2.0	A	5	5	2			8.2		8.0			7.9		7.9			20.8	20.1	19.8			3720
	B	5	5	3																		
3.0	A	5	5	0			8.2		8.0			7.9		7.9			20.8	20.1	19.7			5330
	B	5	5	0																		
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 2.1
Cusum Chart Limits: 1.6 to 2.5
Statistical Method: Spearman-Kärber

We verify this data is true and correct.
Task Manager
Project Manager
QA Officer

SCOEPA00026959

CETIS Test Summary

Report Date: 15 Aug-05 8:33 AM
Test Link: 13-4186-3522/rcda1826

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test No:	06-7234-5587	**Test Type:**	Survival (48h)	**Duration:**	50h
Start Date:	12 Aug-05 12:15 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	14 Aug-05 02:15 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	12 Aug-05 12:15 PM	**Brine:**			

Sample No:	10-3124-1184	**Material:**	Sodium chloride	**Client:**	
Sample Date:	03 Aug-05	**Code:**	1B029-09	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	9d 12h	**Station:**			

Comments: 20 g/L

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
17-7751-0475	48h Proportion Survived	50	2.059767	1.845955	2.298345	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
17-7751-0475	48h Proportion Survived	Control Response	1	0.9 - NL	Yes	Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		2	0.50000	0.40000	0.60000	0.10000	0.14142	28.28%
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	1.00000
0.5		1.00000	1.00000
1		1.00000	1.00000
1.5		1.00000	1.00000
2		0.40000	0.60000
3		0.00000	0.00000

SCOEPA00026960

CETIS Analysis Detail

Report Date: 15 Aug-05 8:33 AM
Analysis: 17-7751-0475/rcda1826

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Sample No:	10-3124-1184	**Material:**	Sodium chloride	**Client:**	
Sample Date:	03 Aug-05	**Code:**	1B029-09	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	9d 12h	**Station:**			

Comments: 20 g/L

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	13-4186-3522	13-4186-3522	15 Aug-05 8:33 AM	CETISv1.1.1

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim	μ	σ
Control Threshold	0	0.00%	0.3138181	0.02379851

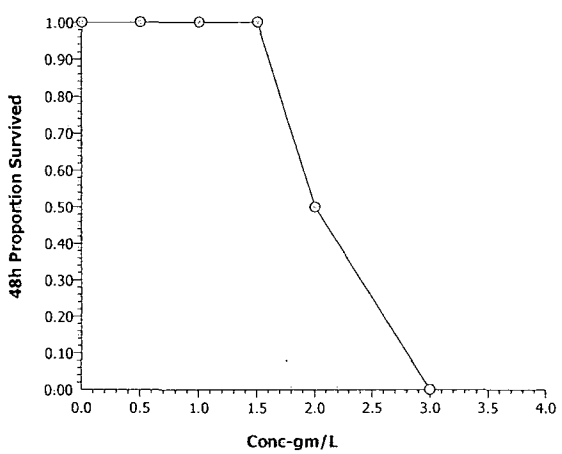
Point Estimates

EC50/LC50	95% LCL	95% UCL
2.05977	1.84596	2.29834

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		2	0.50000	0.40000	0.60000	0.02887	0.14142	5	10
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Graphics



SCOEPA00026961

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

FHM 1252

Client: Ref Tox JULY
Sample Description: NaCl - 50 g/L 18029-05
Date Initiated: 7-6-05 Time: 1200
Date Terminated: 7-13-05 Time: 1330

Technician: Day 0 TP Day 1 AF Day 2 WT Day 3 TP Day 4 TP Day 5 WT Day 6 TP Day 7 TP
Time: Day 0 ~~1100~~ 1200 Day 1 1200 Day 2 1500 Day 3 1100 Day 4 1200 Day 5 1315 Day 6 1615 Day 7 ~~1225~~ 1330

Concentration or Percent	Day	Number of Live Organisms A	B	C	D	Dissolved O_2 (mg/l) Pre	Post	pH Pre	Post	Temperature (°C)	Specific Conductivity (µmhos/cm)
Control	0	10	10	10	10		8.2		7.6	24.2	273
	1	10	10	10	10	7.9	8.3	7.6	7.8	24.2	
	2	10	10	10	10	7.6	7.9	7.4	7.7	25.0	279
	3	10	10	9	10	7.5	8.3	7.8	7.6	24.6	
	4	10	10	9	10	8.1	8.2	7.9	7.6	24.2	276
	5	10	10	9	10	7.3	8.1	7.4	7.9	24.9	275
	6	10	10	9	10	7.5	8.2	7.6	7.6	24.4	279
	7	10	10	9	10	7.1		7.2		24.5	~~290~~ TP
0.3	0	10	10	10	10		8.2		7.8	24.2	810
	1	10	10	10	10	7.6	~~8.58~~ 8.2	7.7	7.9	24.1	
	2	10	10	10	10	7.4	8.1	7.6	8.0	24.9	806
	3	10	R 9 10	10	10	7.6	8.3	7.7	7.7	24.5	
	4	10	10	10	10	8.0	8.3	7.8	7.8	24.2	821
	5	10	10	10	10	7.1	8.2	7.4	7.9	24.8	812
	6	10	10	10	10	7.3	8.3	7.5	7.8	24.5	826
	7	10	10	10	10	7.1		7.3		24.4	~~874~~ TP
1.0	0	10	10	10	10		8.3		7.9	24.2	1899
	1	10	10	10	10	7.8	8.4	7.8	8.0	24.3	
	2	10	10	10	10	7.2	8.1	7.5	8.0	24.9	1971
	3	10	10	10	10	7.5	8.4	7.7	7.8	24.5	
	4	10	10	10	10	8.0	8.4	7.8	7.9	24.1	1969
	5	9	10	10	10	7.2	8.2	7.5	7.9	24.9	1895
	6	9	10	10	10	7.4	8.3	7.5	7.9	24.6	1905
	7	9	10	10	10	7.2		7.5		24.3	~~TP 2010~~ ~~2010~~
2.0	0	10	10	DW 10 9	10		8.3		8.0	24.2	3570
	1	10	10	* 9	10	7.6	8.4	7.8	8.0	24.5	
	2	10	10	9	10	7.3	8.2	7.6	8.0	25.3	3600
	3	10	10	9	10	7.6	8.4	7.7	7.9	24.4	
	4	10	10	9	10	8.1	8.4	7.8	8.0	24.2	3590
	5	10	10	9	10	7.4	8.3	7.6	7.9	24.8	3520
	6	8	10	9	8	7.5	8.4	7.6	7.9	24.9	3520
	7	7	10	8	6	7.3		7.5		24.2	~~3660~~ TP
4.0	0	10	10	10	10		8.3		8.0	24.2	6730
	1	R 9 10	10	10	10	7.6	8.4	7.9	8.0	24.3	
	2	10	10	10	10	7.3	8.3	7.6	8.0	25.1	6590
	3	10	10	10	10	7.7	8.4	7.7	7.9	24.5	
	4	9	10	R 6 7	R 8 9	8.0	8.4	7.8	8.0	24.0	6670
	5	7	8	7	9	7.4	8.2	7.7	7.9	24.8	6700
	6	5	7	7	5	7.7	8.4	7.7	7.9	24.8	6710
	7	4	5	5	4	7.5		7.6		24.7	
8.0	0	10	10	10	10		8.2		8.0	24.1	12620
	1	6	6	9	9	7.6	8.4	7.9	8.0	24.2	
	2	1	3	3	5	7.3	8.4	* 8.4 7.6	8.0	24.9	12530
	3	1	1	1	0	7.8	8.4	7.7	7.9	24.7	~~12~~
	4	0	0	0	0	8.0	8.4	7.7	7.9	24.1	12390
	5	(	(	(	(			~~TP~~ TP			12430
	6	)	)	)	)						
	7	)	)	)	)						

* only 9 present

Endpoint	IC25	Cusum Chart Limits
Survival	2.3	1.7 to 4.4
Growth	1.7	1.3 to 3.1

Task Manager
Project Manager
QA Officer

SCOEPA00026962

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC July | Species ID#: FHM 1232

Lab ID: na | Start Date: 07/06/2005

Sample Description: NaCl - 50g/L 1B029-05

Technician:	TP	TP
Date:	07/14/2005	07/01/2005

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1161.00	1153.55	10
	B	1170.85	1163.49	10
	C	1142.97	1136.37	9
	D	1151.69	1143.84	10
0.3 g/L	A	1171.76	1162.43	10
	B	1159.82	1151.10	10
	C	1170.39	1161.24	10
	D	1155.71	1146.33	10
1.0 g/L	A	1156.84	1146.66	9
	B	1160.33	1150.52	10
	C	1152.71	1142.77	10
	D	1171.79	1161.12	10
2.0 g/L	A	1145.75	1140.30	7
	B	1153.01	1145.99	10
	C	1160.72	1155.24	8
	D	1169.95	1166.64	6
4.0 g/L	A	1161.22	1159.72	4
	B	1149.36	1148.32	5
	C	1152.38	1151.56	5
	D	1147.79	1146.04	4
8.0 g/L	A		1144.40	0
	B		1164.43	0
	C		1140.45	0
	D		1140.88	0

weigh to 0.01 mg

SCOEPA00026963

CETIS Test Summary

Report Date: 15 Jul-05 9:27 AM
Link: 17-7359-3133/rppc1232

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test No:	09-9094-5906	**Test Type:**	Growth-Survival (7d)	**Duration:**	7d 1h
Start Date:	06 Jul-05 12:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
Ending Date:	13 Jul-05 01:30 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatox, AR
Setup Date:	06 Jul-05 12:00 PM	**Brine:**	Not Applicable		

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	35d 12h	**Station:**			

Comments: 50 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
06-6758-0731	7d Proportion Survived	25	2.32600	1.39339	3.07927	Linear Interpolation
		50	3.74800	3.24086	4.23120	
01-6600-0986	Mean Dry Biomass-mg	25	1.65167	1.39011	2.20092	Linear Interpolation
		50	2.49274	1.66658	3.06343	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
06-6758-0731	7d Proportion Survived	Control Response	0.975	0.8 - N/A	Passes acceptability criteria
01-6600-0986	Mean Dry Biomass-mg	Control Response	0.7315	0.25 - N/A	Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
2		4	0.79722	0.60000	1.00000	0.09031	0.18062	22.66%
4		4	0.45000	0.40000	0.50000	0.02887	0.05774	12.83%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.73150	0.66000	0.78500	0.02610	0.05221	7.14%
0.3		4	0.91450	0.87200	0.93800	0.01500	0.03001	3.28%
1		4	1.01500	0.98099	1.06700	0.01895	0.03791	3.73%
2		4	0.54672	0.33099	0.70200	0.07880	0.15761	28.83%
4		4	0.12775	0.08199	0.17500	0.02118	0.04237	33.16%
8		4						

SCOEPA00026964

CETIS Test Summary

Report Date: 15 Jul-05 9:27 AM
Link: 17-7359-3133/rppc1232

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	0.90000	1.00000
0.3		1.00000	1.00000	1.00000	1.00000
1		0.90000	1.00000	1.00000	1.00000
2		0.70000	1.00000	0.88889	0.60000
4		0.40000	0.50000	0.50000	0.40000
8		0.00000	0.00000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.74500	0.73600	0.66000	0.78500
0.3		0.93300	0.87200	0.91500	0.93800
1		1.01799	0.98099	0.99399	1.06700
2		0.54500	0.70200	0.60889	0.33099
4		0.15000	0.10400	0.08199	0.17500
8		N/A	N/A	N/A	N/A

SCOEPA00026965

CETIS Analysis Detail

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	17-7359-3133	17-7359-3133	15 Jul-05 9:26 AM	CETISv1.025

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

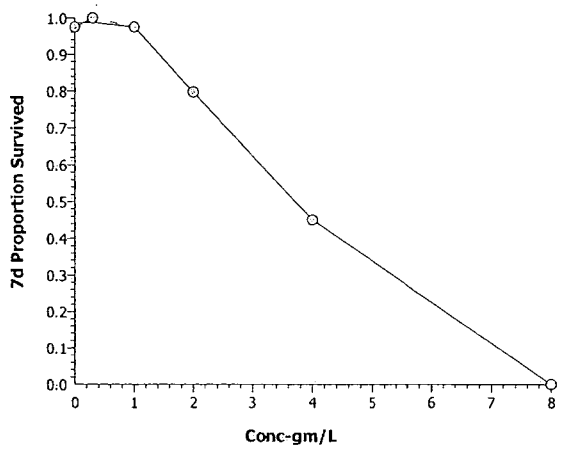
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	2.32600	1.39339	3.07927
50	3.74800	3.24086	4.23120

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
2		4	0.79722	0.60000	1.00000	0.03687	0.18062	31	39
4		4	0.45000	0.40000	0.50000	0.01179	0.05774	18	40
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



SCOEPA00026966

CETIS Analysis Detail

Report Date: 15 Jul-05 9:27 AM
Analysis: 01-6600-0986/rppc1232

Fathead Minnow 7-d Larval Survival and Growth Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	17-7359-3133	17-7359-3133	15 Jul-05 9:27 AM	CETISv1.025

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

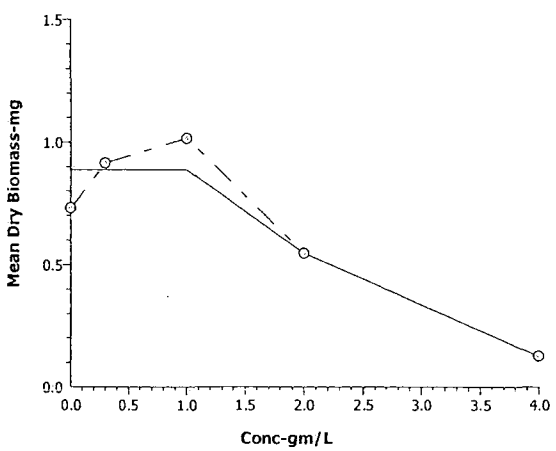
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.65167	1.39011	2.20092
50	2.49274	1.66658	3.06343

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.73150	0.66000	0.78500	0.01066	0.05221
0.3		4	0.91450	0.87200	0.93800	0.00613	0.03001
1		4	1.01500	0.98099	1.06700	0.00774	0.03791
2		4	0.54672	0.33099	0.70200	0.03217	0.15760
4		4	0.12775	0.08199	0.17500	0.00865	0.04237

Graphics



SCOEPA00026967

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Reference Toxicant Test Data Summary

Client QA/QC - August Test Start Date 7-29-05

Sample Description (1B029-05) NaCl - 50 g/L stock Sample ID# —

Ceriodaphnia Lot# Cd 1819 Statistician [illegible]

Percent or Concentration	Total Young Per Replicate A	B	C	D	E	F	G	H	I	J	# Alive Adults	Total Live Young
Control	31	33	28	31	33	30	23	22	31	36	10	298
0.25 g/L	32	31	23	33	30	32	35	25	34	35	10	310
0.5 g/L	28	33	24	24	29	27	24	26	12	25	10	252
1.0 g/L	21	16	13	13	13	1	1/AD	11	12	12	9	113
1.5 g/L	6	7	14	5	0/AD	6	12	2	9	6	9	67
2.0 g/L	0/AD	0/AD	0	0/AD	0/AD	0/AD	0/AD	0	0/AD	0	3	0
4.0 g/L	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Endpoint	IC25	Cusum Chart Limits
Survival	1.63	1.03 to 2.02
Reproduction	0.59	0.22 to 0.88

Task Manager Daniel W. Oldham

Project Manager Doug Winn

QA Officer [illegible]

SCOEPA00026968

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client QA/QC AUGUST Test Beginning : Date 7-29-05 Time 1140

Sample Description NaCl 50 g/l (1B029-05) Test Ending : Date 8-4-05 Time 1010

Ceriodaphnia Lot# cd 1819 Dilution Water RECON MH(AHM) ID# 2528

Technician Day 0 (KW) Day 1 MS Day 2 MS Day 3 JP Day 4 BR Day 5 JW Day 6 DN Day 7 ____

Time Day 0 1140 Day 1 0850 Day 2 0820 Day 3 1045 Day 4 1425 Day 5 1050 Day 6 1010 Day 7 ____

Percent or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	6	6	5	0	5	6	0	0	8	10	41
	4	10	10	10	11	4	0	0	5	6	0	10	56
	5	0	0	0	0	11	11	5	0	10	12	10	49
	6	16	17	12	15	18	14	12	17	15	16	10	152
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	5	4	5	5	5	5	4	7	6	10	51
	4	12	10	8	0	0	0	0	0	0	0	10	30
	5	0	0	0	11	10	12	14	8	12	10	10	77
	6	15	16	11	17	15	15	16	13	15	19	10	152
	7												
0.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	7	5	6	5	3	4	4	0	0	10	39
	4	0	0	8	0	0	0	0	0	4	4	10	16
	5	10	11	0	9	11	9	9	9	8	9	10	85
	6	12	15	11	10	13	15	11	13	0	12	10	112
	7												
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	0	4	3	2	1	1/AD	1	3	2	9	19
	4	0	4	0	0	0	0	5	10	0	0	9	14
	5	10	10	5	5	9	0	↓	0	6	5	9	49
	6	9	2	4	5	3	0	↓	0	3	5	9	31
	7							↓					
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	2	3	0	0	0	3	1	0	0	10	11
	4	0	0	0	0	0/AD	0	0	0	0	2	9	10
	5	4	3	0	5	↓	6	5	1	6	4	9	34
	6	0	2	3	0	↓	0	4	0	3	0	9	12
	7					↓							
2.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0/AD	0	0	0	0	0	0	0	0	9	0
	3	0/AD	↓	0	0	0	0/AD	0/AD	0	AD/0	0	5	0
	4	↓	↓	0	0	0	↓	↓	0	↓	0	5	0
	5	↓	↓	0	0	0	↓	↓	0	↓	0	5	0
	6	↓	↓	0	0/AD	0/AD	↓	↓	0	↓	0	3	0
	7	↓	↓		↓	↓	↓	↓		↓			
4.0 g/L	1											0	0
	2												↓
	3												

SCOEPA00026969

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC 50 g/l AUGUST Initiated Date 7-29-05 Time 1140 Adults Isolated Date 7-28-05 Time 0840

Sample Description NaCl Reagent Log # 1B029-05 Terminated Date 8-4-05 Time 1010 Neo's Collected Date 7-29-05 Time 1000

Technician Day 0 [illegible] Day 1 MS Day 2 MS Day 3 TP Day 4 B Day 5 B Day 6 DW Day 7

Time Day 0 1140 Day 1 0850 Day 2 0830 Day 3 1045 Day 4 1540 Day 5 1310 Day 6 1010 Day 7

Percent or Concentration	Dissolved Oxygen (mg/l) 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
Control	8.2	7.7 / 8.1	7.4 / 8.0	8.2 / 8.3	7.9 / 8.2	8.0 / 7.6	7.8 / –		7.6	7.8 / 7.7	7.7 / 7.6	7.9 / 7.7	7.8 / 7.7	7.3 / 7.5	7.7 / –		24.4 / 312	24.9 / 300	24.6 / 304	25.5 / 273	25.6 / 280	25.0 / 318	25.2 / –	
0.25 g/L	8.2	7.7 / 8.0	7.8 / 8.0	8.2 / 8.2	7.8 / 8.2	7.8 / 7.4	7.8 / –		7.6	7.8 / 7.7	7.7 / 7.6	7.9 / 7.7	7.7 / 7.7	7.8 / 7.4	7.7 / –		24.4 / 801	24.8 / 805	24.4 / 790	25.6 / 696	25.5 / 685	24.5 / 786	25.2 / –	
0.50 g/L	8.3	7.4 / 8.1	7.8 / 8.0	8.0 / 8.2	7.8 / 8.2	7.8 / 7.5	7.8 / –		7.6	7.9 / 7.7	7.8 / 7.6	7.9 / 7.7	7.7 / 7.7	7.8 / 7.5	7.7 / –		24.3 / 1291	24.4 / 1260	24.5 / 1100	25.7 / 1091	24.2 / 1099	24.3 / 1235	24.7 / –	
1.0 g/L	8.3	7.6 / 8.1	7.8 / 8.0	8.2 / 8.3	7.9 / 8.2	7.9 / 7.5	7.8 / –		7.6	7.9 / 7.7	7.7 / 7.5	7.9 / 7.6	7.7 / 7.7	7.7 / 7.5	7.8 / –		24.3 / 2260	24.5 / 2240	24.5 / 2240	25.7 / 1904	24.8 / 1901	24.8 / 2170	25.1 / –	
1.5 g/L	8.3	7.7 / 8.1	7.4 / 8.0	8.2 / 8.3	7.7 / 8.2	7.9 / 7.5	7.8 / –		7.6	7.9 / 7.7	7.8 / 7.6	7.9 / 7.6	7.7 / 7.6	7.7 / 7.5	7.8 / –		24.3 / 3210	24.4 / 3180	24.4 / 3110	25.8 / 2690	25.5 / 2670	25.5 / 3050	25.3 / –	
2.0 g/L	8.3	/ 8.1	7.5 / 8.0	8.2 / 8.3	7.5 / 8.2	8.1 / 7.5	7.9 / –		7.5	7.9 / 7.6	7.8 / 7.6	7.9 / 7.7	7.7 / 7.6	7.7 / 7.5	7.8 / –		24.3 / 3420	24.5 / 4000	24.6 / 3970	25.6 / 3470	25.3 / 3440	25.1 / 3940	24.8 / –	
4.0 g/L	8.3	/ –	– / –	– / –	– / –	– / –	– / –		7.5	7.9 / –	– / –	– / –	– / –	– / –	– / –		24.3 / 7550	24.9 / –	– / –	– / –	– / –	– / –	– / –	– / –

COMMENTS:

CETIS Test Summary

Report Date: 08 Aug-05 8:59 AM
Test Link: 05-4132-0851/rcdc1819

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	06-7252-2870	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	5d 22h
Start Date:	29 Jul-05 11:40 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	04 Aug-05 10:10 AM	**Dil Water:**	Laboratory Water	**Source:**	In-House Culture
Setup Date:	29 Jul-05 11:40 AM	**Brine:**	Not Applicable		

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	58d 11h	**Station:**			

Comments: 50 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
05-0831-2176	6d Proportion Survived	25	1.625	1.25	1.75	Linear Interpolation
		50	1.833333	1.666667	2.333333	
18-4504-2405	Reproduction	25	0.586331	0.463141	0.671123	Linear Interpolation
		50	0.8597122	0.7628012	0.9893411	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
18-4504-2405	Reproduction	Control Response	29.8	15 - NL	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
2		10	0.30000	0.00000	1.00000	0.15275	0.48305	161.02
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	29.8	22	36	1.3888	4.3919	14.74%
0.25		10	31	23	35	1.2824	4.0552	13.08%
0.5		10	25.2	12	33	1.7179	5.4324	21.56%
1		10	11.3	1	21	1.9382	6.1292	54.24%
1.5		10	6.7	0	14	1.3254	4.1913	62.56%
2		10	0	0	0	0	0	0.00%
4		10	0	0	0	0	0	0.00%

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CETIS Test Summary

Report Date: 08 Aug-05 8:59 AM
Test Link: 05-4132-0851/rcdc1819

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	1.00000	0.00000	0.00000	0.00000	0.00000	1.00000	0.00000	1.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	31	33	28	31	33	30	23	22	31	36
0.25		32	31	23	33	30	32	35	25	34	35
0.5		28	33	24	24	29	27	24	26	12	25
1		21	16	13	13	13	1	1	11	12	12
1.5		6	7	14	5	0	6	12	2	9	6
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

SCOEPA00026972

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	58d 11h	**Station:**			

Comments: 50 g/L stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	05-4132-0851	05-4132-0851	08 Aug-05 8:58 AM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

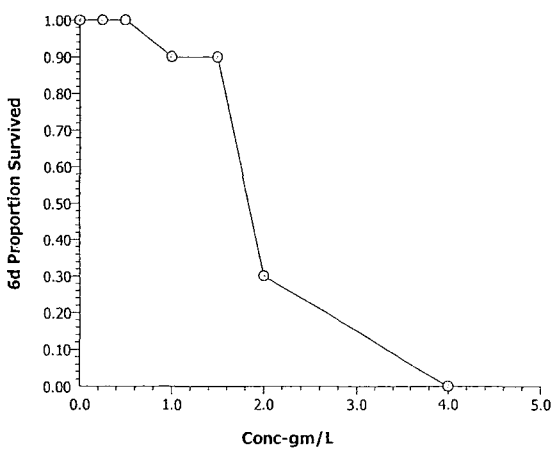
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.625	1.25	1.75
50	1.833333	1.666667	2.333333

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
2		10	0.30000	0.00000	1.00000	0.09860	0.48305	3	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Graphics



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CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	58d 11h	**Station:**			

Comments: 50 g/L stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	05-4132-0851	05-4132-0851	08 Aug-05 8:58 AM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

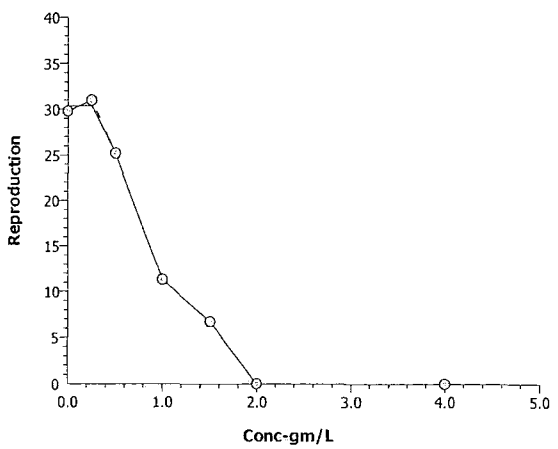
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.586331	0.463141	0.671123
50	0.8597122	0.7628012	0.9893411

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	29.8	22	36	0.8965	4.39191
0.25		10	31	23	35	0.82776	4.05518
0.5		10	25.2	12	33	1.10889	5.43241
1		10	11.3	1	21	1.25111	6.12917
1.5		10	6.7	0	14	0.85554	4.19126
2		10	0	0	0	0	0
4		10	0	0	0	0	0

Graphics



SCOEPA00026974

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA/QC

Sample Description: REF. TOX 50 g/l NaCl (1B029-05)

Test Start Date: 8-2-05 Time: 1400 Initials: JP

Test End Date: 8.6.05 Time: 1250 Initials: TP

TEST CONDITIONS AT INITIATION:

Species ID#: RS 374

Age: 4 days

Dilution Water ID #: 2529

Source Water: RECON MH (FHM) 2528

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		
441	250		Culture Density
MEAN	1,764	x 250,000 =	441,000

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	441,000	=	1.13 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	4	100	0.01
Flask #2	3	100	0.0075
Flask #3	4	100	0.01

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
396	410	408

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	JP	JP	TP	TP	TP
Time	1400	0930	0815	1130	1250

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.8	7.3	7.9	8.2	8.5	9.1	25.1	25.2	25.2	25.6	~~25.3~~ 25.0	328	106	70
0.25	7.7	7.1	8.0	8.2	8.5	9.2	25.0	25.0	25.3	25.3	26.1	~~358~~ 353 @ 1156	104	74
0.5	7.7	7.1	8.0	8.2	8.5	9.1	25.0	25.0	25.5	25.8	25.0	~~34~~ 3410 @ 1156		
1.0	7.6	7.1	7.9	8.2	8.5	9.1	25.1	24.9	26.2	26.2	26.2	1975	104	72
2.0	7.6	7.1	8.0	8.2	8.4	8.9	25.2	25.1	26.5	25.2	25.5	3350		
4.0	7.6	7.1	8.0	8.1	8.3	8.6	25.1	25.0	25.7	26.2	24.9	6320	98	70

Comments: IC_{25} = 0.73 gm/L

Cosun levels: 0.13 to 2.07

Task Manager: David W. Webb

Project Manager: Dan Heaney

QA officer: [signature]

Raphidocelis subcapitata COULTER COUNTER WORKSHEET

Client: QA / QC

Sample Description: NaCl 50 g/L

1B029-05

Lab ID

Test Start Date: 08/02/2005

Test Count Date: 08/08/2005 Initials: DO

Instrument Settings:

size:	100 um
Kd value:	57.59
T_U:	6.2 um
T_L:	3.3 um
Count Mode:	Above T_L
Gain:	256
Current:	1.414
Preamp Gain:	179.20

Dilution factor (DF) Default value: 41

Output: Concentration

Metered volume (ml): 0.5

Blank counts (use ISOTONE II):

Run	BLANK
DF	41
1	26404
2	17466
3	16482
4	14924
5	13202
6	7708

Note: Blank concentrations are Cells per ml (not x 10^6)

Dilutions: DF = 11 (1.0 ml sample to 10mL Isotone II)
DF = 41 (0.50 ml sample to 20mL Isotone II)
DF = 81 (0.25 ml sample to 20mL Isotone II)

Where : * = Concentrations are in Cells per mL x 10^6

COMMENTS

TEST CONCENTRATION	Control			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.321	3.335	3.562	2.719
2	3.342	3.384	3.590	2.758
3	3.367	3.376	3.619	2.776
Replicate Average	**3.343**	**3.365**	**3.590**	**2.751**
CONCENTRATION MEAN # Cells / mL* =	**3.262**	CV % =		11.0%

TEST CONCENTRATION	0.25 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	3.128	3.065	3.269	2.958
2	3.142	3.023	3.278	3.039
3	3.225	3.066	3.346	3.016
Replicate Average	**3.165**	**3.051**	**3.298**	**3.004**
CONCENTRATION MEAN # Cells / mL* =	**3.130**	CV % =		4.2%

TEST CONCENTRATION	0.50 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	2.712	2.756	2.799	2.685
2	2.741	2.775	2.787	2.723
3	2.808	2.780	2.790	2.780
Replicate Average	**2.754**	**2.770**	**2.792**	**2.729**
CONCENTRATION MEAN # Cells / mL* =	**2.761**	CV % =		1.0%

TEST CONCENTRATION	1.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	1.895	1.934	2.333	1.986
2	1.947	1.930	2.412	1.994
3	1.999	1.951	2.418	1.970
Replicate Average	**1.947**	**1.938**	**2.388**	**1.983**
CONCENTRATION MEAN # Cells / mL* =	**2.064**	CV % =		10.5%

TEST CONCENTRATION	2.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.912	1.298	1.186	2.557
2	0.919	1.312	1.171	2.568
3	0.896	1.282	1.164	2.596
Replicate Average	**0.909**	**1.297**	**1.174**	**2.574**
CONCENTRATION MEAN # Cells / mL* =	**1.488**	CV % =		49.8%

TEST CONCENTRATION	4.0 g/L			
Run	REP A	REP B	REP C	REP D
DF (if other than default)				
1	0.994	0.985	0.911	0.924
2	0.981	1.003	0.932	0.925
3	0.974	0.986	0.904	0.926
Replicate Average	**0.983**	**0.991**	**0.916**	**0.925**
CONCENTRATION MEAN # Cells / mL* =	**0.954**	CV % =		4.1%

SCOEPA00026976

CETIS Test Summary

Report Date: 08 Aug-05 4:54 PM
Test Link: 10-1810-5627/rscc374

Raphidocelis Growth Test — **CH2M Hill**

Test No:	07-6286-1727	**Test Type:**	Cell Growth	**Duration:**	95h
Start Date:	02 Aug-05 02:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
Ending Date:	06 Aug-05 12:50 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	02 Aug-05 02:00 PM	**Brine:**			

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	62d 14h	**Station:**			

Comments: 50 g/L stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
16-3662-4585	Cell Density	25	0.7255439	0.4986632	1.010242	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
16-3662-4585	Cell Density	Control CV	0.10997	NL - 0.2	Yes	Passes acceptability criteria
16-3662-4585	Cell Density	Control Response	3262420	1000000 - NL	Yes	Passes acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.26E+6	2.75E+6	3.59E+6	1.79E+5	3.59E+5	11.00%
0.25		4	3.13E+6	3.00E+6	3.30E+6	6.54E+4	1.31E+5	4.18%
0.5		4	2.76E+6	2.73E+6	2.79E+6	1.32E+4	2.65E+4	0.96%
1		4	2.06E+6	1.94E+6	2.39E+6	1.08E+5	2.17E+5	10.49%
2		4	1.49E+6	9.09E+5	2.57E+6	3.71E+5	7.41E+5	49.81%
4		4	9.54E+5	9.16E+5	9.91E+5	1.95E+4	3.89E+4	4.08%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	3.34E+6	3.37E+6	3.59E+6	2.75E+6
0.25		3.17E+6	3.05E+6	3.30E+6	3.00E+6
0.5		2.75E+6	2.77E+6	2.79E+6	2.73E+6
1		1.95E+6	1.94E+6	2.39E+6	1.98E+6
2		9.09E+5	1.30E+6	1.17E+6	2.57E+6
4		9.83E+5	9.91E+5	9.16E+5	9.25E+5

SCOEPA00026977

CETIS Analysis Detail

Report Date: 08 Aug-05 4:54 PM
Analysis: 16-3662-4585/rscc374

Raphidocelis Growth Test — **CH2M Hill**

Sample No:	11-1078-5601	**Material:**	Sodium chloride	**Client:**	
Sample Date:	01 Jun-05	**Code:**	1B029-05	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	62d 14h	**Station:**			

Comments: 50 g/L stock

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	10-1810-5627	10-1810-5627	08 Aug-05 4:54 PM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2895624	280	Yes	Two-Point Interpolation

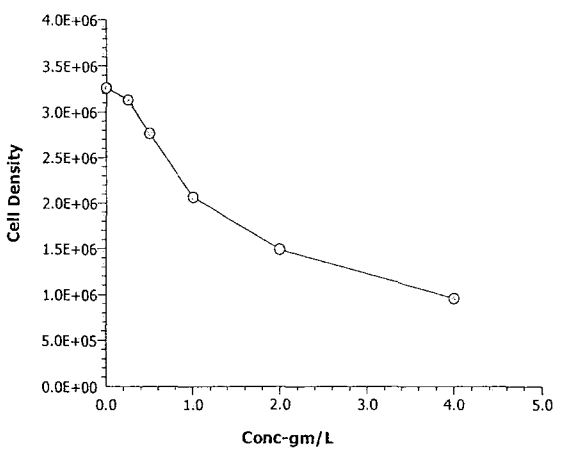
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.7255439	0.4986632	1.010242

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.26E+6	2.75E+6	3.59E+6	7.32E+4	3.59E+5
0.25		4	3.13E+6	3.00E+6	3.30E+6	2.67E+4	1.31E+5
0.5		4	2.76E+6	2.73E+6	2.79E+6	5.41E+3	2.65E+4
1		4	2.06E+6	1.94E+6	2.39E+6	4.42E+4	2.17E+5
2		4	1.49E+6	9.09E+5	2.57E+6	1.51E+5	7.41E+5
4		4	9.54E+5	9.16E+5	9.91E+5	7.94E+3	3.89E+4

Graphics



SCOEPA00026978

APPENDIX C
CHAIN OF CUSTODY

CH2M LL CHAIN OF CUSTODY RECORD FOR NPDES CO[illegible]IANCE BIOMONITORING

Client Siltronic Corp.
Address 7200 NW Front Ave
Port land, OREgon
97219
Contact Person: Tom Rothschild
Phone: 503-219-7374
CH2M HILL Project #

NPDES# 101128
Composite Sample Information
Samples/Hour 1 Volume/Sample ~6L
Total Hours 24 Total Volume ~144L
Initiated: Date 8/7/05 Time 0800
Ended: Date 8/8/05 Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P. O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) Y
Temp. Upon Arrival (°C) 19.2
Check Ammonia (Y/N) Y Dechlorinate (Y/N) N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type Comp.	Sample Type Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia/Mysid Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
05-23	8/8/05	0800	X		1	B1440-01	X	X	X	X	X								X					30, 15, 7.5, 3.75 + 1.9 %

Sampled By & Title (Please sign and print name) Thomas J. Rothschild	Date/Time 8 Aug 2005 / 0800	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 8 Aug 2005 / 0820
Received By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-8-05	Relinquished By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-8-05 / 10:45
Received By (Please sign and print name) Linda D Rise LINDA RISEN	Date/Time 8/8/05 10:45	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026980

CH2M LL CHAIN OF CUSTODY RECORD FOR NPDES CO[illegible]IANCE BIOMONITORING

Client Siltronic Corp.

Address 7200 N.W. Front Ave
Portland, OR 97219

Contact Person: Tom Rothschild

Phone: 503-219-7374

CH2M HILL Project #

NPDES# 101128

Composite Sample Information

Samples/Hour 1 Volume/Sample ~6L

Total Hours 24 Total Volume ~144L

Initiated: Date 8/9/05 Time 0800

Ended: Date 8/10/05 Time 0800

Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P.O.# 4500348001

Check Chlorine (Y/N) Y

Temp. Upon Arrival (°C) 19.0°C

Check Ammonia (Y/N) Y Dechlorinate (Y/N) N

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
05-74	8/10/05	0800	X		1	B1440-02	X	X	X	X									X					30, 15, 7.5, 3.75, 1.9

Sampled By & Title (Please sign and print name) Thomas J. Rothschild	Date/Time 10Aug2005/0800	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 10Aug2005/0845
Received By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-10-05 8:45	Relinquished By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-10-05 12:40
Received By (Please sign and print name)	Date/Time 8-10-05 12:40	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time 8-10-05 1315	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026981

CH2M ...LL CHAIN OF CUSTODY RECORD FOR NPDES CO...IANCE BIOMONITORING

Client Siltronic Corp. NPDES# 101128

Address 7200 N.W. Front Ave Composite Sample Information _____

Contact Person: Tom Rothschild

Phone: 503-219-7374

Samples/Hour 1 Volume/Sample ~6 L

Total Hours 24 Total Volume ~144 L

Initiated: Date 8/11/05 Time 0800

Ended: Date 8/12/05 Time 0800

Chilled During Collection Yes ☐ No ☒

CH2M HILL Project # _____

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.# 4500348001

Check Chlorine (Y/N) _____

Temp. Upon Arrival (°C) 19.6°C

Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste	Concentrations and/or Comments
05-76	8/12/05	0800	X		1	B1440-03	X	X	X	X									X		30, 15, 7.5
																					3.75 +1.9 2.

siltronic
perfect silicon solutions

Sample ID: 05-76

Date: 8.12.05 Time: 0800

Collected by: TR Preserved: NO

Sampled By & Title (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Thomas J. Rothschild	12 Aug 2005/0800	Thomas J. Rothschild	12 Aug 2005/0830
Received By (Please sign and print name) CONROY	Date/Time 8-12-05/8:45	Relinquished By (Please sign and print name) CONROY	Date/Time 8-12-05 / 11:20
Received By (Please sign and print name) LAB	Date/Time 8-12-05/11:25	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00026982

Siltronic Corporation — Purchase Order

PO Number: 4500348001
Date: 07/13/2005

cc: Tom R.
4144

CH2M HILL
PO Box 428
CORVALLIS OR 97339-0428

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 706311
FAX: 541-752-0276
TEL: 541-752-4271

We await your order acknowledgment for the following items:

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00010	1	JOB	08/12/2005		2,000.00	2,000.00

Bioassay Analysis, Annual. Test is scheduled for the week of 8-12 Aug 2005. Three separate samples are to be collected and delivered to CH2MHill in Corvallis, Oregon, one each day on:
8 Aug 2005, 10 Aug 2005, 12 Aug 2005
Each sample is to be tested for ther sand flea, the fathead minnow, green algae. Each specifies is to be tested for both "acute" and "chronic" results. Contact person is Mike Stanaway, Biologist
Aquatic Toxicology Laboratory, CH2MHill,
2300 NW Walnut Boulevard, Corvallis, Oregon 97330-3538
Phone: 541-758-0235 Ext 3161
Delivery and/or shipping will be accomplished by Siltronic's Shipping/Receiving Department.
Similar to PO #4500284558 in July 2004

Total net value excl. tax USD 2,000.00

Dieter Balzat/503-219-7170
FAX:(503) 219-7596
EMAIL:Dieter.Balzat@siltronic.com

Siltronic Corporation — Purchase Order

PO Number: 4500348001
Date: 07/13/2005

cc: Tom R.
4144

CH2M HILL
PO Box 428
CORVALLIS OR 97339-0428

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 706311
FAX: 541-752-0276
TEL: 541-752-4271

We await your order acknowledgment for the following items:

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00010	1	JOB	08/12/2005		2,000.00	2,000.00

Bioassay Analysis, Annual. Test is
scheduled for the week of 8-12 Aug 2005. Three
separate samples are to be collected and delivered to CH2MHill in
Corvallis, Oregon, one each day on:
8 Aug 2005, 10 Aug 2005, 12 Aug 2005
Each sample is to be tested for ther sand flea, the fathead minnow,
green algae. Each specifies is to be tested for both "acute" and
"chronic" results. Contact person is Mike Stanaway, Biologist
Aquatic Toxicology Laboratory, CH2MHill,
2300 NW Walnut Boulevard, Corvallis, Oregon 97330-3538
Phone: 541-758-0235 Ext 3161
Delivery and/or shipping will be accomplished by Siltronic's
Shipping/Receiving Department.
Similar to PO #4500284558 in July 2004

Total net value excl. tax USD 2,000.00

Dieter Balzat/503-219-7170
FAX:(503) 219-7596
EMAIL:Dieter.Balzat@siltronic.com

Siltronic Corporation

PO Number: 4500348001
Date: 07/13/2005

cc: Tom R.
4144

CH2M HILL
PO Box 428
CORVALLIS OR 97339-0428

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 706311
FAX: 541-752-0276
TEL: 541-752-4271

B1440-03

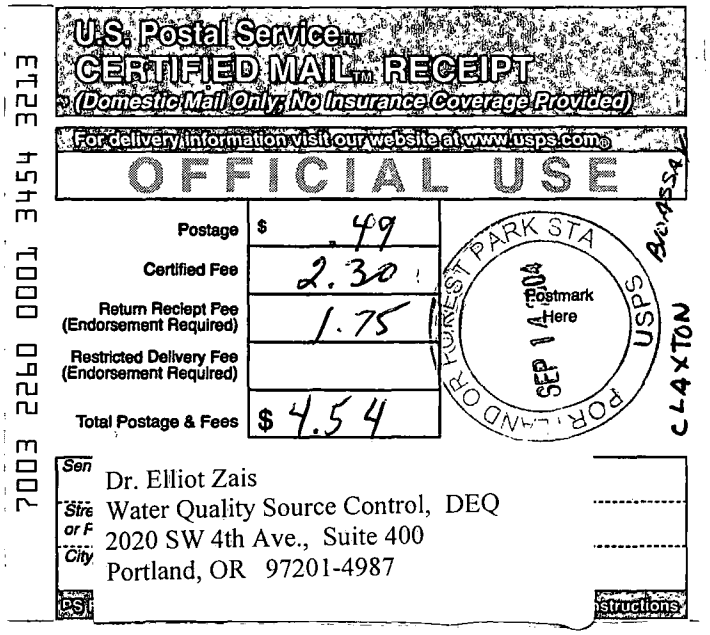
We await your order acknowledgment for the following items:

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00010	1	JOB	08/12/2005		2,000.00	2,000.00

Bioassay Analysis, Annual. Test is scheduled for the week of 8-12 Aug 2005. Three separate samples are to be collected and delivered to CH2MHill in Corvallis, Oregon, one each day on:
8 Aug 2005, 10 Aug 2005, 12 Aug 2005
Each sample is to be tested for ther sand flea, the fathead minnow, green algae. Each specifies is to be tested for both "acute" and "chronic" results. Contact person is Mike Stanaway, Biologist
Aquatic Toxicology Laboratory, CH2MHill,
2300 NW Walnut Boulevard, Corvallis, Oregon 97330-3538
Phone: 541-758-0235 Ext 3161
Delivery and/or shipping will be accomplished by Siltronic's Shipping/Receiving Department.
Similar to PO #4500284558 in July 2004

Total net value excl. tax USD 2,000.00

Dieter Balzat/503-219-7170
FAX:(503) 219-7596
EMAIL:Dieter.Balzat@siltronic.com



7003 2260 0001 3454 3213

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Dr. Elliot Zais
Water Quality Source Control, DEQ
2020 SW 4th Ave., Suite 400
Portland, OR 97201-4987

PS
structions

SCOEPA00026986

SENDER: COMPLETE THIS SECTION

- ☐ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ☑ Print your name and address on the reverse so that we can return the card to you.
- ☐ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dr. Elliot Zais
Water Quality Source Control, DEQ
2020 SW 4th Ave., Suite 400
Portland, OR 97201-4987

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X DEQ/NWR ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery SEP 15 2004

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7003 2260 0001 3454 3213

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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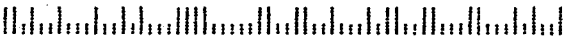
Postage & Fees Paid
USPS
Permit No. G-10

° Sender: Please print your name, address, and ZIP+4 in this box °

Jim Claxton
Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676

24



Jim Claxton
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
jim.claxton@siltronic.com

ER064:JC

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

2004-September-xx

August 2004 Bioassay results

Dear Dr. Zais,

The Bioassay of Siltronic's effluent **passes the requirements** of our NPDES permit number 101128.

The Bioassay was performed on three species: *Ceriodaphnia dubia* (water flea), *Pimephales promelas* (fathead minnow) and *Raphidocelis subcapitata* (green algae). The analyses were performed at the following dilutions, which are based on the average of three mixing zone dilution studies[1], as percentage effluent: 1.90%, 3.75%, 7.5%, 15% and 30%. Samples were taken August 10 though 17, 2004 for *Ceriodaphnia dubia* and *Pimephales promelas*, and August 31, 2004 for *Raphidocelis subcapitata*[2]. The analytical methods used were "*Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002"* and *"Whole Effluent Toxicity Testing Guidance Document, Oregon Department of Environmental Quality, January 1993".*

Ceriodaphnia dubia

Acute Toxicity test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value (concentration of sample causing a 50% reduction in survival) was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's zone of immediate dilution (ZID) is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results show a statistically significant reduction in reproduction at 15% and 30% effluent concentrations when compared to the control. The NOEC and LOEC were 7.5% and 15% effluent, respectively. Control survival was 90%. The IC_{25} value (concentration of sample causing a 25% reduction in biological measurement) calculated on reproduction was 10.6% effluent concentration. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Pimephales promelas (dual endpoint)

Acute Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The LC_{50} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's ZID is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 90%. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Raphidocelis subcapitata

Chronic Toxicity test results indicated no statistically significant reduction in growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is ≥ 1.8% effluent[1].

Summary of CH2MHill results for August 2004

Acute (48-hour) Results:	Ceriodaphnia dubia	Pimephales promelas
NOEC	30%	30% (% Effluent)
ZID Pass Criteria[1]	≥13.4%	≥13.4%

Chronic Results:	Ceriodaphnia dubia	Pimephales promelas	Raphidocelis subcapitata
NOEC	7.5%	30%	30% (% Effluent)
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%	≥ 1.8%

If you have any questions, please contact me.

Regards,
Siltronic Corporation

J Claxton

Jim Claxton
Environmental Engineer

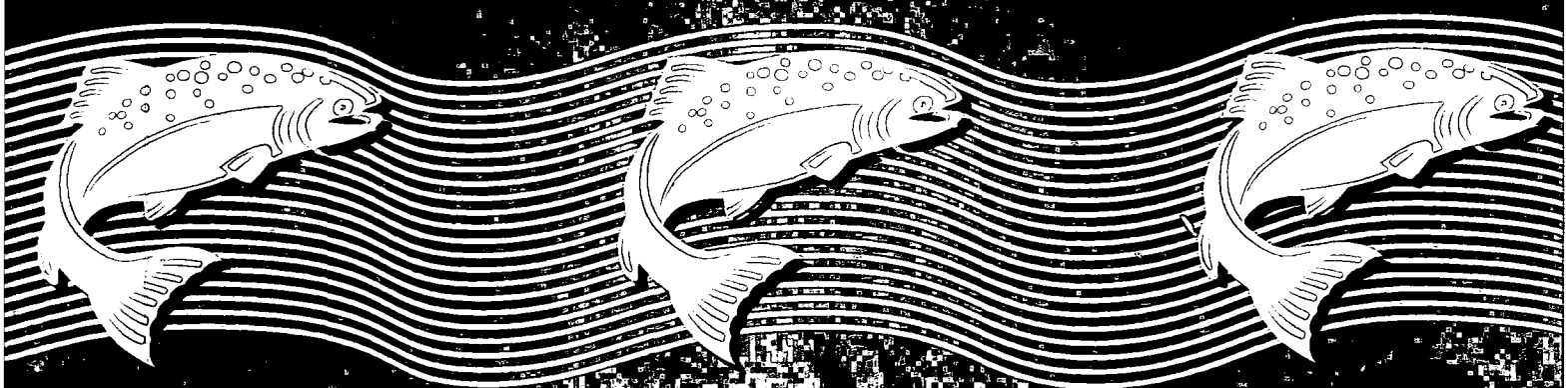
cc: Tom Rothschild
Tom McCue
NPDES Bioassay File

[1] CH2MHILL Mixing Zone Effluent Dilution Evaluations prepared for Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Siltronic's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The average of the three mixing zone dilution studies identified worst-case (0.1-feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$), respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. **Conversely, the effluent is in compliance for toxicity if the acute test NOEC is greater than or equal to (≥) 13.4% effluent and the chronic test NOEC is greater than or equal to (≥) 1.8% effluent.**

[2] The *Raphidocelis subcapitata* (green algae) analysis was left off Chain of Custody for the samples taken August 10 – 17. Dr. Elliot Zais, DEQ Sr. Environmental Engineer, Water Quality Source Control, verbally approved that Siltronic could collect a 24 hour composite sample August 31, 2004 and submit the results to complete the Bioassay testing requirements for 2004. Because the *Raphidocelis subcapitata* (green algae) analysis was new for 2004, two separate 24 hour effluent samples were analyzed earlier in the year, specifically one in January 2004 and one in April 2004. The results for both samples were that the NOEC and LOEC were 30% and greater than 30% effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent.

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted September 1 through 5, 2004



CH2MHILL

SCOEPA00026991

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted September 1 through 5, 2004

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

September 10, 2004
Lab ID No. B1278

SCOEPA00026992

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SCOEPA00026993

INTRODUCTION

CH2M HILL conducted a chronic definitive bioassay on one sample provided by Siltronics Corporation, Portland, Oregon. The organism tested was the green algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum*). The test was conducted from September 1 through 5, 2004.

METHODS AND MATERIALS

TEST METHODS

The chronic test method was performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. (1994); EPA/600/4-91/002 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, March 1993.

TEST ORGANISMS

The *Raphidocelis subcapitata* was obtained from CH2M Hill's in-house cultures, were 5 days old at test initiation, and were acclimated for 5 days prior to test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA.

DILUTION WATER

The dilution water used for test was reconstituted moderately hard water with nutrients added (including EDTA) with a hardness and alkalinity of 106 and 72 mg/l as $CaCO_3$, respectively and a pH of 7.7.

TEST CONCENTRATIONS

The concentrations tested were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent with dilution water for the control. The tests were run with four replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

One sample was collected on September 1, 2004. The sample was transported to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on September 1, 2004. The sample was stored in the dark at 4°C until test solutions were prepared and tested. A chain of custody form for sample collection is provided in Appendix C.

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SAMPLE PREPARATION

The sample used during the test was 0.45 µm filtered upon arrival, nutrients (including EDTA) added, and temperature was adjusted prior to test initiation.

MONITORING OF BIOASSAY

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

For the chronic algae test, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity was measured in the control, low, middle, and high test concentrations at test initiation. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period. *Raphidocelis subcapitata* growth was determined by cell counts using a hemocytometer.

DATA ANALYSIS

The effect measured during the alga test was alga growth response. For the chronic test, statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, using Toxcalc version 5.0. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the growth data between the control and each effluent concentration. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

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RESULTS AND DISCUSSION

CHRONIC BIOASSAY

Table 1 summarizes the 96-hour growth response data for the *Raphidocelis subcapitata* test.

Table 1
***Raphidocelis subcapitata* Results**

Concentration (%)	Growth as Mean Cell Density (cells x 10^6/mL)
Control	5.21726
1.90	4.57654
3.75	4.57846
7.50	4.57245
15.0	4.79175
30.0	4.90229

The results for the *Raphidocelis subcapitata* test indicated no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 30.0 and greater than 30.0 percent effluent, respectively.

The IC_{25} value calculated on the *Raphidocelis* growth was greater than 30.0 percent effluent.

Test temperature remained at 25±1°C. The test proceeded without interruption or incidents that could have affected test results.

REFERENCE TOXICANT TEST

The result of monthly reference toxicant test with sodium chloride indicate that the *Raphidocelis* was within the respective sensitivity range based on EPA guidelines. The IC_{25} values and Control Chart Limits are listed in the table below. The data sheets for the reference toxicant test are provided in Appendix B.

Table 2
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
Raphidocelis subcapitata (growth)	0.94	0.00 to 1.87

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APPENDIX A
RAW DATA SHEETS

CH2M HILL **TOXICITY TEST ORGANISM AND WATER QUALITY DATA**

Client: Siltronics
Test Initiation: Date 9-1-04 Time 1500 Test Termination: Date 9-5-04 Time 1400
Contact: Tom Rothschild 503-219-7374
Technician: Linn, Oldham, Holm
Test Species/ID: *Raphidocelis subcapitata* / Rs 337

Sample Information								Test Species Information	ID# Rs 337	ID#	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	(Age) or Size	5 days / —			
B1278 -01	04-85	9-1-04	0800	0.01 / -	0.77	124	-	Test Container Size	125 ml			
				/				Test Volume	50 ml			
				/				Feeding: Type	1 ml of nutrients			
				/				Amount	added per liter			
				/				Aeration: Began	none			
				/				Amount	—			
				/				Dilution Water ID#	2423			
				/				Acclimation Period	5 days			
				/				Test Location	#11			
				/				Condition of Survivors				
				/				Size (mm)	—			
				/				Loading Rate	—			
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (Algae)	2423	106	72

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Temperature _____
Conductivity #2 Refractometer _____ Other _____

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Raphidocelis subcapitata COUNT WORKSHEET

Client: Siltronics

Sample Description: B1278-01

Test Start Date: 9-1-04 Initials: CEH

TEST CONCENTRATION		Control	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	463	20	5.787500
REP B	460	23	5,000000
REP C	473	22	5.375000
REP D	433	23	4.706522
	MEAN # CELLS / mL* =		5.217755

TEST CONCENTRATION		7.50%	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	585	22	4.573125
REP B	577	30	4.808333
REP C	432	23	4.695652
REP D	489	29	4.215517
	MEAN # CELLS / mL* =		4.572454

TEST CONCENTRATION		1.90%	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	499	28	4.455357
REP B	587	33	4.44697
REP C	488	26	4.692308
REP D	490	26	4.711538
	MEAN # CELLS / mL* =		4.576543

TEST CONCENTRATION		15.0%	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	457	21	5.440476
REP B	543	30	4.528000
REP C	446	22	5.068182
REP D	496	30	4.133333
	MEAN # CELLS / mL* =		4.791748

TEST CONCENTRATION		3.75%	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	562	33	4.257576
REP B	459	27	4.250000
REP C	1013	30	5.108333
REP D	451	24	4.697917
	MEAN # CELLS / mL* =		4.578456

TEST CONCENTRATION		30.0%	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	563	31	4.540322
REP B	613	30	5.108333
REP C	452	21	5.380824
REP D	403	22	4.579545
	MEAN # CELLS / mL* =		4.90229

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

SCOEPA00026999

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics

Sample Description: B1278-01

Test Start Date: 9-1-04 Time: 1500 Initials: KW/DW

Test End Date: 9-5-04 Time: 1400 Initials: CEA

TEST CONDITIONS AT INITIATION:

Species ID#: RS 337

Age: 5 days

Dilution Water ID #: 2423

Source Water: 2419

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields	Culture Density = Mean # of Cells/Field x 250,000	
425	250		
MEAN	1.7	x 250,000 =	425,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	425,000	=	1.18 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc x10^6
Flask #1	4	100	10,000
Flask #2	3	100	7,500
Flask #3	4	100	10,000

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
330	361	307

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	KW	DW	CEA	CEA	CEA
Time	1500	1530	1630	1440	1400

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.4	7.7	7.8	7.9	8.7	9.5	24.3	24.6	24.5	25.3	23.9	347	106	72
1.90 %	7.4	7.4	7.8	7.9	8.5	9.2	24.3	24.6	24.1	24.7	24.7	362		
3.75 %	7.4	7.4	7.7	7.9	8.5	9.2	24.4	24.5	24.1	24.2	24.2	372		
7.50 %	7.5	7.3	7.7	7.9	8.4	9.0	24.5	24.5	24.0	24.0	24.0	394		
15.0 %	7.5	7.3	7.7	7.9	8.5	9.3	24.4	24.6	24.0	24.0	24.0	428		
30.0 %	7.5	7.3	7.7	7.9	8.6	9.1	24.4	24.6	24.0	24.0	24.0	510		

Comments:

Client: Siltronics

Test Start Date: 9-1-04

Sample Description: B1278-01

Initials: CEA

TEST CONCENTRATION				Control			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
114	5	104	8	163	7	117	7
129	5	116	5	103	count 5	101	5
98	5	140	5	100	5	113	6
122	5	100	5	107	5	102	5

TEST CONCENTRATION				1.90%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
117	7	175	10	113	6	124	6
116	6	148	count 8 8	117	6	142	7
137	8	185	10	117	7	128	7
129	7	79	5	141	7	96	6

TEST CONCENTRATION				3.75%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
121	6	105	5	104	5	116	6
109	7	121	7	211	10	118	7
185	10	94	7	109	5	102	5
147	10	139	8	189	10	115	6

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Client: Siltronics

Test Start Date: 9-1-04

Sample Description: B1278-01

Initials: CBK

TEST CONCENTRATION				7.50%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
100	6	104	5	115	6	107	8
111	6	136	7	113	6	100	6
162	10	180	10	101	6	110	5
212	10	157	8	103	5	172	10

TEST CONCENTRATION				15.0%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
111	6	184	10	105	6	153	10
103	5	113	6	112	6	108	6
129	5	92	5	121	5	178	10
114	5	154	9	108	5	57	4

TEST CONCENTRATION				30.0%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
140	10	205	10	117	5	108	6
111	9	97	5	120	5	99	5
192	10	222	10	110	6	102	6
120	6	89	5	105	5	94	5

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Phytoplankton Test-Growth-Cell Density

Start Date:	09/01/2004 15:00	Test ID:	B127801rsc	Sample ID:	Siltronics
End Date:	09/05/2004 14:00	Lab ID:	ORCHM-Corvallis Lab	Sample Type:	EFF2-Industrial
Sample Date:	09/01/2004 08:00	Protocol:	EPAF 94-EPA Freshwater	Test Species:	SC
Comments:					

Conc-%	1	2	3	4
LAB-Control	5787500	5000000	5375000	4706522
1.9	4455357	4446970	4692308	4711539
3.75	4257576	4250000	5108333	4697917
7.5	4570313	4808333	4695652	4215517
15	5440476	4525000	5068182	4133333
30	4540322	5108333	5380952	4579545

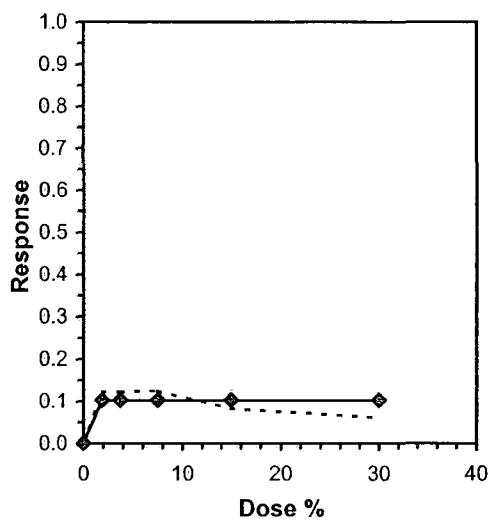
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
LAB-Control	5217256	1.0000	5217256	4706522	5787500	8.977	4				5217256	1.0000
1.9	4576543	0.8772	4576543	4446970	4711539	3.169	4	2.244	2.410	688013	4684298	0.8978
3.75	4578457	0.8776	4578457	4250000	5108333	8.969	4	2.238	2.410	688013	4684298	0.8978
7.5	4572454	0.8764	4572454	4215517	4808333	5.622	4	2.259	2.410	688013	4684298	0.8978
15	4791748	0.9184	4791748	4133333	5440476	12.060	4	1.490	2.410	688013	4684298	0.8978
30	4902288	0.9396	4902288	4540322	5380952	8.384	4	1.103	2.410	688013	4684298	0.8978

Auxiliary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.96243		0.884		0.12967	-0.8093
Bartlett's Test indicates equal variances (p = 0.42)					4.95736		15.0863			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	30	>30		3.33333	688013	0.13187	2.6E+11	1.6E+11	0.20409	5, 18

Linear Interpolation (80 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05*	0.9300			
IC10*	1.8600			
IC15	>30			
IC20	>30			
IC25	>30			
IC40	>30			
IC50	>30			

* indicates IC estimate less than the lowest concentration



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APPENDIX B
REFERENCE TOXICANT DATA SHEETS

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl   Reagent Log #: 13022-02

Test Start Date: 8-26-04   Time: 1520   Initials: BM/DO

Test End Date: 8-30-04   Time: 1605   Initials: CEA

TEST CONDITIONS AT INITIATION:

Species ID#: RS 336

Age: 6 days

Dilution Water ID #: 2420

Source Water: Recon MH (Flow)

EDTA Added ? (Yes) No

INOCULUM (Axenic Culture)	
# Cells	# Fields
458	250
MEAN	1.832
x 250,000 =	Culture Density: 458,000

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol./Replicate	50 mls
No. of Reps	3/4
Nutrient Dosage	1 ml per L

Test Start Density x Test Volume / Culture Density = Inoculum Volume

10,000 x 50 ml / 458,000 = 1.09 ml

Confirming Counts	# Cells	# Fields	Cell Conc. x10^6 (cells/ml)
Flask #1	4	100	0.0100
Flask #2	3	100	0.0075
Flask #3	3	100	0.0075

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
400	379	381

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	DO/BM	DO	BM	CEA	CEA
Time	1520	0805	1245	1525	1605

Test Concen. (g/L)	D.O. (mg/L) 0 hr	pH 0 hr	pH 24	pH 48	pH 72	pH 96	Temperature (°C) 0 hr	Temp 24	Temp 48	Temp 72	Temp 96	Conductivity (umohs/cm) 0 hr	Hard 0 hr	Alk 0 hr
Control	7.3	7.8	7.8	7.9	8.2	8.6	25.8	24.8	24.9	24.7	25.3	351		
0.25	7.3	7.9	7.9	7.8	8.2	8.8	25.4	24.8	25.0	24.9	25.8	781		
0.50	7.5	7.9	7.9	7.9	8.2	8.7	25.1	24.7	25.1	24.8	25.9	1181		
1.0	7.5	7.9	7.9	7.9	8.2	8.6	24.8	24.7	25.1	24.8	25.9	2005		
2.0	7.4	7.9	7.9	7.9	8.2	8.6	24.7	24.8	25.2	24.9	25.7	3400		
4.0	7.4	8.0	7.9	7.9	8.1	8.3	24.7	24.8	25.2	24.8	25.3	6540		

Task Manager [signature]   Endpoint : Growth

Project Manager [signature]   IC25 : 0.94

QA Officer [signature]   Cusum Chart Limits : 0.00 TO 1.87

Comments:

Raphidocelis subcapitata COUNT WORKSHEET

Client: QA/QC

Sample Description: NaCl 1B022-02

Test Start Date: 8-26-04 Initials: CEM

TEST CONCENTRATION	Control		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	647	40	4.043750
REP B	641	40	4.006250
REP C	609	35	4.350000
REP D	809	40	3.181250
MEAN # CELLS / mL* =			3.895313

TEST CONCENTRATION	1.0 g/L		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	608	40	3.80000
REP B	496	49	2.530612
REP C	475	45	2.638889
REP D	469	45	2.605556
MEAN # CELLS / mL* =			2.893764

TEST CONCENTRATION	0.25 g/L		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	575	40	3.593750
REP B	517	40	3.231250
REP C	615	40	3.843750
REP D	504	40	3.150000
MEAN # CELLS / mL* =			3.454688

TEST CONCENTRATION	2.0 g/L		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	406	60	1.691667
REP B	485	60	2.020833
REP C	491	60	2.045833
REP D	407	60	1.695833
MEAN # CELLS / mL* =			1.863542

TEST CONCENTRATION	0.5 g/L		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	550	40	3.437500
REP B	511	40	3.193750
REP C	464	40	2.900000
REP D	476	40	2.975000
MEAN # CELLS / mL* =			3.126563

TEST CONCENTRATION	4.0 g/L		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	180	60	0.75000
REP B	171	60	0.712500
REP C	229	60	0.954167
REP D	241	60	1.0041667
MEAN # CELLS / mL* =			0.855208

TEST CONCENTRATION			
CELL COUNT		# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
MEAN # CELLS / mL* =			

TEST CONCENTRATION			
CELL COUNT		# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
MEAN # CELLS / mL* =			

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

ALGAE

Client QA/QC Test Start Date 8-26-04

Sample Description NaCl 1B022-02 Initials CEA

TEST CONCENTRATION				CONTROL			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
162	10	194	10	135	10	114	10
181	10	142	10	161	10	146	10
155	10	177	10	151	10	138	10
149	10	128	10	162	5	111	10

TEST CONCENTRATION				0.25 g/L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
153	10	119	10	143	10	138	10
132	10	128	10	149	10	105	10
163	10	126	10	168	10	124	10
127	10	144	10	155	16	137	10

TEST CONCENTRATION				0.50 g/L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
159	10	139	10	163	10	198	10
148	10	137	10	94	10	145	10
103	10	127	10	114	10	112	10
140	10	108	10	93	10	111	10

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Client QA / QC

Test Start Date 8-26-04

Sample Description NaCl 16022-02

Initials CBH

TEST CONCENTRATION				1.0 g/L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
150	10	115	10	160	15	134	15
141	10	114	12	100	10	103	16
185	10	115	12	106	10	126	10
132	10	152	15	109	10	106	10

TEST CONCENTRATION				2.0 g/L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
96	15	125	15	124	15	93	15
92	15	129	15	116	15	124	15
104	15	107	15	122	15	90	15
110	15	128	15	129	15	100	15

TEST CONCENTRATION				4.0 g/L			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
45	15	34	15	63	15	73	15
59	15	50	15	69	15	56	15
37	15	36	15	44	15	59	15
39	15	51	15	53	15	53	15

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Report

Raphidocelis Growth Test — **CH2M Hill**

Test:	11-8624-1084	**Test Type:**	Cell Growth	**Duration:**	4 Days 0 Hours
Start Date:	26 Aug-04 03:20 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
End Date:	30 Aug-04 04:05 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	26 Aug-04 03:20 PM	**Brine:**	Not Applicable		

Sample:	02-8111-2335	**Material:**	Sodium chloride	**Client:**	
Sampled:	16 Jul-04	**Code:**	1B022-02	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	41 Days 15 Hours	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
09-3638-1584	Cell Density	0.25	0.5	0.35355	0.16370	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
07-4861-6364	Cell Density	25	0.9404651	0.10057	1.59971	Linear Interpolation
		50	1.918353	1.48103	2.61562	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
07-4861-6364	Cell Density	Control CV	0.1284		0.2	Passes acceptability criteria
09-3638-1584			0.1284		0.2	Passes acceptability criteria
07-4861-6364	Cell Density	Control Response	4E+06	1E+06		Passes acceptability criteria
09-3638-1584			4E+06	1E+06		Passes acceptability criteria
09-3638-1584	Cell Density	MSDp	0.1637	0.091	0.29	Passes acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.90E+6	3.18E+6	4.35E+6	2.50E+5	5.00E+5	12.84%
0.25		4	3.45E+6	3.15E+6	3.84E+6	1.62E+5	3.23E+5	9.36%
0.5		4	3.13E+6	2.90E+6	3.44E+6	1.21E+5	2.42E+5	7.74%
1		4	2.89E+6	2.53E+6	3.80E+6	3.03E+5	6.06E+5	20.94%
2		4	1.86E+6	1.69E+6	2.05E+6	9.82E+4	1.96E+5	10.54%
4		4	8.55E+5	7.13E+5	1.00E+6	7.27E+4	1.45E+5	17.00%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.04E+6	4.01E+6	4.35E+6	3.18E+6
0.25		3.59E+6	3.23E+6	3.84E+6	3.15E+6
0.5		3.44E+6	3.19E+6	2.90E+6	2.98E+6
1		3.80E+6	2.53E+6	2.64E+6	2.61E+6
2		1.69E+6	2.02E+6	2.05E+6	1.70E+6
4		7.50E+5	7.13E+5	9.54E+5	1.00E+6

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CETIS Report

Report Date: 08 Sep-04 9:35 AM
Analysis: 09-3638-1584

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	11-9657-3445	11-9657-3445	08 Sep-04 9:34 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		0.25	0.5	400.00	0.35355	16.37%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	7.43846	15.08628	0.19002	Equal Variances
Distribution	Shapiro-Wilk W	0.95281	0.88421	0.31761	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.5275E+13	5.055E+12	5	36.10	0.00000	Significant Effect
Error	2.5202E+12	1.400E+11	18			
Total	2.7795E+13	5.195E+12	23			

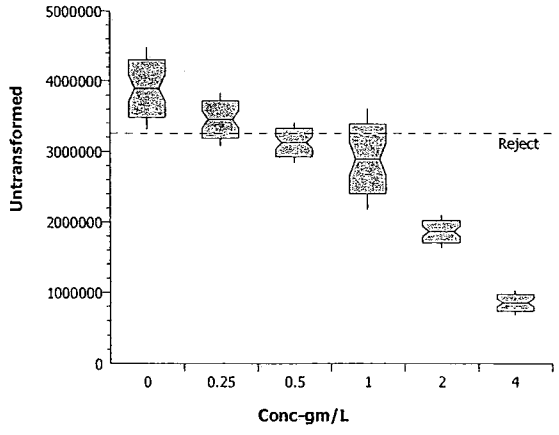
Group Comparisons

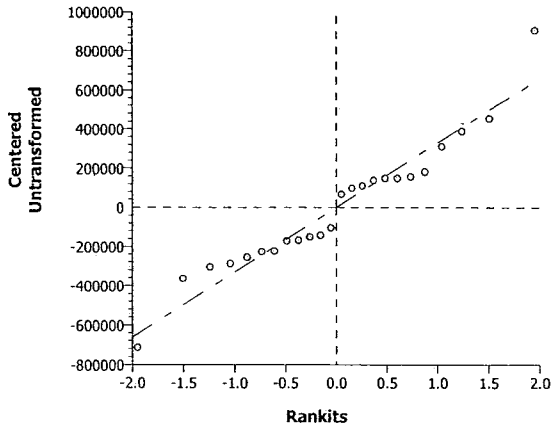
Control	vs	Conc-gm/L	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		0.25	1.665356	2.41	>0.05	637645.3	Non-Significant Effect
		0.5	2.905515	2.41	<=0.05	637645.3	Significant Effect
		1	3.785379	2.41	<=0.05	637645.3	Significant Effect
		2	7.679142	2.41	<=0.05	637645.3	Significant Effect
		4	11.49017	2.41	<=0.05	637645.3	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-gm/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	3.90E+6	3.18E+6	4.35E+6	5.00E+5				
0.25		4	3.45E+6	3.15E+6	3.84E+6	3.23E+5				
0.5		4	3.13E+6	2.90E+6	3.44E+6	2.42E+5				
1		4	2.89E+6	2.53E+6	3.80E+6	6.06E+5				
2		4	1.86E+6	1.69E+6	2.05E+6	1.96E+5				
4		4	8.55E+5	7.13E+5	1.00E+6	1.45E+5				

Cell Density





SCOEPA00027010

CETIS Report

Report Date: 08 Sep-04 9:35 AM
Analysis: 07-4861-6364

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	11-9657-3445	11-9657-3445	08 Sep-04 9:34 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

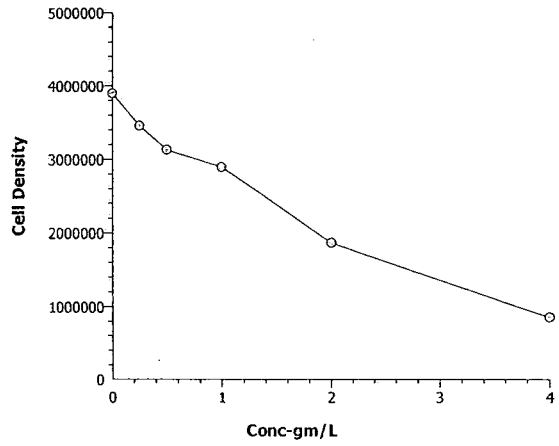
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.9404651	0.10057	1.59971
50	1.918353	1.48103	2.61562

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.90E+6	3.18E+6	4.35E+6	1.02E+5	5.00E+5
0.25		4	3.45E+6	3.15E+6	3.84E+6	6.60E+4	3.23E+5
0.5		4	3.13E+6	2.90E+6	3.44E+6	4.94E+4	2.42E+5
1		4	2.89E+6	2.53E+6	3.80E+6	1.24E+5	6.06E+5
2		4	1.86E+6	1.69E+6	2.05E+6	4.01E+4	1.96E+5
4		4	8.55E+5	7.13E+5	1.00E+6	2.97E+4	1.45E+5

Cell Density



SCOEPA00027011

APPENDIX C
CHAIN OF CUSTODY

CH2M HILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Siltronic Corporation NPDES#: 101128

Address: 7200 NW Front Avenue, Portland, Oregon 97210

Composite Sample Information: _____

Samples/Hour: 1 Volume/Sample: ~1L

Total Hours: 24 Total Volume: ~144L

Contact Person: Thomas J. Rothschild Initiated: Date 31 Aug Time 0800

Phone: 503-219-7374 Ended: Date 1 Sep Time 0800

Chilled During Collection: Yes ☐ No ☒

CH2M HILL Project #: _____

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.#

Check Chlorine (Y/N): _____

Temp. Upon Arrival (°C): 17.3°C

Check Ammonia (Y/N): _____ Dechlorinate (Y/N): _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
04-85	1 Sep 2004	0800	X		1	B1278-01													X					Dilutions: 30, 15, 7.5, 3.75, and 1.9 %

Sampled By & Title (Please sign and print name): Thomas J. Rothschild	Date/Time: 1 Sep 2004 / 0800	Relinquished By (Please sign and print name): Thomas J. Rothschild	Date/Time: 1 Sep 2004 / 0845
Received By (Please sign and print name): PAUL CONROY	Date/Time: 9-1-04 / 8:45	Relinquished By (Please sign and print name): PAUL CONROY	Date/Time: 9-1-04 / 11:00
Received By (Please sign and print name): Jim Wakeyough	Date/Time:	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name): Doug Lamm / LAB	Date/Time: 9-1-04 / 1145	Shipped Via: UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #:
Work Authorized By (Please sign and print name):	Remarks: New Purchase Order will be written. TJR		

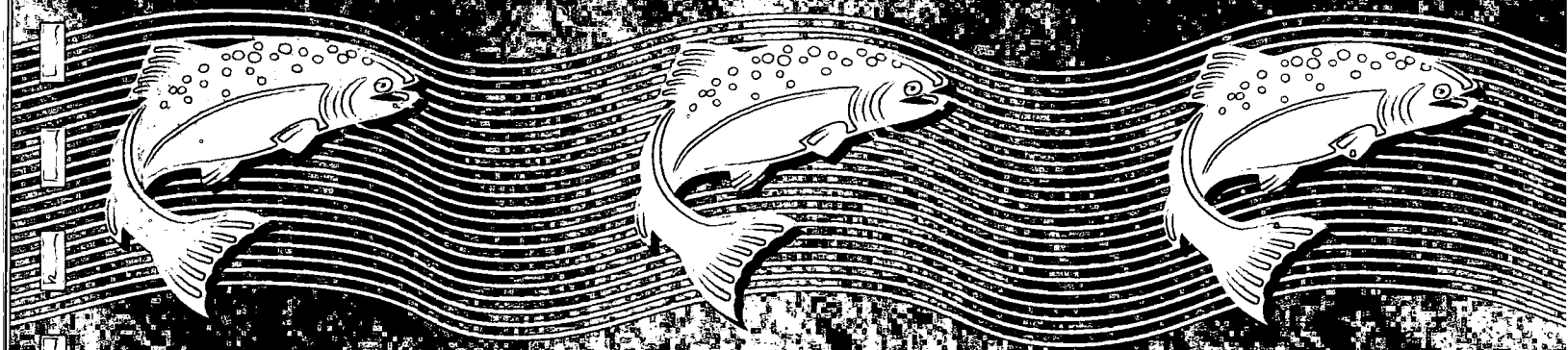
Rev 10/97

SCOEPA00027013

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted April 13 through 17, 2004

RECEIVED APR 2 6 2004
3JR



CH2MHILL

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted April 13 through 17, 2004

RECEIVED APR 2 6 2004
3gR

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

April 22, 2004
Lab ID No. C01197

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	TEST CONCENTRATIONS	1
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	MONITORING OF BIOASSAY	2
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APPENDIX A. RAW DATA SHEETS		
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APPENDIX C. CHAIN OF CUSTODY		

INTRODUCTION

CH2M HILL conducted a chronic definitive bioassay on one sample provided by Siltronics Corporation, Portland, Oregon. The organism tested was the green algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum*). The test was conducted from April 13 through 17, 2004.

METHODS AND MATERIALS

TEST METHODS

The chronic test method was performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. (1994); EPA/600/4-91/002 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, March 1993.

TEST ORGANISMS

The *Raphidocelis subcapitata* was obtained from CH2M Hill's in-house cultures, were 4 days old at test initiation, and were acclimated for 4 days prior to test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA.

DILUTION WATER

The dilution water used for test was reconstituted moderately hard water with nutrients added (including EDTA) with a hardness and alkalinity of 116 and 74 mg/l as $CaCO_3$, respectively and a pH of 7.5.

TEST CONCENTRATIONS

The concentrations tested were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent with dilution water for the control. The tests were run with three replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

One sample was collected on April 13, 2004. The sample was transported to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on April 13, 2004. The sample was stored in the dark at 4°C until test solutions were prepared and tested. A chain of custody form for sample collection is provided in Appendix C.

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SAMPLE PREPARATION

The sample used during the test was 0.45 µm filtered upon arrival, nutrients (including EDTA) added, and temperature was adjusted prior to test initiation.

MONITORING OF BIOASSAY

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

For the chronic algae test, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity was measured in the control, low, middle, and high test concentrations at test initiation. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period. *Raphidocelis subcapitata* growth was determined by cell counts using a hemocytometer.

DATA ANALYSIS

The effect measured during the alga test was alga growth response. For the chronic test, statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, using CETIS version 1.024. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the growth data between the control and each effluent concentration. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

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RESULTS AND DISCUSSION

CHRONIC BIOASSAY

Table 1 summarizes the 96-hour growth response data for the *Raphidocelis subcapitata* test.

Table 1
***Raphidocelis subcapitata* Results**

Concentration (%)	Growth as Mean Cell Density (cells x 10^6/mL)
Control	3.544
1.90	3.527
3.75	3.269
7.50	3.330
15.0	3.395
30.0	3.428

The results for the *Raphidocelis subcapitata* test indicated no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 30.0 and greater than 30.0 percent effluent, respectively.

The IC_{25} value calculated on the *Raphidocelis* growth was greater than 30.0 percent effluent.

Test temperature remained at 25±1°C. The test proceeded without interruption or incidents that could have affected test results.

REFERENCE TOXICANT TEST

The result of monthly reference toxicant test with sodium chloride indicate that the *Raphidocelis* was within the respective sensitivity range based on EPA guidelines. The IC_{25} values and Control Chart Limits are listed in the table below. The data sheets for the reference toxicant test are provided in Appendix B.

Table 2
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart limits
Raphidocelis subcapitata (growth)	0.93	0.29 to 1.59

SCOEPA00027019

APPENDIX A
RAW DATA SHEETS

CH2M HILL **TOXICITY TEST ORGANISM AND WATER QUALITY DATA**

Client Siltronics — Test Initiation: Date 4-13-04 Time 1345 — Test Termination: Date 4-17-04 Time 1245

Contact Tom Rothschild 503-219-7374 — Technician Muckey, Stanaway, Winn, Holm

Test Species/ID *Raphidocelis subcapitata* / Rs 323 / /

Sample Information								Test Species Information	ID# Rs 323	ID#	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	(Age) or Size	4 days			
									—			
B1197 -01	04-36	4-13-04	0800	0.01 / -	1.22	270	-	Test Container Size	125 ml			
				/				Test Volume	50 ml			
				/				Feeding: Type	1 ml of nutrients			
				/				Amount	added per liter			
				/				Aeration: Began	none			
				/				Amount	—			
				/				Dilution Water ID#	2373			
				/				Acclimation Period	days			
				/				Test Location	# 11			
				/				Condition of Survivors				
				/				Size (mm)	—			
				/				Loading Rate	—			
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (Algae)	2373	116	74

Water Quality Meters Used/ID#

Dissolved Oxygen #3 pH #2 Temperature _____

Conductivity #2 Refractometer _____ Other _____

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Siltronics

Sample Description: B1197-01

Test Start Date: 4-13-04 Time: 1345 Initials: Dm

Test End Date: 4-17-04 Time: 1245 Initials: CEM

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 323

Age: 4 days

Dilution Water ID #: Recon MH *2373

Source Water: Recon MH (FHm)

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)	
# Cells	# Fields
426	250
MEAN	1.944

Culture Density = Mean # of Cells/Field x 250,000

	Culture Density
x 250,000 =	486,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	4/3
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	486,000	=	1.03 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	6	150	0.0100
Flask #2	5	150	0.0083
Flask #3	5	150	0.0083

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
385	381	362

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	Dm	Dm	MS	DW	CEM
Time	~~1556~~ 1345	0835	1255	1045	1245

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard.	Alk.
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.6	7.5	7.6	8.1	8.3	8.9	24.1	25.1	25.5	25.7	26.0	353	116	74
1.90 %	7.5	7.5	7.6	8.1	8.2	8.7	24.2	25.2	25.3	25.4	25.7	376	122	68
3.75 %	7.5	7.5	7.7	8.1	8.3	8.9	24.2	25.2	25.1	25.6	25.9	394		
7.50 %	7.4	7.5	7.7	8.1	8.3	8.9	24.2	25.1	25.0	25.4	25.2	426	132	62
15.0 %	7.4	7.5	7.7	8.1	8.3	9.1	24.1	25.1	25.0	25.3	25.3	493		
30.0 %	7.4	7.5	7.7	8.0	8.5	8.9	24.2	25.2	25.4	25.5	25.3	636	178	56

CEM

Comments:

Raphidocelis subcapitata COUNT WORKSHEET

Client: Siltronics

Sample Description: B1197-01

Test Start Date: 4-18-04 Initials: GEA

TEST CONCENTRATION	Control		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	675	40	4.21875
REP B	578	40	3.61250
REP C	577	40	3.60625
REP D	438	40	2.73750
	MEAN # CELLS / mL* =		3.54375

TEST CONCENTRATION	7.50%		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	449	40	2.80625
REP B	593	40	3.70625
REP C	529	40	3.30625
REP D	560	40	3.50000
	MEAN # CELLS / mL* =		3.32969

TEST CONCENTRATION	1.90%		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	647	40	4.04375
REP B	597	40	3.73125
REP C	525	40	3.28125
REP D	488	40	3.05000
	MEAN # CELLS / mL* =		3.52656

TEST CONCENTRATION	15.0%		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	573	40	3.58125
REP B	597	40	3.73125
REP C	580	40	3.62500
REP D	423	40	2.64375
	MEAN # CELLS / mL* =		3.39531

TEST CONCENTRATION	3.75%		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	531	40	3.31875
REP B	525	40	3.28125
REP C	546	40	3.41250
REP D	490	40	3.06250
	MEAN # CELLS / mL* =		3.26875

TEST CONCENTRATION	30.0%		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	697	40	4.35625
REP B	569	40	3.55625
REP C	504	40	3.15000
REP D	424	40	2.65000
	MEAN # CELLS / mL* =		3.42813

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
	MEAN # CELLS / mL* =		

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

SCOEPA00027023

Client: Siltronics

Test Start Date: 4-13-04

Sample Description: 81197-01

Initials: CEA

TEST CONCENTRATION				Control			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
135	10	142	10	130	10	112	10
171	10	140	10	175	10	112	10
204	10	134	10	152	10	105	10
165	10	162	10	120	10	109	10

TEST CONCENTRATION				1.90%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
161	10	136	10	156	10	135	10
157	10	159	10	120	10	124	10
167	10	147	10	130	10	128	10
162	10	155	10	119	10	101	10

TEST CONCENTRATION				3.75%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
134	10	131	10	137	8 10 CEA	107	10
141	10	124	10	151	10	123	10
127	10	~~151~~ 124	10	121	10	133	10
126	10	146	10	137	10	127	10

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
~~10T~~	~~10 CEA~~						

Client: Siltronics

Test Start Date: 4-13-04

Sample Description: B1197-01

Initials: CBH

TEST CONCENTRATION				7.5%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
101	10	136	10	146	10	149	10
107	10	167	10	118	10	125	10
120	10	148	10	120	10	150	10
121	10	142	10	135	10	136	10

TEST CONCENTRATION				15.0 %			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
125	10	131	10	139	10	111	10
162	10	154	10	140	10	106	10
129	10	149	10	149	10	98	10
157	10	163	10	152	10	111	10

TEST CONCENTRATION				30.0%			
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
191	10	140	10	135	10	105	10
186	10	135	10	128	10	108	10
189	10	157	10	125	10	93	10
161	10	141	10	116	10	118	10

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Report

Raphidocelis Growth Test — **CH2M Hill**

Test:	05-8028-8985	**Test Type:**	Cell Growth	**Duration:**	95 Hours
Start Date:	13 Apr-04 01:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
End Date:	17 Apr-04 12:45 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	13 Apr-04 01:45 PM	**Brine:**	Not Applicable		

Sample:	07-7723-3837	**Material:**	Industrial Effluent	**Client:**	
Sampled:	13 Apr-04 08:00 AM	**Code:**	B119701	**Project:**	
Received:	13 Apr-04 11:30 AM	**Source:**	Siltronics		
Hold Time:	6 Hours (11.6 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
11-3896-6011	Cell Density	30	>30	N/A	0.24172	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
07-3400-4284	Cell Density	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
07-3400-4284	Cell Density	Control CV	0.172		0.2	Passes acceptability criteria
11-3896-6011			0.172		0.2	Passes acceptability criteria
07-3400-4284	Cell Density	Control Response	4E+06	1E+06		Passes acceptability criteria
11-3896-6011			4E+06	1E+06		Passes acceptability criteria
11-3896-6011	Cell Density	MSDp	0.2417	0.091	0.29	Passes acceptability criteria

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	3.54E+6	2.74E+6	4.22E+6	3.05E+5	6.09E+5	17.20%
1.9		4	3.53E+6	3.05E+6	4.04E+6	2.23E+5	4.46E+5	12.65%
3.75		4	3.27E+6	3.06E+6	3.41E+6	7.41E+4	1.48E+5	4.53%
7.5		4	3.33E+6	2.81E+6	3.71E+6	1.93E+5	3.85E+5	11.57%
15		4	3.40E+6	2.64E+6	3.73E+6	2.52E+5	5.05E+5	14.87%
30		4	3.43E+6	2.65E+6	4.36E+6	3.61E+5	7.21E+5	21.04%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	4.22E+6	3.61E+6	3.61E+6	2.74E+6
1.9		4.04E+6	3.73E+6	3.28E+6	3.05E+6
3.75		3.32E+6	3.28E+6	3.41E+6	3.06E+6
7.5		2.81E+6	3.71E+6	3.31E+6	3.50E+6
15		3.58E+6	3.73E+6	3.63E+6	2.64E+6
30		4.36E+6	3.56E+6	3.15E+6	2.65E+6

SCOEPA00027026

CETIS Report

Report Date: 20 Apr-04 4:08 PM
Analysis: 11-3896-6011

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	11-4422-2512	11-4422-2512	20 Apr-04 4:08 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.33	N/A	24.17%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	5.57022	15.08628	0.35031	Equal Variances
Distribution	Shapiro-Wilk W	0.96020	0.88421	0.44475	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.33E+11	4.66E+10	5	0.18	0.96481	Non-Significant Effect
Error	4.5479E+12	2.527E+11	18			
Total	4.7809E+12	2.993E+11	23			

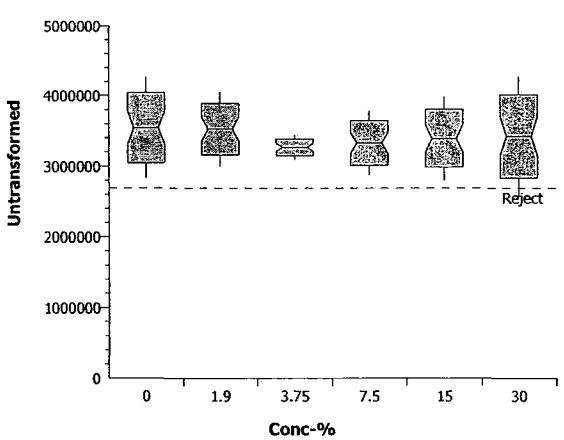
Group Comparisons

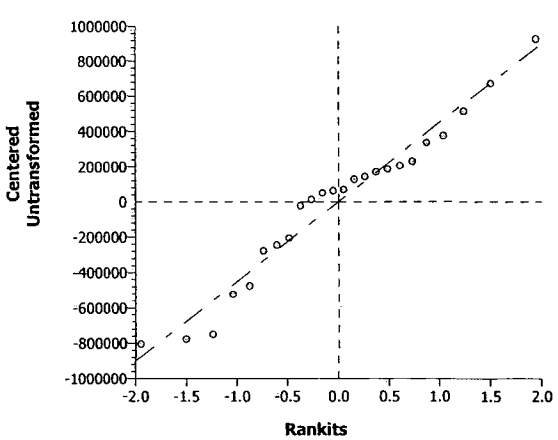
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	0.04835711	2.41	>0.05	856582.9	Non-Significant Effect
		3.75	0.7737138	2.41	>0.05	856582.9	Non-Significant Effect
		7.5	0.6022658	2.41	>0.05	856582.9	Non-Significant Effect
		15	0.4176296	2.41	>0.05	856582.9	Non-Significant Effect
		30	0.3253115	2.41	>0.05	856582.9	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	3.54E+6	2.74E+6	4.22E+6	6.09E+5				
1.9		4	3.53E+6	3.05E+6	4.04E+6	4.46E+5				
3.75		4	3.27E+6	3.06E+6	3.41E+6	1.48E+5				
7.5		4	3.33E+6	2.81E+6	3.71E+6	3.85E+5				
15		4	3.40E+6	2.64E+6	3.73E+6	5.05E+5				
30		4	3.43E+6	2.65E+6	4.36E+6	7.21E+5				

Cell Density





SCOEPA00027027

CETIS Report

Report Date: 20 Apr-04 4:08 PM
Analysis: 07-3400-4284

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	11-4422-2512	11-4422-2512	20 Apr-04 4:08 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

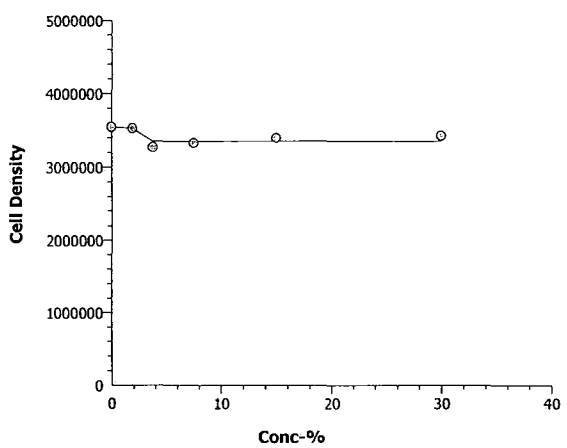
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	3.54E+6	2.74E+6	4.22E+6	1.24E+5	6.09E+5
1.9		4	3.53E+6	3.05E+6	4.04E+6	9.10E+4	4.46E+5
3.75		4	3.27E+6	3.06E+6	3.41E+6	3.02E+4	1.48E+5
7.5		4	3.33E+6	2.81E+6	3.71E+6	7.86E+4	3.85E+5
15		4	3.40E+6	2.64E+6	3.73E+6	1.03E+5	5.05E+5
30		4	3.43E+6	2.65E+6	4.36E+6	1.47E+5	7.21E+5

Cell Density



SCOEPA00027028

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl Reagent Log #: 13018-05

Test Start Date: 3-23-04 Time: 1340 Initials: BM

Test End Date: 3-27-04 Time: 1310 Initials: CEA

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 320

Age: 4 days

Dilution Water ID #: 2370

Source Water: Recon MH 2368

EDTA Added? (Yes) / No

INOCULUM (Axenic Culture)	
# Cells	# Fields
407	200
MEAN	2.04

Culture Density = Mean # of Cells/Field x 250,000

		Culture Density
x 250,000 =		509,750

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	3 or 4
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	509.750	=	0.98 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc x10^6
Flask #1	5	150	0.00833
Flask #2	8	150	0.01333
Flask #3	6	150	0.01000

Light Intensity at Test Initiation (foot candles)		
Location #1	Location #2	Location #3
395	396	382

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	BM	DW	DW	CEA	CEA
Time	1340	0800	0900	1320	1310

Test Concen (g/L)	DO (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	8.1	7.9	7.9	7.9	8.4	9.0	25.1	24.9	24.2	24.4	24.9	359		
0.25	8.1	7.9	7.9	7.9	8.3	9.0	25.1	24.6	23.9	24.2	24.6	798		
0.50	8.1	7.9	7.9	8.0	8.3	9.0	25.1	25.1	24.1	23.9	24.3	1240		
1.0	8.1	7.9	8.0	8.0	8.2	8.9	25.1	24.8	24.1	23.9	24.4	2110		
2.0	8.2	7.9	8.0	8.0	8.1	8.4	25.1	24.6	24.4	23.9	23.9	3770		
4.0	8.1	7.9	8.0	8.1	8.1	8.4	25.1	24.9	24.2	24.2	23.9	6940		

Task Manager

Project Manager

QA Officer

Endpoint : Growth

IC25 : 0.93

Cusum Chart Limits : 0.29 to 1.59

Comments:

Raphidocelis subcapitata COUNT WORKSHEET

Client: QA / QC

Sample Description: NaCl

Test Start Date: 3-23-04 Initials: BM

TEST CONCENTRATION	Control		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	528	~~250~~	~~2.640~~ 2.640
REP B	671	50	3.3550
REP C	629	50	3.1450
REP D	463	50	2.3150
MEAN # CELLS / mL* =			2.8638

TEST CONCENTRATION	1.0 g/L		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	457	50	2.2850
REP B	466	50	2.3300
REP C	401	40	2.5063
REP D	382	50	1.9100
MEAN # CELLS / mL* =			2.2578

TEST CONCENTRATION	0.25 g/L		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	634	40	3.9625
REP B	500	25	5.0000
REP C	483	50	2.4150
REP D	489	50	2.4450
MEAN # CELLS / mL* =			3.4556

TEST CONCENTRATION	2.0 g/L		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	339	50	1.6950
REP B	387	|	1.9350
REP C	285	|	1.4250
REP D	312	|	1.5600
MEAN # CELLS / mL* =			1.6538

TEST CONCENTRATION	0.50 g/L		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	490	30	4.0833
REP B	444	30	3.7000
REP C	428	40	2.6750
REP D	469	50	2.3450
MEAN # CELLS / mL* =			3.2008

TEST CONCENTRATION	4.0 g/L		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	102	50	0.5100
REP B	139	|	0.6950
REP C	136	|	0.6800
REP D	103	|	0.5150
MEAN # CELLS / mL* =			0.6000

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
MEAN # CELLS / mL* =			

TEST CONCENTRATION			
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
REP D			
MEAN # CELLS / mL* =			

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

ALGAE.XLS

Client QA/QC Test Start Date 3-23-09

Sample Description NaCl Initials JM

TEST CONCENTRATION						CONTROL	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
125	10	119	10	123	10	101	10
99		134		129		91	
107		139		126		105	
109		135		123		84	
88		144		128		82	

TEST CONCENTRATION						0.25	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
151	10	104	5	106	10	99	10
156		99		85		83	
154		96		96		93	
173		92		~~87~~ 97		115	
		109		99		99	

TEST CONCENTRATION						0.50	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
155	10	140	10	112	10	99	10
153		147		108		85	
132		157		103		81	
				105		109	
						100	

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Client QA/QC Test Start Date 3-23-09

Sample Description NaCl Initials BM

TEST CONCENTRATION						1	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
103	10	99	10	95	10	68	10
87	|	97	|	112	|	80	|
93	|	92	|	84	|	86	|
89	|	93	|	110	|	72	|
81	|	90	|			76	|

TEST CONCENTRATION						2	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
57	10	89	10	41	10	64	10
70	|	72	|	75	|	49	|
64	|	73	|	54	|	88	|
78	|	74	|	63	|	60	|
70	|	79	|	52	|	51	|

TEST CONCENTRATION						4	
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
19	10	25	10	29	10	18	10
20	|	41	|	26	|	16	|
14	|	17	|	23	|	20	|
23	|	24	|	21	|	24	|
26	|	32	|	37	|	25	|

TEST CONCENTRATION							
Replicate A		Replicate B		Replicate C		Replicate D	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Report

Raphidocelis Growth Test — **CH2M Hill**

Test:	10-0148-9055	**Test Type:**	Cell Growth	**Duration:**	95 Hours
Start Date:	23 Mar-04 01:40 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
End Date:	27 Mar-04 01:10 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	23 Mar-04 01:40 PM	**Brine:**	Not Applicable		

Sample:	13-0704-7512	**Material:**	Sodium chloride	**Client:**	
Sampled:	02 Mar-04	**Code:**	1B018-05	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	21 Days 13 Hours	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
09-6243-8459	Cell Density	1	2	1.41421	0.39213	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
12-6592-0625	Cell Density	25	0.9332523	0.30094	1.58342	Linear Interpolation
		50	2.12726	1.36656	2.91173	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
09-6243-8459	Cell Density	Control CV	0.1652		0.2	Passes acceptability criteria
12-6592-0625			0.1652		0.2	Passes acceptability criteria
09-6243-8459	Cell Density	Control Response	3E+06	1E+06		Passes acceptability criteria
12-6592-0625			3E+06	1E+06		Passes acceptability criteria
09-6243-8459	Cell Density	MSDp	0.3921	0.091	0.29	Fails acceptability criteria

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	2.86E+6	2.32E+6	3.36E+6	2.37E+5	4.73E+5	16.52%
0.25		4	3.46E+6	2.42E+6	5.00E+6	6.29E+5	1.26E+6	36.40%
0.5		4	3.20E+6	2.35E+6	4.08E+6	4.12E+5	8.24E+5	25.74%
1		4	2.26E+6	1.91E+6	2.51E+6	1.25E+5	2.51E+5	11.11%
2		4	1.65E+6	1.43E+6	1.94E+6	1.09E+5	2.18E+5	13.15%
4		4	6.00E+5	5.10E+5	6.95E+5	5.06E+4	1.01E+5	16.87%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	2.64E+6	3.36E+6	3.15E+6	2.32E+6
0.25		3.96E+6	5.00E+6	2.42E+6	2.45E+6
0.5		4.08E+6	3.70E+6	2.68E+6	2.35E+6
1		2.29E+6	2.33E+6	2.51E+6	1.91E+6
2		1.70E+6	1.94E+6	1.43E+6	1.56E+6
4		5.10E+5	6.95E+5	6.80E+5	5.15E+5

SCOEPA00027034

CETIS Report

Report Date: 05 Apr-04 5:08 PM
Analysis: 09-6243-8459

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	07-7808-9314	07-7808-9314	05 Apr-04 5:08 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Untransformed		1	2	100.00	1.41421	39.21%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	18.10675	15.08628	0.00282	Unequal Variances
Distribution	Shapiro-Wilk W	0.95982	0.88421	0.43754	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.3061E+13	4.612E+12	5	10.62	0.00007	Significant Effect
Error	7.8161E+12	4.342E+11	18			
Total	3.0877E+13	5.046E+12	23			

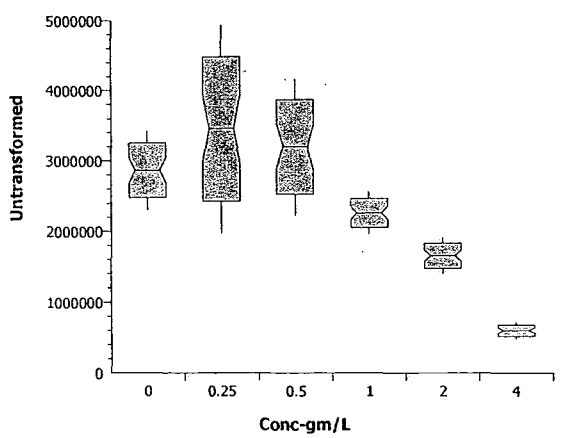
Group Comparisons

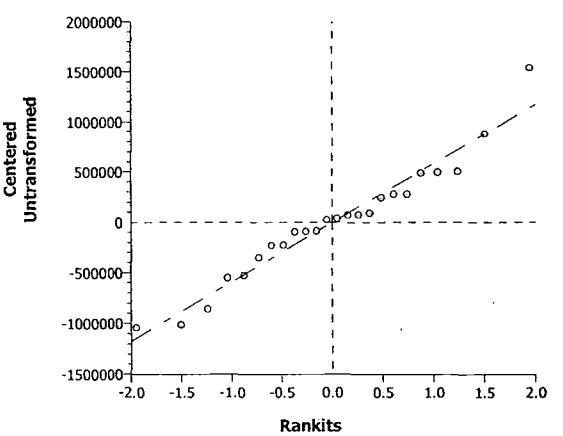
Control	vs	Conc-gm/L	Statistic	Critical	P Level	Ties	Decision(0.05)
Dilution Water		0.25	20	10	>0.05	0	Non-Significant Effect
		0.5	21	10	>0.05	0	Non-Significant Effect
		1	12	10	>0.05	0	Non-Significant Effect
		2	10	10	<=0.05	0	Significant Effect
		4	10	10	<=0.05	0	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-gm/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	2.86E+6	2.32E+6	3.36E+6	4.73E+5				
0.25		4	3.46E+6	2.42E+6	5.00E+6	1.26E+6				
0.5		4	3.20E+6	2.35E+6	4.08E+6	8.24E+5				
1		4	2.26E+6	1.91E+6	2.51E+6	2.51E+5				
2		4	1.65E+6	1.43E+6	1.94E+6	2.18E+5				
4		4	6.00E+5	5.10E+5	6.95E+5	1.01E+5				

Cell Density





SCOEPA00027035

CETIS Report

Report Date: 05 Apr-04 5:08 PM
Analysis: 12-6592-0625

Raphidocelis Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	07-7808-9314	07-7808-9314	05 Apr-04 5:08 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

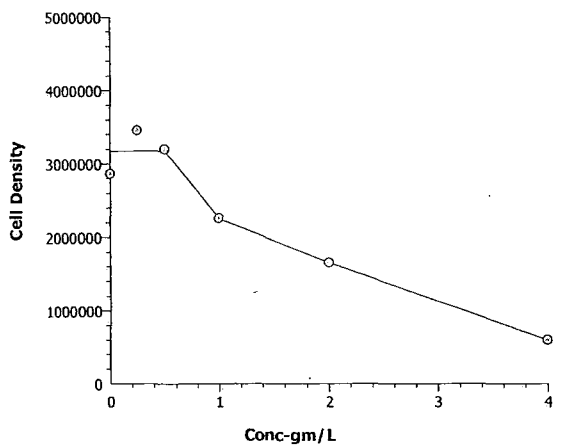
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.9332523	0.30094	1.58342
50	2.12726	1.36656	2.91173

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	2.86E+6	2.32E+6	3.36E+6	9.66E+4	4.73E+5
0.25		4	3.46E+6	2.42E+6	5.00E+6	2.57E+5	1.26E+6
0.5		4	3.20E+6	2.35E+6	4.08E+6	1.68E+5	8.24E+5
1		4	2.26E+6	1.91E+6	2.51E+6	5.12E+4	2.51E+5
2		4	1.65E+6	1.43E+6	1.94E+6	4.44E+4	2.18E+5
4		4	6.00E+5	5.10E+5	6.95E+5	2.07E+4	1.01E+5

Cell Density



SCOEPA00027036

APPENDIX C
CHAIN OF CUSTODY

CH2M HILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client Siltronic Corporation NPDES# 101128

Address 7200 N.W. Front Avenue
Portland, Oregon 97210

Composite Sample Information _____

Samples/Hour 1 Volume/Sample 6L

Total Hours 24 Total Volume 145L

Contact Person: Thomas J. Rothschild

Phone: 503-219-7374

Initiated: Date 12 Apr Time 0800

Ended: Date 13 Apr Time 0800

Chilled During Collection Yes ☐ No ☒

CH2M HILL Project # _____

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.# _____

Check Chlorine (Y/N) _____

Temp. Upon Arrival (°C) 11.6

Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type Comp.	Sample Type Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste	Raph. Sub.			Concentrations and/or Comments
04-36	13 Apr 2004	0800	X		1	B1197-01															X			for Raphidocelis Subcapitata

siltronic
perfect silicon solutions

Sample ID: 04-36

Date: 13 Apr 2004 Time: 0800

Collected by: Thomas J. Rothschild Preserved: 2-4°C

for Raphidocelis Subcapitata

Sampled By (Please sign and print name) Thomas J. Rothschild/Facilities Chemist	Date/Time 13 Apr 2004/0800	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 13 Apr 2004/0845
Received By (Please sign and print name) Paul Conroy/PAUL CONROY	Date/Time 4-13-04/10:45A	Relinquished By (Please sign and print name) Paul Conroy/PAUL CONROY	Date/Time 4-13-04 10:45A
Received By (Please sign and print name) Doug Dunn/LAB	Date/Time 4-13-04/1130 AM	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

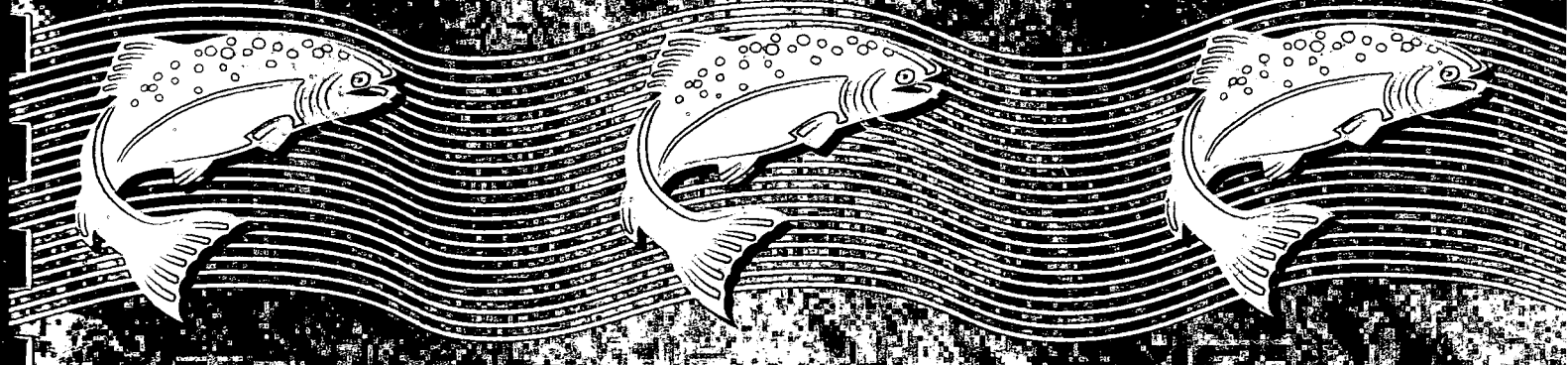
Rev. 10/97

SCOEPA00027038

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted January 15 through 19, 2004

RECEIVED JAN 3 0 2004



CH2MHILL

BIOASSAY REPORT
CHRONIC BIOASSAY
Conducted January 15 through 19, 2004

RECEIVED JAN 3 0 2004

Prepared for

WACKER SILTRONICS
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

January 26, 2004
Lab ID No. C01160

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SCOEPA00027041

INTRODUCTION

CH2M HILL conducted a chronic definitive bioassay on one sample provided by Wacker Siltronics, Portland, Oregon. The organism tested was the green algae (*Raphidocelis subcapitata*, formerly known as *Selenastrum capricornutum*). The test was conducted from January 15 through 19, 2004.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Weber, C. et al. (1994); EPA/600/4-91/002 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, March 1993.

TEST ORGANISMS

The *Raphidocelis subcapitata* was obtained from CH2M hill's in-house cultures, were 6 days old at test initiation, and were acclimated for 6 days prior to test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA.

DILUTION WATER

The dilution water used for test was reconstituted moderately hard water with nutrients added (including EDTA) with a hardness and alkalinity of 112 and 72 mg/l as $CaCO_3$, respectively and a pH of 7.4.

TEST CONCENTRATIONS

The concentrations tested were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent with dilution water for the control. The tests were run with three replicates per test concentration using an initial cell density in each test chamber of 10,000 cells/ml.

SAMPLE COLLECTION

One sample was collected on January 14, 2004. The sample was transported to CH2M HILL's Corvallis Aquatic Toxicology Laboratory and received on January 15, 2004. The sample was stored in the dark at 4°C until test solutions were prepared and tested. A chain of custody form for sample collection is provided in Appendix C.

SCOEPA00027042

SAMPLE PREPARATION

The sample used during the test was 0.45 µm filtered upon arrival, nutrients (including EDTA) added, and temperature was adjusted prior to test initiation.

MONITORING OF BIOASSAY

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

For the chronic algae test, solutions were monitored for pH and temperature daily in the control and all concentrations tested. Conductivity and dissolved oxygen was measured in the control and all concentrations tested at test initiation. Total hardness and alkalinity was measured in the control, low, middle, and high test concentrations at test initiation. Temperature was monitored in a surrogate chamber daily and in the incubator continuously throughout the testing period. *Raphidocelis subcapitata* growth was determined by cell counts using a hemocytometer.

DATA ANALYSIS

The effect measured during the alga test was alga growth response. For the chronic test, statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, using CETIS version 1.024. Dunnett's Procedure, Bonferroni T-test, or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni T-test was used to compare the growth data between the control and each effluent concentration. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or Bonferroni T-test could not be met, Steel's Many-One Rank Test or Wilcoxon Many-One Rank Test with Bonferroni Adjustment was used to analyze the data.

SCOEPA00027043

RESULTS AND DISCUSSION

CHRONIC BIOASSAY

Table 1 summarizes the 96-hour growth response data for the *Raphidocelis subcapitata* test.

Table 1 *Raphidocelis subcapitata* Results	
Concentration (%)	**Growth as Mean Cell Density (cells x 10^6/mL)**
Control	2.900
1.90	2.799
3.75	2.865
7.50	2.499
15.0	2.381
30.0	2.449

The results for the *Raphidocelis subcapitata* test indicated no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 30.0 and greater than 30.0 percent effluent, respectively.

The IC_{25} value was calculated on the *Raphidocelis* growth. The IC_{25} value for growth was greater than 30.0 percent effluent.

Test temperature remained at 25±1°C. The test proceeded without interruption or incidents that could have affected test results.

REFERENCE TOXICANT TEST

The results of monthly reference toxicant test with sodium chloride indicate that the *Raphidocelis* was within the respective sensitivity range based on EPA guidelines. The IC_{25} values and Control Chart Limits are listed in the table below. The data sheets for the reference toxicant test are provided in Appendix B.

Table 2 Chronic Reference Toxicant Tests (g/L)		
Species (test)	**IC_{25}**	**Control Chart limits**
Raphidocelis subcapitata (growth)	0.39	0.28 to 1.56

SCOEPA00027044

APPENDIX A
RAW DATA SHEETS

CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Wacker Siltronics — Test Initiation: Date 1-15-04 Time 1135 — Test Termination: Date 1-19-04 Time 1445

Contact: Tom Rothschild 503-219-7374 — Technician: Mackey, Winn, Holm, Frash, Stevenson

Test Species/ID: *Raphidocelis subcapitata* / Rs 315

Sample Information								Test Species Information	ID# Rs 315	ID#	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Age or Size	6 days			
									—			
B1160 -01		1-14-04	0800	0.021 / -	0.96	192	36	Test Container Size	125 ml			
				/				Test Volume	50 ml			
				/				Feeding: Type	1 ml of nutrients			
				/				Amount	added per liter			
				/				Aeration: Began	none			
				/				Amount	—			
				/				Dilution Water ID#	2351			
				/				Acclimation Period	6 days			
				/				Test Location	# 11			
				/				Condition of Survivors				
				/				Size (mm)	—			
				/				Loading Rate	—			
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (Algae)	2351	112	72

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Temperature _____

Conductivity #2 Refractometer _____ Other _____

SCOEPA00027046

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: Wacker Siltronics

Sample Description: B1160-01

Test Start Date: 1-15-04 Time: 1435 Initials: BM

Test End Date: 1-19-04 Time: 1445 Initials: MS

TEST CONDITIONS AT INITIATION:

Species ID#: RS 315

Age: 6 days

Dilution Water ID #: 2351

Source Water: Recon MA (FHM) + 2349

EDTA Added ? (Yes) No

INOCULUM (Axenic Culture)			
# Cells	# Fields		Culture Density
490	200		
MEAN	2.45	x 250,000 =	612,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	3
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	612,500	=	0.82 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	3	100	0.0075
Flask #2	3	100	0.0075
Flask #3	5	100	0.0125

Light Intensity at Test Initiation (foot-candles)		
Location #1	Location #2	Location #3
363	372	368

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	BM	DW	CEA	(illegible)	MS
Time	1435	1045	1048	0800	1445

Test Concen.	D.O. (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.7	7.4	7.9	7.7	8.0	9.4	24.2	24.1	23.6	*	23.8	364	112	72
1.90 %	7.9	7.4	7.9	7.9	8.2	9.4	24.2	24.2	24.9	*	23.9	383	115	75
3.75 %	7.7	7.4	7.9	7.9	8.1	9.4	24.2	24.2	24.7	*	23.9	394		
7.50 %	7.9	7.4	7.9	7.9	8.1	9.4	24.3	24.3	24.5	*	24.0	418	130	80
15.0 %	7.8	7.4	7.9	7.9	8.1	9.5	24.2	24.2	25.4	*	24.0	460		
30.0 %	7.9	7.4	7.8	7.9	8.1	9.2	24.2	24.3	25.3	*	24.1	567	150	70

Comments: * individual temps not taken. Incubator max temp = 25.1, min temp 24.2 from 1-17 to 1-18 (72 hrs)

Raphidocelis subcapitata COUNT WORKSHEET

Client: Wacker Siltronics

Sample Description: B 1160-01

Test Start Date: 1-15-04 Initials: BM

TEST CONCENTRATION	Control		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	819	60	3.4083
REP B	595	|	2.4792
REP C	675	|	2.8125
MEAN # CELLS / mL* =			2.9000

TEST CONCENTRATION	7.50 %		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	488	60	2.0333
REP B	772	|	3.2167
REP C	539	|	2.2458
MEAN # CELLS / mL* =			2.4986

TEST CONCENTRATION	1.90 %		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	713	60	2.9708
REP B	651	|	2.7125
REP C	651	|	2.7125
MEAN # CELLS / mL* =			2.7986

TEST CONCENTRATION	15.0 %		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	502	60	2.0917
REP B	572	|	2.3833
REP C	640	|	2.6667
MEAN # CELLS / mL* =			2.3806

TEST CONCENTRATION	3.75 %		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	628	60	2.6167
REP B	806	|	3.3583
REP C	629	|	2.6208
MEAN # CELLS / mL* =			2.8653

TEST CONCENTRATION	30.0 %		
CELL COUNT		# FIELDS	CELLS / mL*
REP A	558	60	2.3250
REP B	543	|	2.2625
REP C	662	|	2.7583
MEAN # CELLS / mL* =			2.4486

TEST CONCENTRATION			
CELL COUNT		# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
MEAN # CELLS / mL* =			

TEST CONCENTRATION			
CELL COUNT		# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
MEAN # CELLS / mL* =			

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

Client Wacker Siltronics Test Start Date 1-15-04

Sample Description B460-01 Initials BV

TEST CONCENTRATION				CONTROL	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
140	10	113	10	103	10
129		112		114	
134		84		101	
121		85		119	
139		95		101	
156		106		137	

TEST CONCENTRATION				1.9%	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
95	10	116	10	86	10
103		115		101	
102		112		119	
83		95		131	
164		100		99	
166		113		115	

TEST CONCENTRATION				3.75%	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
97	10	137	10	130	10
115		145		104	
115		132		98	
92		130		107	
94		133		94	
115		129		96	

TEST CONCENTRATION					
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Client: Wacker Siltronics Test Start Date: 1-15-04

Sample Description: B1160-01 Initials: BN

TEST CONCENTRATION				75%	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
73	10	149	10	110	10
80	|	125	|	88	|
82	|	101	|	78	|
80	|	99	|	81	|
92	|	164	|	96	|
81	|	134	|	86	|

TEST CONCENTRATION				15%	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
85	10	93	10	123	10
72	|	107	|	104	|
74	|	82	|	115	|
86	|	89	|	95	|
93	|	120	|	96	|
92	|	81	|	107	|

TEST CONCENTRATION				30%	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
102	10	84	10	99	10
99	|	104	|	103	|
100	|	93	|	102	|
89	|	68	|	113	|
88	|	104	|	124	|
80	|	90	|	121	|

TEST CONCENTRATION					
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Report

Raphidocelis Growth Test — **CH2M Hill, Inc.**

Test:	07-6278-3727	**Test Type:**	Cell Growth	**Duration:**	4 Days 0 Hours
Start Date:	15 Jan-04 02:35 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
End Date:	19 Jan-04 02:45 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	15 Jan-04 02:35 PM	**Brine:**	Not Applicable		

Sample:	16-2239-5091	**Material:**	Industrial Effluent	**Client:**	
Sampled:	14 Jan-04 08:00 AM	**Code:**	B116001	**Project:**	
Received:	14 Jan-04 02:00 PM	**Source:**	Wacker Siltronics		
Hold Time:	31 Hours (3 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
14-4897-9834	Cell Density	30	>30	N/A	0.28443	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
12-0656-6693	Cell Density	15	10.4994	N/A	N/A	Linear Interpolation
		25	>30	N/A	N/A	
		50	>30	N/A	N/A	

Cell Density Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	3	290000	247920	340830	271752.	470689.	16.23%
1.9		3	279860	271250	297080	86100.0	149129.	5.33%
3.75		3	286526	261670	335830	246519.	426984.	14.90%
7.5		3	249860	203330	321670	364252.	630903.	25.25%
15		3	238056	209170	266670	165993.	287509.	12.08%
30		3	244860	226250	275830	155897.	270022.	11.03%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	340830	247920	281250
1.9		297080	271250	271250
3.75		261670	335830	262080
7.5		203330	321670	224580
15		209170	238330	266670
30		232500	226250	275830

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CETIS Report

Raphidocelis Growth Test — **CH2M Hill, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Comparison	11-8153-1429	11-8153-1429	21 Jan-04 3:11 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.33	N/A	28.44%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.64053	15.08628	0.60224	Equal Variances
Distribution	Shapiro-Wilk W	0.92530	0.85752	0.15979	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	8.0096E+11	1.602E+11	5	0.98	0.46796	Non-Significant Effect
Error	1.9594E+12	1.633E+11	12			
Total	2.7604E+12	3.235E+11	17			

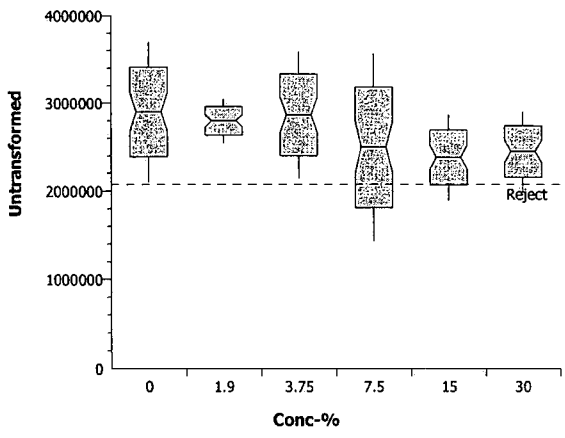
Group Comparisons

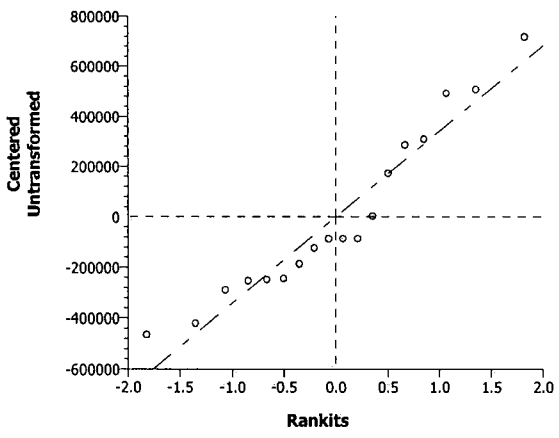
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	0.3073326	2.5	>0.05	824839.2	Non-Significant Effect
		3.75	0.105273	2.5	>0.05	824839.2	Non-Significant Effect
		7.5	1.216601	2.5	>0.05	824839.2	Non-Significant Effect
		15	1.574347	2.5	>0.05	824839.2	Non-Significant Effect
		30	1.368145	2.5	>0.05	824839.2	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	3	290000	247920	340830	470689.				
1.9		3	279860	271250	297080	149129.				
3.75		3	286526	261670	335830	426984.				
7.5		3	249860	203330	321670	630904.				
15		3	238056	209170	266670	287509.				
30		3	244860	226250	275830	270022.				

Cell Density





SCOEPA00027052

CETIS Report

Report Date: 21 Jan-04 3:11 PM
Analysis: 12-0656-6693

Raphidocelis Growth Test — **CH2M Hill, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	11-8153-1429	11-8153-1429	21 Jan-04 3:11 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

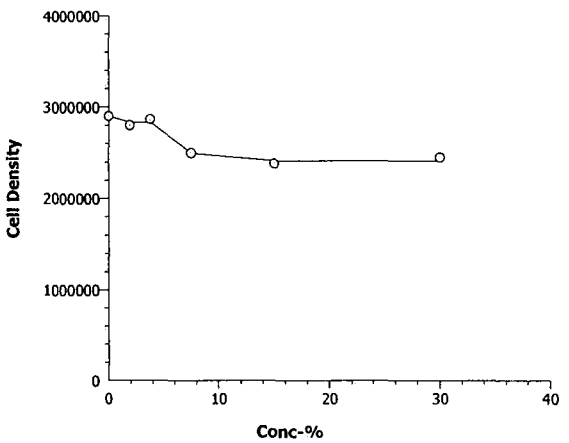
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
15	10.4994	N/A	N/A
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	3	2900000.00	2479200.00	3408300.00	96079.15	470689.8
1.9		3	2798600.00	2712500.00	2970800.00	30441.00	149129.8
3.75		3	2865266.66	2616700.00	3358300.00	87157.88	426984.7
7.5		3	2498600.00	2033300.00	3216700.00	128782.7	630904.0
15		3	2380566.66	2091700.00	2666700.00	58687.64	287509.5
30		3	2448600.00	2262500.00	2758300.00	55118.08	270022.3

Cell Density



SCOEPA00027053

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

Raphidocelis subcapitata (formerly *Selenastrum capricornutum*) TEST CONDITIONS

Client: QA / QC

Sample Description: NaCl Reagent Log #: 18017-08

Test Start Date: 1-15-04 Time: 1435 Initials: BW

Test End Date: 1-19-04 Time: 1450 Initials: MS

TEST CONDITIONS AT INITIATION:

Species ID#: Rs 315

Age: 6 days

Dilution Water ID #: 2351

Source Water: Recon MH (FHM) *2349

EDTA Added ? (Yes) / No

INOCULUM (Axenic Culture)			
# Cells	# Fields		Culture Density
490	200		
MEAN	2.45	x 250,000 =	612,500

Culture Density = Mean # of Cells/Field x 250,000

Filtration	0.45 um filter	X
	1.6 um filter	

Test Vol. / Replicate	50 mls
No. of Reps	3
Nutrient Dosage	1 ml per L

Test Start Density	x	Test Volume	/	Culture Density	=	Inoculum Volume
10,000	x	50 ml	/	612,500	=	0.82 ml

Confirming Counts			
	# Cells	# Fields	Cell Conc. x10^6
Flask #1	3	100	0.0075
Flask #2	3	100	0.0075
Flask #3	5	100	0.0125

Light Intensity at Test Initiation (foot candles)		
Location #1	Location #2	Location #3
363	372	365

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	BW	DW	CEB	(P)	MS
Time	1435	1045	1100	0800	1450

Test Concen (g/L)	DO (mg/L)	pH					Temperature (°C)					Conductivity (umohs/cm)	Hard	Alk
	0 hr	0 hr	24	48	72	96	0 hr	24	48	72	96	0 hr	0 hr	0 hr
Control	7.6	7.5	7.9	7.9	7.9	8.4	24.2	24.3	24.3	24.8	24.1	360	112	72
0.25	7.7	7.5	7.9	8.0	8.0	9.0	24.2	24.2	24.7	25.0	24.2	756	120	90
0.50	7.7	7.5	8.0	8.0	8.0	8.9	24.2	24.3	23.9	25.1	24.3	1211		
1.0	7.8	7.5	8.0	8.0	8.1	8.9	24.1	24.2	24.4	24.9	24.4	2120	110	100
2.0	7.8	7.5	8.0	8.0	8.1	8.6	24.3	24.2	23.8	24.9	24.2	3670		
4.0	7.8	7.5	8.0	7.9	8.1	8.3	24.3	24.2	24.6	24.9	24.1	6770	120	90

Task Manager

Project Manager

QA Officer

Endpoint : Growth

IC25 : 0.39

Cusum Chart Limits : 0.28 to 1.56

Comments:

Selenastrum capricornutum COUNT WORKSHEET

Client QA/QC

Sample Description NaCl

Test Start Date 1-15-04 Initials BM

TEST CONCENTRATION		Control	
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	625	40	3.9063
REP B	460	|	2.8750
REP C	522	|	3.2625
	MEAN # CELLS / mL* =		3.3479

TEST CONCENTRATION		1.0 %
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	345	50	1.7250
REP B	425	|	2.1250
REP C	492	|	2.4600
	MEAN # CELLS / mL* =		2.1033

TEST CONCENTRATION		0.25 %
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	385	50	1.9250
REP B	491	|	2.4550
REP C	593	40	3.7063
	MEAN # CELLS / mL* =		2.6954

TEST CONCENTRATION		2.0 %
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	367	50	1.8350
REP B	287	|	1.4350
REP C	353	|	1.7650
	MEAN # CELLS / mL* =		1.6783

TEST CONCENTRATION		0.50 %
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	493	50	2.4650
REP B	449	|	2.2450
REP C	480	|	2.4000
	MEAN # CELLS / mL* =		2.3700

TEST CONCENTRATION		4.0 %
	CELL COUNT	# FIELDS	CELLS / mL*
REP A	109	50	0.5450
REP B	224	|	1.1200
REP C	170	|	0.8500
	MEAN # CELLS / mL* =		0.8383

TEST CONCENTRATION		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
	MEAN # CELLS / mL* =		

TEST CONCENTRATION		
	CELL COUNT	# FIELDS	CELLS / mL*
REP A			
REP B			
REP C			
	MEAN # CELLS / mL* =		

FORMULA : # OF CELLS / FIELD X CONVERSION FACTOR = # OF CELLS / mL

Where : Conversion factor for Hemacytometer is 250,000
* Cells x 10^6

COMMENTS

SCOEPA00027056

Client QA/QC Test Start Date 1-15-2004

Sample Description M.C Initials BM

TEST CONCENTRATION				CONTROL	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
112	10	120	10	140	10
127	|	128	|	136	|
187	|	101	|	97	|
199	|	111	|	142	|

TEST CONCENTRATION				0.25 SIL	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
69	10	93	10	104	10
93	|	106	|	121	|
73	|	106	|	143	|
63	|	85	|	175	|
87	|	101	|		

TEST CONCENTRATION				0.50 SIL	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
124	10	96	10	108	10
127	|	112	|	92	|
78	|	70	|	104	|
69	|	82	|	91	|
95	|	89	|	85	|

TEST CONCENTRATION					
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

Client QA/QC Test Start Date 1-15-04

Sample Description N.Cl Initials BS

TEST CONCENTRATION				1 S/L	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
64	10	94	10	90	10
70		83		85	
78		72		117	
70		92		98	
63		84		102	

TEST CONCENTRATION				2.0 S/L	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
80	10	64	10	64	10
75		56		69	
68		54		70	
76		62		82	
68		51		69	

TEST CONCENTRATION				4.0 S/L	
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted
19	10	36	10	29	10
24		47		35	
27		41		30	
22		52		37	
17		48		39	

TEST CONCENTRATION					
Replicate A		Replicate B		Replicate C	
# of Algae cells	Fields Counted	# of Algae cells	Fields Counted	# of Algae cells	Fields Counted

CETIS Report

Raphidocelis Growth Test — **CH2M Hill, Inc.**

Test:	14-2423-4316	**Test Type:**	Cell Growth	**Duration:**	4 Days 0 Hours
Start Date:	15 Jan-04 02:35 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Raphidocelis subcapitata
End Date:	19 Jan-04 02:50 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	15 Jan-04 02:35 PM	**Brine:**	Not Applicable		

Sample:	04-9623-2886	**Material:**	Sodium chloride	**Client:**	
Sampled:	17 Dec-03	**Code:**	1B017-08	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	29 Days 14 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
10-9263-4723	Cell Density	15	0.19241	N/A	0.69163	Linear Interpolation
		25	0.3917213	N/A	1.84015	
		50	2.010397	N/A	3.35854	

Cell Density Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	3	334793	287500	390630	300759.	520930.	15.56%
0.25		3	269543	192500	370630	528082.	914665.	33.93%
0.5		3	237000	224500	246500	65255.9	113026.	4.77%
1		3	210333	172500	246000	212452.	367978.	17.50%
2		3	167833	143500	183500	123333.	213619.	12.73%
4		3	838333.	545000.	112000	166090.	287677.	34.32%

Cell Density Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	390630	287500	326250
0.25		192500	245500	370630
0.5		246500	224500	240000
1		172500	212500	246000
2		183500	143500	176500
4		545000.	112000	850000.

CETIS Report

Report Date: 20 Jan-04 5:58 PM
Analysis: 10-9263-4723

Raphidocelis Growth Test — **CH2M Hill, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Cell Density	Linear Interpolation	09-0721-4136	09-0721-4136	20 Jan-04 5:58 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

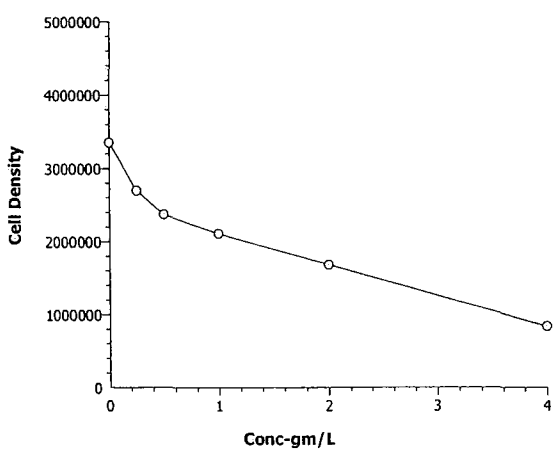
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
15	0.19241	N/A	0.69163
25	0.3917213	N/A	1.84015
50	2.010397	N/A	3.35854

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	3	3347933.33	2875000.00	3906300.00	106334.6	520931.1
0.25		3	2695433.33	1925000.00	3706300.00	186705.4	914665.9
0.5		3	2370000.00	2245000.00	2465000.00	23071.36	113026.1
1		3	2103333.33	1725000.00	2460000.00	75113.34	367978.7
2		3	1678333.33	1435000.00	1835000.00	43604.90	213619.5
4		3	838333.333	545000.000	1120000.00	58721.90	287677.4

Cell Density



SCOEPA00027060

APPENDIX C
CHAIN OF CUSTODY

CH2M HILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Wacker Siltronic Corp.
Address: 7200 NW. Front Avenue
Portland, Oregon 97210

Contact Person: Thomas J. Rothschild
Phone: 503-219-7374

CH2M HILL Project #

NPDES# 101128
Composite Sample Information
Samples/Hour 1 Volume/Sample 6 liters
Total Hours 24 Total Volume ~150
Initiated: Date 13 Jan Time 0800
Ended: Date 14 Jan Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P.O.# 4500251318

Check Chlorine (Y/N)
Temp. Upon Arrival (°C) 3
Check Ammonia (Y/N) Dechlorinate (Y/N)

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae, Green	Haz Waste				Concentrations and/or Comments
04-03	14 Jan 2004	0800	X		1	B1160-01													X					

Sampled By & Title (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Thomas J. Rothschild Thomas J. Rothschild	14 Jan 2004/0800	Thomas J. Rothschild Thomas J. Rothschild	14 Jan 2004/0900
Received By (Please sign and print name) Paul Conroy PAUL CONROY	Date/Time 1-14-04	Relinquished By (Please sign and print name) Paul Conroy PAUL CONROY	Date/Time 1-14-04
Received By (Please sign and print name) [signature] Brett Mackey CH2M Hill	Date/Time 1-14-04 1400	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name) Craig Koehler CRAIG KOEHLER	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name) [signature]	Remarks		

Rev. 10/97

SCOEPA00027062

BIOMONITORING SERVICES

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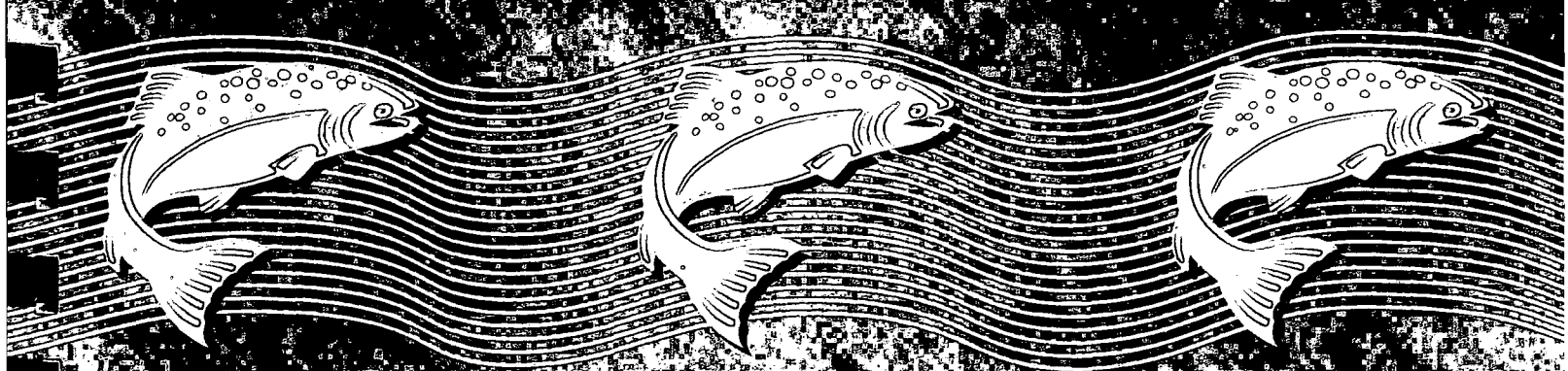
BIOASSAY REPORT
CHRONIC BIOASSAYS
Conducted August 10 through 17, 2004



CH2MHILL

SCOEPA00027063

RECEIVED AUG 3 0 2004

BIOASSAY REPORT
CHRONIC BIOASSAYS
Conducted August 10 through 17, 2004

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

August 19, 2004
Lab I.D. No. B1259

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SCOEPA00027065

INTRODUCTION

CH2M HILL conducted acute and chronic bioassays from August 10 through 17, 2004. The samples were provided by the Siltronics Corporation, Portland, Oregon. The organisms tested were the fathead minnow (*Pimephales promelas*), and the water flea (*Ceriodaphnia dubia*). Forty eight hour acute data was obtained from the chronic test (dual-endpoint testing) for the fathead minnow.

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, January 1993.

TEST ORGANISMS

The *Ceriodaphnia dubia* were obtained from CH2M Hill's in-house cultures and were less than 24 hours old for the acute test and less than 24 hours old and within an 8-hour age range for the chronic test. The fathead minnows were obtained from Aquatox, Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (1994). The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used in the tests was moderately hard reconstituted water (EPA, 1994) with a total hardness of 92 and 96 mg/L as $CaCO_3$, alkalinity of 66 and 62 mg/L as $CaCO_3$, and a pH of 7.8 and 8.0.

TEST CONCENTRATIONS

The concentrations tested for the acute test were 1.90, 3.75, 7.50, 15, and 30 percent effluent with dilution water for the control. For the acute *Ceriodaphnia dubia* test, 20 organisms per concentration were used with four test vessels per concentration and five organisms per vessel.

The concentrations tested in the chronic tests were 1.90, 3.75, 7.5, 15.0, and 30 percent effluent and dilution water for the control. For the fathead minnow chronic test, 10 organisms per chamber with four chambers per concentration, for a total of 40 organisms per concentration were used. For the *Ceriodaphnia* chronic test, 1 organism per chamber with ten chambers per concentration for a total of 10 organisms per concentration were used.

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SAMPLE COLLECTION

Three samples were collected by Siltronics Corporation personnel on August 9, 11, and 13, 2004. The samples were delivered to CH2M HILL's Aquatic Toxicology Laboratory by courier and stored in the dark at 4°C until test solutions were prepared and tested. The tests were initiated within 36 hours of sample collection. Chain of custody for sample collection is provided in Appendix C.

SAMPLE PREPARATION

The samples were filtered through a 60 µm net upon arrival and temperature was adjusted prior to each daily renewal on the sample used during the tests.

MONITORING OF BIOASSAYS

The samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

For the chronic test, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in the control and all concentrations tested. Conductivity was measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was measured daily in the chronic tests. According to EPA (1994), *Ceriodaphnia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored continuously throughout the testing period.

DATA ANALYSIS

The effect measured during the dual-endpoint acute test was survival during the 48 hour exposure period. The effects measured during the *Ceriodaphnia* chronic test included survival and reproduction over the exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the exposure period. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, using CETIS version 1.024. Dunnett's Procedure, Bonferroni's T-Test or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni's T-Test was used to compare the reproduction or growth data between the control and each effluent treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or T-test with Bonferroni Adjustment could not be met, Steel's Many-One Rank Test or Wilcoxon Rank Sum with Bonferroni Adjustment was used to analyze the data.

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RESULTS AND DISCUSSION

ACUTE DUAL ENDPOINT

The raw data sheets are presented in Appendix A and the results for the *Ceriodaphnia dubia* acute are summarized in Table 1 below.

Table 1
Summary of Acute Results
Percent Survival

Concentration (%)	0 hr	24 hr	48 hr
Ceriodaphnia dubia			
Control	100	100	95.0
1.90	100	100	100
3.75	100	100	100
7.5	100	100	100
15	100	100	100
30	100	100	100

The *Ceriodaphnia dubia* test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The NOEC and the LOEC were 30 and greater than 30 percent effluent, respectively. Control survival was 100 percent.

The LC_{50} value (the concentration of sample causing a 50 percent reduction in survival) calculated on *Ceriodaphnia dubia* survival was greater than 30 percent effluent.

The fathead minnow dual endpoint (deriving of the acute mortality results from the chronic test) indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The NOEC and the LOEC were 30 and greater than 30 percent effluent, respectively. Control survival was 97.5 percent.

The LC_{50} value calculated on fathead minnow survival was greater than 30 percent effluent.

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CHRONIC BIOASSAY

Table 2 summarizes the survival and growth data for the samples tested on the fathead minnow.

Table 2
Chronic Fathead Minnow
Results

Sample Concentration (%)	Percent Survival	Mean Dry Weight (mg)
Control	90.0	0.505
1.90	92.5	0.568
3.75	95.0	0.583
7.50	97.5	0.610
15.0	100	0.513
30.0	97.5	0.547

The fathead minnow test results showed no statistically significant reduction in survival or growth at any effluent concentration tested when compared to the control. Control survival was 90 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 30 and greater than 30 percent effluent, respectively. ≥ 13.4%

The IC_{25} value (the concentration of effluent causing a 25 percent reduction in biological measurement, e.g. growth) calculated on the fathead minnow growth was greater than 30 percent.

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Table 3 summarizes the survival and reproduction data for the effluent tested on the *Ceriodaphnia dubia*.

Table 3
***Ceriodaphnia Dubia* Chronic Results**

Concentration (%)	Percent Survival	No. Young Per Adult
Control	90	24.0
1.90	80	22.5
3.75	100	25.2
7.50	90	20.6
15.0	80	14.3 [a]
30.0	80	13.5 [a]

[a] Indicates a statistically significant reduction when compared to the control at p equal to 0.05 using Dunnett's Test.

The test results show a statistically significant reduction in reproduction at the 15 and 30 percent sample concentrations when compared to the control. Control survival was 90 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 7.5 and 15 percent sample, respectively. ≥ 1.8%

The IC_{25} value (the concentration of sample causing a 25 percent reduction in biological measurement, e.g. growth) calculated on *Ceriodaphnia dubia* reproduction was 10.6 percent sample. 1.8%

The dissolved oxygen levels in the chronic tests remained above 40 percent saturation throughout the test period. Test temperatures remained at 25±1°C. The tests proceeded without interruption or incidents that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted in August with sodium chloride (*Ceriodaphnia* and fathead minnow) indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA 1989).

The IC_{25}, LC_{50}, and 95 percent confidence intervals of the reference toxicant test conducted are listed in the tables below.

Table 4
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart
Ceriodaphnia dubia (survival)	1.63	0.89 to 2.11
Ceriodaphnia dubia (reproduction)	0.38	0.17 to 0.94
Pimephales promelas (survival)	3.0	1.9 to 4.6
Pimephales promelas (growth)	2.3	1.5 to 3.5

Table 5
Acute Reference Toxicant Test (g/L)

Species	LC_{50}	Control Chart
Ceriodaphnia dubia	1.9	1.5 to 2.5
Pimephales promelas (FHM 1162)	8.1	6.5 to 8.3

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APPENDIX A
RAW DATA SHEETS

CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client Siltronics — Test Initiation: Date 8-10-04 Time 1045 — Test Termination: Date 8-17-04 Time 1500

Contact — Technician Oldham, Stanaway, Winn, Holm, Dalton-Atta, Mackey

Test Species/ID *Pimephales promelas* / FHM 1162 — *Ceriodaphnia dubia* / Cd 1697 (chronic)

Ceriodaphnia dubia / Cd 1698 (Acute) — /

Sample Information								Test Species Information	ID# FHM 1162	ID# Cd 1697	ID#	ID# Cd 1698
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Age or Size	< 24 hours	< 24 hours within an 8 hour span		< 24 hours
B1259 -01	04-79	8/9/04	0800	0.001 / —	0.59	125	—	Test Container Size	400 ml	30 ml		30 ml
-02	04-80	8-11-04	0730	0.00 / —	1.37	160	—	Test Volume	250 ml	15 ml		25 ml
-03	04-82	8.13.04	0800	0.00 / —	0.55	164	—	Feeding: Type	0.15 ml *Artemia*	0.1 ml Algae &		none
				/				Amount	2 x daily	YCT daily		—
				/				Aeration: Began	None	None		—
				/				Amount	/	S		—
				/				Dilution Water ID#	2411 + 2412	2411 + 2412		2411
				/				Acclimation Period	< 24 hours	< 24 hours		< 24 hrs
				/				Test Location	# 4	# 5		# 7
				/				Condition of Survivors				
				/				Size (mm)	—	—		
				/				Loading Rate	—	—		
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	2411	92	66
↓	2412	96	62

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Temperature _____

Conductivity #2 Refractometer _____ Other _____

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CH2MHILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # B1259-01

Sample Description

Test Species *Ceriodaphnia dubia* ID# Cd 1698

Beginning, Date 8-10-04 Time 1350

Ending, Date 8-12-04 Time 1150

Technician 0 hr DW 24 hr MS 48 hr MS 72 hr ____ 96 hr ____

Time 0 hr 1350 24 hr 0950 48 hr 1150 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	~~4~~ 5	5			8.5	8.6/8.6	8.5			7.8	7.7/7.8	7.9			20.3	20.3	20.3			312		300		
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	5																						
1.9	A	5	5	5			8.5	8.3/8.6	8.4			7.8	7.8/7.8	7.9			20.1	20.3	20.3			~~308~~				
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
3.75	A	5	5	5			8.5	6.5/8.7	8.5			7.7	7.7/7.8	7.9			20.2	20.4	20.3			~~315~~				
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						

SCOEPA00027074

CH2M HILL

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA - STATIC RENEWAL

Client Siltronics CH2M ID # B1259-01

Sample Description

Test Species ~~Ceriodaphnia dubia~~ ID# Cd 1698

Beginning, Date 8-10-04 Time 1350

Ending, Date 8-12-04 Time 1150

Technician 0 hr DW 24 hr MS 48 hr MS 72 hr ____ 96 hr ____

Time 0 hr 1350 24 hr 0950 48 hr 1150 72 hr ____ 96 hr ____

Conc or Percent	Test Container Number	Number of Live Organisms					Dissolved Oxygen (mg/l)					pH					Temperature (°C)					Conductivity (µmohs/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
7.5	A	5	5	5			8.5	8.5/8.6				7.7	7.8/7.8	7.9			20.2	20.4	20.3							
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
15	A	5	5	5			8.5	8.5/8.6				7.7	7.8/7.8	7.9			20.1	20.4	20.3							
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
30	A	5	5	5			8.5	8.3/8.4				7.6	7.8/7.6	7.6			20.3	20.3	20.3			536		540		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						

CETIS Report

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test:	03-0745-6137	**Test Type:**	Survival (48h)	**Duration:**	46 Hours
Start Date:	10 Aug-04 01:50 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	12 Aug-04 11:50 AM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	10 Aug-04 01:50 PM	**Brine:**	Not Applicable		

Sample:	14-8465-7465	**Material:**	Industrial Effluent	**Client:**	
Sampled:	09 Aug-04 08:00 AM	**Code:**	B1259-01	**Project:**	
Received:	09 Aug-04 12:00 PM	**Source:**	Siltronics		
Hold Time:	30 Hours (14.4 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
07-4790-6137	48h Proportion Survived	30	>30	N/A	0.05291	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
15-8245-1003	48h Proportion Survived	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
07-4790-6137	48h Proportion Survived	Control Response	0.9500	0.9		Passes acceptability criteria
15-8245-1003			0.9500	0.9		Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	0.80000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

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CETIS Report

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	03-3281-6275	03-3281-6275	18 Aug-04 10:54 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		30	>30	3.33	N/A	5.29%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	4.24788	0.44569	Equal Variances
Distribution	Shapiro-Wilk W	0.46508	0.88421	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.01181415	0.0023628	5	1.00	0.44569	Non-Significant Effect
Error	0.04253092	0.0023628	18			
Total	0.05434507	0.0047257	23			

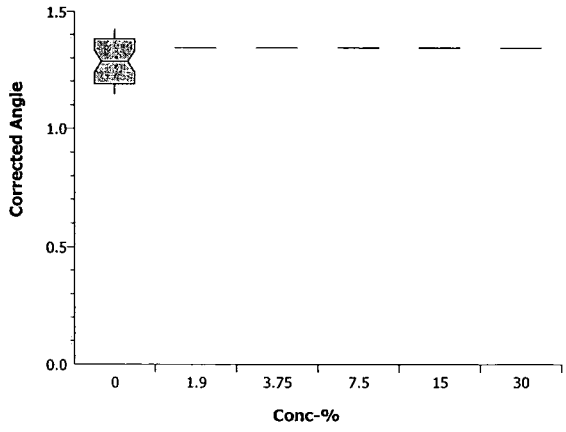
Group Comparisons

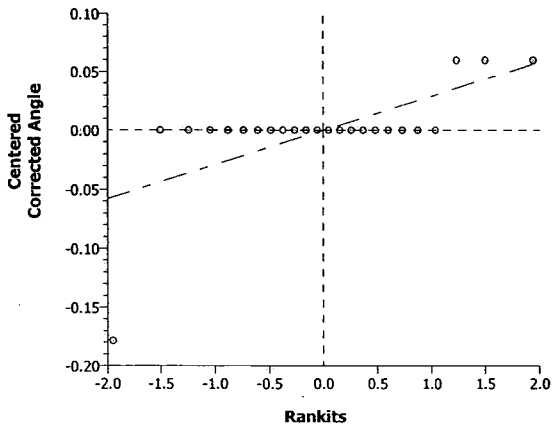
Control	vs	Conc-%	Statistic	Critical	P Level	Ties	Decision(0.05)
Dilution Water		1.9	20	10	>0.05	1	Non-Significant Effect
		3.75	20	10	>0.05	1	Non-Significant Effect
		7.5	20	10	>0.05	1	Non-Significant Effect
		15	20	10	>0.05	1	Non-Significant Effect
		30	20	10	>0.05	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.95000	0.80000	1.00000	0.10000	1.28575	1.10715	1.34528	0.11907
1.9		4	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00021
3.75		4	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00021
7.5		4	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00021
15		4	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00021
30		4	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00021

48h Proportion Survived





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CETIS Report

Report Date: 18 Aug-04 10:54 AM
Analysis: 15-8245-1003

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	03-3281-6275	03-3281-6275	18 Aug-04 10:54 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

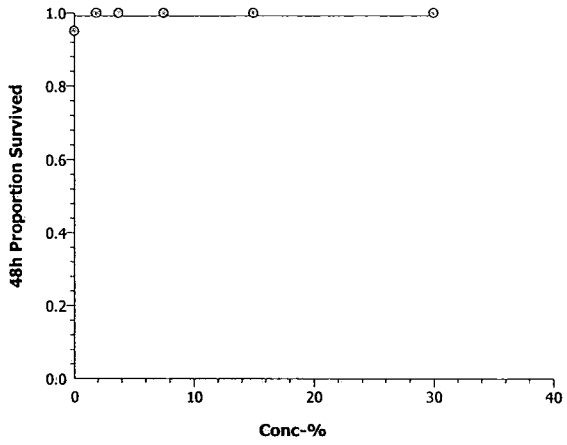
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.95000	0.80000	1.00000	0.02041	0.10000	19	20
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
7.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	20	20

48h Proportion Survived



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CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics — Date Initiated: 8-10-04 — Time: 1310

Sample Description: B1259 — Date Terminated: 8-17-04 — Time: 1500

Technician: Day 0 DW Day 1 [illegible] Day 2 [illegible] Day 3 BM Day 4 CEH Day 5 MM Day 6 [illegible] Day 7 [illegible]

Time: Day 0 1310 Day 1 1300 Day 2 1140 Day 3 1020 Day 4 1600 Day 5 1225 Day 6 1340 Day 7 1500

Concentration or Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
CONTROL	0	10	10	10	10		8.3		7.8	24.5	312
	1	10	9	10	10	7.7	8.2	7.7	7.7	24.6	
	2	10	9	10	10	7.4	8.1	7.5	7.7	24.3	288
	3	10	9	10	10	6.8	8.0	7.2	7.7	24.1	
	4	10	9	10	10	7.4	8.3	7.3	7.5	24.8	286
	5	10	9	10	10	7.4	8.2	7.2	7.6	25.0	
	6	10	9	9	8	7.3	7.9	7.3	7.6	24.6	
	7	10	9	9	8	7.5		7.4		24.3	
1.90 %	0	10	10	10	10		8.3		7.8	24.8	
	1	10	10	10	10	7.8	8.3	7.6	7.7	24.7	
	2	10	10	10	10	7.4	8.1	7.5	7.7	24.5	
	3	10	10	10	10	6.7	8.1	7.2	7.7	24.0	
	4	10	10	10	10	7.4	8.3	7.3	7.5	24.3	
	5	10	9	10	8	7.4	8.3	7.2	7.5	24.8	
	6	10	9	10	8	7.3	8.0	7.3	7.6	24.4	
	7	10	9	10	8	7.7		7.4		24.4	
3.75 %	0	10	10	10	10		8.3		7.7	24.6	
	1	10	9	10	10	7.9	8.3	7.6	7.7	24.7	
	2	10	9	10	10	7.4	8.1	7.4	7.7	24.4	
	3	10	9	10	10	6.6	8.1	7.2	7.7	24.0	
	4	10	9	9	10	7.4	8.3	7.2	7.5	25.2	
	5	10	9	9	10	7.4	8.3	7.2	7.5	24.8	
	6	10	9	9	10	7.4	8.1	7.3	7.6	24.4	
	7	10	9	9	10	7.6		7.4		24.5	
7.50 %	0	10	10	10	10		8.3		7.7	24.6	
	1	10	10	9	10	7.5	8.4	7.6	7.7	24.5	
	2	10	10	9	10	7.4	8.1	7.4	7.7	24.4	
	3	10	10	9	10	6.7	8.1	7.2	7.7	24.1	
	4	10	10	9	10	7.4	8.3	7.2	7.5	25.1	
	5	10	10	9	10	7.4	8.3	7.2	7.5	25.0	
	6	10	10	9	10	7.4	8.0	7.3	7.6	24.5	
	7	10	10	9	10	7.4		7.4		24.4	
15.0 %	0	10	10	10	10		8.3		7.7	24.9	
	1	10	10	10	10	7.5	8.4	7.5	7.7	24.5	
	2	10	10	10	10	7.4	8.1	7.4	7.7	24.6	
	3	10	10	10	10	6.7	8.2	7.2	7.6	24.2	
	4	10	10	10	10	7.3	8.3	7.2	7.4	25.3	
	5	10	10	10	10	7.3	8.3	7.3	7.4	25.0	
	6	10	10	10	10	7.4	8.1	7.3	7.5	24.4	
	7	10	10	10	10	7.7		7.3		24.6	
30.0 %	0	10	10	10	10		8.3		7.6	24.5	536
	1	10	10	10	10	7.5	8.4	7.5	7.6	24.4	
	2	10	10	10	10	7.5	8.3	7.4	7.6	24.5	452
	3	10	10	10	10	6.7	8.2	7.2	7.6	24.2	
	4	10	10	10	10	7.2	8.3	7.2	7.4	25.2	451
	5	10	10	10	10	7.2	8.3	7.2	7.4	24.8	
	6	10	10	10	9	7.4	8.1	7.2	7.5	24.4	
	7	10	10	10	9	7.7		7.3		24.3	

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics Species ID# FHM 1162

Lab ID: B1259

Sample Description:

Technician:	DO	DO
Date:	08/18/2004	08/06/2004

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1146.50	1141.30	10
	B	1138.21	1133.28	9
	C	1147.15	1141.29	9
	D	1136.97	1132.76	8
1.9 %	A	1181.28	1174.75	10
	B	1160.01	1154.73	9
	C	1162.65	1155.94	10
	D	1138.85	1134.65	8
3.75 %	A	1177.33	1172.20	10
	B	1179.91	1173.94	9
	C	1151.13	1145.44	9
	D	1178.69	1172.18	10
7.5 %	A	1174.60	1167.79	10
	B	1174.73	1168.56	10
	C	1164.87	1158.85	9
	D	1139.39	1134.00	10
15 %	A	1146.93	1141.26	10
	B	1158.87	1153.86	10
	C	1159.94	1155.12	10
	D	1185.04	1180.04	10
30 %	A	1139.17	1134.04	10
	B	1136.05	1130.31	10
	C	1152.48	1146.69	10
	D	1169.42	1164.22	9
	A			
	B			
	C			
	D			

weigh to 0.01 mg

CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test:	12-6149-6349	**Test Type:**	Growth-Survival (7d)	**Duration:**	7 Days 1 Hours
Start Date:	10 Aug-04 01:10 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
End Date:	17 Aug-04 03:00 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatox, AR
Setup Date:	10 Aug-04 01:10 PM	**Brine:**	Not Applicable		

Sample:	14-8465-7465	**Material:**	Industrial Effluent	**Client:**	
Sampled:	09 Aug-04 08:00 AM	**Code:**	B1259-01	**Project:**	
Received:	09 Aug-04 12:00 PM	**Source:**	Siltronics		
Hold Time:	29 Hours (14.4 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
20-5938-0844	2d Proportion Survived	30	>30	N/A	0.04796	Steel's Many-One Rank
00-3547-0692	7d Proportion Survived	30	>30	N/A	0.13464	Dunnett's Multiple Comparison
03-6472-5519	Mean Dry Biomass-mg	30	>30	N/A	0.22951	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
09-3784-4132	2d Proportion Survived	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	
01-4919-6098	Mean Dry Biomass-mg	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
00-3547-0692	7d Proportion Survived	Control Response	0.9	0.8		Passes acceptability criteria
01-4919-6098	Mean Dry Biomass-mg		0.505	0.25		Passes acceptability criteria
03-6472-5519			0.505	0.25		Passes acceptability criteria
03-6472-5519	Mean Dry Biomass-mg	MSDp	0.2295	0.12	0.3	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
7.5		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.90000	0.80000	1.00000	0.04082	0.08165	9.07%
1.9		4	0.92500	0.80000	1.00000	0.04787	0.09574	10.35%
3.75		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
7.5		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.50500	0.42100	0.58600	0.03414	0.06828	13.52%
1.9		4	0.56800	0.42000	0.67101	0.05870	0.11739	20.67%
3.75		4	0.58250	0.51300	0.65099	0.02874	0.05748	9.87%
7.5		4	0.60975	0.53900	0.68099	0.02915	0.05829	9.56%
15		4	0.51250	0.48199	0.56700	0.01869	0.03737	7.29%
30		4	0.54650	0.51300	0.57900	0.01741	0.03482	6.37%

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CETIS Report

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	0.90000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	0.90000	1.00000	1.00000
7.5		1.00000	1.00000	0.90000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	0.90000	0.90000	0.80000
1.9		1.00000	0.90000	1.00000	0.80000
3.75		1.00000	0.90000	0.90000	1.00000
7.5		1.00000	1.00000	0.90000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	0.90000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.52000	0.49299	0.58600	0.42100
1.9		0.65300	0.52800	0.67101	0.42000
3.75		0.51300	0.59701	0.56901	0.65099
7.5		0.68099	0.61699	0.60200	0.53900
15		0.56700	0.50100	0.48199	0.50000
30		0.51300	0.57400	0.57900	0.52001

CETIS Report

Report Date: 18 Aug-04 11:02 AM
Analysis: 20-5938-0844

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	06-3362-6746	06-3362-6746	18 Aug-04 11:02 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		30	>30	3.33	N/A	4.80%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.60000	4.24788	0.70060	Equal Variances
Distribution	Shapiro-Wilk W	0.66831	0.88421	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.00995975	0.001992	5	0.60	0.70060	Non-Significant Effect
Error	0.0597585	0.0033199	18			
Total	0.06971824	0.0053119	23			

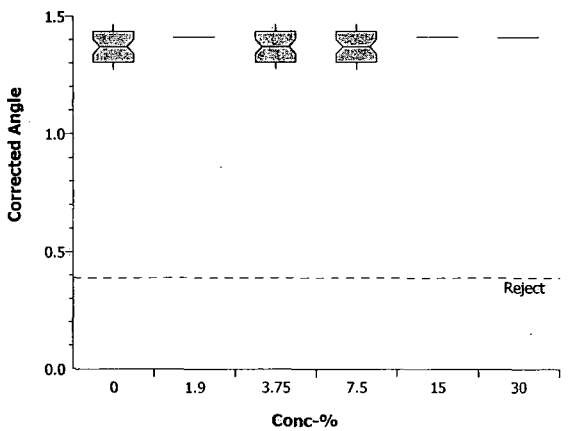
Group Comparisons

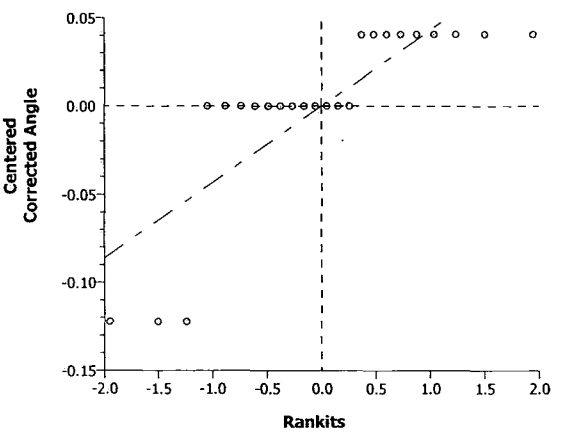
Control	vs	Conc-%	Statistic	Critical	P Level	Ties	Decision(0.05)
Dilution Water		1.9	20	10	>0.05	1	Non-Significant Effect
		3.75	18	10	>0.05	2	Non-Significant Effect
		7.5	18	10	>0.05	2	Non-Significant Effect
		15	20	10	>0.05	1	Non-Significant Effect
		30	20	10	>0.05	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1.9		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
3.75		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
7.5		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
15		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
30		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

2d Proportion Survived





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CETIS Report

Report Date: 18 Aug-04 11:02 AM
Analysis: 09-3784-4132

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	06-3362-6746	06-3362-6746	18 Aug-04 11:02 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5795186	200	Yes	Two-Point Interpolation

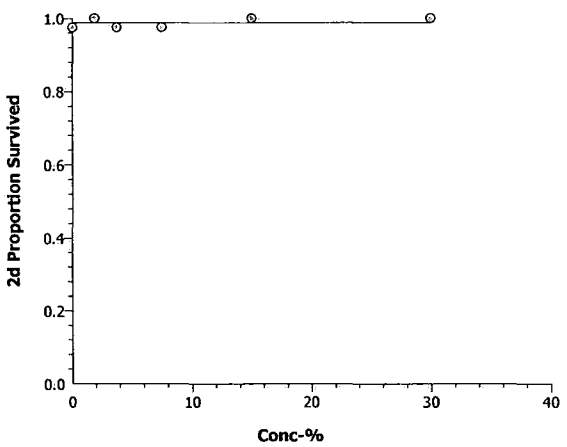
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
3.75		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
7.5		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

2d Proportion Survived



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CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	06-3362-6746	06-3362-6746	18 Aug-04 11:02 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		30	>30	3.33	N/A	13.46%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.52603	4.24788	0.23128	Equal Variances
Distribution	Shapiro-Wilk W	0.95594	0.88421	0.36733	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.06635568	0.0132711	5	1.34	0.29110	Non-Significant Effect
Error	0.1777668	0.0098759	18			
Total	0.24412253	0.0231471	23			

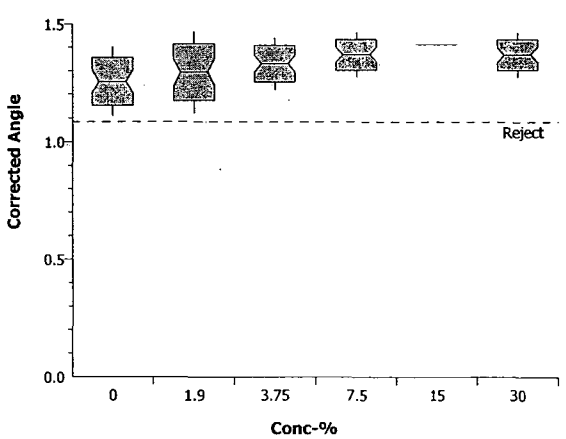
Group Comparisons

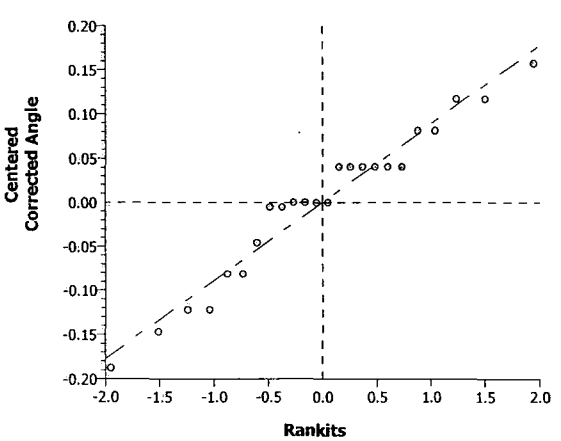
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	-0.579795	2.41	>0.05	0.1693523	Non-Significant Effect
		3.75	-1.084618	2.41	>0.05	0.1693523	Non-Significant Effect
		7.5	-1.664413	2.41	>0.05	0.1693523	Non-Significant Effect
		15	-2.244208	2.41	>0.05	0.1693523	Non-Significant Effect
		30	-1.664413	2.41	>0.05	0.1693523	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.90000	0.80000	1.00000	0.08165	1.25431	1.10715	1.41202	0.12461
1.9		4	0.92500	0.80000	1.00000	0.09574	1.29506	1.10715	1.41202	0.14695
3.75		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
7.5		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
15		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
30		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

7d Proportion Survived





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CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	06-3362-6746	06-3362-6746	18 Aug-04 11:02 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.33	N/A	22.95%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	5.52926	15.08628	0.35475	Equal Variances
Distribution	Shapiro-Wilk W	0.97220	0.88421	0.71192	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.03318406	0.0066368	5	1.43	0.25954	Non-Significant Effect
Error	0.0832614	0.0046256	18			
Total	0.11644546	0.0112624	23			

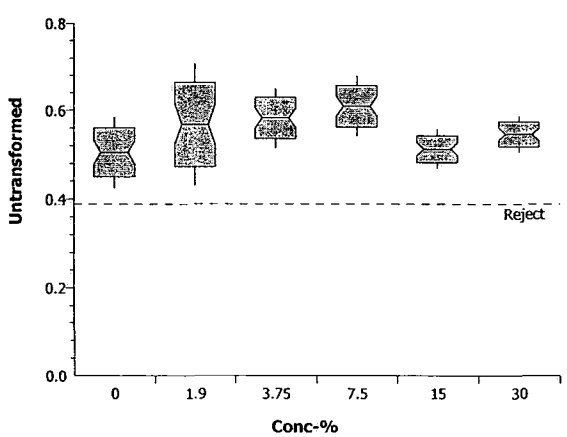
Group Comparisons

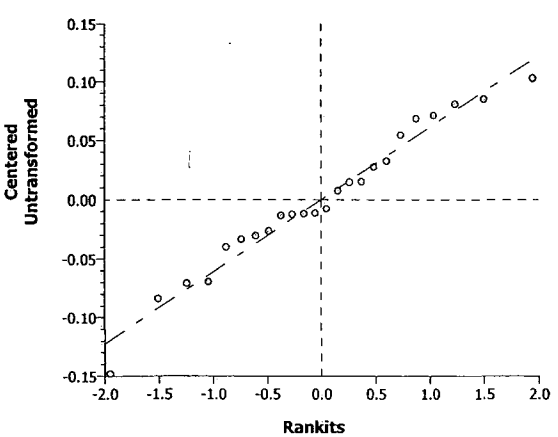
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	-1.310133	2.41	>0.05	0.1159011	Non-Significant Effect
		3.75	-1.611617	2.41	>0.05	0.1159011	Non-Significant Effect
		7.5	-2.178161	2.41	>0.05	0.1159011	Non-Significant Effect
		15	-0.1560408	2.41	>0.05	0.1159011	Non-Significant Effect
		30	-0.8630787	2.41	>0.05	0.1159011	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.50500	0.42100	0.58600	0.06828				
1.9		4	0.56800	0.42000	0.67101	0.11739				
3.75		4	0.58250	0.51300	0.65099	0.05748				
7.5		4	0.60975	0.53900	0.68099	0.05829				
15		4	0.51250	0.48199	0.56700	0.03737				
30		4	0.54650	0.51300	0.57900	0.03482				

Mean Dry Biomass-mg





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CETIS Report

Report Date: 18 Aug-04 11:02 AM
Analysis: 01-4919-6098

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	06-3362-6746	06-3362-6746	18 Aug-04 11:02 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	2895624	200	Yes	Two-Point Interpolation

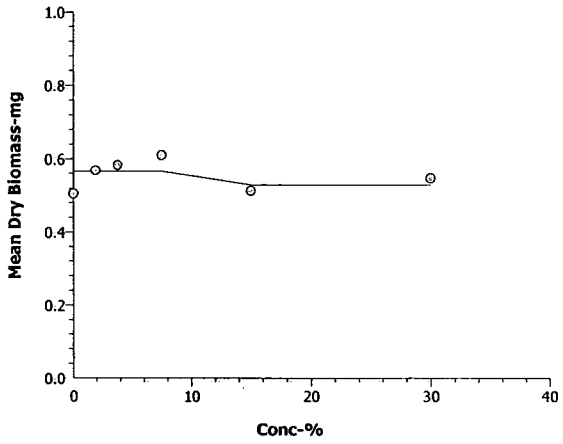
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.50500	0.42100	0.58600	0.01394	0.06828
1.9		4	0.56800	0.42000	0.67101	0.02396	0.11739
3.75		4	0.58250	0.51300	0.65099	0.01173	0.05748
7.5		4	0.60975	0.53900	0.68099	0.01190	0.05829
15		4	0.51250	0.48199	0.56700	0.00763	0.03737
30		4	0.54650	0.51300	0.57900	0.00711	0.03482

Mean Dry Biomass-mg



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CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics — Test Start Date: 8-10-04

Sample Description: _____ — Sample ID#: B1259

Ceriodaphnia Lot#: Cd 1697 — Statistician: Mackey

Percent or Concentration	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	28	29	31	31	21	22	27	5/AD	23	23	9	240
1.9	26	10/AD	24	27	21	24	25	24	20	24/AD	8	225
3.75	29	22	18	21	28	25	28	24	29	28	10	252
7.5	28	25	5/AD	20	25	20	17	18	18	30	9	206
15	28	14	19	0/AD	16	9	3/AD	11	23	20	8	143
30	10/AD	19	18	19	14	18	17	0/AD	8	12	8	135

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client Siltronics Test Beginning: Date 8-10-04 Time 1045

Sample Description B1259 Test Ending: Date 8-16-04 Time 1320

Ceriodaphnia Lot# Cd 1697 Dilution Water Recon MH (FHM) ID# 2411 & 2412

Technician Day 1 DW Day 2 DW Day 3 JM Day 4 MM Day 5 CEW Day 6 CEW Day 7 ____

Time Day 1 0950 Day 2 0940 Day 3 1225 Day 4 1600 Day 5 1410 Day 6 1320 Day 7 ____

Percent or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	6	6	4	4	6	5	4	3	10	47
	4	6	10	9	8	7	7	9	OAN	0	7	9	57
	5	6	0	8	8	0	0	8	↓	4	6	9	10
	6	18	14	16	17	10	11	12	↓	15	13	9	126
	7							↓	↓				
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	2	3	4	3	4	3	3	4	2	10	31
	4	9	8	7	10	8	7	8	10	6	0	10	74
	5	0	0/AP	0	0	0	0	0	0	0	10	9	10
	6	14	↓	14	13	9	13	14	11	10	12	8	110
	7		↓								↓		
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	2	6	4	4	4	4	3	5	5	10	41
	4	0	10	0	8	11	9	10	9	9	4	10	70
	5	12	0	0	0	2	0	0	0	0	6	10	20
	6	13	10	12	9	11	12	14	12	15	13	10	121
	7												
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	2	5	0	3	2	3	4	4	3	10	30
	4	0	0	0	9	7	8	5	5	5	10	10	49
	5	12	10	0/AP	0	0	0	9	0	0	0	9	31
	6	12	13	↓	11	15	10	0	9	9	17	9	96
	7			↓									
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	5	20	2	2	3	0	2	2	10	20
	4	10	5	7	OAN	5	0	0	5	0	10	9	42
	5	3	0	0	↓	0	0	0/AP	0	9	0	8	12
	6	11	9	7	↓	9	7	↓	6	12	8	8	69
	7				↓			↓					
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	2	3	2	0	0	0	0	2	0	10	11
	4	8	0	9	8	7	8	9	OAN	0	0	9	49
	5	0/AP	8	0	0	0	0	0	↓	0	7	8	15
	6	↓	9	6	9	7	10	8	0	0	5	8	60
	7	↓											

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics — Initiated: Date 8-10-04 Time 1045 — Adults Isolated: Date 8-9-04 Time 0720

Sample Description: B1259 — Terminated: Date 8-16-04 Time 1425 — Neo's Collected: Date 8-9-04 Time 1430

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	[illegible]	[illegible]	CEA	CEA	
Time	1045	0950	0940	1355	1630	1425	1425	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.0	7.9 / 8.1	8.0 / 8.1	7.7 / 7.4	7.7 / 7.6	7.9 / 8.0	7.7 / —	—
1.9	8.0	7.9 / 8.1	8.0 / 8.1	7.9 / 7.5	7.8 / 7.6	8.0 / 7.9	7.9 / —	—
3.75	8.0	7.9 / 8.1	8.0 / 8.1	7.9 / 7.5	7.8 / 7.5	8.1 / 8.0	7.9 / —	—
7.5	8.0	7.9 / 8.1	7.9 / 8.1	7.9 / 7.5	7.9 / 7.5	8.1 / 8.0	8.0 / —	—
15	8.0	7.9 / 8.1	7.9 / 8.1	7.9 / 7.4	8.0 / 7.8	8.1 / 7.9	7.9 / —	—
30	8.1	7.9 / 8.1	7.9 / 8.2	7.8 / 7.6	8.1 / 7.5 7.8	8.2 / 7.8	7.8 / —	—

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.7	8.0 / 7.8	7.9 / 7.7	7.7 / 7.5	7.7 / 7.6	7.9 / 7.7	7.7 / —	—
1.9	7.7	8.0 / 7.7	7.8 / 7.7	7.7 / 7.4	7.7 / 7.4	7.8 / 7.6	7.8 / —	—
3.75	7.7	8.0 / 7.7	7.8 / 7.7	7.7 / 7.4	7.7 / 7.4	7.8 / 7.5	7.8 / —	—
7.5	7.6	8.0 / 7.7	7.8 / 7.7	7.7 / 7.3	7.7 / 7.4	7.8 / 7.4	7.7 / —	—
15	7.6	7.9 / 7.6	7.8 / 7.7	7.7 / 7.3	7.7 / 7.5	7.8 / 7.4	7.7 / —	—
30	7.5	7.9 / 7.6	7.7 / 7.6	7.7 / 7.3	7.9 / 7.6	7.7 / 7.3	7.7 / —	—

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.1 / 291	24.4	25.4 / 295	24.5	24.6 / 301	25.8	25.2	—
1.9	25.4 / -	24.8 / -	25.1 / -	24.5 / -	24.3 / -	24.6 / -	25.3 / -	—
3.75	25.0 / -	24.3 / -	25.2 / -	24.4 / -	24.2 / -	24.6 / -	25.3 / -	—
7.5	24.8 / -	24.5 / -	24.8 / -	24.6 / -	24.7 / -	24.4 / -	24.6 / -	—
15	25.2 / -	24.4 / -	25.1 / -	24.5 / -	24.2 / -	24.0 / -	24.8 / -	—
30	24.9 / 412	24.3	25.3 / 440	24.3	24.1 / 469	24.3	25.0	—

COMMENTS: [illegible] 8-4-04

CETIS Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test:	07-0763-5049	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6 Days 2 Hours
Start Date:	10 Aug-04 10:45 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	16 Aug-04 01:20 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	10 Aug-04 10:45 AM	**Brine:**	Not Applicable		

Sample:	14-8465-7465	**Material:**	Industrial Effluent	**Client:**	
Sampled:	09 Aug-04 08:00 AM	**Code:**	B1259-01	**Project:**	
Received:	09 Aug-04 12:00 PM	**Source:**	Siltronics		
Hold Time:	27 Hours (14.4 °C)	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
07-7684-6898	6d Proportion Survived	30	>30	N/A	N/A	Fisher's Exact
01-3643-2244	Reproduction	7.5	15	10.60660	0.28139	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
05-6018-4381	Reproduction	25	10.59524	5.90056	21.15000	Linear Interpolation
		50	>30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
01-3643-2244	Reproduction	Control Response	24	15		Passes acceptability criteria
05-6018-4381			24	15		Passes acceptability criteria
01-3643-2244	Reproduction	MSDp	0.2814	0.13	0.47	Passes acceptability criteria

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1.9		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
15		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%
30		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	24.0000	5.00000	31.0000	2.41293	7.63035	31.79%
1.9		10	22.5000	10.0000	27.0000	1.53659	4.85913	21.60%
3.75		10	25.2000	18.0000	29.0000	1.21838	3.85285	15.29%
7.5		10	20.6000	5.00000	30.0000	2.24202	7.08990	34.42%
15		10	14.3000	0.00000	28.0000	2.77308	8.76926	61.32%
30		10	13.5000	0.00000	19.0000	1.94508	6.15088	45.56%

SCOEPA00027091

CETIS Report

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
1.9		1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
30		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000

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	28.00000	29.00000	31.00000	31.00000	21.00000	22.00000	27.00000	5.00000	23.00000	23.00000
1.9		26.00000	10.00000	24.00000	27.00000	21.00000	24.00000	25.00000	24.00000	20.00000	24.00000
3.75		29.00000	22.00000	18.00000	21.00000	28.00000	25.00000	28.00000	24.00000	29.00000	28.00000
7.5		28.00000	25.00000	5.00000	20.00000	25.00000	20.00000	17.00000	18.00000	18.00000	30.00000
15		28.00000	14.00000	19.00000	0.00000	16.00000	9.00000	3.00000	11.00000	23.00000	20.00000
30		10.00000	19.00000	18.00000	19.00000	14.00000	18.00000	17.00000	0.00000	8.00000	12.00000

SCOEPA00027092

CETIS Report

Report Date: 18 Aug-04 10:58 AM
Analysis: 07-7684-6898

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	04-2439-6742	04-2439-6742	18 Aug-04 10:57 AM	CETISv1.024

Method	Alt H	Data Transform	NOEL	LOEL	Toxic Units	ChV	MSDp
Fisher's Exact	C > T	Untransformed	30	>30	3.33	N/A	

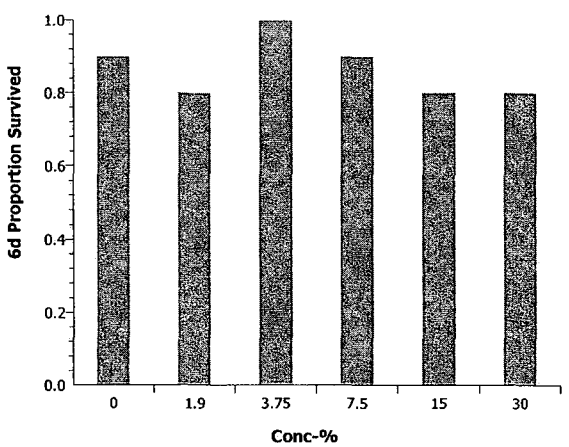
Group Comparisons

Control	vs	Conc-%	Statistic	Critical	Decision(0.05)
Dilution Water		1.9	0.50000	0.05000	Non-Significant Effect
		3.75	1.00000	0.05000	Non-Significant Effect
		7.5	0.76316	0.05000	Non-Significant Effect
		15	0.50000	0.05000	Non-Significant Effect
		30	0.50000	0.05000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
1.9		8	2	10
3.75		10	0	10
7.5		9	1	10
15		8	2	10
30		8	2	10

6d Proportion Survived



SCOEPA00027093

CETIS Report

Report Date: 18 Aug-04 10:58 AM
Analysis: 01-3643-2244

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	04-2439-6742	04-2439-6742	18 Aug-04 10:58 AM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		7.5	15	13.33	10.60660	28.14%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	7.20785	15.08628	0.20564	Equal Variances
Distribution	Kolmogorov-Smirnov D	0.11774	0.13307	0.03776	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1243.883	248.7767	5	5.70	0.00027	Significant Effect
Error	2355.1	43.61296	54			
Total	3598.9834	292.38964	59			

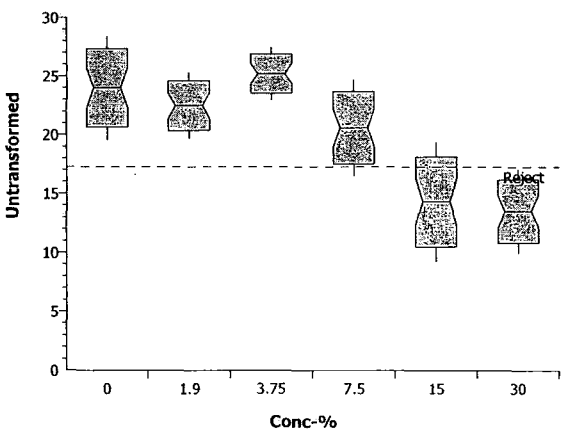
Group Comparisons

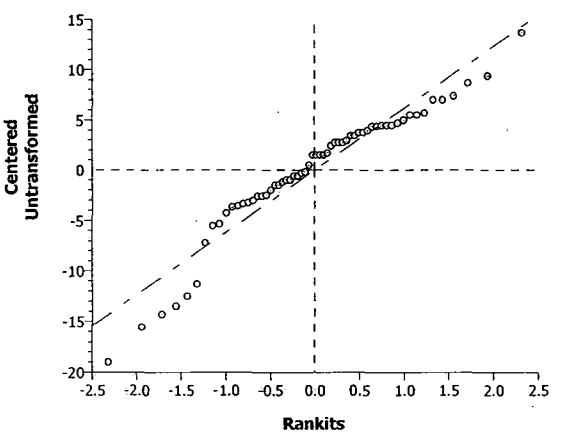
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	0.5078886	2.286667	>0.05	6.753449	Non-Significant Effect
		3.75	-0.4063109	2.286667	>0.05	6.753449	Non-Significant Effect
		7.5	1.151214	2.286667	>0.05	6.753449	Non-Significant Effect
		15	3.284346	2.286667	<=0.05	6.753449	Significant Effect
		30	3.55522	2.286667	<=0.05	6.753449	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	24.0000	5.00000	31.0000	7.63035				
1.9		10	22.5000	10.0000	27.0000	4.85913				
3.75		10	25.2000	18.0000	29.0000	3.85285				
7.5		10	20.6000	5.00000	30.0000	7.08990				
15		10	14.3000	0.00000	28.0000	8.76926				
30		10	13.5000	0.00000	19.0000	6.15088				

Reproduction





SCOEPA00027094

CETIS Report

Report Date: 18 Aug-04 10:58 AM
Analysis: 05-6018-4381

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	04-2439-6742	04-2439-6742	18 Aug-04 10:58 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

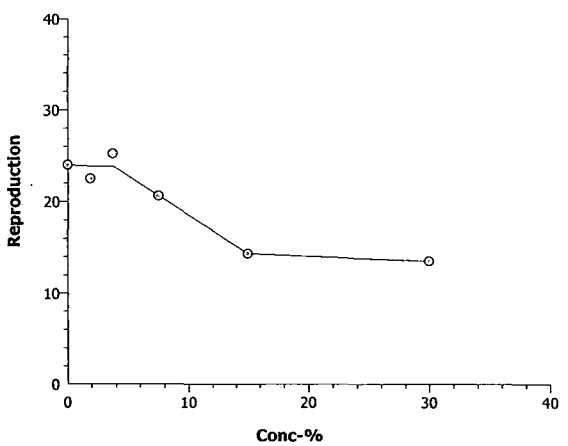
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	10.59524	5.90056	21.15000
50	>30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	24.00000	5.00000	31.00000	1.55754	7.63035
1.9		10	22.50000	10.00000	27.00000	0.99187	4.85913
3.75		10	25.20000	18.00000	29.00000	0.78646	3.85285
7.5		10	20.60000	5.00000	30.00000	1.44722	7.08990
15		10	14.30000	0.00000	28.00000	1.79002	8.76926
30		10	13.50000	0.00000	19.00000	1.25554	6.15088

Reproduction



SCOEPA00027095

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Reference Toxicant Test Data Summary

Client QA/QC – August 1B022-02 Test Start Date 7-29-04

Sample Description NaCl Sample ID# —

Ceriodaphnia Lot# Cd 1687 Statistician

Percent or Concentration	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	36	34	26	28	29	29	27	(AD) 18	30	31	9	288
0.25 g/L	15	25	33	18	23	23	24	21	17	26	10	225
0.5 g/L	29	31	14	28	27	15	11	16	21	15	10	207
1.0 g/L	19	16	9	11	10	17	9	12	13	12	10	128
1.5 g/L	9	9	5	7	7	3	7	2	0	4	10	53
2.0 g/L	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	0	0
4.0 g/L	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	(AD) 0	0	0

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Endpoint	IC25	Cusum Chart Limits	
Survival	1.63	0.39 to 2.11	Task Manager Doug Winn
Reproduction	0.33	0.17 to 0.94	Project Manager
			QA Officer

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client QA/QC - August Test Beginning: Date 7-29-04 Time 0910

Sample Description NaCl - 50 g/L 1B022-02 Test Ending: Date 8-4-04 Time 1330

Ceriodaphnia Lot# Cd 1687 Dilution Water Reconstituted (EHM) ID# 2403

Technician Day 1 [illegible] Day 2 KS Day 3 KS Day 4 [illegible] Day 5 MS Day 6 DW Day 7 ____

Time Day 1 1120 Day 2 1045 Day 3 0845 Day 4 1300 Day 5 1120 Day 6 1330 Day 7 ____

Percent or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	7	6	5	6	3	4	4	5	6	5	10	51
	4	9	12	7	9	11	10	7	10	11	12	10	98
	5	0	0	0	0	0	0	0	0	0	0	10	0
	6	20	16	14	13	15	15	16	3M 1L	13	14	9	139
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	6	5	4	5	5	5	4	5	10	47
	4	6	8	0	0	10	5	7	6	6	8	10	52
	5	0	0	11	13	0	0	0	0	0	0	10	24
	6	5	13	16	0	13	13	12	10	7	13	10	102
	7												
0.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	4	4	3	2	3	3	4	4	10	34
	4	0	0	0	0	0	0	8	6	5	7	10	26
	5	12	12	10	13	11	13	0	0	0	0	10	71
	6	13	16	0	11	13	0	0	7	12	4	10	~~86~~ 76 MS
	7												
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	0	0	0	3	2	0	2	2	3	10	14
	4	0	0	4	0	0	0	3	4	3	3	10	17
	5	6	5	5	4	7	6	0	0	0	0	10	33
	6	11	11	0	7	0	9	6	6	8	6	10	64
	7												
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	1	0	0	0	1	1	0	0	0	10	3
	4	0	0	0	0	0	0	0	0	0	0	10	0
	5	2	3	2	3	3	2	3	2	0	0	10	20
	6	7	5	3	4	4	0	3	0	0	4	10	30
	7												
2.0 g/L	1	0	AD/0	0	AD/0	AD/0	0	0	0	AD/0	0	6	0
	2	AD/0	↓	AD/0	↓	↓	AD/0	AD/0	0	↓	0	2	0
	3	↓	↓	↓	↓	↓	↓	↓	AD/0	↓	AD/0	0	0
	4	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(
	5	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(
	6	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(
	7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(
4.0 g/L	1	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	AD/0	0	0
	2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(
	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	(	(

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC - August — Initiated Date 7-29-04 Time 0910 — Adults Isolated Date 7-28-04 Time 0830

Sample Description NaCl Reagent Log # 1B022-02 — Terminated Date 8-4-04 Time 1330 — Neo's Collected Date 7-28-04 Time 1230

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	[illegible]	KJ	KJ	[illegible]	MS	DW	
Time	0910	1530	1515	0900	1400	1120	1330	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.8	7.8 / 7.8	8.0 / 7.9	7.9 / 7.9	7.9 / 7.9	7.5 / 7.7	7.4 / –	
0.25 g/L	7.9	8.0 / 7.9	8.0 / 8.0	7.9 / 8.1	7.9 / 8.0	7.6 / 7.5	7.6 / –	
0.50 g/L	7.9	8.0 / 7.9	8.0 / 8.0	8.0 / 8.1	8.0 / 8.1	7.5 / 7.7	7.6 / –	
1.0 g/L	7.9	7.9 / 7.9	8.0 / 8.0	8.0 / 8.1	8.0 / 8.1	7.5 / 7.6	7.6 / –	
1.5 g/L	7.9	7.9 / 7.9	8.0 / 8.0	8.0 / 8.1	8.1 / 8.0	7.8 / 7.8	7.7 / –	
2.0 g/L	7.9	7.9 / 7.9	8.0 / 8.0	8.1 / –	–			
4.0 g/L	7.9	7.8 / 7.9	– / –					

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.5	7.6 / 7.5	7.8 / 7.9	7.6 / 7.6	7.4 / 7.9	7.9 / 7.8	7.8 / –	
0.25 g/L	7.5	7.6 / 7.5	7.8 / 7.7	7.7 / 7.6	7.7 / 7.7	7.8 / 7.8	7.8 / –	
0.50 g/L	7.5	7.5 / 7.4	7.9 / 7.7	7.7 / 7.6	7.9 / 7.7	7.6 / 7.6	7.7 / –	
1.0 g/L	7.6	7.5 / 7.4	7.9 / 7.8	7.8 / 7.7	7.8 / 7.8	7.8 / 7.5	7.7 / –	
1.5 g/L	7.6	7.6 / 7.5	8.0 / 7.8	7.9 / 7.8	7.9 / 7.9	7.8 / 7.5	7.7 / –	
2.0 g/L	7.7	7.7 / 7.7	8.0 / 7.8	8.0 / –	–			
4.0 g/L	7.7	7.7 / 7.7	– / –					

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.4 / 274	24.7 / ←	25.4 / 266 ← 252	25.6 / 275	24.6 /	25.4 / 289	24.2 /	
0.25 g/L	25.7 / 658	24.6 / ←	25.5 / 652 ← 693	25.4 / 696	24.9 /	24.7 / 720	24.6 /	
0.50 g/L	25.1 / 1118	24.7 / ←	25.2 / 894 ← 877	25.4 / 1072	24.9 /	25.1 / 1002	24.4 /	
1.0 g/L	25.2 / 1934	24.6 / ←	25.3 / 1862 ← 1944	25.5 / 1938	24.8 /	24.1 / 1906	24.7 /	
1.5 g/L	25.4 / 2730	24.7 / ←	25.5 / 2710 ← 2720	25.6 / 2740	24.7 /	24.4 / 2800	24.9 /	
2.0 g/L	25.7 / 3540	24.6 / ←	25.5 / 3482 ← 3490	25.7 / –	–			
4.0 g/L	25.2 / 6520	24.7 / ←	[illegible] / 6440	–				

COMMENTS:

CETIS Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test:	05-8675-1751	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6 Days 4 Hours
Start Date:	29 Jul-04 09:10 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	04 Aug-04 01:30 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	29 Jul-04 09:10 AM	**Brine:**	Not Applicable		

Sample:	02-8111-2335	**Material:**	Sodium chloride	**Client:**	
Sampled:	16 Jul-04	**Code:**	1B022-02	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	13 Days 9 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
11-4076-5928	6d Proportion Survived	25	1.625	1.62500	1.62500	Linear Interpolation
		50	1.75	1.75000	1.75000	
05-3092-6440	Reproduction	25	0.375	0.19688	0.65418	Linear Interpolation
		50	0.8987342	0.75781	1.04885	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
05-3092-6440	Reproduction	Control Response	28.8	15		Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	28.8000	18.0000	36.0000	1.54056	4.87169	16.92%
0.25		10	22.5000	15.0000	33.0000	1.63469	5.16935	22.97%
0.5		10	20.7000	11.0000	31.0000	2.34307	7.40945	35.79%
1		10	12.8000	9.00000	19.0000	1.09341	3.45768	27.01%
1.5		10	5.30000	0.00000	9.00000	0.95510	3.02030	56.99%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

SCOEPA00027100

CETIS Report

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	36.00000	34.00000	26.00000	28.00000	29.00000	29.00000	27.00000	18.00000	30.00000	31.00000
0.25		15.00000	25.00000	33.00000	18.00000	23.00000	23.00000	24.00000	21.00000	17.00000	26.00000
0.5		29.00000	31.00000	14.00000	28.00000	27.00000	15.00000	11.00000	16.00000	21.00000	15.00000
1		19.00000	16.00000	9.00000	11.00000	10.00000	17.00000	9.00000	12.00000	13.00000	12.00000
1.5		9.00000	9.00000	5.00000	7.00000	7.00000	3.00000	7.00000	2.00000	0.00000	4.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

SCOEPA00027101

CETIS Report

Report Date: 10 Aug-04 11:02 AM
Analysis: 11-4076-5928

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	08-8525-3786	08-8525-3786	10 Aug-04 11:01 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

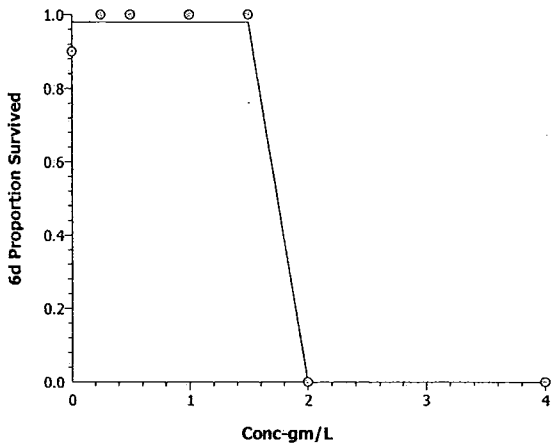
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.625	1.62500	1.62500
50	1.75	1.75000	1.75000

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

6d Proportion Survived



SCOEPA00027102

CETIS Report

Report Date: 10 Aug-04 11:02 AM
Analysis: 05-3092-6440

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	08-8525-3786	08-8525-3786	10 Aug-04 11:02 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

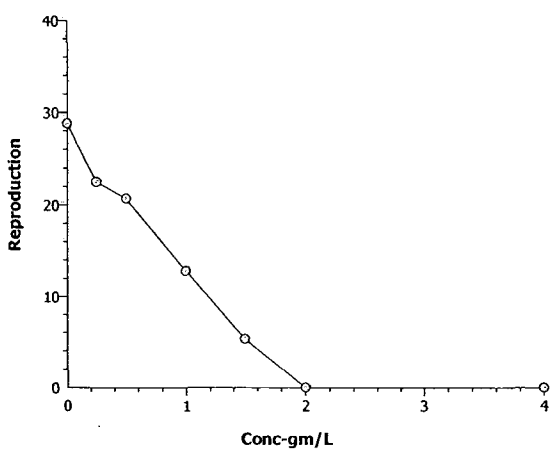
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.375	0.19688	0.65418
50	0.8987342	0.75781	1.04885

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	28.80000	18.00000	36.00000	0.99443	4.87169
0.25		10	22.50000	15.00000	33.00000	1.05519	5.16935
0.5		10	20.70000	11.00000	31.00000	1.51245	7.40945
1		10	12.80000	9.00000	19.00000	0.70580	3.45768
1.5		10	5.30000	0.00000	9.00000	0.61652	3.02030
2		10	0.00000	0.00000	0.00000	0.00000	0.00000
4		10	0.00000	0.00000	0.00000	0.00000	0.00000

Reproduction



SCOEPA00027103

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

FHM1161

Client: Ref Tox — Date Initiated: 8-4-04 — Time: 1630

Sample Description: NaCl - 1B022-02 — Date Terminated: 8-11-04 — Time: 1420

Technician: Day 0 CEH Day 1 [illegible] Day 2 [illegible] Day 3 CEH Day 4 CEH Day 5 CEH Day 6 [illegible] Day 7 [illegible]

Time: Day 0 1630 Day 1 1145 Day 2 1240 Day 3 1625 Day 4 1050 Day 5 0945 Day 6 1120 Day 7 1420

Concentration or % g/L	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
Control	0	10	10	10	10		8.0		7.5	24.0	269
	1	10	10	10	10	6.9	7.9	7.6	8.0	24.7	288
	2	10	10	10	10	6.9	7.8	7.6	8.0	24.6	270
	3	10	10	10	10	7.3	8.0	7.5	8.2	24.0	293
	4	10	10	10	10	7.5	8.3	7.4	8.1	24.4	295
	5	10	10	10	10	7.0	8.0	7.5	8.0	24.0	307
	6	10	10	10	10	7.3	8.2	7.6	7.9	24.4	289
	7	10	10	10	10	7.0		7.6		25.1	—
0.3	0	10	10	10	10		8.0		7.6	24.5	432
	1	10	10	10	10	7.0	7.8	7.6	8.0	24.9	700
	2	10	10	10	10	6.9	7.9	7.6	7.1	24.6	690
	3	10	10	10	10	7.5	8.1	7.5	8.2	24.4	655
	4	10	10	10	10	7.5	8.3	7.9	8.0	24.6	802
	5	10	10	10	10	7.2	8.1	7.6	7.9	24.0	779
	6	10	10	10	10	7.2	8.2	7.5	7.9	24.3	695
	7	10	10	10	10	7.1		7.6		25.0	—
1.0	0	10	10	10	10		8.0		7.7	24.6	1641
	1	10	10	10	10	7.0	8.0	7.6	7.9	24.6	1780
	2	10	10	10	10	7.1	8.0	7.7	8.0	24.7	1800
	3	10	10	10	10	7.5	8.1	7.6	8.1	24.5	1793
	4	10	10	10	10	7.5	8.3	7.4	7.9	24.7	1935
	5	10	9	10	10	7.2	8.3	7.6	7.8	24.1	1716
	6	10	9	9	10	7.3	8.0	7.5	7.9	24.4	2000
	7	10	9	9	10	7.2		7.6		25.3	—
2.0	0	10	10	10	10		8.1		7.8	24.5	3510
	1	10	10	10	10	7.0	8.0	7.5	7.8	24.4	3460
	2	10	10	10	10	7.1	8.1	7.6	8.0	24.6	3450
	3	10	10	10	10	7.5	8.1	7.6	8.0	24.6	3750
	4	10	10	10	10	7.5	8.3	7.4	7.9	24.4	3540
	5	10	10	10	10	7.2	8.3	7.6	7.8	24.1	3570
	6	9	10	10	10	7.4	8.1	7.5	7.7	24.4	3510
	7	~~3~~ 8	10	~~9~~ 10	~~7~~ 10	7.2		7.6		25.1	—
4.0	0	10	10	10	10		8.1		7.8	24.5	6390
	1	10	10	10	10	7.0	8.0	7.5	7.8	24.8	6600
	2	10	10	10	10	7.1	8.1	7.5	7.9	24.5	6500
	3	10	10	10	10	7.5	8.1	7.7	7.9	24.7	6660
	4	10	10	10	10	7.5	8.3	7.5	7.9	24.5	6620
	5	10	10	9	10	7.2	8.3	7.6	7.8	24.1	6350
	6	9	9	8	10	7.3	8.2	7.4	7.6	24.3	6610
	7	8	10	6	10	7.2		7.6		25.0	—
8.0	0	10	10	10	10		8.2		7.8	24.6	12070
	1	7	8	4	7	6.9	8.1	7.5	7.8	24.6	12470
	2	4	3	0	2	7.0	8.1	7.5	7.9	24.5	12430
	3	2	1		0	7.5	8.1	7.5	7.9	24.8	12050
	4	2	0			7.5	8.3	7.5	7.8	24.4	12450
	5	1				7.2	8.3	7.5	7.8	24.2	11740
	6	0				7.3	8.2	7.3	7.8	24.4	12290
	7					—		—		—	—

Endpoint	IC25	Cusum Chart Limits	Task Manager	
Survival	3.0	1.9 to 4.6	Project Manager	
Growth	2.3	1.5 to 3.5	QA Officer	

SCOEPA00027104

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC | Species ID#: FHM 1161

Lab ID: na | Start Date: 08/04/2004

Sample Description: NaCl 1B022-02

Technician: DO CEH

Date: 08/12/2004 07/30/2004

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1151.31	1145.90	10
	B	1176.57	1170.11	10
	C	1164.63	1157.95	10
	D	1152.40	1146.82	10
0.3 g/L	A	1157.56	1151.37	10
	B	1149.00	1143.46	10
	C	1149.33	1143.48	10
	D	1153.93	1147.39	10
1.0 g/L	A	1158.36	1151.96	10
	B	1132.95	1126.59	9
	C	1157.91	1152.59	9
	D	1142.05	1135.53	10
2.0 g/L	A	1151.05	1146.21	8
	B	1175.72	1170.37	10
	C	1153.99	1148.58	9
	D	1158.19	1154.40	7
4.0 g/L	A	1155.94	1152.04	8
	B	1149.51	1146.77	6
	C	1145.64	1143.10	6
	D	1182.54	1180.26	6
8.0 g/L	A		1144.74	0
	B		1152.52	0
	C		1149.63	0
	D		1145.11	0

weigh to 0.01 mg

SCOEPA00027105

CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test:	14-8404-5822	**Test Type:**	Growth-Survival (7d)	**Duration:**	6 Days 21 Hours
Start Date:	04 Aug-04 04:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
End Date:	11 Aug-04 02:20 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatox, AR
Setup Date:	04 Aug-04 04:30 PM	**Brine:**	Not Applicable		

Sample:	02-8111-2335	**Material:**	Sodium chloride	**Client:**	
Sampled:	16 Jul-04	**Code:**	1B022-02	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	19 Days 16 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
06-4134-7247	7d Proportion Survived	25	3	1.40000	4.60000	Linear Interpolation
		50	4.923077	4.51282	5.57949	
08-3525-4193	Mean Dry Biomass-mg	25	2.296954	1.38647	2.92914	Linear Interpolation
		50	3.828056	3.05347	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
06-4134-7247	7d Proportion Survived	Control Response	1	0.8		Passes acceptability criteria
08-3525-4193	Mean Dry Biomass-mg		0.6033	0.25		Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
2		4	0.85000	0.70000	1.00000	0.06455	0.12910	15.19%
4		4	0.65000	0.60000	0.80000	0.05000	0.10000	15.38%
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.60325	0.54100	0.66801	0.03155	0.06309	10.46%
0.3		4	0.60300	0.55400	0.65400	0.02157	0.04314	7.15%
1		4	0.61500	0.53201	0.65200	0.02787	0.05575	9.06%
2		4	0.48475	0.37899	0.54100	0.03750	0.07500	15.47%
4		4	0.28650	0.22800	0.38999	0.03576	0.07152	24.96%
8		4						

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
0.3		1.00000	1.00000	1.00000	1.00000
1		1.00000	0.90000	0.90000	1.00000
2		0.80000	1.00000	0.90000	0.70000
4		0.80000	0.60000	0.60000	0.60000
8		0.00000	0.00000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.54100	0.64600	0.66801	0.55801
0.3		0.61901	0.55400	0.58500	0.65400
1		0.64000	0.63600	0.53201	0.65200
2		0.48401	0.53500	0.54100	0.37899
4		0.38999	0.27400	0.25400	0.22800
8					

SCOEPA00027106

CETIS Report

Report Date: 12 Aug-04 3:44 PM
Analysis: 06-4134-7247

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	06-4647-5002	06-4647-5002	12 Aug-04 3:43 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

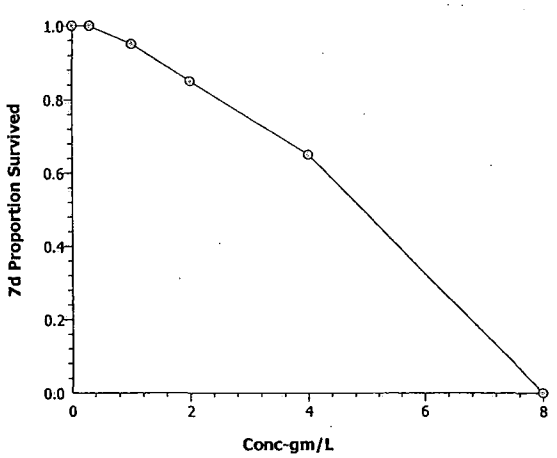
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	3	1.40000	4.60000
50	4.923077	4.51282	5.57949

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
2		4	0.85000	0.70000	1.00000	0.02635	0.12910	34	40
4		4	0.65000	0.60000	0.80000	0.02041	0.10000	26	40
8		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

7d Proportion Survived



SCOEPA00027107

CETIS Report

Report Date: 12 Aug-04 3:44 PM
Analysis: 08-3525-4193

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	06-4647-5002	06-4647-5002	12 Aug-04 3:44 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

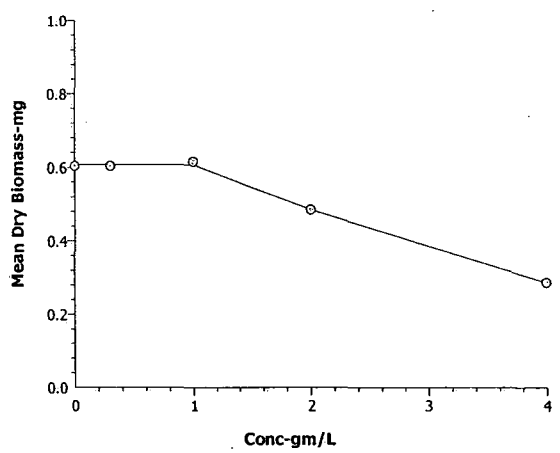
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	2.296954	1.38647	2.92914
50	3.828056	3.05347	N/A

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.60325	0.54100	0.66801	0.01288	0.06309
0.3		4	0.60300	0.55400	0.65400	0.00881	0.04314
1		4	0.61500	0.53201	0.65200	0.01138	0.05575
2		4	0.48475	0.37899	0.54100	0.01531	0.07500
4		4	0.28650	0.22800	0.38999	0.01460	0.07152

Mean Dry Biomass-mg



SCOEPA00027108

REFERENCE TOXICANT DATA SHEET

Client: QA/QC | Reference Toxicant: Sodium chloride | Test Begin: Date 8-10-04 Time 0935
Test Organism: *Ceriodaphnia dubia* | Solvent: distilled water | Stock Solution: 20 g/L | Test End: Date 8-12-04 Time 1300
Source: in house | Reagent Log ID #: 13022.06
ID#: Cd 1698 | *Dilution Water: Recon MH (FHM) | ID#: 2911
Age: < 24 hrs | Total Hardness as CaCO3: 92 | Total Alkalinity as CaCO3: 66
Size: na | Conductivity (µmhos/cm) / Salinity (ppt): 290 | Temperature: 20 ± 1 °C
Loading: na | Technician: 0 hr 3m | 24 hr 3m | 48 hr DW | 72 hr | 96 hr
Time: 0 hr 0935 | 24 hr 0850 | 48 hr 1300 | 72 hr | 96 hr

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving					Dissolved Oxygen (mg/l)					pH					Temperature °C					Cond.
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0
Control	A	5	5	5			8.5	-	8.3			7.7	-	7.8			19.9	20.2	20.4			277
	B	5	4	4																		
0.5	A	5	5	5			8.5	-	8.3			7.6	-	7.7			19.9	20.2	20.1			1137
	B	5	5	5																		
1.0	A	5	5	5			8.5	-	8.3			7.7	-	7.7			19.9	20.2	20.1			1953
	B	5	5	5																		
1.5	A	5	5	5			8.5	-	8.3			7.8	-	7.7			19.9	20.2	20.2			2790
	B	5	4	4																		
2.0	A	5	4	2			8.5	-	8.3			7.7	-	7.7			19.9	20.2	20.4			3610
	B	5	5	2																		
3.0	A	5	4	0			8.5	-	8.4			7.7	-	7.7			19.9	20.2	20.2			5160
	B	5	5	0																		
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 1.9
Cusum Chart Limits: 1.5 to 2.5
Statistical Method: Prob.t

We verify this data is true and correct.
Task Manager
Project Manager
QA Officer

SCOEPA00027109

CETIS Report

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test:	14-8825-8438	**Test Type:**	Survival (48h)	**Duration:**	51 Hours
Start Date:	10 Aug-04 09:35 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	12 Aug-04 01:00 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	10 Aug-04 09:35 AM	**Brine:**	Not Applicable		

Sample:	13-3120-9752	**Material:**	Sodium chloride	**Client:**	
Sampled:	03 Aug-04	**Code:**	1B022-06	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	7 Days 9 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
11-0993-3323	48h Proportion Survived	25	1.726399	0.99165	1.93778	Linear Regression
		50	1.922237	1.57043	2.34647	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
11-0993-3323	48h Proportion Survived	Control Response	0.9000	0.9		Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	0.90000	0.80000	1.00000	0.10000	0.14142	15.71%
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		2	0.90000	0.80000	1.00000	0.10000	0.14142	15.71%
2		2	0.40000	0.40000	0.40000	0.00000	0.00000	0.00%
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	0.80000
0.5		1.00000	1.00000
1		1.00000	1.00000
1.5		1.00000	0.80000
2		0.40000	0.40000
3		0.00000	0.00000

SCOEPA00027110

CETIS Report

Report Date: 16 Aug-04 8:29 AM
Analysis: 11-0993-3323

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Regression	19-1126-1872	19-1126-1872	16 Aug-04 8:29 AM	CETISv1.024

Linear Regression Options

Model	Threshold Option	Lower Threshold	Threshold Optimized	Reweighted	Pooled Groups	Heterogeneity Corr.
Log-Normal	Control Threshold	0.1	Yes	Yes	No	No

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
Threshold	0.03415	0.03293	-0.03040	0.09869	1.037	0.37599	Not Significant
Slope	14.45367	6.03589	2.62332	26.28402	2.395	0.09634	Not Significant
Intercept	0.89795	1.73563	-2.50389	4.29979	0.517	0.64063	Not Significant

Regression Summary

Iters	Log Likelihood	Mu	Sigma	G Stat	Chi-Sq	Critical	P Level	Decision(0.05)
7	3.74502	0.06213	0.06919	0.66994	1.94532	15.50731	0.98264	Non-Significant Heterogeneity

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.05)
Variances	Modified Levene	-4211106000	6.25606	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.65872	0.84159	0.00024	Non-normal Distribution

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.726399	0.99165	1.93778
50	1.922237	1.57043	2.34647

Data Summary

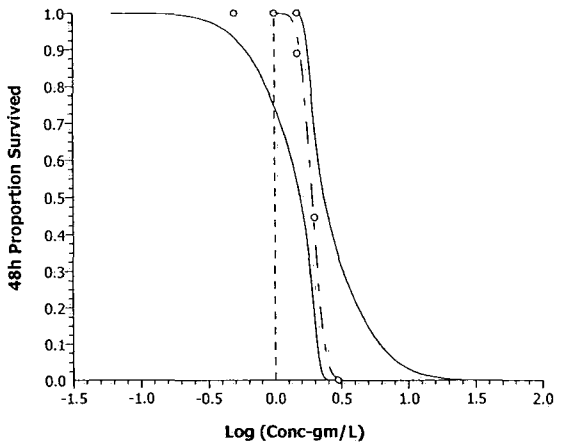
			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	0.90000	0.80000	1.00000	0.02887	0.14142	9	10
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		2	0.90000	0.80000	1.00000	0.02887	0.14142	9	10
2		2	0.40000	0.40000	0.40000	0.00002	0.00011	4	10
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

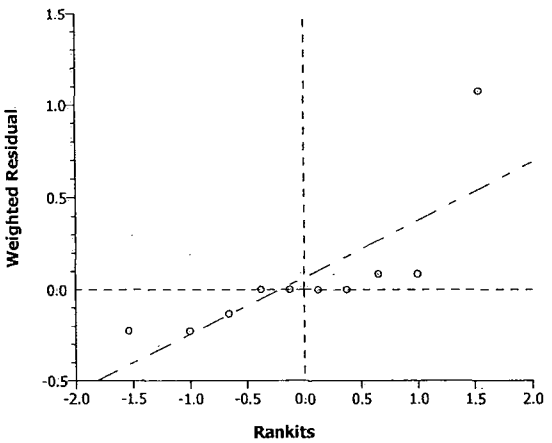
SCOEPA00027111

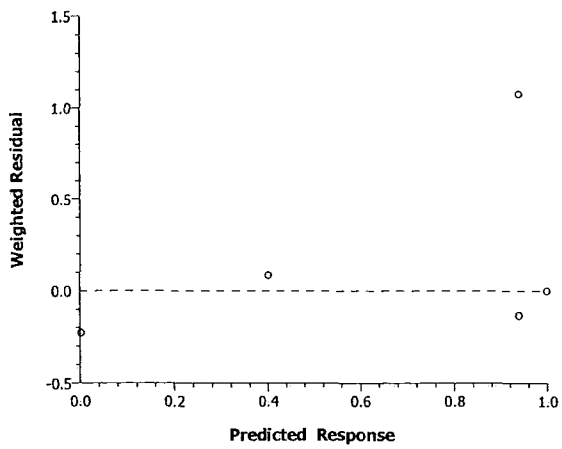
CETIS Report

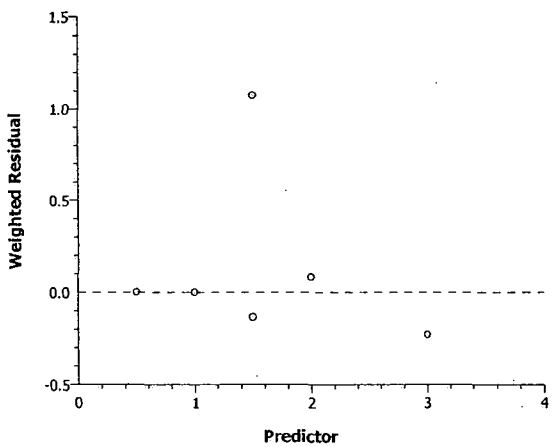
Report Date: 16 Aug-04 8:29 AM
Analysis: 11-0993-3323

48h Proportion Survived









SCOEPA00027112

REFERENCE TOXICANT DATA SHEET

Client: QA/QC | Reference Toxicant: Sodium chloride | Test Begin: Date 8-10-04 Time 1300
Test Organism: *Pimephales promelas* | Solvent: distilled water | Stock Solution: 20 g/L | Test End: Date 8-12-04 Time 1600
Source: Aquatox Inc. | Reagent Log ID #: 1B022-06
ID#: FHM 1162 | *Dilution Water: Recon MH (FHM) | ID#: 2411
Age: <24 hrs. | Total Hardness as CaCO3: 92 | Total Alkalinity as CaCO3: 66
Size: na | (Conductivity (µmhos/cm)) / Salinity (ppt): 290 | Temperature: 20 ± 1 °C
Loading: na | Technician: 0 hr DN, 24 hr MS, 48 hr DN, 72 hr ____, 96 hr ____
Time: 0 hr 1300, 24 hr 1000, 48 hr 1600, 72 hr ____, 96 hr ____

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving					Dissolved Oxygen (mg/l)					pH					Temperature °C					Cond.
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0
Control		10	10	10			8.5	8.2	8.1			7.6	7.6	7.6			22.0	20.3	20.0			278
4		10	10	10			8.5	8.4	8.1			7.6	7.6	7.6			22.0	20.1	20.2			6780
6		10	10	10			8.5	8.4	8.1			7.7	7.7	7.6			19.9	20.2	19.8			9820
8		10	10	6			8.5	8.5				7.7	7.6	7.5			19.9	20.3	20.1			12630
10		10	0	—			8.5	8.4	—			7.6	7.5	—			19.9	20.1	—			15520
12		10	0	—			8.5	8.5	—			7.6	7.5	—			19.9	20.3	—			18310
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 8.1

Cusum Chart Limits: 6.5 to 8.3

Statistical Method: Trimmed Spearman-Kaber

We verify this data is true and correct.

Task Manager: [signature]

Project Manager: Doug Winn

QA Officer: [signature]

SCOEPA00027113

CETIS Report

Fathead Minnow 96-h Acute Survival Test — **CH2M Hill**

Test:	15-0162-5355	**Test Type:**	Survival (48h)	**Duration:**	51 Hours
Start Date:	10 Aug-04 01:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
End Date:	12 Aug-04 04:00 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatox, AR
Setup Date:	10 Aug-04 01:00 PM	**Brine:**	Not Applicable		

Sample:	13-3120-9752	**Material:**	Sodium chloride	**Client:**	
Sampled:	03 Aug-04	**Code:**	1B022-06	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	7 Days 13 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
06-0685-4946	48h Proportion Survived	50	8.075608	7.46116	8.74065	Trimmed Spearman-Karber

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
4		1	1.00000	1.00000	1.00000			
6		1	1.00000	1.00000	1.00000			
8		1	0.60000	0.60000	0.60000			
10		1	0.00000	0.00000	0.00000			0.00%
12		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1
0	Dilution Water	1.00000
4		1.00000
6		1.00000
8		0.60000
10		0.00000
12		0.00000

SCOEPA00027114

CETIS Report

Report Date: 16 Aug-04 8:36 AM
Analysis: 06-0685-4946

Fathead Minnow 96-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	08-6114-6146	08-6114-6146	16 Aug-04 8:36 AM	CETISv1.024

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	0.9071752	0.01718433

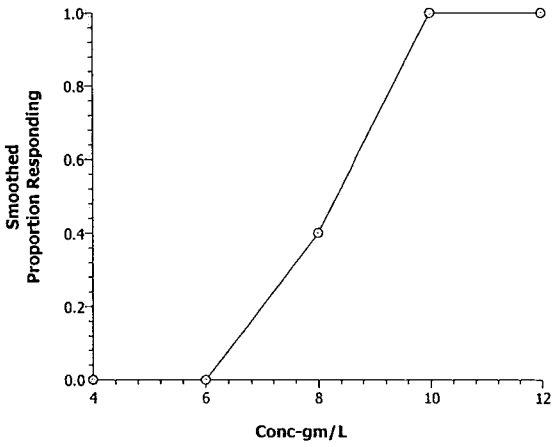
Point Estimates

EC50/LC50	95% LCL	95% UCL
8.07561	7.46116	8.74065

Data Summary

Conc-gm/	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
4		1	1.00000	1.00000	1.00000			10	10
6		1	1.00000	1.00000	1.00000			10	10
8		1	0.60000	0.60000	0.60000			6	10
10		1	0.00000	0.00000	0.00000			0	10
12		1	0.00000	0.00000	0.00000			0	10

48h Proportion Survived



SCOEPA00027115

CH2M L CHAIN OF CUSTODY RECORD FOR NPDES CO IANCE BIOMONITORING

Client Siltronic Corporation
Address 7200 N.W. Front Avenue
Portland, Oregon 97210

Contact Person: Thomas J. Rothschild
Phone: 503-219-7374

CH2M HILL Project # _____

NPDES# 101128

Composite Sample Information _____

Samples/Hour 1 Volume/Sample ~6L
Total Hours 24 Total Volume ~144L
Initiated: Date 8 Aug 04 Time 0800
Ended: Date 9 Aug 04 Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.# 4500284558

Check Chlorine (Y/N) _____
Temp. Upon Arrival (°C) 14.4 °C
Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
04-79	9 Aug 2004	0800	X		1	B1259-01	X	X	X	X														

Sampled By & Title (Please sign and print name) Thomas J. Rothschild	Date/Time 9 Aug 2004/ 0800	Relinquished By (Please sign and print name) Thomas J. Rothschild	Date/Time 9 Aug 2004/0900
Received By (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time 8-9-04 11:00
Received By (Please sign and print name) Jim Watenpaugh	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time 8/9/04 1200	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev. 10/97

SCOEPA00027116

CH2M **CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING**

Client Sitronic Corporation
Address 7200 N.W. Front Avenue
Portland, Oregon 97210

Contact Person: Thomas J. Rothschild
Phone: 503-219-7374

NPDES# 101128
Composite Sample Information _____
Samples/Hour 1 Volume/Sample ~6L
Total Hours 24 Total Volume ~144L
Initiated: Date 10 Aug 04 Time 0800
Ended: Date 11 Aug 04 Time 0730
Chilled During Collection Yes ☐ No ☒

CH2M HILL Project # _____

Ship Samples to: CH2M HILL, Inc.
P. O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) _____
Temp. Upon Arrival (°C) 6 °C
Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
04-80	11 Aug 2004	0730	X		1	1259-02	X	X	X	X														30, 15, 7.5, 3.75, 1.9 %

Sampled By & Title (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 11 Aug 2004 / 0730	Relinquished By (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 11 Aug 2004 / 0830
Received By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-11-04 8:32A	Relinquished By (Please sign and print name) Paul Conroy CONROY	Date/Time 8-11-04 11:20A.
Received By (Please sign and print name) Jim Wakenpaugh Jim Wakenpaugh	Date/Time 8-11-04 11:00 AM	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

Rev 10/97

SCOEPA00027117

CH2M L CHAIN OF CUSTODY RECORD FOR NPDES CO IANCE BIOMONITORING

Client Sitkronic Corporation
Address 7200 N.W. Front Avenue
Portland, Oregon 97219

Contact Person: Thomas J. Rothschild
Phone: 503-219-7374

CH2M HILL Project # _____

NPDES# 101128
Composite Sample Information _____
Samples/Hour 1 Volume/Sample ~6L
Total Hours 24 Total Volume ~144L
Initiated: Date 12 Aug Time 0800
Ended: Date 13 Aug Time 0800
Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
P.O.#
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

Check Chlorine (Y/N) _____
Temp. Upon Arrival (°C) 12.7°C
Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
04-82	13 Aug 2004	0800	X		1	B1259-03	X	X	X	X														30, 15, 7.5, 3.75, 1.9%

Sampled By & Title (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 13 Aug 2004 / 0800	Relinquished By (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 13 Aug 2004 / 0845
Received By (Please sign and print name) Paul Conroy PAUL CONROY	Date/Time 8-13-8:45A.	Relinquished By (Please sign and print name) Paul Conroy PAUL CONROY	Date/Time 8-13-04 / 10:50A.
Received By (Please sign and print name) Lyndee D Rivera	Date/Time 8/13 10:55	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name) Brett Mahony	Date/Time 8/13/04 1450	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

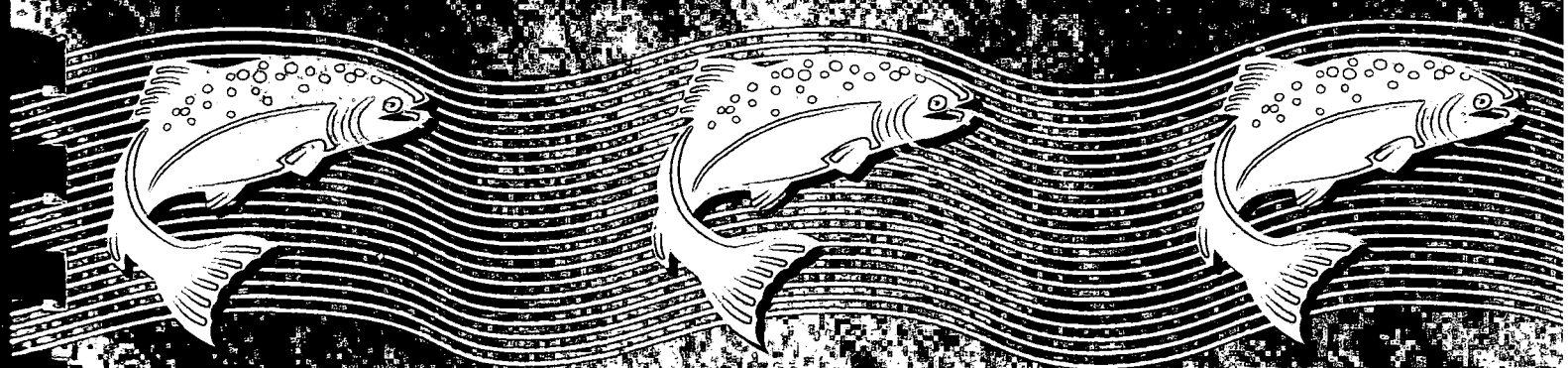
Rev 10/97

SCOEPA00027118

BIOMONITORING SERVICES

BIOASSAY REPORT
CHRONIC BIOASSAYS
Conducted May 27 through June 3, 2004

RECEIVED JUN 1 4 2004 38



CH2MHILL

SCOEPA00027119

BIOASSAY REPORT
CHRONIC BIOASSAYS
Conducted May 27 through June 3, 2004

RECEIVED JUN 1 4 2004 382

Prepared for

SILTRONICS CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL
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INTRODUCTION

CH2M HILL conducted chronic bioassays from May 27 through June 3, 2004. The samples were provided by the Siltronics Corporation, Portland, Oregon. The organisms tested were the fathead minnow (*Pimephales promelas*), and the water flea (*Ceriodaphnia dubia*). Forty eight hour acute data was obtained from the chronic tests (dual-endpoint testing).

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to: Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002 and *Whole Effluent Toxicity Testing Guidance Document*, Oregon Department of Environmental Quality, January 1993.

TEST ORGANISMS

The *Ceriodaphnia dubia* used in the test were obtained from CH2M HILL's in-house cultures and were less than 24 hours old and within an eight hour age range, respectively, at test initiation. The fathead minnows were obtained from Aquatox, Inc., Hot Springs, Arkansas, and were less than 24 hours old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (1994). The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used in the tests was moderately hard reconstituted water (EPA, 1994) with a total hardness of 96 mg/L as $CaCO_3$, alkalinity of 66 mg/L as $CaCO_3$, and a pH of 7.8.

TEST CONCENTRATIONS

The concentrations tested in the chronic tests were 1.90, 3.75, 7.50, 15.0, and 30.0 percent effluent and dilution water for the control. For the fathead minnow chronic test, 10 organisms per chamber with four chambers per concentration, for a total of 40 organisms per concentration were used. For the *Ceriodaphnia* chronic test, 1 organism per chamber with ten chambers per concentration for a total of 10 organisms per concentration were used.

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SAMPLE COLLECTION

One sample was collected by Siltronics Corporation personnel on May 27, 2004. The sample was delivered to CH2M HILL's Aquatic Toxicology Laboratory by courier and stored in the dark at 4°C until test solutions were prepared and tested. The tests were initiated within 36 hours of sample collection. Chain of custody for sample collection is provided in Appendix C.

SAMPLE PREPARATION

The samples were filtered through a 60 µm net upon arrival and temperature was adjusted prior to each daily renewal on samples used during the tests.

MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, total residual chlorine, ammonia, and temperature.

For the chronic test, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in the control and all concentrations tested. Conductivity was measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was measured daily in the chronic tests. According to EPA (1994), *Ceriodaphnia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Fathead minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the fathead minnow chronic test. Temperature was monitored continuously throughout the testing period.

DATA ANALYSIS

The effect measured during the dual-endpoint acute tests was survival during the 48 hour exposure period. The effects measured during the *Ceriodaphnia* chronic test included survival and reproduction over the 7-day exposure period. The effects measured during the fathead minnow chronic test included survival and growth over the 7-day exposure period. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, using CETIS version 1.024. Dunnett's Procedure, Bonferroni's T-Test or Fisher's Exact Test was used to compare the survival data and Dunnett's Procedure or Bonferroni's T-Test was used to compare the reproduction or growth data between the control and each effluent treatment. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or T-test with Bonferroni Adjustment could not be met, Steel's Many-One Rank Test or Wilcoxon Rank Sum with Bonferroni Adjustment was used to analyze the data.

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RESULTS AND DISCUSSION

ACUTE DUAL ENDPOINT

Table 1 summarizes the acute dual-endpoint survival data taken from the chronic tests.

Table 1
Acute Dual-Endpoint Survival Data

Sample Concentration (%)	*Ceriodaphnia dubia* 48 hour percent survival	Fathead minnow 48 hour percent survival
Control	100	100
1.90	100	100
3.75	100	100
7.50	100	97.5
15.0	100	100
30.0	80	100

The acute dual-endpoint test results showed no statistically significant reduction in survival when compared to the control at any of the effluent concentrations tested for both species. The dual-endpoint LC_{50} was greater than 30 percent for both species.

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CHRONIC BIOASSAY

Table 2 summarizes the survival and growth data for the samples tested on the fathead minnow.

Table 2
Chronic Fathead Minnow
Results

Sample Concentration (%)	Percent Survival	Mean Dry Weight (mg)
Control	100	0.803
1.90	100	0.682
3.75	100	0.699
7.50	97.5	0.723
15.0	97.5	0.729
30.0	100	0.754

The fathead minnow test results showed no statistically significant reduction in survival or growth at any effluent concentration tested when compared to the control. Control survival was 30 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 30 and greater than 30 percent effluent, respectively.

The IC_{25} value (the concentration of effluent causing a 25 percent reduction in biological measurement, e.g. growth) calculated on the fathead minnow growth was greater than 30 percent.

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Table 3 summarizes the survival and reproduction data for the effluent tested on the *Ceriodaphnia dubia*.

Table 3
***Ceriodaphnia Dubia* Chronic Results**

Concentration (%)	Percent Survival	No. Young Per Adult
Control	100	23.4
1.90	90	21.0
3.75	100	20.7
7.50	90	19.8
15.0	90	16.2 [b]
30.0	20 [a]	2.6

[a] Indicates a statistically significant reduction when compared to the control at p equal to 0.05 using Fisher's Exact Test.
[b] Indicates a statistically significant reduction when compared to the control at p equal to 0.05 using Dunnett's Test.

The test results show a statistically significant reduction in survival at the 30 percent and in reproduction at the 15 percent sample concentrations when compared to the control. Control survival was 90 percent. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 7.5 and 15 percent sample, respectively.

The IC_{25} value (the concentration of sample causing a 25 percent reduction in biological measurement, e.g. growth) was calculated on the *Ceriodaphnia dubia* reproduction. The IC_{25} value for reproduction was 12.2 percent sample.

The dissolved oxygen levels in the chronic tests remained above 40 percent saturation throughout the test period. Test temperatures remained at 25±1°C. The tests proceeded without interruption or incidents that could have affected test results.

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REFERENCE TOXICANT TESTS

The results of the reference toxicant tests conducted in August with sodium chloride (*Ceriodaphnia* and fathead minnow) indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA 1989).

The IC_{25}, LC_{50}, and 95 percent confidence intervals of the reference toxicant test conducted are listed in the tables below.

Table 4
Chronic Reference Toxicant Tests (g/L)

Species (test)	IC_{25}	Control Chart
Ceriodaphnia dubia (survival)	1.39	0.77 to 2.17
Ceriodaphnia dubia (reproduction)	0.27	0.10 to 1.01
Pimephales promelas (survival)	3.0	1.8 to 5.1
Pimephales promelas (growth)	2.0	1.6 to 3.9

Table 5
Acute Reference Toxicant Test (g/L)

Species	LC_{50}	Control Chart
Ceriodaphnia dubia	2.3	1.5 to 2.6
Pimephales promelas (FHM 1147)	7.0	6.3 to 8.1

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APPENDIX A
RAW DATA SHEETS

CH2MHILL ***TOXICITY TEST ORGANISM AND WATER QUALITY DATA***

Client Siltronics — Test Initiation: Date 5-27-04 Time 1300 — Test Termination: Date 6-3-04 Time 1515

Contact Tom Rothschild — Technician Oldham, Stanaway, Winn, Holm, Mickey

Test Species/ID *Pimephales promelas* / FHM 1147 — /

Ceriodaphnia dubia / Cd 1660 — /

Sample Information								Test Species Information	ID# FHM 1147	ID# Cd 1660	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Age or Size	~~48~~ <24 hours	< 24 hours within		
									—	an 8 hour span		
B1218-01	04-56	5-27-04	0800	0.057 —	0.78	128	—	Test Container Size	~~800~~ 400 ml	30 ml		
-02				/				Test Volume	500 ~~250~~ ml	15 ml		
-03				/				Feeding: Type	0.15 ml *Artemia*	0.1 ml Algae &		
				/				Amount	2 x daily	YCT daily		
				/				Aeration: Began	None	None		
				/				Amount	—	—		
				/				Dilution Water ID#	2383	2383		
				/				Acclimation Period	< 24 hours	< 24 hours		
				/				Test Location	# 3/6	# 4		
				/				Condition of Survivors				
				/				Size (mm)	—	—		
				/				Loading Rate	—	—		
				/				Comments				

Dilution Water Source	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	2383	96	66

* 1 Sample only

Water Quality Meters Used/ID#

Dissolved Oxygen _____ pH _____ Temperature _____

Conductivity _____ Refractometer _____ Other _____

CH2M HILL

FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA

Client: Siltronics — Date Initiated: 5-27-04 Time: 1500

Sample Description: — Date Terminated: 6-3-04 Time: 1515

Technician: Day 0 MS Day 1 CEH Day 2 CEH Day 3 CEH Day 4 CEH Day 5 XX Day 6 XX Day 7 DW

Time: Day 0 1500 Day 1 1400 Day 2 1305 Day 3 MSS Day 4 1550 Day 5 0930 Day 6 0900 Day 7 1515

Concentration or (Percent)	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
CONTROL	0	10	10	10	10		8.0		7.8	25.1	270
	1	10	10	10	10	7.3	7.8	7.1	7.8	24.7	
	2	10	10	10	10	8.0	8.3	8.0/7.6	8.3/8.2	24.8	
	3	10	10	10	10	7.8	8.3	7.7	7.9	24.3	
	4	10	10	10	10	7.5	8.3	7.5	7.9	23.8	
	5	10	10	10	10	7.8	8.1	7.4	7.7	24.3	
	6	10	10	10	10	7.5	8.3	7.2	7.6	24.4	
	7	10	10	10	10	7.4		7.5		24.5	
1.90 %	0	10	10	10	10		8.2		7.8	25.0	
	1	10	10	10	10	7.0	7.9	7.1	7.9	24.5	
	2	10	10	10	10	8.0	8.3	8.0/7.6	8.3/8.2	24.6	
	3	10	10	10	10	7.8	8.3	7.7	8.0	24.4	
	4	10	10	10	10	7.5	8.3	7.5	7.9	23.9	
	5	10	10	10	10	7.8	8.3	7.4	7.7	24.3	
	6	10	10	10	10	7.5	8.3	7.2	7.6	24.4	
	7	10	10	10	10	7.4		7.6		24.4	
3.75 %	0	10	10	10	10		8.3		7.8	24.9	
	1	10	10	10	10	7.0	7.9	7.2	7.9	24.4	
	2	10	10	10	10	8.0	8.3	7.9/7.7	8.3/8.2	24.5	
	3	10	10	10	10	7.8	8.3	7.7	8.0	24.5	
	4	10	10	10	10	7.5	8.3	7.5	7.9	23.9	
	5	10	10	10	10	7.7	8.3	7.4	7.7	24.2	
	6	10	10	10	10	7.4	8.4	7.3	7.6	24.3	
	7	10	10	10	10	7.4		7.5		24.5	
7.50 %	0	10	10	10	10		8.2		7.8	24.8	
	1	10	10	10	10	7.0	8.0	7.2	7.9	24.4	
	2	9	10	10	10	8.0	8.3	8.0/7.6	8.3/8.1	24.0	
	3	9	10	10	10	7.8	8.3	7.7	8.0	24.4	
	4	9	10	10	10	7.5	8.3	7.5	7.9	24.0	
	5	9	10	10	10	7.5	8.3	7.4	7.7	24.2	
	6	9	10	10	10	7.4	8.4	7.3	7.6	24.1	
	7	9	10	10	10	7.4		7.5		24.3	
15.0 %	0	10	10	10	10		8.2		7.8	25.1	
	1	10	10	10	10	7.0	7.9	7.3	7.9	24.3	
	2	10	10	10	10	8.0	8.3	8.0/7.6	8.3/8.1	24.0	
	3	10	10	10	10	7.8	8.3	7.6	7.9	24.3	
	4	9	10	10	10	7.5	8.3	7.5	7.9	24.0	
	5	9	10	10	10	7.4	8.2	7.4	7.6	24.1	
	6	9	10	10	10	7.4	8.4	7.2	7.6	24.0	
	7	9	10	10	10	7.4		7.5		24.3	
30.0 %	0	10	10	10	10		8.2		7.7	25.0	426
	1	10	10	10	10	6.9	7.9	7.3	7.9	24.2	
	2	10	10	10	10	8.0	8.3	8.0/7.6	8.3/8.1	23.8	
	3	10	10	10	10	7.8	8.3	7.6	7.6	24.3	
	4	10	10	10	10	7.5	8.3	7.4	7.9	24.0	
	5	10	10	10	10	7.5	8.3	7.3	7.5	24.0	
	6	10	10	10	10	7.4	8.4	7.2	7.5	24.0	
	7	10	10	10	10	7.2		7.3		24.1	

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: Siltronics Species ID# FHM 1147

Lab ID: B 1218 05/27/2004

Sample Description:

Technician: CEH DO

Date: 06/04/2004 05/20/2004

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1142.38	1133.40	10
	B	1159.79	1152.02	10
	C	1151.45	1143.54	10
	D	1152.82	1145.36	10
1.9 %	A	1143.22	1137.03	10
	B	1161.64	1154.33	10
	C	1155.55	1148.61	10
	D	1143.34	1136.50	10
3.75 %	A	1177.62	1171.19	10
	B	1155.20	1147.00	10
	C	1166.58	1160.69	10
	D	1141.44	1134.02	10
7.5 %	A	1153.21	1147.27	9
	B	1160.42	1153.37	10
	C	1159.20	1151.22	10
	D	1173.53	1165.60	10
15 %	A	1188.78	1182.03	9
	B	1177.46	1170.13	10
	C	1149.41	1141.72	10
	D	1160.62	1153.23	10
30 %	A	1164.98	1157.93	10
	B	1145.27	1136.85	10
	C	1187.65	1180.87	10
	D	1161.60	1153.70	10
	A			
	B			
	C			
	D			

weigh to 0.01 mg

CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test:	18-3732-1183	**Test Type:**	Growth-Survival (7d)	**Duration:**	7 Days 0 Hours
Start Date:	27 May-04 03:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
End Date:	03 Jun-04 03:15 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatic Biosystems, CO
Setup Date:	27 May-04 03:00 PM	**Brine:**	Not Applicable		

Sample:	19-0443-0299	**Material:**	Industrial Effluent	**Client:**	
Sampled:	27 May-04 08:00 AM	**Code:**	B121801	**Project:**	
Received:	27 May-04 10:45 AM	**Source:**	Siltronics		
Hold Time:	7 Hours	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
07-1969-2599	2d Proportion Survived	30	>30	N/A	0.02071	Steel's Many-One Rank
02-2255-5674	7d Proportion Survived	30	>30	N/A	0.03102	Steel's Many-One Rank
04-7243-4572	Mean Dry Biomass-mg	30	>30	N/A	0.15871	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
04-1895-1367	2d Proportion Survived	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	
13-0061-5620	Mean Dry Biomass-mg	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
02-2255-5674	7d Proportion Survived	Control Response	1	0.8		Passes acceptability criteria
04-7243-4572	Mean Dry Biomass-mg		0.803	0.25		Passes acceptability criteria
13-0061-5620			0.803	0.25		Passes acceptability criteria
04-7243-4572	Mean Dry Biomass-mg	MSDp	0.1587	0.12	0.3	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
15		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.80300	0.74600	0.89800	0.03303	0.06607	8.23%
1.9		4	0.68200	0.61899	0.73101	0.02331	0.04662	6.84%
3.75		4	0.69850	0.58900	0.82000	0.05142	0.10283	14.72%
7.5		4	0.72250	0.59399	0.79800	0.04786	0.09573	13.25%
15		4	0.72900	0.67500	0.76901	0.01965	0.03930	5.39%
30		4	0.75375	0.67800	0.84200	0.03788	0.07576	10.05%

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CETIS Report

2d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		0.90000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000
7.5		0.90000	1.00000	1.00000	1.00000
15		0.90000	1.00000	1.00000	1.00000
30		1.00000	1.00000	1.00000	1.00000

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.89800	0.77700	0.79099	0.74600
1.9		0.61899	0.73101	0.69401	0.68400
3.75		0.64301	0.82000	0.58900	0.74199
7.5		0.59399	0.70500	0.79800	0.79301
15		0.67500	0.73300	0.76901	0.73900
30		0.70499	0.84200	0.67800	0.79000

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CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	10-2316-8710	10-2316-8710	07 Jun-04 2:12 PM	CETISv1.024

Method	Alt_H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		30	>30	3.33	N/A	2.07%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	4.24788	0.44569	Equal Variances
Distribution	Shapiro-Wilk W	0.46508	0.88421	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.00553319	0.0011066	5	1.00	0.44569	Non-Significant Effect
Error	0.0199195	0.0011066	18			
Total	0.02545269	0.0022133	23			

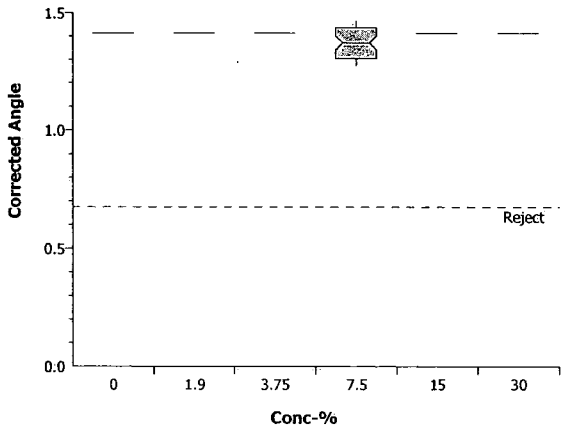
Group Comparisons

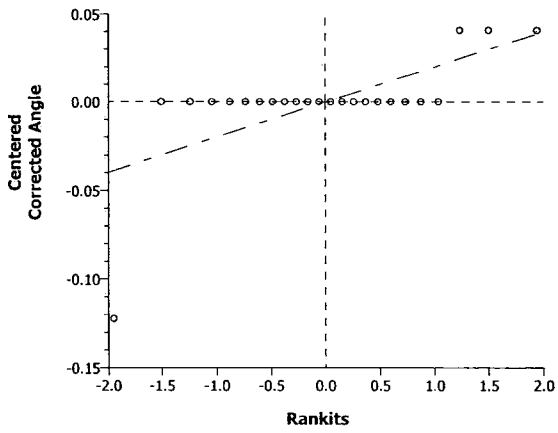
Control	vs	Conc-%	Statistic	Critical	P Level	Ties	Decision(0.05)
Dilution Water		1.9	18	10	>0.05	1	Non-Significant Effect
		3.75	18	10	>0.05	1	Non-Significant Effect
		7.5	16	10	>0.05	1	Non-Significant Effect
		15	18	10	>0.05	1	Non-Significant Effect
		30	18	10	>0.05	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1.9		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
3.75		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
7.5		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
15		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
30		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

2d Proportion Survived





SCOEPA00027134

CETIS Report

Report Date: 07 Jun-04 2:12 PM
Analysis: 04-1895-1367

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	10-2316-8710	10-2316-8710	07 Jun-04 2:12 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5795186	200	Yes	Two-Point Interpolation

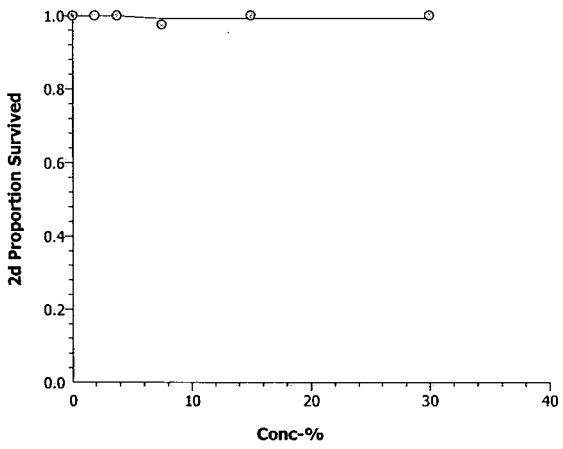
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1.9		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
3.75		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
7.5		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
15		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
30		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

2d Proportion Survived



SCOEPA00027135

CETIS Report

Comparisons:
Report Date: 07 Jun-04 2:12 PM
Analysis: 02-2255-5674

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	10-2316-8710	10-2316-8710	07 Jun-04 2:12 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		30	>30	3.33	N/A	3.10%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.80000	4.24788	0.56404	Equal Variances
Distribution	Shapiro-Wilk W	0.61382	0.88421	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.00885311	0.0017706	5	0.80	0.56404	Non-Significant Effect
Error	0.039839	0.0022133	18			
Total	0.04869211	0.0039839	23			

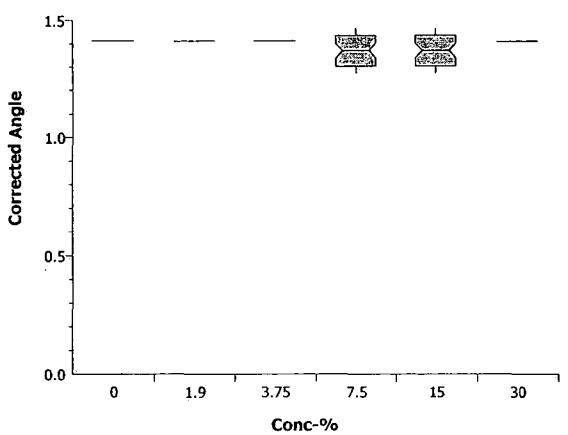
Group Comparisons

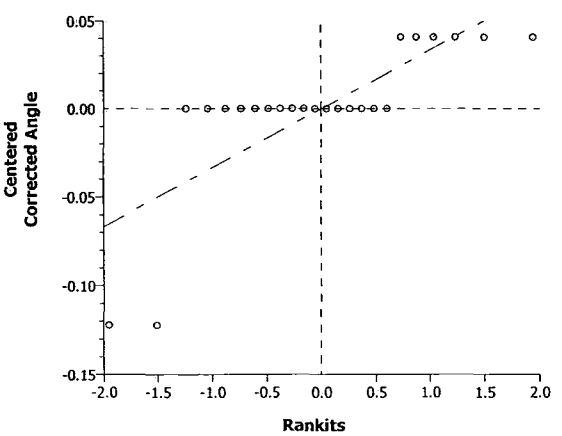
Control	vs	Conc-%	Statistic	Critical	P Level	Ties	Decision(0.05)
Dilution Water		1.9	18	10	>0.05	1	Non-Significant Effect
		3.75	18	10	>0.05	1	Non-Significant Effect
		7.5	16	10	>0.05	1	Non-Significant Effect
		15	16	10	>0.05	1	Non-Significant Effect
		30	18	10	>0.05	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1.9		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
3.75		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
7.5		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
15		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
30		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

7d Proportion Survived





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CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	10-2316-8710	10-2316-8710	07 Jun-04 2:12 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		30	>30	3.33	N/A	15.87%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.51640	15.08628	0.62091	Equal Variances
Distribution	Shapiro-Wilk W	0.98043	0.88421	0.89116	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.03693355	0.0073867	5	1.32	0.29969	Non-Significant Effect
Error	0.1006771	0.0055932	18			
Total	0.13761067	0.0129799	23			

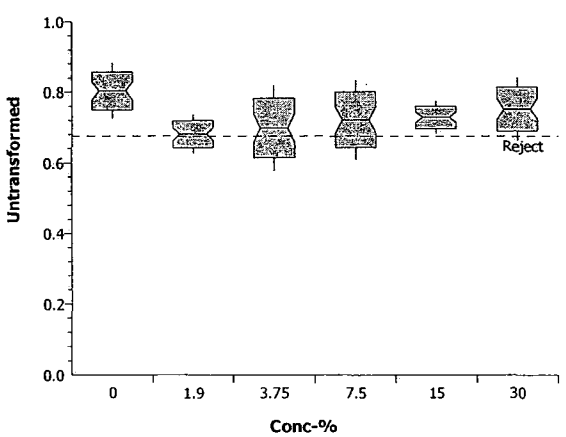
Group Comparisons

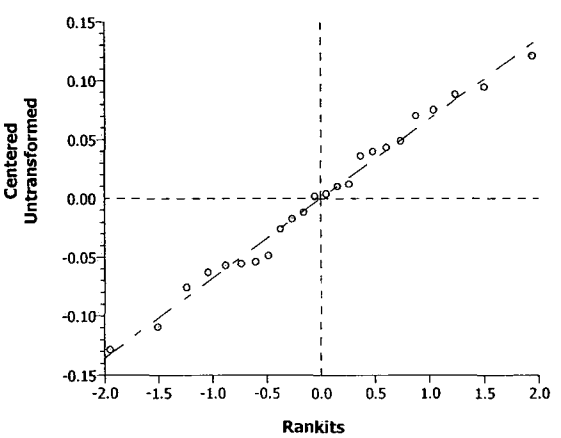
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	2.288007	2.41	>0.05	0.1274475	Non-Significant Effect
		3.75	1.976037	2.41	>0.05	0.1274475	Non-Significant Effect
		7.5	1.522164	2.41	>0.05	0.1274475	Non-Significant Effect
		15	1.399245	2.41	>0.05	0.1274475	Non-Significant Effect
		30	0.9312336	2.41	>0.05	0.1274475	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.80300	0.74600	0.89800	0.06607				
1.9		4	0.68200	0.61899	0.73101	0.04662				
3.75		4	0.69850	0.58900	0.82000	0.10283				
7.5		4	0.72250	0.59399	0.79800	0.09573				
15		4	0.72900	0.67500	0.76901	0.03930				
30		4	0.75375	0.67800	0.84200	0.07576				

Mean Dry Biomass-mg





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CETIS Report

Report Date: 07 Jun-04 2:12 PM
Analysis: 13-0061-5620

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	10-2316-8710	10-2316-8710	07 Jun-04 2:12 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	2895624	200	Yes	Two-Point Interpolation

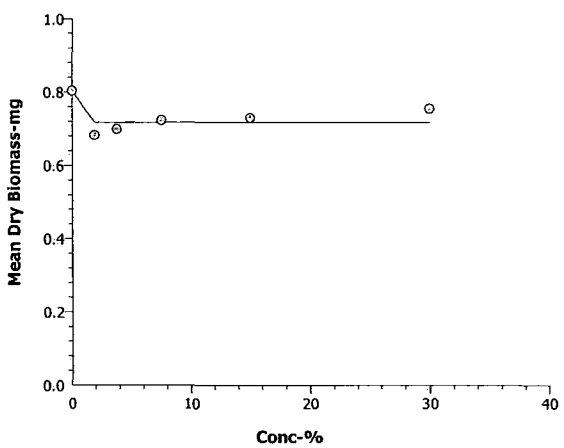
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.80300	0.74600	0.89800	0.01349	0.06607
1.9		4	0.68200	0.61899	0.73101	0.00952	0.04662
3.75		4	0.69850	0.58900	0.82000	0.02099	0.10283
7.5		4	0.72250	0.59399	0.79800	0.01954	0.09573
15		4	0.72900	0.67500	0.76901	0.00802	0.03930
30		4	0.75375	0.67800	0.84200	0.01546	0.07576

Mean Dry Biomass-mg



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CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Siltronics

Test Start Date: MS 5-27-04

Sample Description:

Sample ID#: B1218

Ceriodaphnia Lot#: Cd 1660

Statistician:

Percent or Concentration	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	32	21	20	23	23	20	25	23 24 MS	23	24	10	234
1.9	26	24	17	26	(AD) 10	18	29	23	14	23	9	210
3.75	25	22	16	17	21	18	22	29	23	14	10	207
7.5	20	26	10	21	26	21	(AD) 9	24	20	21	9	198
15	25	14	18	(AD) 9	18	12	19	19	16	12	9	162
30	(AD) 3	4	(AD) 0	(AD) 4	(AD) 3	4	(AD) 0	(AD) 6	(AD) 2	(AD) 0	2 MS 5	26

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client Siltronics Test Beginning : Date 5-27-04 Time 1300

Sample Description _____ Test Ending : Date 6-2-04 Time 1300

Ceriodaphnia Lot# Cd 1660 Dilution Water Recon MH (FHM) ID# 2383

Technician Day 1 JS Day 2 JS Day 3 CEA Day 4 CEA Day 5 DW Day 6 DW Day 7 _____

Time Day 1 1045 Day 2 1130 Day 3 1130 Day 4 1238 Day 5 1430 Day 6 1300 Day 7 _____

Percent or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	4	5	6	6	7	4	4	4	0	10	46
	4	0	3	4	2	3	0	3	4	3	4	10	26
	5	9	0	11	8	0	13	7	0	0	9	10	57
	6	17	14	0	7	14	0	11	15	16	11	10	105
	7												
1.90 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	2	4	4	3	0	4	0	0	0	10	20
	4	~~6~~	6	7	7	7	5	0	5	3	2	10	48
	5	3	4	6	0	%AD	0	9	0	0	5	DW 9	27
	6	14	12	0	15	↓	13	16	18	11	16	DW ~~10~~ 9	115
	7					↓							
3.75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	2	0	0	0	3	3	2	0	0	10	12
	4	0	7	5	0	0	4	5	0	0	0	10	21
	5	8	13	11	6	6	11	0	10	11	0	10	76
	6	15	0	0	11	15	0	14	17	12	14	10	98
	7												
7.50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	~~10~~	4	3	3	5	0	4	3	3	3	10	28
	4	~~0~~	6	0	3	0	7	5	5	8	0	10	34
	5	8	0	7	0	8	0	0	0	0	6	10	29
	6	12	16	0	15	13	14	%AD	16	9	12	9	107
	7							↓					
15.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	0	3	4	3	3	6	3	2	3	10	32
	4	0	5	0	5	0	4	3	0	0	0	10	17
	5	7	0	5	0	7	0	0	5	5	2	10	31
	6	13	9	10	%AD	8	5	10	11	9	7	9	82
	7				↓								
30.0 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	DAD	0	0	0	0	0	0	DAD	8	0
	3	0	0		4	3	2	0	3	0		8	12
	4	0	0		0	0	0	0	3	0		9	3
	5	3	1		%AD	%AD	0	0	0	02		6	6
	6	%AD	3		↓	↓	2	%AD	%AD	%AD		2	5
	7	↓			↓	↓		↓	↓	↓			

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Siltronics

Initiated Date: 5-27-04 Time: 1300

Adults Isolated Date: 5-26-04 Time: 0903

Sample Description:

Terminated Date: 6-2-04 Time: 1300

Neo's Collected Date: 5-26-04 Time: 1400

Technician: Day 0 MS; Day 1 JW; Day 2 JW; Day 3 JW; Day 4 DW; Day 5 DW; Day 6 DW; Day 7

Time: Day 0 1300; Day 1 1540; Day 2 1420; Day 3 1350; Day 4 1430; Day 5 1430; Day 6 1300; Day 7

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.9	8.0 / 8.1	8.2 / 8.2	8.2 / 8.1	8.2 / 8.2	7.7 / 7.9	7.8 / -	
1.9	8.0	8.0 / 8.1	8.2 / 8.2	8.2 / 8.1	8.2 / 8.2	7.7 / 7.9	7.8 / -	
3.75	8.1	8.0 / 8.1	8.2 / 8.2	8.2 / 8.2	8.2 / 8.2	7.7 / 7.9	7.8 / -	
7.5	8.2	8.0 / 8.0	8.2 / 8.2	8.2 / 8.1	8.2 / 8.2	7.7 / 7.9	7.8 / -	
15	8.2	8.0 / 8.1	8.2 / 8.2	8.2 / 8.2	8.2 / 8.2	7.7 / 7.8	7.7 / -	
30	8.2	8.0 / 8.1	8.3 / 8.2	8.2 / 8.2	8.2 / 8.2	7.7 / 7.7	7.7 / -	

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.6	7.7 / 7.6	8.0 / 7.9	7.8 / 7.9	8.2 / 7.8	7.9 / 7.6	7.8 / -	
1.9	7.66	7.8 / 7.6	8.0 / 7.9	7.9 / 7.9	8.1 / 7.8	7.8 / 7.6	7.8 / -	
3.75	7.7	7.8 / 7.6	8.0 / 7.9	7.9 / 7.9	8.1 / 7.8	7.8 / 7.6	7.8 / -	
7.5	7.7	7.8 / 7.6	8.1 / 8.0	7.9 / 7.9	8.0 / 7.8	7.8 / 7.6	7.8 / -	
15	7.6	7.8 / 7.6	8.1 / 8.0	7.9 / 7.9	8.0 / 7.8	7.8 / 7.5	7.7 / -	
30	7.5	7.7 / 7.6	8.1 / 7.9	7.9 / 7.9	7.9 / 7.7	7.6 / 7.4	7.6 / -	

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.1 / 270	25.2 / -	25.7 / -	25.2 / -	24.0 / -	24.9 / -	24.3 / -	
1.9	25.2 / -	25.5 / -	26.1 / -	25.9 / -	23.7 / -	25.2 / -	24.5 / -	
3.75	24.9 / -	25.1 / -	25.9 / -	25.2 / -	23.4 / -	25.0 / -	24.1 / -	
7.5	25.1 / -	24.9 / -	25.3 / -	24.9 / -	23.6 / -	24.7 / -	24.3 / -	
15	25.1 / -	24.2 / -	24.4 / -	24.7 / -	23.6 / -	25.0 / -	24.6 / -	
30	25.2 / 408	24.4 / -	25.2 / -	25.3 / -	23.8 / -	24.6 / -	24.5 / -	

COMMENTS:

CETIS Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test:	06-7256-0330	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6 Days 0 Hours
Start Date:	27 May-04 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	02 Jun-04 01:00 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	27 May-04 01:00 PM	**Brine:**	Not Applicable		

Sample:	19-0443-0299	**Material:**	Industrial Effluent	**Client:**	
Sampled:	27 May-04 08:00 AM	**Code:**	B121801	**Project:**	
Received:	27 May-04 10:45 AM	**Source:**	Siltronics		
Hold Time:	5 Hours	**Station:**			

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
09-0075-3659	2d Proportion Survived	30	>30	N/A	N/A	Fisher's Exact
03-5765-9103	6d Proportion Survived	15	30	21.21320	N/A	Fisher's Exact
05-3858-4387	Reproduction	7.5	15	10.60660	0.21196	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-%	95% LCL	95% UCL	Method
04-6978-4115	2d Proportion Survived	25	>30	N/A	N/A	Linear Interpolation
		50	>30	N/A	N/A	
06-6589-5226	Reproduction	25	12.1875	5.44057	16.31369	Linear Interpolation
		50	19.96324	17.38095	21.76948	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
05-3858-4387	Reproduction	Control Response	23.4	15		Passes acceptability criteria
06-6589-5226			23.4	15		Passes acceptability criteria
05-3858-4387	Reproduction	MSDp	0.212	0.13	0.47	Passes acceptability criteria

2d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
15		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
30		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%

6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.9		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
7.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
15		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
30		10	0.20000	0.00000	1.00000	0.13333	0.42164	210.82

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	23.4000	20.0000	32.0000	1.08730	3.43835	14.69%
1.9		10	21.0000	10.0000	29.0000	1.90321	6.01849	28.66%
3.75		10	20.7000	14.0000	29.0000	1.43023	4.52278	21.85%
7.5		10	19.8000	9.00000	26.0000	1.86070	5.88407	29.72%
15		10	16.2000	9.00000	25.0000	1.45907	4.61399	28.48%
30		10	2.60000	0.00000	6.00000	0.65320	2.06559	79.45%

SCOEPA00027142

CETIS Report

2d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30		1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.9		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
3.75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
15		1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
30		0.00000	1.00000	0.00000	0.00000	0.00000	1.00000	0.00000	0.00000	0.00000	0.00000

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	32.00000	21.00000	20.00000	23.00000	23.00000	20.00000	25.00000	23.00000	23.00000	24.00000
1.9		26.00000	24.00000	17.00000	26.00000	10.00000	18.00000	29.00000	23.00000	14.00000	23.00000
3.75		25.00000	22.00000	16.00000	17.00000	21.00000	18.00000	22.00000	29.00000	23.00000	14.00000
7.5		20.00000	26.00000	10.00000	21.00000	26.00000	21.00000	9.00000	24.00000	20.00000	21.00000
15		25.00000	14.00000	18.00000	9.00000	18.00000	12.00000	19.00000	19.00000	16.00000	12.00000
30		3.00000	4.00000	0.00000	4.00000	3.00000	4.00000	0.00000	6.00000	2.00000	0.00000

SCOEPA00027143

CETIS Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	07-8293-4890	07-8293-4890	07 Jun-04 2:09 PM	CETISv1.024

Method	Alt H	Data Transform	NOEL	LOEL	Toxic Units	ChV	MSDp
Fisher's Exact	C > T	Untransformed	30	>30	3.33	N/A	

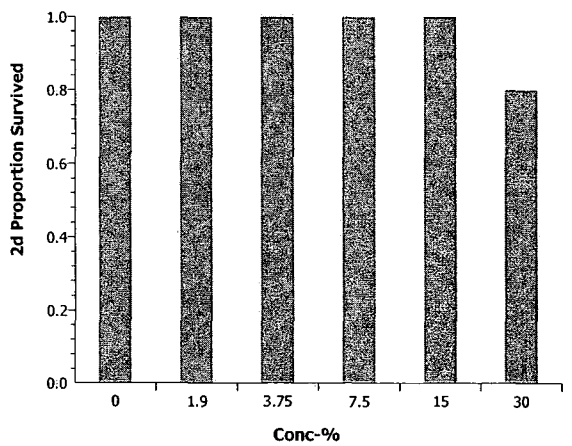
Group Comparisons

Control	vs	Conc-%	Statistic	Critical	Decision(0.05)
Dilution Water		1.9	1.00000	0.05000	Non-Significant Effect
		3.75	1.00000	0.05000	Non-Significant Effect
		7.5	1.00000	0.05000	Non-Significant Effect
		15	1.00000	0.05000	Non-Significant Effect
		30	0.23684	0.05000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		10	0	10
3.75		10	0	10
7.5		10	0	10
15		10	0	10
30		8	2	10

2d Proportion Survived



SCOEPA00027144

CETIS Report

Report Date: 07 Jun-04 2:09 PM
Analysis: 04-6978-4115

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Linear Interpolation	07-8293-4890	07-8293-4890	07 Jun-04 2:09 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

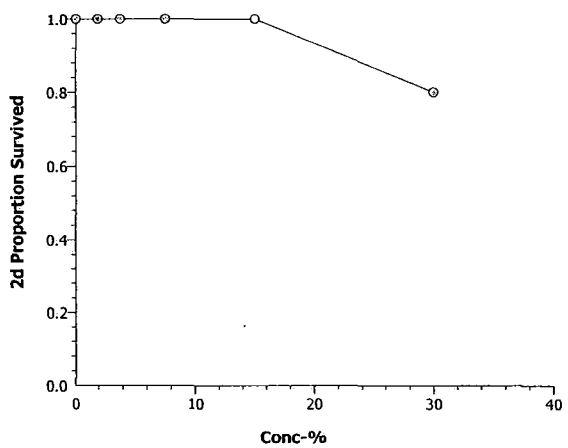
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	>30	N/A	N/A
50	>30	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.9		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
3.75		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
7.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
15		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
30		10	0.80000	0.00000	1.00000	0.08607	0.42164	8	10

2d Proportion Survived



SCOEPA00027145

CETIS Report

Report Date: 07 Jun-04 2:09 PM
Analysis: 03-5765-9103

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Comparison	07-8293-4890	07-8293-4890	07 Jun-04 2:09 PM	CETISv1.024

Method	Alt H	Data Transform	NOEL	LOEL	Toxic Units	ChV	MSDp
Fisher's Exact	C > T	Untransformed	15	30	6.67	21.21320	

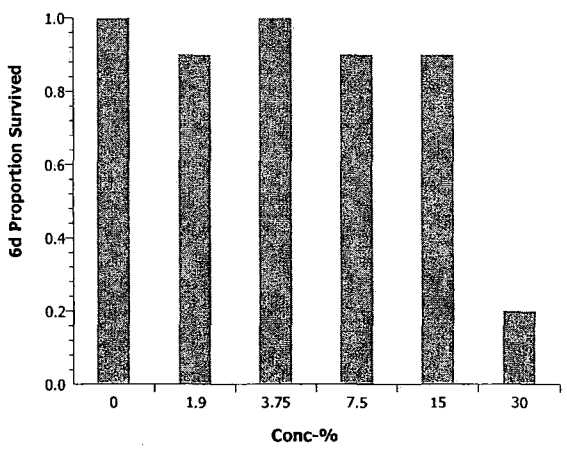
Group Comparisons

Control	vs	Conc-%	Statistic	Critical	Decision(0.05)
Dilution Water		1.9	0.50000	0.05000	Non-Significant Effect
		3.75	1.00000	0.05000	Non-Significant Effect
		7.5	0.50000	0.05000	Non-Significant Effect
		15	0.50000	0.05000	Non-Significant Effect
		30	0.00036	0.05000	Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
1.9		9	1	10
3.75		10	0	10
7.5		9	1	10
15		9	1	10
30		2	8	10

6d Proportion Survived



SCOEPA00027146

CETIS Report

Report Date: 07 Jun-04 2:09 PM
Analysis: 05-3858-4387

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	07-8293-4890	07-8293-4890	07 Jun-04 2:09 PM	CETISv1.024

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		7.5	15	13.33	10.60660	21.20%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.36218	13.27671	0.49914	Equal Variances
Distribution	Shapiro-Wilk W	0.96402	0.93000	0.22341	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	272.88	68.22	4	2.74	0.03999	Significant Effect
Error	1119.7	24.88222	45			
Total	1392.57996	93.102224	49			

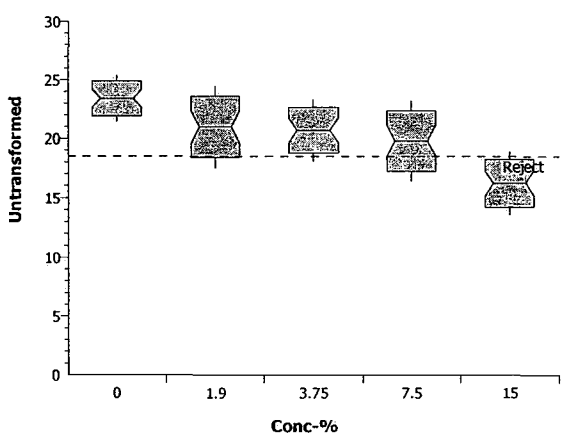
Group Comparisons

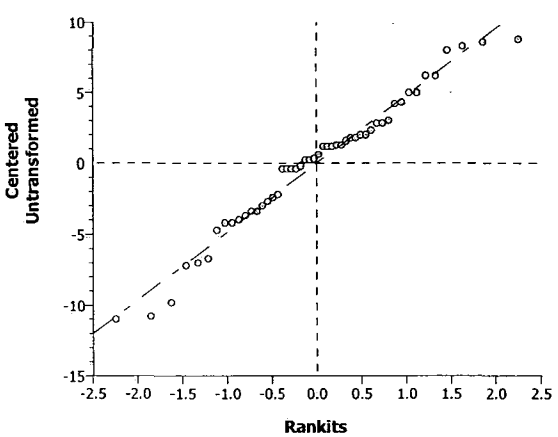
Control	vs	Conc-%	Statistic	Critical	P Level	MSD	Decision(0.05)
Dilution Water		1.9	1.07585	2.223333	>0.05	4.9598	Non-Significant Effect
		3.75	1.210331	2.223333	>0.05	4.9598	Non-Significant Effect
		7.5	1.613775	2.223333	>0.05	4.9598	Non-Significant Effect
		15	3.22755	2.223333	<=0.05	4.9598	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	23.4000	20.0000	32.0000	3.43835				
1.9		10	21.0000	10.0000	29.0000	6.01849				
3.75		10	20.7000	14.0000	29.0000	4.52278				
7.5		10	19.8000	9.00000	26.0000	5.88407				
15		10	16.2000	9.00000	25.0000	4.61399				

Reproduction





SCOEPA00027147

CETIS Report

Report Date: 07 Jun-04 2:09 PM
Analysis: 06-6589-5226

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	07-8293-4890	07-8293-4890	07 Jun-04 2:09 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

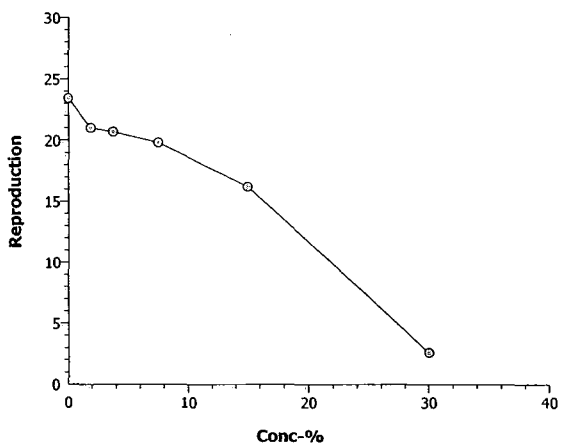
Point Estimates

% Effect	Conc-%	95% LCL	95% UCL
25	12.1875	5.44057	16.31369
50	19.96324	17.38095	21.76948

Data Summary

			Calculated Variate				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	23.40000	20.00000	32.00000	0.70185	3.43835
1.9		10	21.00000	10.00000	29.00000	1.22852	6.01849
3.75		10	20.70000	14.00000	29.00000	0.92321	4.52278
7.5		10	19.80000	9.00000	26.00000	1.20108	5.88407
15		10	16.20000	9.00000	25.00000	0.94183	4.61399
30		10	2.60000	0.00000	6.00000	0.42164	2.06559

Reproduction



SCOEPA00027148

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Reference Toxicant Test Data Summary

Client QA/QC – May Test Start Date 5-11-2004

Sample Description (18019-03) NaCl – 50 g/L STOCK Sample ID# ——

Ceriodaphnia Lot# Cd 1652 Statistician BM

Percent or (Concentration)	Total Young Per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	24	36	31	15	35	37	41	41	36	32	10	328
0.25 g/L	38	34	20	38	16 (AD)	15	26	22	24	21	9	254
0.5 g/L	17	15	17	16	17	17	16	18	17	0 (AD)	9	150
1.0 g/L	14	22	12	21	15	17	4	17	9	9	10	144
1.5 g/L	9	9	6	0 (AD)	0 (AD)	12	0 (AD)	4	5	17	7	62
2.0 g/L	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0	0
4.0 g/L	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0 (A)	0	0

Footnote: *Ceriodaphnia dubia* test should be terminated when 60% of the control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Endpoint	IC25	Cusum Chart Limits	
Survival	~~1.64~~ 1.39	~~0.70~~ 0.77	to ~~2.49~~ 2.17
Reproduction	0.27	0.10	to 1.01

Task Manager Doug Dimm

Project Manager

QA Officer

SCOEPA00027150

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client QA/QC - May Test Beginning: Date 5/11/04 Time 1045

Sample Description NaCl - 50 g/L STOCK 18019-03 Test Ending: Date 5/17/04 Time 1520

Ceriodaphnia Lot# cd 1652 Dilution Water Perrin MH ID# 2378

Technician Day 1 DW Day 2 XX Day 3 XX Day 4 CEH Day 5 CEH Day 6 MS Day 7 ____

Time Day 1 1300 Day 2 1100 Day 3 0830 Day 4 1730 Day 5 1215 Day 6 1500 Day 7 ____

Percent or Concentration	Day	Replicate A	B	C	D	E	F	G	H	I	J	No. Live Adults	Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	0	0	0	0	0	0	0	0	0	10	5
	4	4	5	8	7	4	8	7	7	6	6	10	62
	5	0	14	13	8	15	13	18	15	12	12	10	120
	6	15	17	10	0	16	16	16	19	18	14	10	141
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0 MS
	4	6	5	6	6	5	5	5	3	7	3	10	46 51
	5	13	11	14	14	11/AD	10	11	6	17	8	~~10~~ 9	115
	6	19	18	0	18	↓	0	10	13	0	10	9	88
	7					↓							
0.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	AD/0	9	0
	4	5	6	7	6	6	3	5	5	5	↓	9	48
	5	12	9	10	10	11	0	11	13	12	↓	9	88
	6	0	0	0	0	0	14	0	0	0	↓	9	14
	7										↓		
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	4	2	0	3	4	0	3	4	3	10	26
	5	7	9	6	10	5	4	4	8	5	6	10	64
	6	8	9	4	11	7	9	0	6	0	0	10	54
	7												
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0/AD	0	0	0	9	0
	3	0	0	0	0	0	0	↓	0	0	0	9	0
	4	3	2	2	AD	AD	3	↓	4	↓	3	7	18
	5	3	3	4	↓	↓	6	↓	0	4	6	7	20
	6	3	4	0	↓	↓	3	↓	0	0	8	7	14
	7				↓	↓		↓					
2.0 g/L	1	0/AD	0	0	0	0	0	0	0	0	0	9	0
	2	↓	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	~	~
	4	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	~	~
	5	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	~	~
	6	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	~	~
	7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	~	~
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2	~	~	~	~	~	~	~	~	~	~	~	~
	3	~	~	~	~	~	~	~	~	~	~	~	~

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client QA / QC - May | Initiated Date 5-11-04 Time 1045 | Adults Isolated Date 5-10-04 Time 1315

Sample Description NaCl Reagent Log # 18019-03 | Terminated Date 5-17-04 Time 1500 | Neo's Collected Date 5-10-04 Time 1500

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	RM	DW	RM	RM	CEM	CEM	MS	
Time	1045	1300	1140	0900	1740	1240	1500	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.0	7.9 / 8.1	8.0 / 8.0	8.0 / 8.0	8.0 / 8.3	8.0 / 8.3	7.6 / —	
0.25 g/L	8.0	7.9 / 8.1	7.9 / 8.0	8.2 / 8.1	8.2 / 8.3	8.2 / 8.3	7.4 / —	
0.50 g/L	8.0	7.9 / 8.1	7.9 / 8.0	8.3 / 8.3	8.1 / 8.3	8.3 / 8.3	7.4 / —	
1.0 g/L	8.1	7.9 / 8.1	7.9 / 8.1	8.3 / 8.3	8.0 / 8.4	8.1 / 8.3	7.4 / —	
1.5 g/L	8.1	7.9 / 8.1	8.0 / 8.1	/ 8.4	8.0 / 8.3	8.1 / 8.3	7.6 / —	
2.0 g/L	8.0	7.9 / 8.2	7.9 / -					
4.0 g/L	8.2	8.0 / -						

pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
7.3	7.8 / 7.6	7.7 / 7.6	7.6 / 7.5	7.9 / 8.0	7.6 / 7.7	7.7 / —	
7.6	7.9 / 7.5	7.8 / 7.6	7.9 / 7.5	7.9 / 7.7	7.7 / 7.6	7.9 / —	
7.6	8.0 / 7.6	7.8 / 7.9	7.9 / 7.6	8.1 / 7.6	7.8 / 7.5	8.0 / —	
7.6	8.0 / 7.6	7.9 / 7.8	7.9 / 7.6	8.1 / 7.6	7.8 / 7.5	7.9 / —	
7.7	8.1 / 7.6	8.1 / 7.6	7.9 / 7.6	8.1 / 7.6	7.9 / 7.5	8.0 / —	
7.7	8.1 / 7.6	8.1 / -						
7.7	8.0 / -							

Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
24.2 / 275	24.7 / 277	24.8 / 260	24.6 / 279	24.0 / 323	24.9 / 289	24.1 / —	
24.5 / 688	25.1 / 701	24.8 / 650	24.5 / 672	24.0 / 691	24.0 / 700	24.1 / —	
24.0 / 1123	24.9 / 1114	24.7 / 1018	24.8 / 1147	24.0 / 1128	24.0 / 1133	24.3 / —	
24.4 / 1907	24.7 / 1954	24.6 / 1960	24.6 / 1894	24.0 / 1821	24.9 / 1935	24.3 / —	
24.3 / 2750	24.8 / 2770	24.6 / 2760	24.5 / 2820	24.0 / 2800	24.9 / 2740	24.4 / —	
24.4 / 3530	25.1 / 3530	24.9 / -					
24.2 / 6500	24.8 / -	~~24.4~~					

COMMENTS:

CETIS Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test:	10-9984-8676	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6 Days 4 Hours
Start Date:	11 May-04 10:45 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	17 May-04 03:00 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	11 May-04 10:45 AM	**Brine:**	Not Applicable		

Sample:	01-8160-5042	**Material:**	Sodium chloride	**Client:**	
Sampled:	27 Apr-04	**Code:**	1B019-03	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	14 Days 10 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
13-1192-0698	6d Proportion Survived	25	1.392857	1.14474	1.58333	Linear Interpolation
		50	1.642857	1.39286	1.72222	
08-3070-5738	Reproduction	25	0.2692308	0.15127	0.35959	Linear Interpolation
		50	0.4663461	0.37302	1.06931	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
08-3070-5738	Reproduction	Control Response	32.8	15		Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		10	0.70000	0.00000	1.00000	0.15275	0.48305	69.01%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	32.8000	15.0000	41.0000	2.52894	7.99722	24.38%
0.25		10	25.4000	15.0000	38.0000	2.68825	8.50098	33.47%
0.5		10	15.0000	0.00000	18.0000	1.68655	5.33333	35.56%
1		10	14.4000	4.00000	22.0000	1.82696	5.77735	40.12%
1.5		10	6.20000	0.00000	17.0000	1.78761	5.65292	91.18%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

SCOEPA00027153

CETIS Report

6d Proportion Survived 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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.5		1.00000	1.00000	1.00000	0.00000	0.00000	1.00000	0.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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	24.00000	36.00000	31.00000	15.00000	35.00000	37.00000	41.00000	41.00000	36.00000	32.00000
0.25		38.00000	34.00000	20.00000	38.00000	16.00000	15.00000	26.00000	22.00000	24.00000	21.00000
0.5		17.00000	15.00000	17.00000	16.00000	17.00000	17.00000	16.00000	18.00000	17.00000	0.00000
1		18.00000	22.00000	12.00000	21.00000	15.00000	17.00000	4.00000	17.00000	9.00000	9.00000
1.5		9.00000	9.00000	6.00000	0.00000	0.00000	12.00000	0.00000	4.00000	5.00000	17.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

SCOEPA00027154

CETIS Report

Report Date: 17 May-04 4:59 PM
Analysis: 08-3070-5738

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	07-0295-1141	07-0295-1141	17 May-04 4:59 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

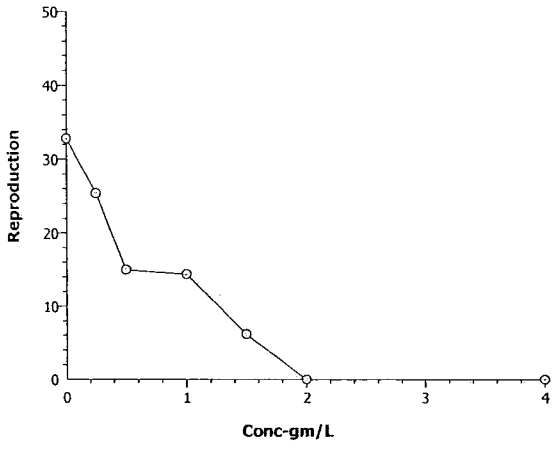
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.2692308	0.15127	0.35959
50	0.4663461	0.37302	1.06931

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	32.80000	15.00000	41.00000	1.63243	7.99722
0.25		10	25.40000	15.00000	38.00000	1.73526	8.50098
0.5		10	15.00000	0.00000	18.00000	1.08866	5.33333
1		10	14.40000	4.00000	22.00000	1.17930	5.77735
1.5		10	6.20000	0.00000	17.00000	1.15390	5.65292
2		10	0.00000	0.00000	0.00000	0.00000	0.00000
4		10	0.00000	0.00000	0.00000	0.00000	0.00000

Reproduction



SCOEPA00027155

CETIS Report

Report Date: 17 May-04 4:59 PM
Analysis: 13-1192-0698

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	07-0295-1141	07-0295-1141	17 May-04 4:59 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

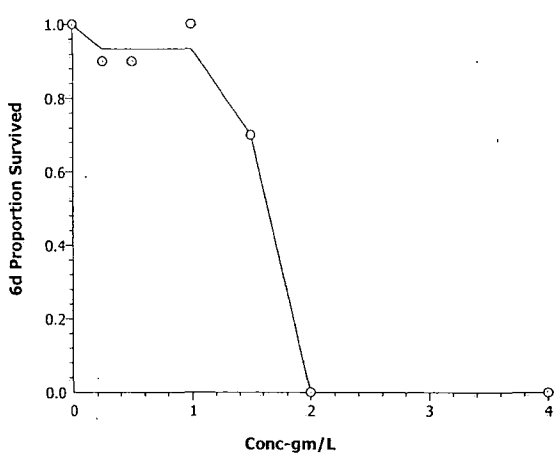
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.392857	1.14474	1.58333
50	1.642857	1.39286	1.72222

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		10	0.70000	0.00000	1.00000	0.09860	0.48305	7	10
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

6d Proportion Survived



SCOEPA00027156

CH2M HILL **FATHEAD MINNOW 7-DAY SURVIVAL AND WATER QUALITY DATA** FHM 148 from ABS

Client Ref Tox - June Date Initiated 5-28-04 Time 1625
Sample Description NaCl - 50 g/L 18020-06 Date Terminated 6-4-04 Time 1430

Technician: Day 0 CEH Day 1 CEH Day 2 SS Day 3 CEH Day 4 [illegible] Day 5 [illegible] Day 6 [illegible] Day 7 DW
Time Day 0 1625 Day 1 1400 Day 2 1455 Day 3 1420 Day 4 1130 Day 5 0930 Day 6 1120 Day 7 1430

Concentration or g/L Percent	Day	Number of Live Organisms				Dissolved O_2 (mg/l)		pH		Temperature (°C)	Specific Conductivity (µmhos/cm)
		A	B	C	D	Pre	Post	Pre	Post		
Control	0	10	10	10	10		7.9		8.0	24.4	274
	1	10	10	10	10	8.0	8.3	7.7	8.3	24.8	285
	2	10	10	10	10	7.6	8.3	7.4	8.2	25.1	291
	3	10	10	10	10	7.8	8.3	7.7	8.3	24.3	289
	4	10	10	10	10	7.8	8.3	7.8	8.10	24.5	282
	5	10	10	10	10	7.4	8.3	7.4	8.10	24.6	296
	6	9 10	10	10	10	7.4	8.3	7.8	8.1	24.3	291
	7	9	10	9	10	7.2		7.5		24.5	
0.3	0	10	10	10	10		7.9		8.0	24.5	805
	1	10	10	10	10	8.0	8.3	7.7	8.4	24.9	809
	2	10	10	10	10	7.6	8.3	7.9	8.2	25.1	797
	3	10	10	10	10	7.8	8.3	7.7	8.3	24.4	798
	4	10	10	10	10	7.8	8.3	7.7	8.0	24.5	793
	5	10	10	10	10	7.7	8.2	7.4	8.1	24.6	813
	6	10	10	10	10	7.7	8.2	7.7	7.9	24.3	845
	7	10	10	10	10	7.0		7.5		24.4	
1.0	0	10	10	10	10		7.9		8.0	24.6	1959
	1	10	10	10	10	7.9	8.3	7.8	8.0	25.2	1926
	2	10	10	10	10	7.6	8.3	7.6	8.2	25.1	1943
	3	10	10	10	10	7.8	8.3	7.7	8.2	24.5	1912
	4	10	10	10	10	7.7	8.3	7.7	7.9	24.3	1905
	5	10	10	10	10	7.9	8.2	7.7	7.7	24.3	2080
	6	10	10	10	10	7.9	8.2	7.7	7.7	24.3	2100
	7	10	10	10	10	6.8		7.4		24.3	
2.0	0	10	10	10	10		7.9		8.0	24.5	3620
	1	10	10	10	10	7.7	8.3	7.8	8.0	25.2	3490
	2	10	10	10	10	7.6	8.3	7.6	8.2	25.2	3120
	3	10	10	10	10	7.8	8.3	7.7	8.1	24.5	3490
	4	9	10	10	10	7.6	8.3	7.7	7.8	24.4	3580
	5	9	10	9	10	7.7	8.3	7.5	8.0	24.1	2740
	6	9	10 9	9	8	7.5	8.2	7.6	7.7	24.2	3540
	7	9	8	7	8	6.7		7.3		24.4	
4.0	0	10	10	10	10		7.9		8.0	24.3	6550
	1	10	10	10	10	7.6	8.3	7.7	8.3	24.9	6496
	2	10	10	10	10	7.6	8.3	7.6	8.2	25.2	6588
	3	10	10	10	10	7.8	8.3	7.7	8.1	24.5	6520
	4	9	9	9	10	7.6	8.4	7.5	7.7	24.4	6760
	5	9	8	8	10	7.7	8.4	7.4	7.9	24.1	7150
	6	9	8	8	10	7.6	8.3	7.5	7.7	24.0	6080
	7	7	7	6	7	6.5		7.3		24.3	
8.0	0	10	10	10	10		8.0		8.0	24.4	12 260
	1	0	7	9	10	7.5	8.3	7.7	8.3	24.9	12 290
	2		2	2	4	7.6	8.3	7.5	8.0	25.2	11790
	3		1	1	1	7.8	8.3	7.7	8.0	24.6	10930
	4		1	1	1	7.6	8.4	7.4	7.6	24.5	12 850
	5		1	1	1	7.5	8.4	7.3	7.8	24.2	12480
	6		81	0	1	7.5	8.1	7.4	7.7	24.0	11430
	7		1	1	0	6.1		7.3		24.2	

Endpoint	IC25	Cusum Chart Limits	
Survival	30	1.3 to 5.1	Task Manager
Growth	2.0	1.6 to 3.9	Project Manager
			QA Officer

FATHEAD MINNOW 7-DAY GROWTH DATA

Client: QA/QC | Species ID# FHM 1145

Lab ID: na | Start Date 5/19/2004

Sample Description: NaCl

Technician: CEH dw

Date: 06/05/2004 05/20/2004

Concentration or Percent	Replicate	Total Weight (mg)	Tare Weight (mg)	No. of Fish
Control	A	1172.86	1165.61	9
	B	1163.98	1156.20	10
	C	1135.40	1129.07	9
	D	1146.19	1138.21	10
0.3 g/L	A	1160.15	1152.45	10
	B	1182.88	1174.99	10
	C	1158.15	1150.11	10
	D	1153.59	1146.35	10
1.0 g/L	A	1157.09	1149.46	10
	B	1163.07	1155.40	10
	C	1160.71	1153.67	10
	D	1185.52	1178.70	10
2.0 g/L	A	1159.01	1152.34	9
	B	1185.63	1179.98	8
	C	1179.94	1175.44	7
	D	1149.00	1143.58	8
4.0 g/L	A	1151.98	1149.39	7
	B	1146.23	1143.03	7
	C	1141.85	1138.78	6
	D	1154.39	1151.50	7
8.0 g/L	A		1166.05	0
	B	1150.18	1149.89	1
	C		1133.55	0
	D		1173.82	0

weigh to 0.01 mg

SCOEPA00027158

CETIS Report

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Test:	09-1971-9514	**Test Type:**	Growth-Survival (7d)	**Duration:**	6 Days 22 Hours
Start Date:	28 May-04 04:25 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Pimephales promelas
End Date:	04 Jun-04 02:30 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatox, AR
Setup Date:	28 May-04 04:25 PM	**Brine:**	Not Applicable		

Sample:	05-5119-4082	**Material:**	Sodium chloride	**Client:**	
Sampled:	19 May-04	**Code:**	1B020-06	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	9 Days 16 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
03-5105-0032	7d Proportion Survived	25	3	1.36000	3.80000	Linear Interpolation
		50	5.128205	4.74530	5.37740	
16-2202-7345	Mean Dry Biomass-mg	25	1.951051	1.35419	2.63525	Linear Interpolation
		50	3.370334	2.75948	3.73403	

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
03-5105-0032	7d Proportion Survived	Control Response	0.95	0.8		Passes acceptability criteria
16-2202-7345	Mean Dry Biomass-mg		0.7335	0.25		Passes acceptability criteria

7d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		4	0.80000	0.70000	0.90000	0.04082	0.08165	10.21%
4		4	0.67500	0.60000	0.70000	0.02500	0.05000	7.41%
8		4	0.02500	0.00000	0.10000	0.02500	0.05000	200.00

Mean Dry Biomass-mg Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	4	0.73350	0.63301	0.79800	0.03687	0.07374	10.05%
0.3		4	0.77175	0.72400	0.80400	0.01737	0.03474	4.50%
1		4	0.72900	0.68201	0.76699	0.02128	0.04256	5.84%
2		4	0.55600	0.45000	0.66700	0.04457	0.08913	16.03%
4		4	0.29375	0.25900	0.32000	0.01321	0.02642	9.00%
8		4	0.02900	0.02900	0.02900			

7d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.90000	1.00000	0.90000	1.00000
0.3		1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
2		0.90000	0.80000	0.70000	0.80000
4		0.70000	0.70000	0.60000	0.70000
8		0.00000	0.10000	0.00000	0.00000

Mean Dry Biomass-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.72500	0.77800	0.63301	0.79800
0.3		0.77001	0.78900	0.80400	0.72400
1		0.76300	0.76699	0.70399	0.68201
2		0.66700	0.56500	0.45000	0.54200
4		0.25900	0.32000	0.30699	0.28900
8			0.02900		

SCOEPA00027159

CETIS Report

Report Date: 07 Jun-04 9:20 AM
Analysis: 03-5105-0032

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Linear Interpolation	11-0174-7278	11-0174-7278	07 Jun-04 9:20 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	140176	200	Yes	Two-Point Interpolation

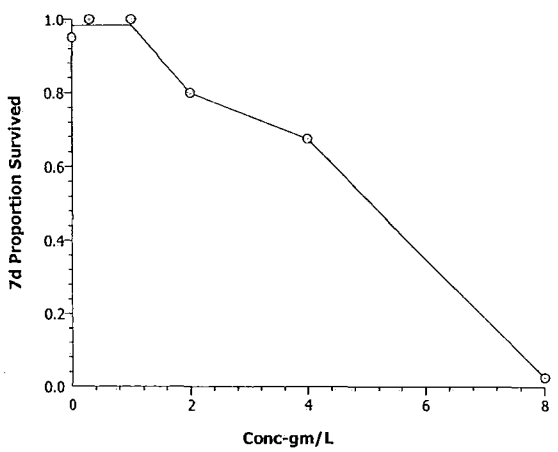
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	3	1.36000	3.80000
50	5.128205	4.74530	5.37740

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
0.3		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
2		4	0.80000	0.70000	0.90000	0.01667	0.08165	32	40
4		4	0.67500	0.60000	0.70000	0.01021	0.05000	27	40
8		4	0.02500	0.00000	0.10000	0.01021	0.05000	1	40

7d Proportion Survived



SCOEPA00027160

CETIS Report

Report Date: 07 Jun-04 9:20 AM
Analysis: 16-2202-7345

Fathead Minnow 7-d Larval Survival and Growth Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	11-0174-7278	11-0174-7278	07 Jun-04 9:20 AM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	140176	200	Yes	Two-Point Interpolation

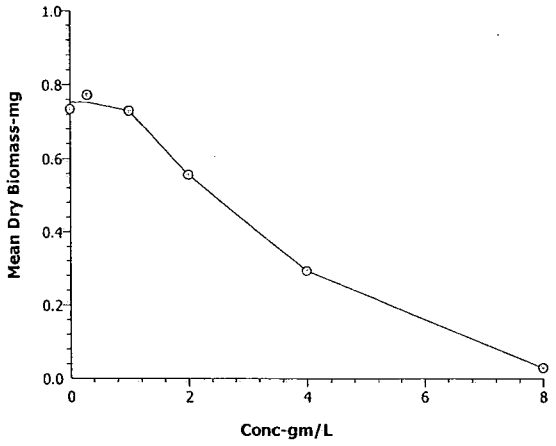
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.951051	1.35419	2.63525
50	3.370334	2.75948	3.73403

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	4	0.73350	0.63301	0.79800	0.01505	0.07374
0.3		4	0.77175	0.72400	0.80400	0.00709	0.03474
1		4	0.72900	0.68201	0.76699	0.00869	0.04256
2		4	0.55600	0.45000	0.66700	0.01819	0.08913
4		4	0.29375	0.25900	0.32000	0.00539	0.02642
8		1	0.02900	0.02900	0.02900		

Mean Dry Biomass-mg



SCOEPA00027161

REFERENCE TOXICANT DATA SHEET

Client: QA/QC
Test Organism: Ceriodaphnia dubia
Source: In house
ID#: Cd 16051
Age: < 24 hrs.
Size: –
Loading: –

Reference Toxicant: NaCl
Solvent: deionized H2O
Stock Solution: 20 g/L
Reagent Log ID #: 1B019-01
*Dilution Water: Recon MH (FHM)
ID#: 2378
Total Hardness as CaCO3: 94
Total Alkalinity as CaCO3: 68
(Conductivity (µmhos/cm)) / Salinity (ppt): 281
Temperature: 20 ± 1 °C

Test Begin: Date 5/11/04 Time 0900
Test End: Date 5/13/04 Time 1030

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	DD	DW	DD		
Time	0900	1430	1030		

Toxicant Concen. g/L	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen mg/l 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond. 0
control	A	5	5	5			8.2	–	8.2			7.6	–	7.7			20.3	19.3	20.6			271
	B	5	5	5																		
0.5	A	5	5	5			8.3	–	8.4			7.8	–	7.7			20.2	19.6	20.3			1105
	B	5	5	5																		
1.0	A	5	5	5			8.4	–	8.4			7.8	–	7.8			20.1	19.5	20.2			1945
	B	5	5	5																		
1.5	A	5	5	5			8.4	–	8.5			7.9	–	7.8			20.1	19.3	20.2			2660
	B	5	5	5																		
2.0	A	5	5	4			8.5	–	8.6			7.9	–	7.8			20.1	19.4	20.2			3520
	B	5	5	4																		
3.0	A	5	0	–			8.4	8.7	–			7.9	7.9	–			20.0	19.2	–			5040
	B	5	0	–																		
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT (12°C): >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
S - soft
MH - moderately hard
H - hard
Art. Sea - Artificial Sea Water

48 h LC50: 2.3
Cusum Chart Limits: 1.5 2.0 to 2.6
Statistical Method: Spearman-Kaber

We verify this data is true and correct.
Task Manager: Daniel W. Oldham
Project Manager: Doug Dixon
QA Officer:

SCOEPA00027162

CETIS Report

Report Date: 13 May-04 4:49 PM
Analysis: 10-9885-9009

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	02-5645-2687	02-5645-2687	13 May-04 4:49 PM	CETISv1.024

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	0.3589726	0.01903881

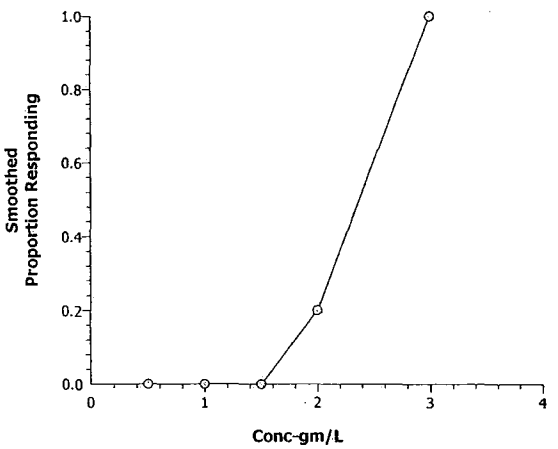
Point Estimates

EC50/LC50	95% LCL	95% UCL
2.28545	2.09361	2.49488

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
2		2	0.80000	0.80000	0.80000	0.00005	0.00023	8	10
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

48h Proportion Survived



SCOEPA00027163

CETIS Report

Ceriodaphnia 48-h Acute Survival Test — **CH2M Hill**

Test:	03-8665-8615	**Test Type:**	Survival (48h)	**Duration:**	50 Hours
Start Date:	11 May-04 09:00 AM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Ceriodaphnia dubia
End Date:	13 May-04 10:30 AM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	In-House Culture
Setup Date:	11 May-04 09:00 AM	**Brine:**	Not Applicable		

Sample:	03-6720-1329	**Material:**	Sodium chloride	**Client:**	
Sampled:	06 Apr-04	**Code:**	1B019-01	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	35 Days 9 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
10-9885-9009	48h Proportion Survived	50	2.285455	2.09361	2.49488	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Lower Limit	Upper Limit	Decision
10-9885-9009	48h Proportion Survived	Control Response	1	0.9		Passes acceptability criteria

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1.5		2	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
2		2	0.80000	0.80000	0.80000	0.00000	0.00000	0.00%
3		2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2
0	Dilution Water	1.00000	1.00000
0.5		1.00000	1.00000
1		1.00000	1.00000
1.5		1.00000	1.00000
2		0.80000	0.80000
3		0.00000	0.00000

SCOEPA00027164

REFERENCE TOXICANT DATA SHEET

Client: QA/QC
Test Organism: *Pimephales promelas*
Source: ~~Aquatox Inc.~~ AJS
ID#: FHM 1147
Age: < 48 hrs
Size: na
Loading: na

Reference Toxicant: Sodium chloride
Solvent: distilled water Stock Solution: 20 g/L
Reagent Log ID #: 18019-01
*Dilution Water: Recon MH (FAW) ID#: 2383
Total Hardness as CaCO3: 96 Total Alkalinity as CaCO3: 66
Conductivity (µmhos/cm) / Salinity (ppt): 230 Temperature: 20 ± 1 °C

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	MS	DM	CEH		
Time	1600	1645	1510		

Test Begin: Date 5-27-04 Time 1600
Test End: Date 5-29-04 Time 1510

Toxicant Concen. (g/L)	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen (mg/l) 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Conc 0
Control		10	10	10			8.5	8.3	9.0			7.8	7.9	8.0			20.1	20.0	19.9			280
4		10	10	10			8.5	8.2	9.0			7.8	7.9	8.0			20.1	20.0	20.0			6130
6		10	10	10			8.4	8.3	9.0			7.7	7.8	9.0			20.1	20.0	20.0			9180
8		10	9	0			8.5	8.3	9.0			7.7	7.7	7.9			20.1	20.0	20.0			1206
10		10	1	0			8.5	8.3	9.0			7.7	7.6	7.8			20.1	20.0	20.0			1771
12		10	0	—			8.5	8.2	-			7.6	7.6	-			20.1	20.0	-			1794
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT: >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
VS - very soft
S - soft
MH - moderately hard
H - hard
VH - very hard

48 hr LC50: 7.0
Cusum Chart Limits: 6.3 to 8.1
Statistical Method: Linear Interpolation

We verify this data is true and correct.
Task Manager
Project Manager
QA Officer

CETIS Report

Fathead Minnow 96-h Acute Survival Test — **CH2M Hill**

Test:	07-6485-5731	**Test Type:**	Survival (48h)	**Duration:**	N/A
Start Date:	27 May-04 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
End Date:	09 May-04 03:10 PM	**Dil Water:**	Mod-Hard Synthetic Water	**Source:**	Aquatic Biosystems, CO
Setup Date:	27 May-04 04:00 PM	**Brine:**	Not Applicable		

Sample:	03-6720-1329	**Material:**	Sodium chloride	**Client:**	
Sampled:	06 Apr-04	**Code:**	1B019-01	**Project:**	
Received:		**Source:**	Reference Toxicant		
Hold Time:	51 Days 16 Hours	**Station:**			

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
04-0993-2071	48h Proportion Survived	25	6.5	N/A	N/A	Linear Interpolation
		50	7	N/A	N/A	

48h Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
4		1	1.00000	1.00000	1.00000			
6		1	1.00000	1.00000	1.00000			
8		1	0.00000	0.00000	0.00000			0.00%
10		1	0.00000	0.00000	0.00000			0.00%
12		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1
0	Dilution Water	1.00000
4		1.00000
6		1.00000
8		0.00000
10		0.00000
12		0.00000

SCOEPA00027166

CETIS Report

Report Date: 07 Jun-04 1:05 PM
Analysis: 04-0993-2071

Fathead Minnow 96-h Acute Survival Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	08-8895-7961	08-8895-7961	07 Jun-04 1:04 PM	CETISv1.024

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	1	Yes	Two-Point Interpolation

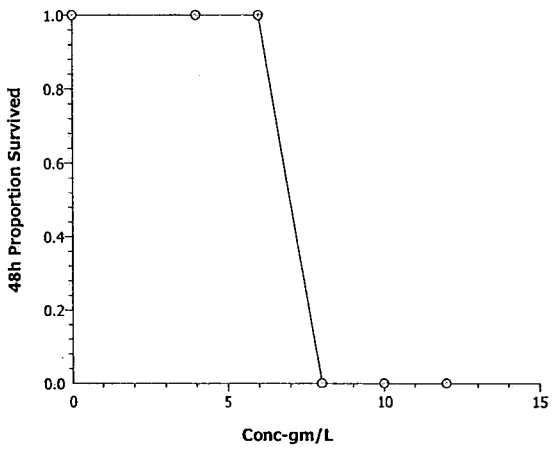
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	6.5	N/A	N/A
50	7	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
4		1	1.00000	1.00000	1.00000			10	10
6		1	1.00000	1.00000	1.00000			10	10
8		1	0.00000	0.00000	0.00000			0	10
10		1	0.00000	0.00000	0.00000			0	10
12		1	0.00000	0.00000	0.00000			0	10

48h Proportion Survived



SCOEPA00027167

APPENDIX C
CHAIN OF CUSTODY

CH2M ...L CHAIN OF CUSTODY RECORD FOR NPDES CO... IANCE BIOMONITORING

Client Siltronic Corporation

Address 7200 N.W. Front Avenue
Portland, Oregon 97210

Contact Person: Thomas J. Rothschild

Phone: 503-279-7374

CH2M HILL Project # _____

NPDES# _____

Composite Sample Information _____

Samples/Hour 1 Volume/Sample ~6L

Total Hours 24 Total Volume ~144L

Initiated: Date 26 May Time 0800

Ended: Date 27 May Time 0800

Chilled During Collection Yes ☐ No ☒

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.# _____

Check Chlorine (Y/N) _____

Temp. Upon Arrival (°C) _____

Check Ammonia (Y/N) _____ Dechlorinate (Y/N) _____

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
04-56	27 May 2004	0800	X			B12878-01	X	X	X	X														see below for dilutions.

Sampled By & Title (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 27 May 2004 / 0800	Relinquished By (Please sign and print name) Thomas J. Rothschild Thomas J. Rothschild	Date/Time 27 May 2004 / 0830
Received By (Please sign and print name) T. Pilling	Date/Time 27 MAY 04 / 8:37	Relinquished By (Please sign and print name) Paul Conroy CONROY	Date/Time 5-27-04 10:45A.
Received By (Please sign and print name) Linda D Rice	Date/Time 5/27/04 10:45	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks Purchase Order #4500274418 Dilutions: 30%, 15%, 7.5%, 3.75%, 1.9%.		

Rev 10/97

SCOEPA00027169

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Dr. Elliot Zais, DEQ, State of OR, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987 (CLAXTON)

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dr. Elliot Zais
Water Quality Source Control, DEQ
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X DEQ/NWR ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

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If YES, enter delivery address below: ☐ No

SEP 11 2003

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Jim Claxton
Wacker Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland, Oregon 97210-3676

WACKER SILTRONIC

JIM CLAXTON
ENVIRONMENTAL ENGINEER

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland OR 97210-3676
Tel. 503 219 7313
Fax 503 219 7599
jim.claxton@wacker.com

Wacker Siltronic Corporation
7200 NW Front Avenue, Portland OR 97210-3676, USA

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

ER040:JC

August 27, 2003

Bioassay Results for 2003

Dear Dr. Zais:

The Bioassay of Wacker's effluent for 2003 **passes the requirements** of our NPDES permit, number 101128.

CH2MHill results for August 2003

Acute (48-hour) Results:	Survival (% Effluent)	
	Ceriodaphnia dubia	Pimephales promelas
NOEC	30%	30%
ZID Pass Criteria[1]	≥13.4%	≥13.4%

Chronic Results:	Survival (% Effluent)	
	Ceriodaphnia dubia	Pimephales promelas
NOEC	7.5%	30%
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%

If you have any questions, please contact Jim Claxton at 503-219-7313.

Regards,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

cc: Tom Rothschild
NPDES DMR File

[1] CH2MHILL. Mixing Zone Effluent Dilution Evaluations prepared for Wacker Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Wacker's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The mixing zone dilution studies identified worst-case (0.1 feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$) respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. Conversely, the effluent is considered to be in compliance for toxicity if the acute test NOEC $\geq$ 13.4% effluent and the chronic test NOEC $\geq$ 1.8% effluent.