

**City of Morro Bay and
Cayucos Sanitary District**

**OFFSHORE MONITORING
AND REPORTING PROGRAM**

SEMIANNUAL EFFLUENT SAMPLING

**CHEMICAL AND BIOASSAY
ANALYSIS RESULTS**

JANUARY 2007



Marine Research Specialists

**3140 Telegraph Rd., Suite A
Ventura, California 93003**

Report to

**City of Morro Bay and
Cayucos Sanitary District**

**955 Shasta Avenue
Morro Bay, California 93442
(805) 772-6272**

**MONITORING
AND
REPORTING PROGRAM**

SEMI-ANNUAL EFFLUENT REPORT

**CHEMICAL AND BIOASSAY
ANALYSIS RESULTS**

JANUARY 2007

Prepared by

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Marine Research Specialists

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February 2007

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

Mr. Bruce Ambo
City of Morro Bay

Date _____

marine research specialists

3140 Telegraph Road, Suite A · Ventura, CA 93003 · (805) 644-1180

Mr. Bruce Keogh
Wastewater Division Manager
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

12 February 2007

Reference: Chemical and Bioassay Analysis Results for Effluent Samples Collected in January 2007

Dear Mr. Keogh:

Enclosed are the results of chemical analyses conducted on grab and composite effluent samples collected on 10 January 2007, a chronic bioassay on one composite effluent sample collected on 22 January 2007, and an acute bioassay conducted on four effluent samples collected daily from 15 January through 18 January 2007. All analyses were conducted in accordance with the requirements of Monitoring and Reporting Program Number 98-15¹ to assess compliance with effluent limitations specified in the Waste Discharge Requirements of the NPDES Discharge Permit.² Bioassay protocols conformed to the revised requirements specified by RWQCB³ staff that eliminated techniques previously used to mitigate interference from ammonia toxicity.⁴ All of the measured chemical concentrations and toxicity endpoints complied with the limitations promulgated by the current discharge permit. This includes acute-toxicity limitations that are no longer promulgated by the current version of the California Ocean Plan⁵ because they were determined to be unnecessarily stringent. This cover letter summarizes the bioassay results and discusses the chemical compounds that were detected in the effluent samples. The full laboratory results as well as the pertinent QA/QC data and chains of custody are included as attachments.

Chronic Bioassay

As summarized in Table 1, the chronic bioassay tests demonstrated that effluent toxicity was an order of magnitude lower than the limitations specified in the NPDES permit. Results were comparable to the low toxicities determined in tests conducted for more than a decade. Chronic bioassays provide a far more sensitive and accurate measure of toxic effects to marine organisms than do acute toxicity tests, which are plagued with interference from ammonia, as is described below. As with past bioassays, the chronic toxicity tests conducted in January 2007 measured spore germination and growth response in giant kelp (*Macrocystis pyrifera*) after exposure to a range of effluent dilutions. Toxic screening studies conducted in 1993⁶

¹ Monitoring and Reporting Program No. 98-15 for City of Morro Bay and Cayucos Sanitary District Wastewater Treatment Plant, San Luis Obispo County promulgated by the State of California Regional Water Quality Control Board Central Coast Region and the United States Environmental Protection Agency Region IX, San Francisco California. 11 December 1998

² State of California Regional Water Quality Control Board Central Coast Region Waste Discharge Requirements Order No. 98-15 and United States Environmental Protection Agency Region IX, San Francisco California National Pollutant Discharge Elimination System Permit No. CA0047881 for City of Morro Bay and Cayucos Sanitary District Wastewater Treatment Plant, San Luis Obispo County

³ California Regional Water Quality Control Board, Central Coast Division

⁴ Letter from Roger W. Briggs, Executive Officer of the RWQCB to Mr. Bruce Keogh, City of Morro Bay WWTP, dated 14 March 2003: 2002 Annual Offshore monitoring Report, City of Morro Bay and Cayucos Sanitary District Wastewater Treatment Plant, San Luis Obispo County

⁵ State Water Resources Control Board (SWRCB). 2001. Water quality control plan, ocean waters of California, California Ocean Plan. California Environmental Protection Agency. Effective December 3, 2001

⁶ Table 2-4, Page 2-7 of the MBCSD 1993 Annual Monitoring. Report to the City of Morro Bay and Cayucos Sanitary District. Prepared by Marine Research Specialists, 1994

Table 1. Comparison of Measured Toxicity Levels with Permit Limitations

Bioassay Test	End Point (%)	Toxicity Concentration (TU)	Permit Limitations (TU)		
			30-day Average	7-day Average	Instantaneous Maximum
Chronic: Giant Kelp (<i>Macrocystis pyrifera</i>) Chronic Germination	18 ⁸	5.6			134
Chronic Growth	18 ⁸	5.6			134
Acute: Fathead Minnow (<i>Pimephales promelas</i>)	70.7 ⁹	1.41	1.5	2.0	2.5

established that giant kelp (*M. pyrifera*) is substantially more sensitive to MBCSD⁷ effluent than other species, such as the larvae of the inland silverside (*Menidia beryllina*) and bay mussel (*Mytilus edulis*).

The chronic bioassay results presented in Table 1 demonstrate the effluent's continuing low toxicity to this most-sensitive marine species. Both chronic-toxicity concentrations (5.6 TUC) were more than 20 times lower than the applicable permit limitation (134 TUC). The reported chronic toxic units (TUC) were based on a 'No Observable Effects Concentration' (NOEC), which is the highest effluent concentration that does not cause an adverse effect statistically different from a control sample. Chronic bioassays did not reveal adverse effects in marine organisms with effluent concentrations at or below 18%, while the permit allows adverse effects in concentrations as low as 0.75%.

As part of quality control, chronic bioassays were also conducted using a reference toxic chemical (copper chloride) to determine the sensitivity of this particular set of giant kelp spores (*M. pyrifera*) to toxins. Results demonstrated that the kelp specimens were susceptible to toxic exposure because they experienced a significant reduction in germination and growth in concentrations as low as 56 µg/L of the reference toxicant. The concomitant NOEC for the reference toxicant, at 32 µg/L, was comparable to toxic concentrations found in reference tests conducted over the last several years.¹⁰ This suggests that the susceptibility of this particular batch of kelp spores to toxic materials was comparable to previous batches. Nevertheless, they were only minimally affected by exposure to treatment-plant effluent.

Acute Bioassay

In contrast to the chronic toxicity test, the results of the acute bioassay were confounded by toxic interference caused by the presence of ammonia in the test sample. Current bioassay protocols¹¹ limit the use of techniques that, in the past, have been widely used to reduce the confounding influence of ammonia during acute bioassay tests. The acute bioassay test examined the mortality of the Fathead Minnow (*Pimephales promelas*) exposed to various concentrations of effluent. Historically, Fathead Minnow tests have reliably evaluated a broad range of freshwater, marine, and effluent samples. However, they are problematic when test samples contain ammonia, a constituent that is naturally elevated in sewage-derived wastewater. Under ambient ocean conditions, ammonia is not particularly toxic to marine organisms. This is reflected by the strikingly high limit for ammonia concentrations that is specified in the NPDES discharge

⁷ City of Morro Bay and the Cayucos Sanitary District, joint owners of the wastewater treatment and disposal facility

⁸ NOEC or the No Observed Effects Concentration, which is the highest concentration of effluent that did not produce an adverse effect statistically different from the control experiment

⁹ LC₅₀ or the effluent concentration that produces death of 50% of the test organisms exposed to the toxicants for 96 hours

¹⁰ cf. The Giant Kelp Germ Tube Growth Laboratory Control Chart attached to this report

¹¹ Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, Fifth Edition. October 2002. U.S. Environmental Protection Agency, Office of Water (4303T), 1200 Pennsylvania Avenue, NW Washington, DC 20460. EPA-821-R-02-012

permit (804 mg/L)¹² as compared to typical effluent ammonia concentrations (≤ 33 mg/L).¹³ This is because ammonia remains in a relatively benign, ionic ammonium¹⁴ form in seawater and wastewater. However, in an acute bioassay, effluent remains static in the test chambers for an extended period of time, during which complex interactions among the organic constituents cause pH to increase. As pH increases, ammonium is converted into a deionized ammonia form¹⁵ that is highly toxic to the test organisms. In contrast to the static conditions in the test chambers, the pH of the marine receiving waters is stabilized by the highly buffered oceanic carbonate system. Thus, the acute bioassay tests are not representative of the alkalinity conditions in the ocean environment and, as a result, the tests report artificially elevated toxic concentrations.

Various methods have been developed over the years to reduce the well-recognized artifactual toxicity that results from changes in wastewater ammonia during bioassay tests.¹⁶ Ammonia interference in the acute bioassays conducted on MBCSD effluent samples has previously been successfully reduced through the use of zeolite pretreatment. As a result, in the 21 acute tests conducted since 1997, and prior to April 2003, the highest measured acute toxicity was 0.59 TUa. This practice was discontinued in April 2003 when the RWQCB staff specified the use of new EPA protocols in their comments on the 2002 Annual Monitoring Report for the MBSCD Wastewater Discharge.¹⁷ Among other changes, the new protocols use much younger, smaller test specimens, and encourage the use of sample-renewal techniques to reduce moderate levels of ammonia interference, rather than chemical techniques. Based on this, the RWQCB staff further required that the acute toxicity tests no longer implement any form of chemical sample manipulation to reduce toxic ammonia interference.

Unfortunately, renewal methods, in which test chambers are periodically refreshed with new sample solutions, are significantly more complex and costly to implement than previous bioassay procedures. More importantly, they fall far short of eliminating significant artifactual toxicity arising from ammonia deionization. As a result, the acute toxicity reported here is conspicuously elevated compared to past tests, although it remained below the permitted limit. The apparent increase is not attributable to an actual change in the characteristic toxicity of the effluent itself. Instead, it is an artifact of changes in the protocols used to assess acute toxicity. This is obvious because there has been no commensurate increase in the accompanying chronic-toxicity measurements.

Because static renewal is only marginally effective in accommodating pH-induced ammonia interference, extraordinary measures were instituted in an attempt to reduce impacts from ammonia toxicity to the maximum extent possible. For example, the current bioassay protocols were implemented using daily grab effluent samples that were hand delivered to the testing facility in Ventura, California, shortly after collection at the MBCSD treatment plant. Extra care was also taken to remove all headspace in sample containers and to maintain a uniform sample temperature during transit to the bioassay laboratory. Finally, care was also taken during renewal in the laboratory to avoid physical impact to the extremely small larval-fish specimens.

Despite these extraordinary measures, the presence of ammonia toxicity was unmistakable during the tests. The artificially elevated acute toxicity that is reported in Table 1 is a direct result of this test-related toxicity. The test results incorrectly imply that the effluent acute toxicity was only 0.09 TUa below the permitted

¹² Instantaneous maximum ammonia concentration specified in the NPDES waste-discharge requirements for the MBCSD effluent

¹³ Marine Research Specialists (MRS). 2006. City of Morro Bay and Cayucos Sanitary District, Offshore Monitoring and Reporting Program, 2005 Annual Report. Submitted February 2006 to the City of Morro Bay and Cayucos Sanitary District, Morro Bay, CA

¹⁴ NH_4^+

¹⁵ NH_3

¹⁶ Mercer, B.W., Ames, L.L., Touhill, C.J., Slyke, W.J., Dean, R.B. 1970. Ammonia removal from secondary effluents by selective ion exchange. *Journal of the Water Pollution Control Federation* 42 (2,Part 2), R95–R107.

¹⁷ RWQCB. 2003 (Footnote 4) *op. cit.*

limit, or 94% of the permitted toxicity. In reality, the effluent discharge does not result in pH-induced ammonia toxicity, DO depletion, or physical stress on marine organisms upon discharge into receiving waters. Consequently, the reported results do not accurately reflect the toxicity that is experienced by marine organisms exposed to MBCSD effluent. Instead, ancillary measurements collected during the tests demonstrate that all of these confounding influences were present, and that they caused elevated measured toxicities that were close to the NPDES discharge permit limit.

The impact of unmitigated ammonia interference on the acute bioassay is evident in the water quality measurements reported in the attached raw test data. The increase in the toxic deionized form of ammonia can be computed from the changes in pH measured in the test chambers. Prior to renewal on the first day of the test (January 16), pH increased from 7.5 to 8.0 in the test chamber containing 100% effluent. This, along with a precipitous drop in DO,¹⁸ caused toxic deionized ammonia concentrations to more than double from 0.6 mg/l to 1.6 mg/l, and resulted in the mortality of all of the test specimens in the two test chambers containing 100% effluent on the first day of the test. In test chambers with lower effluent concentrations, daily static renewal was also only partially successful at ameliorating pH fluctuations. However, because the effluent was diluted, the concentrations of deionized ammonia were proportionally smaller, and despite the observed increases in pH, all the test organisms survived in the other test chambers. Nevertheless, the impacts apparent in the test chambers containing 100% effluent demonstrate that artifactual ammonia toxicity was not sufficiently accommodated by static renewal methods.

As part of the quality control procedures, acute bioassay tests were also conducted using a reference toxic chemical¹⁹ in order to determine the relative sensitivity of the test organisms. Results demonstrated that the batch of Fathead Minnows (*P. promelas*) used in the January 2007 bioassay were highly susceptible to toxic exposure. They experienced 100% mortality in concentrations as low as 8 mg/L of the reference toxicant.²⁰ The concomitant LC₅₀ for the reference toxicant was 5.3 mg/L, which was comparable to the average toxicant concentrations found in reference tests conducted in previous years.

The foregoing discussion demonstrates that the apparent increase in acute toxicity, which was first measured in April 2003, and has continued into January 2007, is an artifact of the change in protocols rather than a true increase in marine toxicity. Additionally, chronic bioassays conducted over the past decade, including the one reported here, demonstrate that the MBCSD effluent has had a consistently low toxicity to marine organisms. Chronic bioassays are far more accurate and sensitive than the acute bioassays, particularly because the current acute bioassay protocols are confounded by interference from toxic ammonia artifacts.

Quantifiable Chemical Constituents

The nontoxic character of the MBCSD effluent was confirmed by the general absence of chemical contaminants within the grab and composite samples collected on 10 January 2007. The samples were tested for the presence of 145 chemical compounds. Table 2 shows that only six compounds were detected in quantifiable amounts in the January-2007 effluent samples. These compounds were ammonia, copper, lead, zinc, chloroform, and a commonly occurring phthalate compound (bis 2-ethylhexyl phthalate). Table 2 also shows that the concentrations measured for these six compounds were all well below the discharge limitations promulgated by the NPDES permit. The permit limits were derived from the receiving-water objectives stated in Table B of the California Ocean Plan,²¹ and a critical initial dilution ratio of 133:1

¹⁸ DO concentrations in the test chamber with 100% effluent dropped from 9.1 mg/L to 4.6 mg/L on the first day of the test

¹⁹ Sodium dodecyl sulfate

²⁰ cf. The Larval Fathead Minnow Juvenile Acute Laboratory Control Chart attached to this report

²¹ State Water Resources Control Board (SWRCB). 1997. California Ocean Plan, Water Quality Control Plan Ocean Waters of California. State Water Resources Control Board, California Environmental Protection Agency. Effective July 23, 1997.

Table 2. Comparison of Effluent Chemical Concentrations with NPDES Permit Limitations

Constituent	Concentration		
	Units	Measured	Limitation ²⁴
Copper	µg/L	16	140.
Lead	µg/L	2.2	270.
Zinc	µg/L	56	1,620.
Bis (2-ethylhexyl) phthalate	µg/L	11	470. ²⁵
Chloroform	µg/L	0.86	17,400. ²⁵
Ammonia (as N)	mg/L	20.	80.4

computed from a conservative oceanic dispersion model applied to the MBCSD outfall.²² Because the PQL's²³ for nearly all undetected compounds were well below their respective permit limits, the chemical analyses were sensitive enough to detect potentially toxic levels of compounds in the effluent. All analyses were conducted in accordance with EPA protocols.

Ammonia

Most of the compounds in Table 2 have been routinely detected at low but quantifiable concentrations within effluent²⁶ and biosolid²⁷ samples collected over the past decade. Ammonia as nitrogen²⁸ is measured in grab effluent samples that are collected on a monthly basis. It has always been present in detectable concentrations that are well below the most-stringent permit limit of 80.4 mg/L, which applies to a 6-month median. The ammonia concentration of 20 mg/L measured in the January-2007 sample was somewhat lower than the historical average concentration of 25 mg/L. This difference may reflect the increased contribution of inflow and infiltration of rainwater and groundwater into the collection system that often occurs during winter months. This contribution dilutes the proportion of wastewater of sewage origin that contains most of the ammonia.

Metals

Similarly, the presence of copper, lead, and zinc at low concentrations in the January effluent sample is not indicative of any significant new contaminant sources within the influent stream. Unlike synthetic organic compounds, these metals occur naturally within the mineralogy of sediments along the central California coast. They enter the wastewater collection system through erosion of natural mineral deposits. Copper, lead, and zinc also frequently enter the wastewater collection system through internal corrosion of household plumbing systems. Lead can also be introduced to the system from the illegal dumping of lead-based paints, gasoline, or fuel-contaminated dusts. However, given the history of consistently low but detectable lead concentrations within MBCSD effluent, the latter methods of introducing lead into the collection system are probably not a common occurrence, and are not likely to have tangibly contributed to the concentrations measured in the January-2007 effluent samples.

²² See the discussion beginning on Page III-1 in: Supplement to the 2003 Renewal Application for Ocean Discharge under NPDES Permit No. CA0047881. Prepared for the City of Morro Bay, Morro Bay, CA, July 2003.

²³ The Practical Quantification Limit is the smallest quantifiable concentration based on the sample size and analytical technique.

²⁴ 6-month median limitation unless otherwise indicated.

²⁵ 30-Day Average

²⁶ Table 14 (Page III-20) in: Supplement to the 2003 Renewal Application for Ocean Discharge under NPDES Permit No. CA0047881. Prepared for the City of Morro Bay, Morro Bay, CA, July 2003.

²⁷ Table 22 (Page III-78) *op. cit.*

²⁸ NH₃-N

In addition, the measured concentrations of lead (2.2 µg/L), copper (16 µg/L), and zinc (56 µg/L) were low, and only slightly above their respective PQLs (1 µg/L, 10 µg/L, and 50 µg/L). The measured lead concentration was more than 100 times lower than the limit specified in the NPDES discharge permit for 6-month median concentrations, while the measured concentration of zinc was more than 28 times lower. Similarly, the copper concentration was almost an order of magnitude lower than its 6-month median limit.

BEHP

The phthalate compound, bis (2-ethylhexyl) phthalate (BEHP), is another ubiquitous compound that has also been consistently detected at low levels in effluent and biosolid samples collected over the past decade.²⁹ Phthalate esters, such as BEHP, are components of synthetic dyes, resins, plasticizers, insecticides, and, pharmaceuticals. Nearly 2.7 million metric tons (6 billion pounds) of phthalate esters are produced each year, of which more than half is BEHP. BEHP is a physical plasticizer that is added to plastic resins to soften them, providing increased flexibility. It is not, however, covalently bound to the resin, which allows it to slowly leach out of the plastic and into the environment over time through evaporation or dissolution. Because of their mobility, high vapor pressure, and the massive scale at which they are produced, phthalate esters, and BEHP in particular, have become pervasive in the environment. However, although this phthalate compound can negatively affect human health, concentrations would have to be more than 42-times higher than those measured in January 2007 to be of a human-health concern.

Chloroform

Chloroform was the only other compound was detected in measurable concentrations within the January-2007 effluent sample. Chloroform is a typical by-product of drinking-water and wastewater chlorination programs, and has been detected at low levels in about one-third of the effluent samples. At 0.86 µg/L, the measured concentration in the January 2007 sample was only slightly above the detection limit (PQL= 0.5 µg/L) and was over four orders of magnitude lower than levels considered harmful to human health. Because chloroform rapidly volatilizes in water, low concentrations are not of ecological concern in the marine environment. At the low measured concentration and flow rates comparable to 2006, the mass emission of chloroform will remain well below the stringent mass-loading goal of 5 kg/yr identified in the NPDES permit.

Detectable Chemical Constituents

In addition to the six compounds detected in the effluent at quantifiable levels, eleven other constituents were detected at levels too minute to be accurately quantified by standard laboratory procedures. These compounds are listed in Table 3 along with their estimated concentrations. They include five naturally occurring metals, two gasoline-related compounds, a cleaning agent, cyanide, and two chlorination by-products. Except for antimony and cyanide, all of the estimated concentrations are more than an order of magnitude less than their limiting concentrations. The estimated antimony concentration is more than eight-times lower than its limit, while estimated cyanide concentration is more than nine-times lower than its limit. As such, the presence of these compounds in the effluent cannot be considered a threat to human health or the marine environment.

²⁹ Table 3 (Page II-9) in: Supplement to the 2003 Renewal Application for Ocean Discharge under NPDES Permit No. CA0047881. Prepared for the City of Morro Bay, Morro Bay, CA. July 2003.

Table 3. Non-Quantifiable Effluent Constituent Detects

Constituent	Unit	Concentration			
		MDL	Estimated ³⁰	PQL	Limitation ²⁴
Antimony	µg/L	4.5	20.	100.	160.8 ²⁵
Nickel	µg/L	1.7	4.9	10	670.
Selenium	µg/L	0.54	0.59	2.0	2010.
Thallium	µg/L	0.13	0.22	1.0	1180. ²⁵
Mercury	µg/L	0.026	0.062	0.2	5.
Toluene	µg/L	0.098	0.11	0.5	11400000. ²⁵
Xylene	µg/L	0.19	0.41	1.0	—
Cyanide	mg/L	0.0063	.014	0.02	0.13
1,4 Dichlorobenzene	µg/L	0.094	0.11	0.5	2410. ²⁵
Bromoform	µg/L	0.11	0.13	0.5	17400. ^{25,31}
Dibromochloromethane	µg/L	0.12	0.16	0.5	17400. ^{25,31}

The two gasoline-related compounds, toluene and xylene, comprise one-half of the group of aromatic hydrocarbon compounds collectively known as BTEX (benzene, toluene, ethyl benzene, and xylene). BTEX compounds are primarily associated with gasoline contamination and elevated BTEX concentrations were detected in 1999 in conjunction with an infiltration of gasoline-contaminated groundwater.³² Given the low concentrations measured in the January-2007 sample, and the absence of other gasoline-related compounds, the presence of a significant new source of gasoline contamination within the collection system is unlikely.

The volatile organic chemical 1,4-dichlorobenzene is used to control moths, molds, and mildew, and to deodorize restrooms and waste containers. It has been occasionally detected in quantifiable concentrations in effluent samples collected in prior years.

Although cyanide has not been frequently detected in effluent samples in the past, it has been encountered in four of the last five effluent samples, and is commonly found in low concentrations in biosolids. There are many natural sources of cyanide; it is frequently used in pigments and can be introduced into the collection system during photo processing, newspaper printing, jewelry making, chemicals used to develop photographs, electroplating, and metal cleaning. However, low concentrations of cyanide derivatives may also form as byproducts of the chlorination process used for disinfection of the effluent.

Bromoform and dibromochloromethane are halomethanes which form during the chlorine disinfection process when organic substances are present. At these low concentrations, it is not clear whether their presence is the result of wastewater disinfection within the treatment plant, or is the result of the chlorination of drinking water that is subsequently discharged into the collection system.

Conclusions

The comprehensive chemical and bioassay analyses conducted on effluent samples collected in January 2007 augment data collected over the last two decades. Together, these measurements demonstrate the consistently benign nature of the discharge from the MBSCD treatment plant. The absence of heavy industry within the collection area and the high performance of the treatment process are reflected in the general lack of toxicity and chemical contaminants within the effluent samples. The concentrations of the few chemical compounds

³⁰ Not detected at levels above the indicated practical quantification (detection) limit

³¹ Limit on the sum of halomethanes.

³² Marine Research Specialists (MRS). 2000. City of Morro Bay and Cayucos Sanitary District, Offshore Monitoring and Reporting Program, 1999 Annual Report. Submitted February 2000 to the City of Morro Bay and Cayucos Sanitary District, Morro Bay, CA

Mr. B. Keogh
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that were detected in the January-2007 samples were typical of wastewater derived from domestic sources, and all were far below limits specified in the NPDES discharge permit. All measurements fully complied with the requirements and limitations specified in the current NPDES discharge permit.

Please contact the undersigned if you have questions regarding these results.

Sincerely,

Douglas A. Coats, Ph.D.
Program Manager

Enclosure (Four Report Copies)

CHEMICAL ANALYSIS RESULTS

Marine Research Specialists
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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Water Analysis (General Chemistry)

BCL Sample ID: 0700391-01	Client Sample Name: Grab, 1/10/2007 9:00:00AM													
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru- ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
Ammonia as N (Distilled)	20	mg/L	2.5	1.0	EPA-350.1	01/19/07	01/22/07 14:00	VC1	AAII-5	50	BQA1005	ND	A01	

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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Water Analysis (General Chemistry)

BCL Sample ID: 0700391-02	Client Sample Name: COMP, 1/10/2007 9:00:00AM													
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru- ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
Total Cyanide	0.014	mg/L	0.020	0.0063	EPA-335.3	01/16/07	01/17/07 02:00	MRM	AAII-1	1	BQA0781	ND	J	

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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Water Analysis (Metals)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
Total Antimony	20	ug/L	100	16	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND	J	
Total Beryllium	ND	ug/L	10	0.72	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND		
Total Cadmium	ND	ug/L	10	3.3	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND		
Total Chromium	ND	ug/L	10	0.89	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	1.0		
Total Copper	16	ug/L	10	2.6	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND		
Total Mercury	0.062	ug/L	0.20	0.026	EPA-245.1	01/12/07	01/17/07 17:10	PRA	CETAC1	1	BQA0615	ND	J	
Total Nickel	4.9	ug/L	10	1.7	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND	J	
Total Silver	ND	ug/L	10	9.4	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND		
Total Zinc	56	ug/L	50	8.2	EPA-200.7	01/15/07	01/16/07 12:09	EMC	PE-OP2	1	BQA0626	ND		
Total Recoverable Arsenic	ND	ug/L	2.0	0.89	EPA-200.8	01/16/07	01/17/07 19:46	PPS	PE-EL1	1	BQA0750	ND		
Total Recoverable Lead	2.2	ug/L	1.0	0.12	EPA-200.8	01/16/07	01/17/07 19:46	PPS	PE-EL1	1	BQA0750	ND		
Total Recoverable Selenium	0.59	ug/L	2.0	0.54	EPA-200.8	01/16/07	01/17/07 19:46	PPS	PE-EL1	1	BQA0750	ND	J	
Total Recoverable Thallium	0.22	ug/L	1.0	0.13	EPA-200.8	01/16/07	01/17/07 19:46	PPS	PE-EL1	1	BQA0750	ND	J	

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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Organochlorine Pesticides and PCB's (EPA Method 608)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM											
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Aldrin	ND	ug/L	0.0050	0.0014	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
alpha-BHC	ND	ug/L	0.0050	0.0017	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
beta-BHC	ND	ug/L	0.0050	0.0037	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
delta-BHC	ND	ug/L	0.0050	0.00090	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	V11
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.0017	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Chlordane (Technical)	ND	ug/L	0.50	0.38	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
4,4'-DDD	ND	ug/L	0.0050	0.0024	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
4,4'-DDE	ND	ug/L	0.0050	0.0015	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
4,4'-DDT	ND	ug/L	0.0050	0.0019	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	V11
Dieldrin	ND	ug/L	0.0050	0.0021	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Endosulfan I	ND	ug/L	0.0050	0.0016	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Endosulfan II	ND	ug/L	0.0050	0.0031	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Endosulfan sulfate	ND	ug/L	0.0050	0.0019	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Endrin	ND	ug/L	0.0050	0.0022	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Endrin aldehyde	ND	ug/L	0.010	0.0022	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Heptachlor	ND	ug/L	0.0050	0.0044	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Heptachlor epoxide	ND	ug/L	0.0050	0.0019	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
Methoxychlor	ND	ug/L	0.0050	0.0036	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	V11
Toxaphene	ND	ug/L	2.0	0.42	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
PCB-1016	ND	ug/L	0.20	0.034	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
PCB-1221	ND	ug/L	0.20	0.089	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	
PCB-1232	ND	ug/L	0.20	0.090	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND	

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Organochlorine Pesticides and PCB's (EPA Method 608)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
PCB-1242	ND	ug/L	0.20	0.095	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND		
PCB-1248	ND	ug/L	0.20	0.025	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND		
PCB-1254	ND	ug/L	0.20	0.042	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND		
PCB-1260	ND	ug/L	0.20	0.043	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND		
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704	ND		
TCMX (Surrogate)	118	%	58 - 153 (LCL - UCL)		EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704			
Dibutyl chlorendate (Surrogate)	45.4	%	56 - 151 (LCL - UCL)		EPA-608	01/12/07	02/07/07 03:26	JRS	GC-1	1	BQA0704		S09	

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Volatile Organic Analysis (EPA Method 624)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM											
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Benzene	ND	ug/L	0.50	0.23	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Bromodichloromethane	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Bromoform	0.13	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J
Bromomethane	ND	ug/L	1.0	0.57	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Carbon tetrachloride	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Chlorobenzene	ND	ug/L	0.50	0.050	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Chloroethane	ND	ug/L	0.50	0.24	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Chloroform	0.86	ug/L	0.50	0.050	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Chloromethane	ND	ug/L	0.50	0.25	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Dibromochloromethane	0.16	ug/L	0.50	0.12	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J
1,2-Dichlorobenzene	ND	ug/L	0.50	0.072	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.12	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
1,4-Dichlorobenzene	0.11	ug/L	0.50	0.094	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J
1,1-Dichloroethane	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichloroethane	ND	ug/L	0.50	0.20	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
1,1-Dichloroethene	ND	ug/L	0.50	0.24	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.13	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichloropropane	ND	ug/L	0.50	0.16	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.16	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.15	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Ethylbenzene	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	
Methylene chloride	ND	ug/L	1.0	0.14	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	

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Volatile Organic Analysis (EPA Method 624)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
Methyl t-butyl ether	ND	ug/L	0.50	0.086	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.10	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Tetrachloroethene	ND	ug/L	0.50	0.13	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Toluene	0.11	ug/L	0.50	0.098	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.076	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
1,1,2-Trichloroethane	ND	ug/L	0.50	0.18	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Trichloroethene	ND	ug/L	0.50	0.21	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.14	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Vinyl chloride	ND	ug/L	0.50	0.21	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
Total Xylenes	0.41	ug/L	1.0	0.19	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J	
Acrolein	ND	ug/L	50	3.2	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	V01,V11	
Acrylonitrile	ND	ug/L	20	0.81	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND		
p- & m-Xylenes	0.30	ug/L	0.50	0.10	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J	
o-Xylene	0.11	ug/L	0.50	0.083	EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608	ND	J	
1,2-Dichloroethane-d4 (Surrogate)	98.6	%	76 - 114 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608			
Toluene-d8 (Surrogate)	102	%	88 - 110 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608			
4-Bromofluorobenzene (Surrogate)	98.8	%	86 - 115 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:49	MGC	MS-V7	1	BQA0608			

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-01 **Client Sample Name:** Grab, 1/10/2007 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru- ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
4-Chloro-3-methylphenol	ND	ug/L	5.0	0.39	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2-Chlorophenol	ND	ug/L	2.0	0.39	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2,4-Dichlorophenol	ND	ug/L	2.0	0.37	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2,4-Dimethylphenol	ND	ug/L	2.0	1.5	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
4,6-Dinitro-2-methylphenol	ND	ug/L	10	2.5	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2,4-Dinitrophenol	ND	ug/L	10	0.35	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2-Methylphenol	ND	ug/L	2.0	1.3	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
3- & 4-Methylphenol	ND	ug/L	2.0	1.4	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2-Nitrophenol	ND	ug/L	2.0	0.33	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
4-Nitrophenol	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
Pentachlorophenol	ND	ug/L	10	0.55	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
Phenol	ND	ug/L	2.0	0.30	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2,4,5-Trichlorophenol	ND	ug/L	5.0	0.37	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2,4,6-Trichlorophenol	ND	ug/L	5.0	0.47	EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950	ND	
2-Fluorophenol (Surrogate)	34.6	%	28 - 87 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		
Phenol-d5 (Surrogate)	36.8	%	18 - 55 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		
Nitrobenzene-d5 (Surrogate)	69.3	%	40 - 121 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		
2-Fluorobiphenyl (Surrogate)	67.3	%	42 - 128 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		
2,4,6-Tribromophenol (Surrogate)	62.4	%	44 - 137 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		
p-Terphenyl-d14 (Surrogate)	90.6	%	43 - 154 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:13	SKC	MS-B1	1	BQA0950		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-02 Client Sample Name: COMP, 1/10/2007 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Acenaphthene	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Acenaphthylene	ND	ug/L	2.0	0.32	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Aldrin	ND	ug/L	2.0	0.47	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Aniline	ND	ug/L	5.0	1.8	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
Anthracene	ND	ug/L	2.0	0.27	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benizidine	ND	ug/L	20	4.7	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	C02
Benzo[a]anthracene	ND	ug/L	2.0	0.34	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzo[b]fluoranthene	ND	ug/L	2.0	0.38	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzo[k]fluoranthene	ND	ug/L	2.0	0.47	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
Benzo[a]pyrene	ND	ug/L	2.0	0.45	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzo[g,h,i]perylene	ND	ug/L	2.0	0.56	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzoic acid	ND	ug/L	10	0.61	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzyl alcohol	ND	ug/L	2.0	0.44	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Benzyl butyl phthalate	ND	ug/L	2.0	0.32	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
alpha-BHC	ND	ug/L	2.0	0.42	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
beta-BHC	ND	ug/L	2.0	0.46	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
delta-BHC	ND	ug/L	2.0	0.28	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
gamma-BHC (Lindane)	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
bis(2-Chloroethoxy)methane	ND	ug/L	2.0	1.6	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
bis(2-Chloroethyl) ether	ND	ug/L	2.0	0.49	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
bis(2-Chloroisopropyl)ether	ND	ug/L	2.0	0.57	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
bis(2-Ethylhexyl)phthalate	11	ug/L	5.0	0.98	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-02		Client Sample Name: COMP, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru- ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals	
4-Bromophenyl phenyl ether	ND	ug/L	2.0	0.40	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
4-Chloroaniline	ND	ug/L	2.0	0.99	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11	
2-Chloronaphthalene	ND	ug/L	2.0	0.41	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
4-Chlorophenyl phenyl ether	ND	ug/L	2.0	0.33	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Chrysene	ND	ug/L	2.0	0.30	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
4,4'-DDD	ND	ug/L	2.0	0.38	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11	
4,4'-DDE	ND	ug/L	3.0	0.52	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
4,4'-DDT	ND	ug/L	2.0	0.36	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Dibenzo[a,h]anthracene	ND	ug/L	3.0	0.48	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Dibenzofuran	ND	ug/L	2.0	0.37	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
1,2-Dichlorobenzene	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
1,3-Dichlorobenzene	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
1,4-Dichlorobenzene	ND	ug/L	2.0	0.25	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
3,3-Dichlorobenzidine	ND	ug/L	10	1.5	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Dieldrin	ND	ug/L	3.0	0.52	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Diethyl phthalate	ND	ug/L	2.0	0.34	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Dimethyl phthalate	ND	ug/L	2.0	0.32	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Di-n-butyl phthalate	ND	ug/L	2.0	0.40	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
2,4-Dinitrotoluene	ND	ug/L	2.0	0.39	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
2,6-Dinitrotoluene	ND	ug/L	2.0	0.48	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
Di-n-octyl phthalate	ND	ug/L	2.0	0.41	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND		
1,2-Diphenylhydrazine	ND	ug/L	2.0	0.38	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11	

Marine Research Specialists
 3140 Telegraph Road, Suite A
 Suite A
 Ventura, CA 93003-3238

Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-02 Client Sample Name: COMP, 1/10/2007 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Endosulfan I	ND	ug/L	10	2.3	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
Endosulfan II	ND	ug/L	10	1.6	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
Endosulfan sulfate	ND	ug/L	3.0	0.67	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Endrin	ND	ug/L	2.0	0.68	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Endrin aldehyde	ND	ug/L	10	3.6	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Fluoranthene	ND	ug/L	2.0	0.30	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Fluorene	ND	ug/L	2.0	0.36	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Heptachlor	ND	ug/L	2.0	0.53	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Heptachlor epoxide	ND	ug/L	2.0	0.24	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Hexachlorobenzene	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Hexachlorobutadiene	ND	ug/L	2.0	0.40	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Hexachlorocyclopentadiene	ND	ug/L	2.0	0.36	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Hexachloroethane	ND	ug/L	2.0	0.29	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Indeno[1,2,3-cd]pyrene	ND	ug/L	2.0	0.47	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Isophorone	ND	ug/L	2.0	0.31	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Methylnaphthalene	ND	ug/L	2.0	0.27	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Naphthalene	ND	ug/L	2.0	0.30	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Naphthylamine	ND	ug/L	20	5.3	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	C02
2-Nitroaniline	ND	ug/L	2.0	0.82	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
3-Nitroaniline	ND	ug/L	2.0	1.6	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
4-Nitroaniline	ND	ug/L	5.0	0.44	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	V11
Nitrobenzene	ND	ug/L	2.0	0.37	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	

Marine Research Specialists
 3140 Telegraph Road, Suite A
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 Ventura, CA 93003-3238

Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-02 Client Sample Name: COMP, 1/10/2007 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
N-Nitrosodimethylamine	ND	ug/L	2.0	0.53	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	C02
N-Nitrosodi-N-propylamine	ND	ug/L	2.0	0.88	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
N-Nitrosodiphenylamine	ND	ug/L	2.0	0.42	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Phenanthrene	ND	ug/L	2.0	0.29	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Pyrene	ND	ug/L	2.0	0.29	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	0.26	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
4-Chloro-3-methylphenol	ND	ug/L	5.0	0.39	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Chlorophenol	ND	ug/L	2.0	0.39	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2,4-Dichlorophenol	ND	ug/L	2.0	0.37	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2,4-Dimethylphenol	ND	ug/L	2.0	1.5	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
4,6-Dinitro-2-methylphenol	ND	ug/L	10	2.5	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2,4-Dinitrophenol	ND	ug/L	10	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Methylphenol	ND	ug/L	2.0	1.3	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
3- & 4-Methylphenol	ND	ug/L	2.0	1.4	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Nitrophenol	ND	ug/L	2.0	0.33	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
4-Nitrophenol	ND	ug/L	2.0	0.35	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Pentachlorophenol	ND	ug/L	10	0.55	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
Phenol	ND	ug/L	2.0	0.30	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2,4,5-Trichlorophenol	ND	ug/L	5.0	0.37	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2,4,6-Trichlorophenol	ND	ug/L	5.0	0.47	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950	ND	
2-Fluorophenol (Surrogate)	48.9	%	28 - 87 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		
Phenol-d5 (Surrogate)	49.1	%	18 - 55 (LCL - UCL)		EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		

Marine Research Specialists
 3140 Telegraph Road, Suite A
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 Ventura, CA 93003-3238

Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

BCL Sample ID: 0700391-02	Client Sample Name: COMP, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instrument ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Nitrobenzene-d5 (Surrogate)	79.4	%	40 - 121	(LCL - UCL)	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		
2-Fluorobiphenyl (Surrogate)	73.6	%	42 - 128	(LCL - UCL)	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		
2,4,6-Tribromophenol (Surrogate)	84.7	%	44 - 137	(LCL - UCL)	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		
p-Terphenyl-d14 (Surrogate)	109	%	43 - 154	(LCL - UCL)	EPA-625	01/11/07	01/18/07 20:41	SKC	MS-B1	1	BQA0950		

BIOASSAY RESULTS

LABORATORY REPORT



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4350 Transport Street, Unit 107
Ventura, CA 93003
(805) 650-0546 FAX (805) 650-0756
CA DOHS ELAP Cert. No.: 1775

Date: January 20, 2007

Client: Marine Research Specialists
3140 Telegraph Road, Suite A
Ventura, CA 93003
Attn: Doug Coats

Laboratory No.: A-07011601
Sample I.D.: Morro Bay Effluent

Sample Control: The samples were received by ATL within the recommended hold time, in a chilled state, and with the chain of custody records attached.

Date Sampled: 01/15, 01/16, 01/17, 01/18/07
Date Received: 01/16, 01/17, 01/18, 01/19/07
Temp. Received: 2°C, 2°C, 2°C, 2°C
Chlorine (TRC): 0.0 mg/l, 0.0 mg/l, 0.0 mg/l, 0.0 mg/l
Dates Tested: 01/16/07 to 01/20/07

Sample Analysis: The following analyses were performed on your sample:
Fathead Minnow 96hr Acute Static-Renewal Toxicity Test (EPA Method 2000.0).
Attached are the test data generated from the analysis of your sample.

Result Summary:

<u>Sample ID.</u>	<u>Test</u>	<u>LC50</u>	<u>TUa</u>
Grab Effluent	Fathead Minnow	70.7%	1.41

Quality Control: Reviewed and approved by:



Joseph A. LeMay
Laboratory Director

FATHEAD MINNOW ACUTE NPDES TEST



Lab No.: A-07011601
 Client/ID: MRS - Morro Bay

Start Date: 01/16/07

TEST SUMMARY

Species: *Pimephales promelas*.
 Age: 9 (1-14) days.
 Regulations: NPDES.
 Test solution volume: 250 ml.
 Feeding: prior to renewal at 48 hrs.
 Aeration: None, unless DO drops below 4.0 mg/l.
 Number of replicates: 2.
 Dilution water: Moderately hard reconstituted water.
 QA/QC Batch No.: RT-070109.

Source: In-laboratory Culture.
 Test type: Static-Renewal.
 Test Protocol: EPA-821-R-02-012.
 Endpoints: Percent Survival at 96 hrs.
 Test chamber: 500 ml beakers.
 Temperature: 20 +/- 1°C.
 Number of fish per chamber: 10.
 Photoperiod: 16/8 hrs light/dark.

INITIAL WATER QUALITY PARAMETERS

Additional Parameters	Control	100% Sample			
		Day 1	Day 2	Day 3	Day 4
Temperature (°C)	19.6	2°	2°	2°	2°
DO (mg/l)	8.9	9.1	8.6	8.8	8.0
pH	7.9	7.5	7.5	7.5	7.4
Total Res. Chlorine (mg/l)	0	0	0	0	0
Ammonia (mg/l NH ₃ -N)**	<0.1	46	56	44	50
Alkalinity (mg/l CaCO ₃)	65	46 352	365	356	373
Hardness (mg/l CaCO ₃)	96	254	326	352	374
Conductivity (umhos)	335	1465	1930	1980	2430

Comments:

* Chlorine neutralized with sodium thiosulfate (one drop per liter of 10% solution). - no Cl₂ present.

** Ammonia reading by Hach Kit - only approximate indication.

Acute Fish Test-96 Hr Survival

Start Date: 16 Jan-07 11:00 Test ID: 7011601f Sample ID: CA0047881-Morro Bay SD
 End Date: 20 Jan-07 11:30 Lab ID: CAATL-Aquatic Testing Labs Sample Type: EFF1-POTW
 Sample Date: 15 Jan-07 00:00 Protocol: ACUTE 5TH-EPA-821-R-02-(Test Species: PP-Pimephales promelas
 Comments:

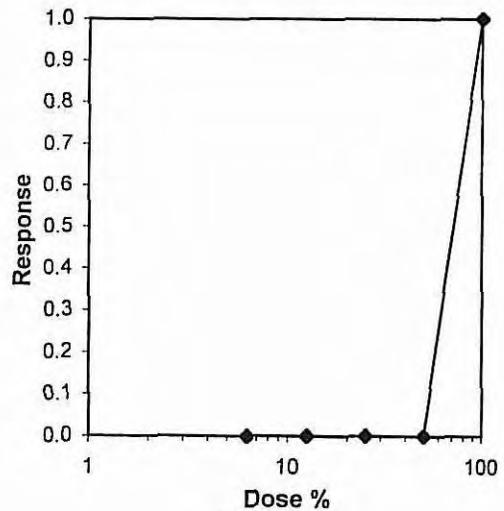
Conc-%	1	2
D-Control	1.0000	1.0000
6.25	1.0000	1.0000
12.5	1.0000	1.0000
25	1.0000	1.0000
50	1.0000	1.0000
100	0.0000	0.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	Number Resp	Total Number
			Mean	Min	Max	CV%				
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20	
6.25	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20	
12.5	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20	
25	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20	
50	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20	
100	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trim Level	EC50	Graphical Method
0.0%	70.711	

$$TU_{0.0} = 100 / 70.711 = 1.41$$



FATHEAD MINNOW ACUTE NPDES TEST



Lab No.: A-07011601

Client/ID: MRS - Morro Bay

Start Date: 01/16/07

RAW TEST DATA

		DAY 1		DAY 2		DAY 3		DAY 4	
		0 hr	24hr						
Analyst Initials:		<i>Rv</i>							
Time of Readings:		1100	1200	1200	1100	1100	1300	1300	1130
Control	DO	8.9	7.2	8.9	7.5	8.8	7.8	8.8	8.0
	pH	7.9	7.6	7.8	7.6	7.9	7.6	7.8	7.8
	Temp	20.0	19.1	19.4	19.2	19.8	19.1	19.5	19.9
	# Alive	Rep A	---	10	---	10	---	10	---
Rep B		---	10	---	10	---	10	---	10
6.25%	DO	9.0	6.1	8.9	7.3	8.6	7.4	8.8	7.9
	pH	7.8	7.4	7.7	7.5	7.7	7.5	7.6	7.6
	Temp	20.0	19.1	19.4	19.2	19.9	19.1	19.5	19.9
	# Alive	Rep A	---	10	---	10	---	10	---
Rep B		---	10	---	10	---	10	---	10
12.5%	DO	9.0	5.5	8.9	7.2	8.6	7.1	8.6	7.6
	pH	7.7	7.3	7.6	7.6	7.6	7.5	7.5	7.6
	Temp	20.1	19.0	19.5	19.1	20.0	19.2	19.6	19.9
	# Alive	Rep A	---	10	---	10	---	10	---
Rep B		---	10	---	10	---	10	---	10
25%	DO	9.0	5.2	8.8	6.6	8.6	7.1	8.5	7.1
	pH	7.7	7.4	7.6	7.7	7.6	7.6	7.5	7.6
	Temp	20.1	19.0	19.5	19.1	20.0	19.2	19.6	19.8
	# Alive	Rep A	---	10	---	10	---	10	---
Rep B		---	10	---	10	---	10	---	10
50%	DO	9.0	5.1	8.8	5.3	8.5	6.3	8.3	5.9
	pH	7.6	7.7	7.5	7.8	7.5	7.8	7.4	7.8
	Temp	20.2	19.0	19.7	19.1	20.3	19.2	19.6	19.8
	# Alive	Rep A	---	10	---	10	---	10	---
Rep B		---	10	---	10	---	10	---	10
100%	DO	9.1	4.6	---	---	---	---	---	---
	pH	7.5	8.0	---	---	---	---	---	---
	Temp	20.3	19.1	---	---	---	---	---	---
	# Alive	Rep A	---	0	---	---	---	---	---
Rep B		---	0	---	---	---	---	---	---

LABORATORY REPORT



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4350 Transport Street, Unit 107
Ventura, CA 93003
(805) 650-0546 FAX (805) 650-0756
CA DOHS ELAP Cert. No.: 1775

Date: January 25, 2007
Client: Marine Research Specialists
3140 Telegraph Road, Suite A
Ventura, CA 93003
Attn: Doug Coats

Laboratory No.: A-06012302
Sample I.D.: Morro Bay Effluent

Sample Control: The samples were received by ATL within the recommended hold time, in a chilled state, and with the chain of custody records attached.

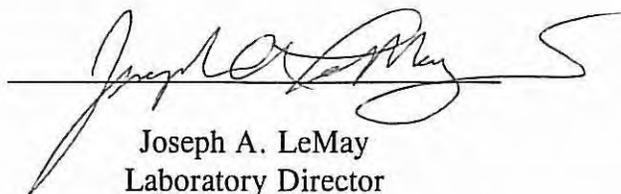
Date Sampled: 01/22/07
Date Received: 01/23/07
Temp. Received: 2°C
Chlorine (TRC): 0.0 mg/l
Dates Tested: 01/23/07 to 01/25/07

Sample Analysis: The following analyses were performed on your sample:
Giant Kelp Germination and Growth Short-Term Toxicity Test (EPA Method 1009.0).
Attached are the test data generated from the analysis of your sample.

Result Summary:

<u>Test</u>	<u>NOEC</u>	<u>TUc</u>
Kelp Germination:	18%	5.6
Kelp Growth:	18%	5.6

Quality Control: Reviewed and approved by:



Joseph A. LeMay
Laboratory Director

GIANT KELP GERMINATION AND GROWTH SHORT-TERM TOXICITY TEST



Lab No.: A-07012302
Client/ID: MRS - Morro Bay Comp. Effluent

Date Tested: 01/23/07 - 01/25/07

TEST SUMMARY

Species: *Macrocystis pyrifera*.
Protocol: EPA Method 1009.0.
Test type: Static.
Test chamber: 100 ml plastic petri dishes.
Temperature: 15 +/- 1°C.
Number of spores per ml: 7,500 (approx.).
QA/QC Batch No.: RT-070123 (ran concurrently).

Source: Field collected.
Dilution water: Lab seawater.
Endpoints: NOEC, IC25 at 48 hrs.
Test volume: 50 ml.
Aeration: None.
Number of replicates: 5.

RESULTS SUMMARY

Sample Concentration	Percent Germination		Mean Germ Tube Length (μm)	
Control (Brine)	83.3%		15.25	
5.6%	84.0%		15.50	
10%	84.9%		15.50	
18%	82.7%		15.50	
32%	61.7%	*	10.70	*
56%	44.9%	*	8.85	*

* Statistically significantly less than control at P = 0.05 level

CHRONIC TOXICITY

END POINT	GERMINATION	GERM TUBE LENGTH
NOEC	18%	18%
TU _c (100/NOEC)	5.56	5.56

QA/QC TEST ACCEPTABILITY

Parameter	Result
Mean control germination $\geq 70\%$	Yes (83.3%)
Mean control germination tube length $> 10 \mu\text{m}$	Yes (15.25 μm)
Please see RT-070123 report for additional test acceptability criteria.	

Macrocystis Germination and Growth Test-Proportion Germinated

Start Date: 23 Jan-07 14:00 Test ID: 7012302k Sample ID: CA0047881-Morro Bay SD
 End Date: 25 Jan-07 14:00 Lab ID: CAATL-Aquatic Testing Labs Sample Type: EFF1-POTW
 Sample Date: 22 Jan-07 00:00 Protocol: WCCH-EPA-600-R-95-136 Test Species: MP-Macrocystis pyrifera
 Comments:

Conc-%	1	2	3	4	5
B-Control	0.8137	0.8077	0.8857	0.8515	0.8058
D-Control	0.8447	0.8654	0.7961	0.8416	0.8073
5.6	0.8725	0.8654	0.8137	0.8505	0.7981
10	0.8000	0.8627	0.8350	0.9038	0.8416
18	0.8667	0.8447	0.8252	0.7864	0.8137
32	0.4722	0.6000	0.7547	0.6518	0.6058
56	0.6078	0.4865	0.3805	0.3426	0.4273

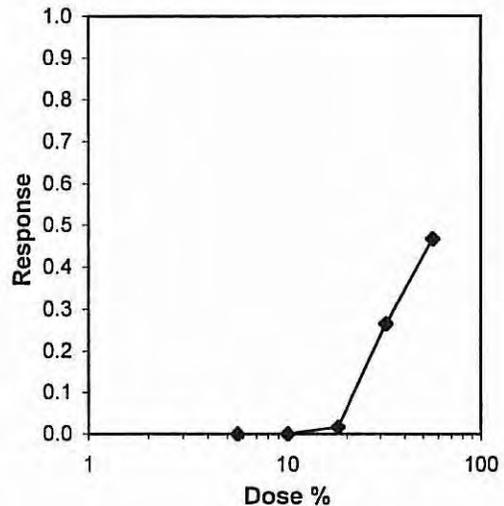
Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	t-Stat	1-Tailed Critical	MSD	Isotonic	
			Mean	Min	Max	CV%	Mean					N-Mean	
B-Control	0.8329	1.0023	1.1514	1.1145	1.2259	4.211	5				0.8405	1.0000	
D-Control	0.8310	1.0000	1.1482	1.1023	1.1951	3.316	5						
5.6	0.8400	1.0109	1.1608	1.1047	1.2057	3.810	5	-0.205	2.360	0.1078	0.8405	1.0000	
10	0.8486	1.0212	1.1736	1.1071	1.2555	4.674	5	-0.485	2.360	0.1078	0.8405	1.0000	
18	0.8273	0.9956	1.1434	1.0904	1.1970	3.540	5	0.175	2.360	0.1078	0.8273	0.9843	
*32	0.6169	0.7423	0.9056	0.7576	1.0527	11.745	5	5.381	2.360	0.1078	0.6169	0.7340	
*56	0.4489	0.5402	0.7337	0.6253	0.8941	14.319	5	9.144	2.360	0.1078	0.4489	0.5341	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96772	0.9	0.39455	1.0035
Bartlett's Test indicates equal variances (p = 0.21)	7.16057	15.0863		
The control means are not significantly different (p = 0.91)	0.11623	2.30601		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSB	MSE	F-Stat	F-Prob	df
Dunnett's Test	18	32	24	5.55556	0.08731	0.16729	0.00522	32.0658	7.1E-10	5, 24

Linear Interpolation (80 Resamples)

Point	%	SE	95% CL(Exp)		Skew
IC05	19.919	1.285	14.726	21.874	-1.3314
IC10	22.715	1.375	19.767	26.332	0.6988
IC15	25.511	1.849	22.222	30.425	1.0207
IC20	28.307	2.339	24.064	34.564	0.9135
IC25	31.103	3.198	26.039	41.775	0.7974
IC40	48.088				
IC50	>56				



Macrocystis Germination and Growth Test-Growth-Length

Start Date: 23 Jan-07 14:00 Test ID: 7012302k Sample ID: CA0047881-Morro Bay SD
 End Date: 25 Jan-07 14:00 Lab ID: CAATL-Aquatic Testing Labs Sample Type: EFF1-POTW
 Sample Date: 22 Jan-07 00:00 Protocol: WCCH-EPA-600-R-95-136 Test Species: MP-Macrocystis pyrifera

Comments:

Conc-%	1	2	3	4	5
B-Control	15.000	14.750	16.250	15.000	15.250
D-Control	14.500	16.000	15.000	15.500	15.500
5.6	15.000	16.000	15.000	16.000	15.500
10	15.500	15.250	14.750	16.500	15.500
18	16.000	17.000	14.500	16.000	14.000
32	8.250	10.500	11.500	13.250	10.000
56	11.250	8.250	8.000	8.000	8.750

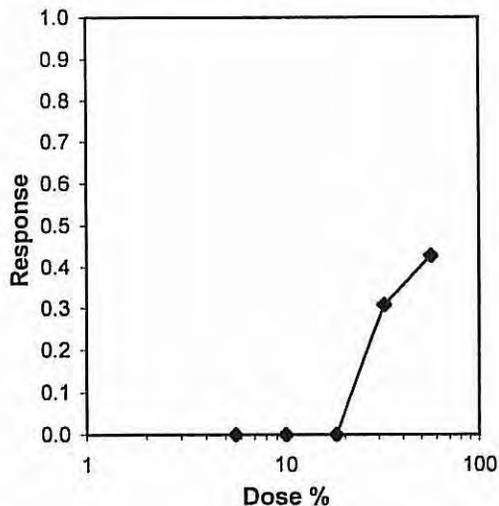
Conc-%	Mean	N-Mean	Transform: Untransformed					t-Stat	1-Tailed Critical	MSD	Isotonic	
			Mean	Min	Max	CV%	N				Mean	N-Mean
B-Control	15.250	0.9967	15.250	14.750	16.250	3.845	5				15.438	1.0000
D-Control	15.300	1.0000	15.300	14.500	16.000	3.726	5					
5.6	15.500	1.0131	15.500	15.000	16.000	3.226	5	-0.346	2.360	1.703	15.438	1.0000
10	15.500	1.0131	15.500	14.750	16.500	4.112	5	-0.346	2.360	1.703	15.438	1.0000
18	15.500	1.0131	15.500	14.000	17.000	7.902	5	-0.346	2.360	1.703	15.438	1.0000
*32	10.700	0.6993	10.700	8.250	13.250	17.280	5	6.305	2.360	1.703	10.700	0.6931
*56	8.850	0.5784	8.850	8.000	11.250	15.550	5	8.868	2.360	1.703	8.850	0.5733

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95076	0.9	0.49778	1.30963
Bartlett's Test indicates equal variances (p = 0.08)	9.71696	15.0863		
The control means are not significantly different (p = 0.89)	0.13672	2.30601		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSB	MSE	F-Stat	F-Prob	df
Dunnett's Test	18	32	24	5.55556	1.70318	44.51	1.30208	34.1837	3.7E-10	5, 24

Linear Interpolation (80 Resamples)

Point	%	SE	95% CL(Exp)		Skew
IC05	20.281	1.193	14.847	21.609	-1.8917
IC10	22.562	1.165	19.359	25.218	-0.0423
IC15	24.843	1.437	22.050	28.826	0.5606
IC20	27.124	1.786	23.806	32.435	0.8269
IC25	29.405	2.500	25.445	38.527	1.3085
IC40	50.649				
IC50	>56				



**GIANT KELP GERMINATION
AND GROWTH
SHORT-TERM TOXICITY TEST**



Lab No.: A-07012302

Start Date: 01/23/2007

Dish No.	Sample Conc.	Total Number Counted	Number Germin.	Number Non-Germin.	Germ Tube Lengths (micrometer units)									
					A	B	C	D	E	F	G	H	I	J
1	18	105	91	14	7	7	6	5	7	6	6	8	7	5
2	10	105	84	21	7	6	5	7	6	6	5	7	6	7
3	32	108	51	57	3	4	5	2	3	4	3	3	2	4
4	5-6	102	89	13	7	6	5	7	7	6	5	6	4	7
5	56	102	62	40	6	5	4	4	3	4	6	5	4	4
6	BC	102	83	19	7	7	5	7	6	4	6	6	7	5
7	18	103	87	16	6	7	8	7	7	5	8	7	6	7
8	BC	104	84	20	5	4	7	6	5	7	7	6	7	5
9	10	102	88	14	6	6	7	6	5	6	7	5	7	6
10	32	105	63	42	4	3	4	6	5	4	4	5	3	4
11	5-6	104	90	14	5	7	7	8	7	6	6	7	5	6
12	10	103	86	17	6	7	4	7	6	5	6	7	4	7
13	18	103	85	18	7	6	6	4	6	7	4	5	7	6
14	56	111	54	57	4	4	5	3	4	2	2	4	3	2
15	5-6	102	83	19	7	6	7	4	6	6	7	5	6	6
16	18	103	81	22	8	6	5	7	7	6	5	6	7	7
17	56	113	43	70	5	4	3	4	3	2	2	3	4	2
18	BC	105	93	12	6	5	7	7	6	8	7	6	6	7
19	10	104	94	10	7	6	7	7	5	8	7	6	6	7
20	32	106	80	26	5	4	5	4	3	4	5	6	4	6

Comments:

Micrometer conversion factor: 1 unit = 2.5 um at 400X power

**GIANT KELP GERMINATION
AND GROWTH
SHORT-TERM TOXICITY TEST**



Lab No.: A-07012302

Start Date: 01/23/2007

Dish No.	Sample Conc.	Total Number Counted	Number Germin.	Number Non-Germin.	Germ Tube Lengths (micrometer units)									
					A	B	C	D	E	F	G	H	I	J
21	5.6	107	91	16	5	7	7	6	4	7	8	7	6	7
22	BC	101	86	15	7	5	7	6	6	7	5	4	7	6
23	18	102	83	19	6	7	5	6	6	4	6	4	4	8
24	5.6	108	37	71	3	4	2	4	3	4	4	3	2	3
25	5.6	104	83	21	7	6	5	7	7	6	5	6	6	7
26	32	112	73	39	6	4	5	5	4	4	6	6	7	6
27	10	101	85	16	6	7	6	6	4	7	6	7	7	6
28	5.6	110	47	63	3	4	4	5	3	3	4	2	4	3
29	BC	103	83	20	5	7	5	6	4	7	7	7	8	5
30	32	104	63	41	3	5	4	6	4	2	2	3	4	7
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														

Comments:

Micrometer conversion factor: 1 unit = 2.5 um at 400X power

GIANT KELP GERMINATION AND GROWTH SHORT-TERM TOXICITY TEST



Lab No.: A-07012302

Client ID: MRS - Morro Bay Effluent

Start Date: 01/23/2007

WATER QUALITY READINGS

Sample	Initial Readings				Final Readings			
	Temp (°C)	DO (mg/l)	pH	Salinity (o/oo)	Temp (°C)	DO (mg/l)	pH	Salinity (o/oo)
Control	15.1	8.0	8.0	34	15.8	7.4	8.0	34
Brine Control	15.7	7.4	8.1	34	15.4	7.6	8.0	34
5.6%	15.3	7.8	8.2	34	15.3	7.4	8.1	34
10%	15.1	7.8	8.2	34	15.6	7.2	8.2	34
18%	15.1	7.7	8.2	34	15.6	7.1	8.2	34
32%	15.2	7.2	8.2	34	15.7	7.1	8.2	34
56%	15.6	6.2	8.3	34	15.9	7.3	8.2	31

Sample as received: Chlorine: 0.0 mg/l; pH: 7.5; Salinity: 1 ppt; Temp: 2°C;
DO: 8.1 mg/l; NH₃-N: 48 mg/l..

Brine Control contains equivalent amount of artificial sea salts as highest effluent concentration.

Initial readings: Analyst: [Signature] Date: 1-23-07 Time: 1400

Final readings: Analyst: [Signature] Date: 1-25-07 Time: 1400

QA/QC REPORTS & CHAINS OF CUSTODY



Aquatic
Testing
Laboratories

***CHAIN
OF
CUSTODY***



Date of Report: 01/29/2007

Doug Coats

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

RE: Semi-annual eff
BC Work Order: 0700391

Enclosed are the results of analyses for samples received by the laboratory on 01/10/2007 16:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Tina Green", written over a horizontal line.

Contact Person: Tina Green
Client Services Manager

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke, written over a horizontal line.

Authorized Signature

Analyses of Effluent Samples to be collected from the Morro Bay Wastewater Treatment Plant in January 2007

Analysis	Sample	Method
Level IIA QC Report concentrations that are detected above the MDL, but are below the PQL		
Ammonia as N w/ distillation	Grab	EPA-350.1
Total Chlorinated and Total Non-Chlorinated Phenolic Compounds (Report only the phenolic compounds)	Grab	EPA-625
13 Metals:		
Ag Silver	Composite	EPA 200.7
As Arsenic	Composite	EPA 200.8
Be Beryllium	Composite	EPA 200.7
Cd Cadmium	Composite	EPA 200.7
Cr Chromium	Composite	EPA 200.7
Cu Copper	Composite	EPA 200.7
Hg Mercury	Composite	EPA 245.1
Ni Nickel	Composite	EPA 200.7
Pb Lead	Composite	EPA 200.8
Sb Antimony	Composite	EPA 200.7
Se Selenium	Composite	EPA 200.8
Tl Thallium	Composite	EPA 200.8
Zn Zinc	Composite	EPA 200.7
Volatile Organics - Low Level Including Acrolein, Acrylonitrile, MTBE	Composite	EPA 624/8240
Organochlorine Pesticides and PCBs	Composite	EPA 608/8080
Phenolic Compounds: Full list of base-neutral and acid-extractable congeners	Composite	EPA 625/8270
Cyanide	Composite	EPA 335.3

Invoice and Report to be sent to: Dr. Douglas A. Coats (Doug.Coats@mrsenv.com)
Marine Research Specialists
3140 Telegraph Rd., Suite A
Ventura, CA 93003
Telephone: (805) 644-1180

Samples to be collected from: Morro Bay Wastewater Treatment Plant
160 Atascadero Rd.
Morro Bay, CA 93442
Telephone: (805) 772-6272

16800-LO

Submission #: 07-00391

Project Code:

TB Batch #

SHIPPING INFORMATION

Federal Express UPS Hand Delivery
 BC Lab Field Service Other (Specify)

SHIPPING CONTAINER

Ice Chest None
 Box Other (Specify)

Refrigerant: Ice Blue Ice None Other Comments:

Custody Seals: Ice Chest Containers None Comments:
 Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received
 YES NO

Ice Chest ID
 Temperature: 0.5 °C
 Thermometer ID: FL15

Emissivity 0.95
 Container QTAE

Date/Time 1/10/07
 Analyst Init KLL 16:20

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL PHYSICAL		D								
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS		B								
PT CYANIDE		C								
PT NITROGEN FORMS	A									
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
100ml TOTAL ORGANIC CARBON										
QT TOX										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK			AC)							
40ml VOA VIAL		A, B								
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT QA/QC										
QT AMBER	B	E, f, g								
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										

Comments:
 Sample Numbering Completed By: OTD Date/Time: 1/10/06 1900

CHAIN OF CUSTODY

Client: City of Morro Bay

Address: Wastewater Treatment Plant

160 Atascadero Road

Morro Bay, CA 93442

Project Manager: Doug Coats - MRS

Phone: (805) 644-1180

Fax: (805) 289-3935

Purchase Order No:



4350 Transport St., Unit 107
 Ventura, CA 93003
 (805) 650-0546 Fax (805) 650-0756

Sample ID	Sample Date	Sample Time	Sample Type *	Chlorine (TRC)**	Number of Containers	Testing Requested
Grab Eff. ARS	15 Jan 07	0800	E	<.05	1 (one gallon)	FHM Acute daily renewal

Special Instructions:

** Note: Total residual chlorine must be taken immediately after sample collection if sample is a chlorinated effluent.

* L - Liquid, S - Solid, SS - Semi-Solid/sludge, RW - Receiving Water, GW - Ground Water, E - Effluent

CUSTODY TRANSFERS

Relinquished by (signature)	Received by (signature)	Date (mm/dd/yy)	Time (hh:mm)	Seals Intact? (Yes, No, NA)	Temperature Received (°C)
<i>Steven R. Achenbren</i>	<i>Fel Ex</i>	15 Jan 07	1400	—	—
<i>Fel Ex</i>	<i>[Signature]</i>	1-16-07	0930	NA	2°C

CHAIN OF CUSTODY

Client: City of Morro Bay

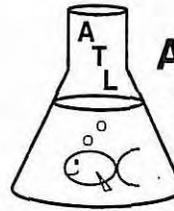
Address: Wastewater Treatment Plant
160 Atascadero Road
Morro Bay, CA 93442

Project Manager: Doug Coats - MRS

Phone: (805) 644-1180

Fax: (805) 289-3935

Purchase Order No:



**Aquatic
Testing
Laboratories**

4350 Transport St., Unit 107
Ventura, CA 93003
(805) 650-0546 Fax (805) 650-0756

Sample ID	Sample Date	Sample Time	Sample Type *	Chlorine (TRC)**	Number of Containers	Testing Requested
Grab Eff. ARS	1/16/07	8:30 am	E	<.05	1 (one gallon)	FHM Acute daily renewal

Special Instructions:

** Note: Total residual chlorine must be taken immediately after sample collection if sample is a chlorinated effluent.

* L - Liquid, S - Solid, SS - Semi-Solid/sludge, RW - Receiving Water, GW - Ground Water, E - Effluent

CUSTODY TRANSFERS

Relinquished by (signature)	Received by (signature)	Date (mm/dd/yy)	Time (hh:mm)	Seals Intact? (Yes, No, NA)	Temperature Received (°C)
<i>Stan R. Archuleta</i>	<i>[Signature]</i>	16 Jan 07	1440	—	—
<i>Fed Ex</i>	<i>[Signature]</i>	1-17-07	0930	NA	2°C

CHAIN OF CUSTODY

Client: City of Morro Bay

Address: Wastewater Treatment Plant

160 Atascadero Road

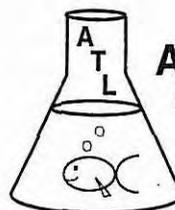
Morro Bay, CA 93442

Project Manager: Doug Coats - MRS

Phone: (805) 644-1180

Fax: (805) 289-3935

Purchase Order No:



**Aquatic
Testing
Laboratories**

4350 Transport St., Unit 107
Ventura, CA 93003
(805) 650-0546 Fax (805) 650-0756

Sample ID	Sample Date	Sample Time	Sample Type *	Chlorine (TRC)**	Number of Containers	Testing Requested
Grab Eff. ARS	7/17/07	832 AM	E	<.05	1 (one gallon)	FHM Acute daily renewal

Special Instructions:

** Note: Total residual chlorine must be taken immediately after sample collection if sample is a chlorinated effluent.

* L - Liquid, S - Solid, SS - Semi-Solid/sludge, RW - Receiving Water, GW - Ground Water, E - Effluent

CUSTODY TRANSFERS

Relinquished by (signature)	Received by (signature)	Date (mm/dd/yy)	Time (hh:mm)	Seals Intact? (Yes, No, NA)	Temperature Received (°C)
<i>Steven R. Archler</i>	<i>Feed</i>	17 Jan 07	1430	NA	—
<i>Feed</i>	<i>ATL</i>	1-18-07	1000	NA	2°C

CHAIN OF CUSTODY

Client: City of Morro Bay

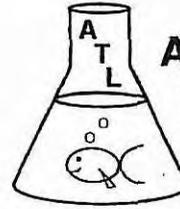
Address: Wastewater Treatment Plant
160 Atascadero Road
Morro Bay, CA 93442

Project Manager: Doug Coats - MRS

Phone: (805) 644-1180

Fax: (805) 289-3935

Purchase Order No:



**Aquatic
Testing
Laboratories**

4350 Transport St., Unit 107
Ventura, CA 93003
(805) 650-0546 Fax (805) 650-0756

Sample ID	Sample Date	Sample Time	Sample Type *	Chlorine (TRC)**	Number of Containers	Testing Requested
Grab_Eff. ARS	1/18/07	900 AM	E	0.03	1 (one gallon)	FHM Acute daily renewal

Special Instructions:

** Note: Total residual chlorine must be taken immediately after sample collection if sample is a chlorinated effluent.

* L - Liquid, S - Solid, SS - Semi-Solid/sludge, RW - Receiving Water, GW - Ground Water, E - Effluent

CUSTODY TRANSFERS

Relinquished by (signature)	Received by (signature)	Date (mm/dd/yy)	Time (hh:mm)	Seals Intact? (Yes, No, NA)	Temperature Received (°C)
Steven R. Archambault	Fel Rex	18 Jan 07	1430	—	—
Fel Rex	Johnny AC	1-19-07	1000	NA	2°C

CHAIN OF CUSTODY

Client: City of Morro Bay

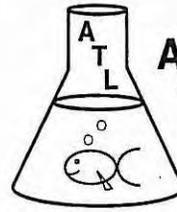
Address: Wastewater Treatment Plant
160 Atascadero Road
Morro Bay, CA 93442

Project Manager: Doug Coats - MRS

Phone: (805) 644-1180

Fax: (805) 289-3935

Purchase Order No: _____



**Aquatic
Testing
Laboratories**

**4350 Transport St., Unit 107
Ventura, CA 93003
(805) 650-0546 Fax (805) 650-0756**

Sample ID	Sample Date	Sample Time	Sample Type *	Chlorine (TRC)**	Number of Containers	Testing Requested
Comp. Eff.	22 Jan 07	0815	E	0.01	1 (one gallon)	Giant Kelp Chronic

Special Instructions:

**** Note: Total residual chlorine must be taken immediately after sample collection if sample is a chlorinated effluent.**

* L - Liquid, S - Solid, SS - Semi-Solid/sludge, RW - Receiving Water, GW - Ground Water, E - Effluent

CUSTODY TRANSFERS

Relinquished by (signature)	Received by (signature)	Date (mm/dd/yy)	Time (hh:mm)	Seals Intact? (Yes, No, NA)	Temperature Received (°C)
Steven R. Deeburn	Fed E	22 Jan 07	1400	NA	—
Fed E	[Signature]	1-23-07	1000	NA	2°C



***REFERENCE
TOXICANT
DATA***

**FATHEAD MINNOW ACUTE
Method 2000.0
Reference Toxicant - SDS**



QA/QC Batch No.: RT-070109

TEST SUMMARY

Species: *Pimephales promelas*.
Age: 13 days old.
Regulations: NPDES.
Test chamber volume: 250 ml.
Feeding: Prior to renewal at 48 hrs.
Temperature: 20 +/- 1°C.
Number of replicates: 2.
Dilution water: MHSF.

Source: In-lab culture.
Test type: Static-Renewal.
Test Protocol: EPA-821-R-02-012.
Endpoints: LC50 at 96 hrs.
Test chamber: 600 ml glass beakers.
Aeration: None.
Number of organisms per chamber: 10.
Photoperiod: 16/8 hrs light/dark.

TEST DATA

Date/Time: Analyst:	INITIAL			24 Hr					48 Hr				
	<u>1-9-07 1400</u>			<u>1-10-07 1300</u>					<u>1-11-07 1200</u>				
	<u>Ru</u>			<u>Ru</u>					<u>Ru</u>				
	°C	DO	pH	°C	DO	pH	# Dead		°C	DO	pH	# Dead	
A							B	A				B	
Control	<u>20.8</u>	<u>8.8</u>	<u>7.9</u>	<u>19.5</u>	<u>7.4</u>	<u>7.4</u>	<u>0</u>	<u>0</u>	<u>19.8</u>	<u>7.3</u>	<u>7.5</u>	<u>0</u>	<u>0</u>
1.0 mg/l	<u>20.8</u>	<u>8.8</u>	<u>7.9</u>	<u>19.4</u>	<u>7.2</u>	<u>7.3</u>	<u>0</u>	<u>0</u>	<u>19.8</u>	<u>7.1</u>	<u>7.5</u>	<u>0</u>	<u>0</u>
2.0 mg/l	<u>20.8</u>	<u>8.9</u>	<u>7.9</u>	<u>19.5</u>	<u>7.2</u>	<u>7.4</u>	<u>0</u>	<u>0</u>	<u>19.7</u>	<u>7.0</u>	<u>7.4</u>	<u>0</u>	<u>0</u>
4.0 mg/l	<u>20.8</u>	<u>8.9</u>	<u>7.9</u>	<u>19.6</u>	<u>7.1</u>	<u>7.4</u>	<u>0</u>	<u>0</u>	<u>19.7</u>	<u>7.0</u>	<u>7.4</u>	<u>0</u>	<u>0</u>
8.0 mg/l	<u>20.8</u>	<u>8.9</u>	<u>7.9</u>	<u>19.7</u>	<u>6.3</u>	<u>7.3</u>	<u>10</u>	<u>10</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Date/Time: Analyst:	RENEWAL			72 Hr					96 Hr				
	<u>1-11-07 1200</u>			<u>1-12-07 1100</u>					<u>1-13-07 1100</u>				
	<u>Ru</u>			<u>Ru</u>					<u>Ru</u>				
	°C	DO	pH	°C	DO	pH	# Dead		°C	DO	pH	# Dead	
A							B	A				B	
Control	<u>20.3</u>	<u>8.8</u>	<u>7.9</u>	<u>19.2</u>	<u>7.7</u>	<u>7.3</u>	<u>0</u>	<u>0</u>	<u>19.2</u>	<u>8.1</u>	<u>7.5</u>	<u>0</u>	<u>0</u>
1.0 mg/l	<u>20.3</u>	<u>8.9</u>	<u>7.8</u>	<u>19.2</u>	<u>7.5</u>	<u>7.3</u>	<u>0</u>	<u>0</u>	<u>19.2</u>	<u>8.1</u>	<u>7.5</u>	<u>0</u>	<u>0</u>
2.0 mg/l	<u>20.3</u>	<u>9.0</u>	<u>7.8</u>	<u>19.2</u>	<u>7.2</u>	<u>7.3</u>	<u>0</u>	<u>0</u>	<u>19.2</u>	<u>8.0</u>	<u>7.4</u>	<u>0</u>	<u>0</u>
4.0 mg/l	<u>20.3</u>	<u>9.0</u>	<u>7.8</u>	<u>19.3</u>	<u>6.6</u>	<u>7.3</u>	<u>1</u>	<u>1</u>	<u>19.3</u>	<u>8.1</u>	<u>7.4</u>	<u>0</u>	<u>0</u>
8.0 mg/l	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Comments:

Control: Alkalinity: 65 mg/l; Hardness: 96 mg/l; Conductivity: 335 umho.
SDS: Alkalinity: 66 mg/l; Hardness: 96 mg/l; Conductivity: 330 umho.

Acute Fish Test-96 Hr Survival

Start Date: 09 Jan-07 14:00 Test ID: RT-070109f Sample ID: REF-Ref Toxicant
 End Date: 13 Jan-07 14:00 Lab ID: CAATL-Aquatic Testing Labs Sample Type: SDS-Sodium dodecyl sulfate
 Sample Date: 09 Jan-07 00:00 Protocol: ACUTE 5TH-EPA-821-R-02-(Test Species: PP-Pimephales promelas
 Comments:

Conc-mg/L	1	2
D-Control	1.0000	1.0000
1	1.0000	1.0000
2	1.0000	1.0000
4	0.9000	0.9000
8	0.0000	0.0000

Conc-mg/L	Transform: Arcsin Square Root							Number Resp	Total Number
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
1	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
2	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
4	0.9000	0.9000	1.2490	1.2490	1.2490	0.000	2	2	20
8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

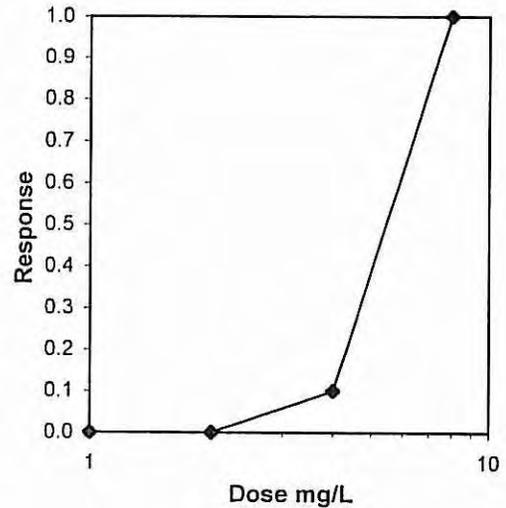
Auxiliary Tests

Normality of the data set cannot be confirmed
 Equality of variance cannot be confirmed

Statistic Critical Skew Kurt

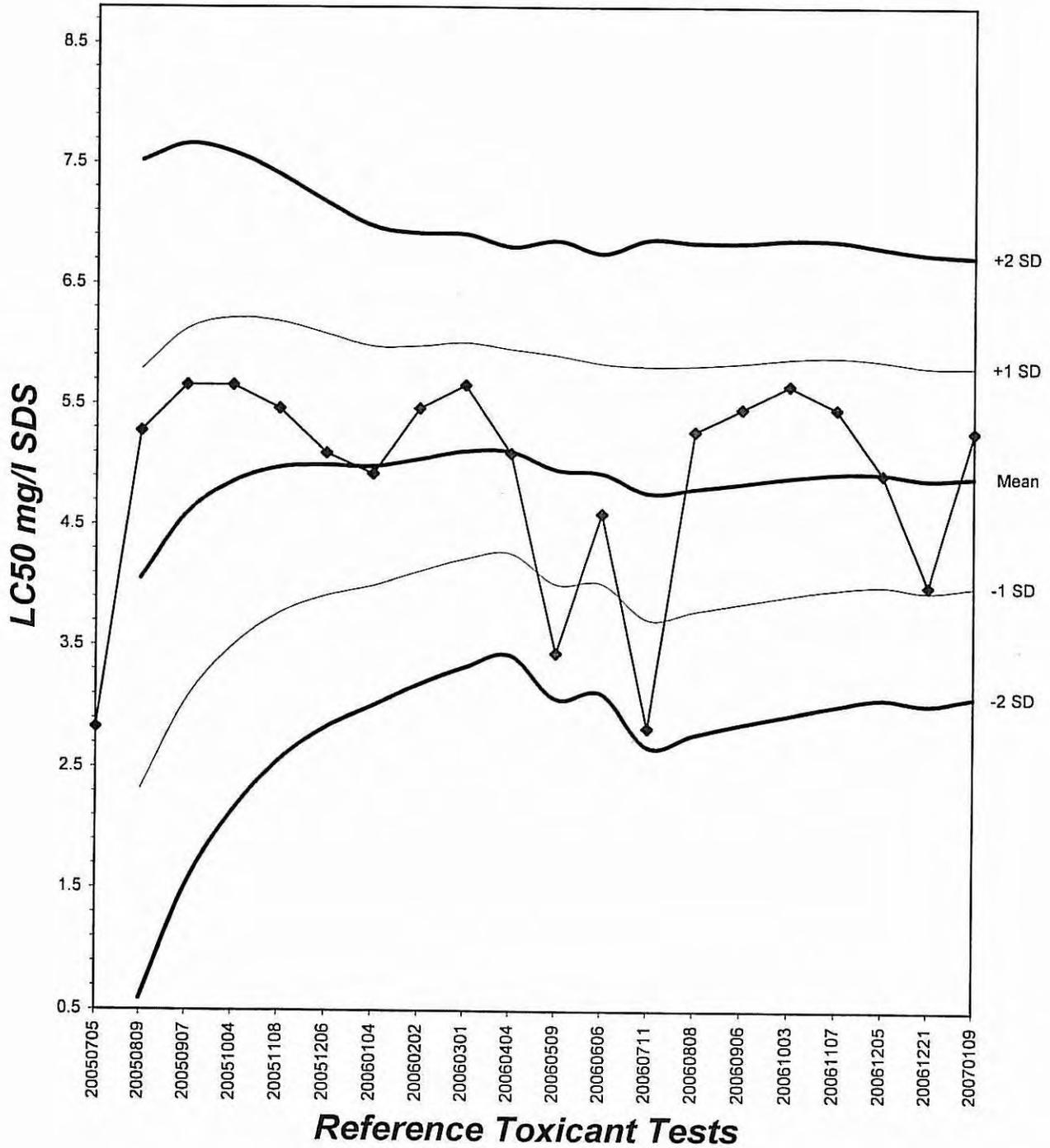
Trimmed Spearman-Kärber

Trim Level	EC50	95% CL	
0.0%	5.2780	4.8093	5.7924
5.0%	5.3968	4.8053	6.0611
10.0%	5.4432	5.1395	5.7648
20.0%	5.4432	5.1395	5.7648
Auto-0.0%	5.2780	4.8093	5.7924



Fathead Minnow Acute Laboratory Control Chart

CV% = 18.5



TEST ORGANISM LOG



FATHEAD MINNOW - LARVAL (*Pimephales promelas*)

QA/QC BATCH NO.: RT-070109

SOURCE: In-Lab Culture

DATE HATCHED: 12-27-06

APPROXIMATE QUANTITY: 400

GENERAL APPEARANCE: good

MORTALITIES 48 HOURS PRIOR TO
TO USE IN TESTING: 0

DATE USED IN LAB: 11/9/07

AVERAGE FISH WEIGHT: 0.006 gm

TEST LOADING LIMITS: 0.65 gm/liter

200 ml test solution volume = 0.013 gm mean fish weight limit

250 ml test solution volume = 0.016 gm mean fish weight limit

ACCLIMATION WATER QUALITY:

Temp.: 20.8 °C

pH: 7.9

Ammonia: 20.1 mg/l NH₃-N

DO: 8.8 mg/l

Alkalinity: 65 mg/l

Hardness: 96 mg/l

READINGS RECORDED BY: _____

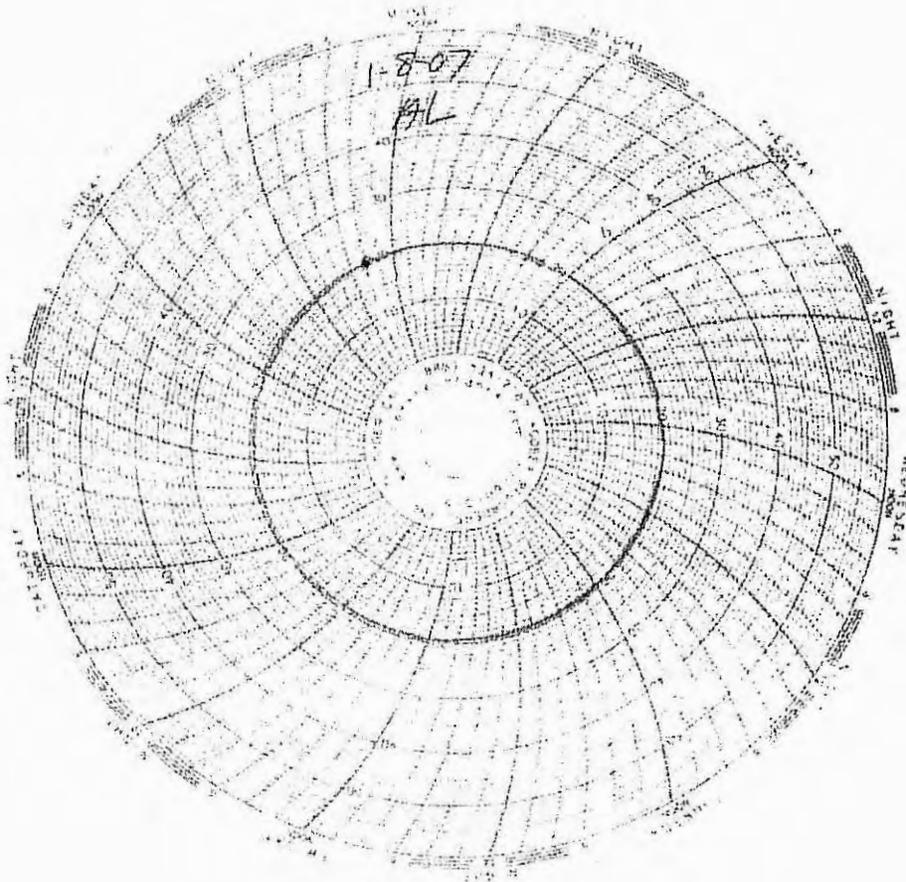
DATE: 1-10-07

Laboratory Temperature Chart

QA/QC Batch No: RT-070109

Date Tested: 01/09/07 to 01/13/07

Acceptable Range: 20 \pm 1 $^{\circ}$ C



GIANT KELP GERMINATION AND GROWTH TEST REFERENCE TOXICANT - COPPER



QA/QC Batch No.: RT-070123

Date Tested: 01/23/07 - 01/25/07

TEST SUMMARY

Species: *Macrocystis pyrifera*.
 Protocol: EPA Method 1009.0.
 Test type: Static.
 Test chamber: 100 ml plastic petri dishes.
 Temperature: 15 +/- 1°C.
 Number of spores per ml: 7,500 (approx.).
 Standard toxicant: Copper chloride.
 Lab seawater: 0.2 um filtered seawater.

Source: Field collected.
 Dilution water: Lab seawater.
 Endpoints: NOEC, IC25 at 48 hrs.
 Test volume: 50 ml.
 Aeration: None.
 Number of replicates: 5.
 Ref. tox. source: Mallinckrodt.
 Preservative: none.

RESULTS SUMMARY

Sample Concentration	Percent Germination		Mean Germ Tube Length (µm)	
Control	83.1%		15.30	
10 µg/l	84.5%		15.80	
18 µg/l	83.3%		15.30	
32 µg/l	78.2%		13.00	
56 µg/l	55.9%	*	9.35	*
100 µg/l	18.8%	*	6.70	*
180 µg/l	5.3%	*	5.60	*
* Statistically significantly less than control at P = 0.05 level				

CHRONIC TOXICITY

Germination NOEC	32 µg/l
Germination IC25	48.5 µg/l
Germ Tube Growth NOEC	32 µg/l
Germ Tube Growth IC25	40.8 µg/l

QA/QC TEST ACCEPTABILITY

Parameter	Result
Mean control germination ≥70%	Yes (83.1%)
Mean control germination tube length > 10 µm	Yes (15.30 µm)
Germination tube growth NOEC < 35 µg/l Copper	Yes (32 µg/l)
%MSD < 20% relative to control (germination & growth)	Yes (germ = 11.5%, growth = 9.2%)

Macrocystis Germination and Growth Test-Proportion Germinated

Start Date: 23 Jan-07 14:00 Test ID: RT-070123k Sample ID: REF-Ref Toxicant
 End Date: 25 Jan-07 14:00 Lab ID: CAATL-Aquatic Testing Labs Sample Type: CUCL-Copper chloride
 Sample Date: 23 Jan-07 00:00 Protocol: WCCH-EPA-600-R-95-136 Test Species: MP-Macrocystis pyrifera
 Comments:

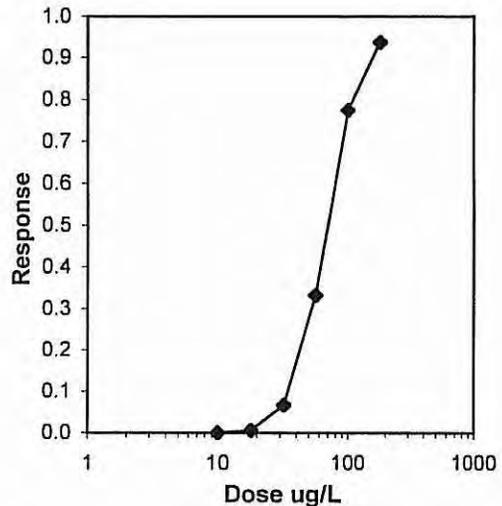
Conc-ug/L	1	2	3	4	5
D-Control	0.8447	0.8654	0.7961	0.8416	0.8073
10	0.8679	0.8364	0.8558	0.7925	0.8725
18	0.8952	0.8058	0.8462	0.7830	0.8350
32	0.8077	0.7048	0.7593	0.8350	0.8020
56	0.5784	0.5098	0.3945	0.7019	0.6091
100	0.1622	0.0857	0.2091	0.1607	0.3238
180	0.0280	0.0472	0.0550	0.0278	0.1048

Conc-ug/L	Transform: Arcsin Square Root							t-Stat	1-Tailed Critical	MSD	Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N				Mean	N-Mean
D-Control	0.8310	1.0000	1.1482	1.1023	1.1951	3.316	5				0.8380	1.0000
10	0.8450	1.0168	1.1676	1.0978	1.2057	3.750	5	-0.400	2.409	0.1170	0.8380	1.0000
18	0.8330	1.0024	1.1524	1.0862	1.2412	5.122	5	-0.087	2.409	0.1170	0.8330	0.9941
32	0.7817	0.9407	1.0866	0.9964	1.1524	5.587	5	1.267	2.409	0.1170	0.7817	0.9328
*56	0.5587	0.6724	0.8454	0.6791	0.9933	13.856	5	6.235	2.409	0.1170	0.5587	0.6668
*100	0.1883	0.2266	0.4409	0.2971	0.6053	25.455	5	14.566	2.409	0.1170	0.1883	0.2247
*180	0.0526	0.0632	0.2242	0.1674	0.3296	29.627	5	19.028	2.409	0.1170	0.0526	0.0627

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97491	0.91	0.05342	0.83785						
Bartlett's Test indicates equal variances (p = 0.23)	8.06093	16.8119								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSB	MSE	F-Stat	F-Prob	df
Dunnett's Test	32	56	42.332		0.09574	0.7453	0.00589	126.43	5.9E-19	6, 28

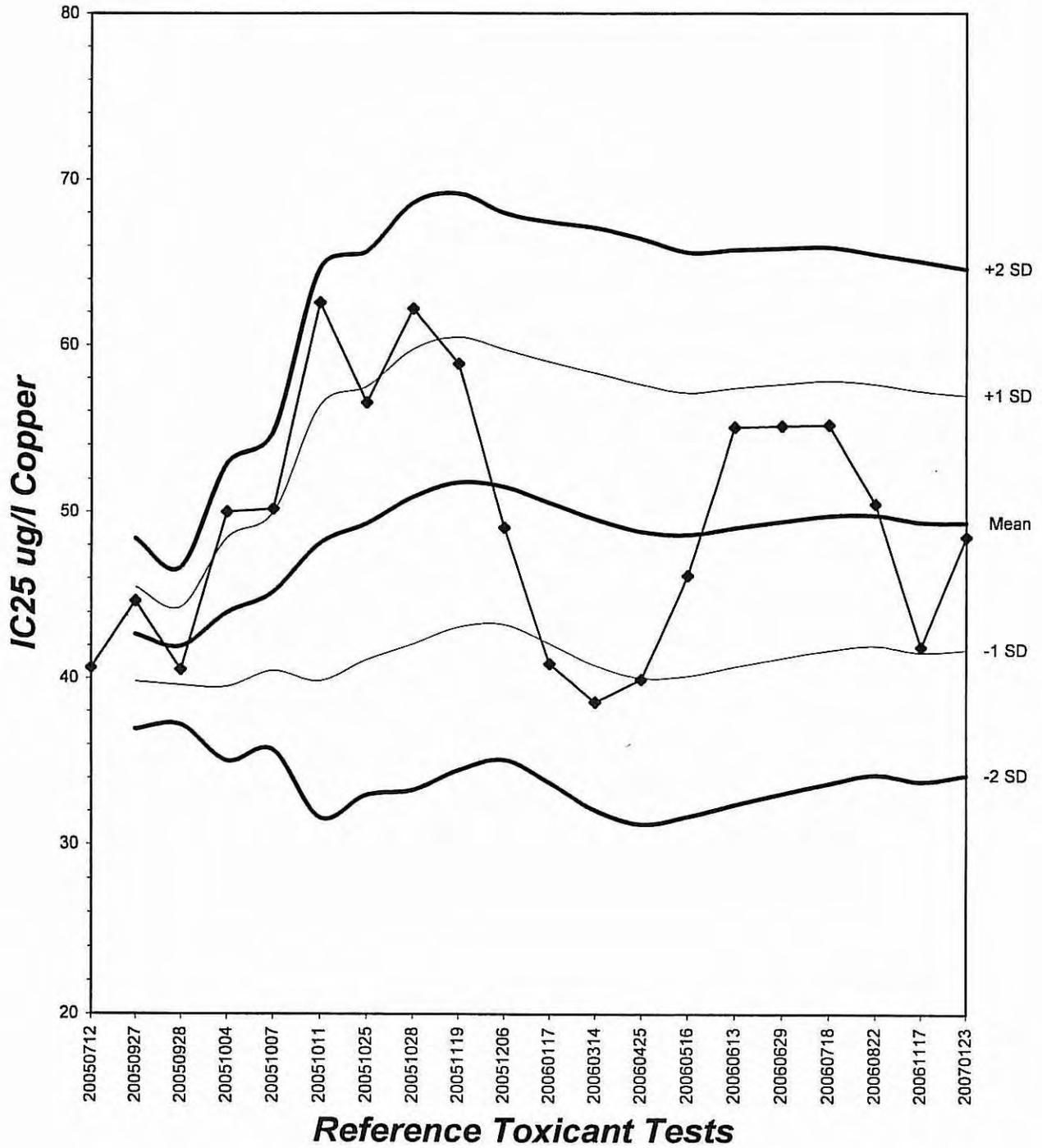
Linear Interpolation (80 Resamples)

Point	ug/L	SE	95% CL(Exp)	Skew
IC05	28.075	4.445	12.412 37.015	-0.7822
IC10	34.962	2.782	25.835 42.415	-0.2526
IC15	39.472	2.995	32.945 49.373	1.4895
IC20	43.981	3.473	37.378 56.289	1.5155
IC25	48.491	3.936	40.848 62.089	1.0374
IC40	62.644	4.556	48.457 75.121	-0.0807
IC50	72.598	4.070	56.568 83.882	-0.4577



Giant Kelp Germination Laboratory Control Chart

CV% = 15.4



Macrocyctis Germination and Growth Test-Growth-Length

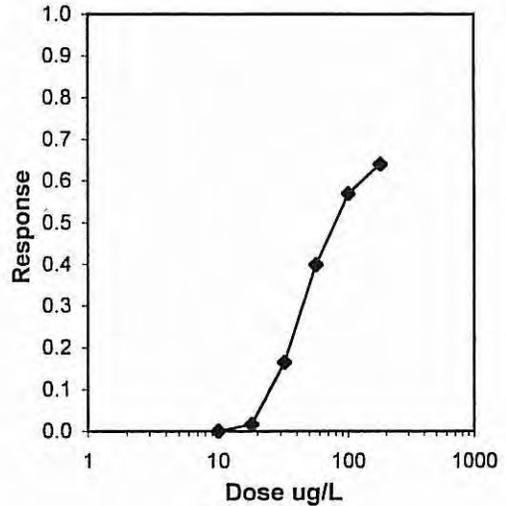
Start Date: 23 Jan-07 14:00 Test ID: RT-070123k Sample ID: REF-Ref Toxicant
 End Date: 25 Jan-07 14:00 Lab ID: CAATL-Aquatic Testing Labs Sample Type: CUCL-Copper chloride
 Sample Date: 23 Jan-07 00:00 Protocol: WCCH-EPA-600-R-95-136 Test Species: MP-Macrocyctis pyrifera
 Comments:

Conc-ug/L	1	2	3	4	5
D-Control	14.500	16.000	15.000	15.500	15.500
10	16.250	15.750	15.500	16.000	15.500
18	15.500	14.000	15.250	15.250	16.500
32	13.500	11.000	11.750	13.250	15.500
56	9.500	8.750	7.750	11.000	9.750
100	6.500	7.250	6.500	6.250	7.000
180	5.500	5.500	5.250	5.750	6.000

Conc-ug/L			Transform: Untransformed					Rank Sum	1-Tailed Critical	Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N			Mean	N-Mean
D-Control	15.300	1.0000	15.300	14.500	16.000	3.726	5			15.550	1.0000
10	15.800	1.0327	15.800	15.500	16.250	2.063	5	34.50	16.00	15.550	1.0000
18	15.300	1.0000	15.300	14.000	16.500	5.823	5	27.00	16.00	15.300	0.9839
32	13.000	0.8497	13.000	11.000	15.500	13.393	5	18.00	16.00	13.000	0.8360
*56	9.350	0.6111	9.350	7.750	11.000	12.906	5	15.00	16.00	9.350	0.6013
*100	6.700	0.4379	6.700	6.250	7.250	6.131	5	15.00	16.00	6.700	0.4309
*180	5.600	0.3660	5.600	5.250	6.000	5.090	5	15.00	16.00	5.600	0.3601

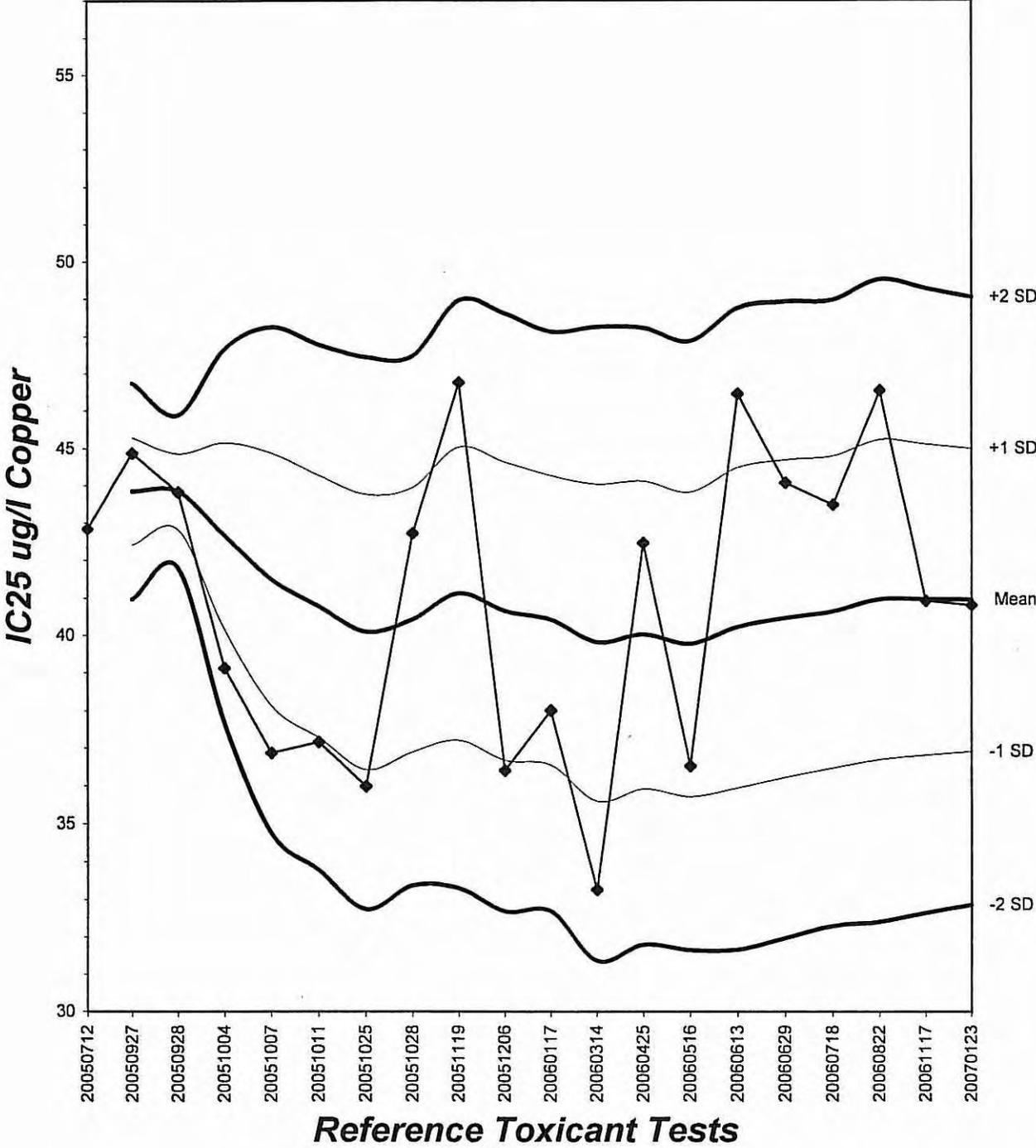
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93929	0.91	0.29588	2.24516
Bartlett's Test indicates unequal variances (p = 3.72E-03)	19.2786	16.8119		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	32	56	42.332	

Linear Interpolation (80 Resamples)					
Point	ug/L	SE	95% CL(Exp)		Skew
IC05	21.211	2.883	14.556	31.916	1.0918
IC10	25.943	3.629	20.052	38.894	0.7497
IC15	30.676	3.722	24.067	41.640	0.2701
IC20	35.682	3.851	27.119	45.797	-0.0209
IC25	40.795	3.592	32.018	51.179	-0.2051
IC40	56.332	5.076	48.224	74.084	0.8669
IC50	82.151	4.179	67.100	91.907	-0.4138



Giant Kelp Germ Tube Growth Laboratory Control Chart

CV% = 9.9



GIANT KELP GERMINATION AND GROWTH SHORT-TERM TOXICITY TEST



QA/QC No.: RT-070123

Start Date: 01/23/2007

Dish No.	Sample Conc.	Total Number Counted	Number Germin.	Number Non-Germin.	Germ Tube Lengths (micrometer units)									
					A	B	C	D	E	F	G	H	I	J
1	180	107	3	104	2	3	2	2	2	2	2	2	2	3
2	100	111	18	93	3	2	2	2	4	2	3	2	4	2
3	10	106	92	14	6	7	7	5	6	8	7	4	8	7
4	56	102	59	43	4	2	4	5	4	3	4	4	3	5
5	18	105	94	11	7	6	7	8	5	5	6	7	5	6
6	32	104	84	20	6	5	6	4	7	6	5	5	4	6
7	C	103	87	16	6	5	6	5	6	6	7	4	7	6
8	18	103	83	20	5	7	6	6	4	7	6	5	4	6
9	56	102	52	50	4	4	5	4	3	4	2	3	2	4
10	C	104	90	14	6	7	5	7	8	7	7	6	6	5
11	100	105	9	96	3	4	3	4	4	2	2	2	3	2
12	32	105	74	31	4	5	3	4	6	3	3	4	5	7
13	10	110	92	18	7	6	6	7	5	7	7	6	6	6
14	180	106	5	101	2	2	2	2	3	2	2	3	2	2
15	18	104	88	16	7	5	7	6	6	7	5	7	7	4
16	56	109	43	66	3	4	2	3	3	2	4	3	3	4
17	C	103	82	21	6	7	7	5	7	4	7	7	6	4
18	100	110	23	87	3	2	4	2	2	3	3	2	3	2
19	32	108	82	26	5	6	4	3	4	4	5	4	6	6
20	180	109	6	103	2	2	2	3	2	2	2	2	2	2

Comments:

Micrometer conversion factor: 1 unit = 2.5 um at 400X power

GIANT KELP GERMINATION AND GROWTH SHORT-TERM TOXICITY TEST



QA/QC No.: RT-070123

Start Date: 01/23/2007

Dish No.	Sample Conc.	Total Number Counted	Number Germin.	Number Non-Germin.	Germ Tube Lengths (micrometer units)									
					A	B	C	D	E	F	G	H	I	J
21	10	104	89	15	4	7	6	7	8	5	6	6	7	6
22	32	103	86	17	6	7	5	6	4	5	5	6	6	3
23	100	112	18	94	3	2	2	4	2	3	2	2	2	3
24	18	106	83	23	6	5	7	6	7	7	6	5	6	6
25	56	104	73	31	5	6	4	4	6	5	3	4	4	3
26	10	106	84	22	8	6	7	7	5	6	7	5	6	7
27	180	108	3	105	2	3	2	2	2	2	2	3	2	3
28	C	101	85	16	5	7	7	6	7	5	6	7	5	7
29	56	110	67	43	4	3	5	4	4	3	2	5	4	5
30	18	103	86	17	7	8	6	5	8	7	7	4	7	7
31	180	105	11	94	3	2	2	3	3	2	2	2	2	3
32	32	101	81	20	5	6	7	7	6	5	7	6	6	7
33	C	109	88	21	7	6	7	6	6	5	7	5	7	6
34	100	105	34	71	2	3	2	2	4	3	4	3	2	3
35	10	102	89	13	4	7	7	8	6	7	6	6	5	6
36														
37														
38														
39														
40														

Comments:

Micrometer conversion factor: 1 unit = 2.5 um at 400X power

GIANT KELP GERMINATION AND GROWTH SHORT-TERM TOXICITY TEST



QA/QC No.: RT-070123

Start Date: 01/23/2007

WATER QUALITY READINGS

Sample	Initial Readings				Final Readings			
	Temp (°C)	DO (mg/l)	pH	Salinity (o/oo)	Temp (°C)	DO (mg/l)	pH	Salinity (o/oo)
Control	15.1	8.0	8.0	34	15.8	7.4	8.0	34
10 µg/l	15.1	7.9	8.0	34	15.2	7.5	8.0	34
18 µg/l	15.1	7.8	8.0	34	15.6	7.5	8.0	34
32 µg/l	15.0	7.9	8.0	34	15.1	7.4	8.0	34
56 µg/l	15.0	7.8	8.0	34	15.2	7.5	8.0	34
100 µg/l	14.9	7.7	8.0	34	14.9	7.4	8.0	34
180 µg/l	14.9	7.8	8.0	34	15.5	7.3	8.0	34

Comments:

Reference toxicant: Copper chloride.

All dilutions made with reference lab seawater.

Illumination (16 hr light / 8 hr dark at 50 ± 10 uE/m²/s) at 5 locations in incubator:
(four corners and center): 52, 57, 48, 57, 50 uE/m²/s.

Initial readings: Analyst: [Signature] Date: 1-23-07 Time: 1400

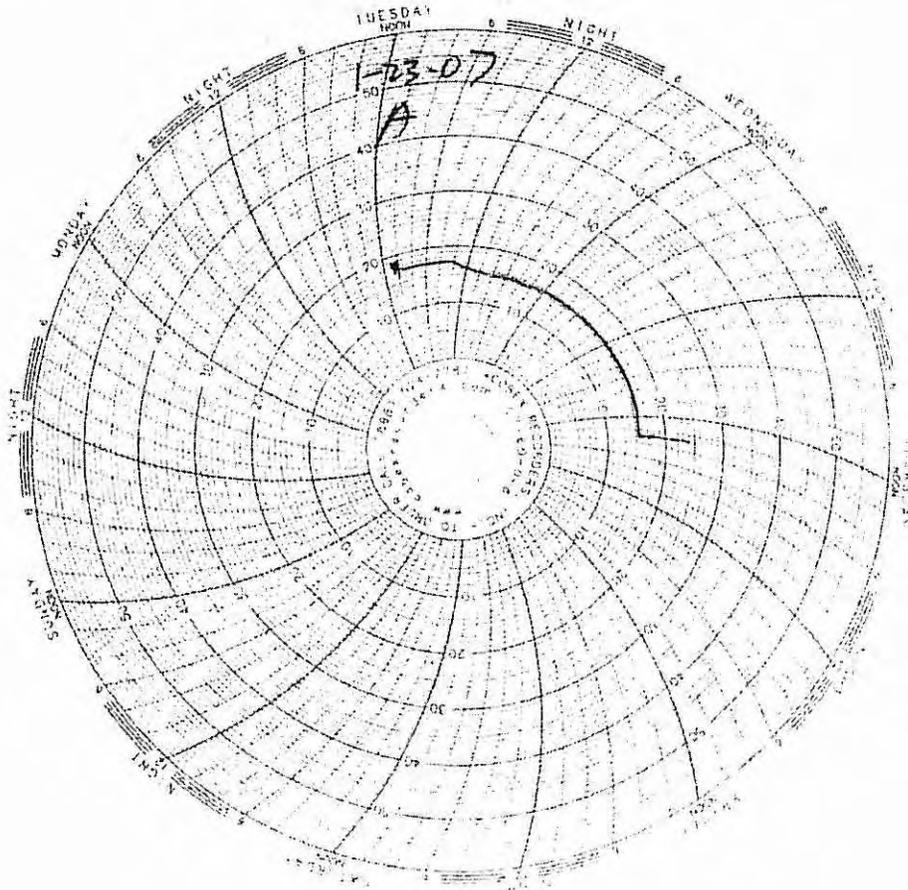
Final readings: Analyst: [Signature] Date: 1-25-07 Time: 1400

Laboratory Temperature Chart

QA/QC Batch No: RT-070123

Date Tested: 01/23/07 to 01/25/07

Acceptable Range: 15 \pm 1 $^{\circ}$ C



Marine Research Specialists
 3140 Telegraph Road, Suite A
 Suite A
 Ventura, CA 93003-3238

Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

Reported: 02/07/2007 16:24

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
Total Cyanide	BQA0781	Duplicate	0700455-01	ND	ND		mg/L			10	
		Matrix Spike	0700455-01	ND	0.25750	0.25000	mg/L		103		90 - 110
		Matrix Spike Duplicate	0700455-01	ND	0.25750	0.25000	mg/L	0	103	20	90 - 110
Ammonia as N (Distilled)	BQA1005	Duplicate	0700391-01	19.606	19.606		mg/L	0		20	A01
		Matrix Spike	0700391-01	19.606	24.238	4.0000	mg/L		116		80 - 120 A01
		Matrix Spike Duplicate	0700391-01	19.606	24.816	4.0000	mg/L	11.4	130	20	80 - 120 A01,Q03

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Water Analysis (Metals)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
Total Mercury	BQA0615	Duplicate	0700212-01	0.067500	ND		ug/L			20	
		Matrix Spike	0700212-01	0.067500	1.1375	1.0000	ug/L		107		70 - 130
		Matrix Spike Duplicate	0700212-01	0.067500	1.1450	1.0000	ug/L	0.9	108	20	70 - 130
Total Antimony	BQA0626	Duplicate	0700329-01	ND	ND		ug/L			20	
		Matrix Spike	0700329-01	ND	423.83	400.00	ug/L		106		75 - 125
		Matrix Spike Duplicate	0700329-01	ND	452.01	400.00	ug/L	6.4	113	20	75 - 125
Total Beryllium	BQA0626	Duplicate	0700329-01	ND	ND		ug/L			20	
		Matrix Spike	0700329-01	ND	205.81	200.00	ug/L		103		75 - 125
		Matrix Spike Duplicate	0700329-01	ND	218.44	200.00	ug/L	5.7	109	20	75 - 125
Total Cadmium	BQA0626	Duplicate	0700329-01	ND	ND		ug/L			20	
		Matrix Spike	0700329-01	ND	217.26	200.00	ug/L		109		75 - 125
		Matrix Spike Duplicate	0700329-01	ND	224.78	200.00	ug/L	2.7	112	20	75 - 125
Total Chromium	BQA0626	Duplicate	0700329-01	3.2880	3.2935		ug/L	0.2		20	J
		Matrix Spike	0700329-01	3.2880	206.66	200.00	ug/L		102		75 - 125
		Matrix Spike Duplicate	0700329-01	3.2880	220.74	200.00	ug/L	6.6	109	20	75 - 125
Total Copper	BQA0626	Duplicate	0700329-01	91.903	94.261		ug/L	2.5		20	
		Matrix Spike	0700329-01	91.903	313.46	200.00	ug/L		111		75 - 125
		Matrix Spike Duplicate	0700329-01	91.903	325.74	200.00	ug/L	5.3	117	20	75 - 125
Total Nickel	BQA0626	Duplicate	0700329-01	6.5299	6.1705		ug/L	5.7		20	J
		Matrix Spike	0700329-01	6.5299	444.04	400.00	ug/L		109		75 - 125
		Matrix Spike Duplicate	0700329-01	6.5299	472.83	400.00	ug/L	7.1	117	20	75 - 125
Total Silver	BQA0626	Duplicate	0700329-01	ND	ND		ug/L			20	
		Matrix Spike	0700329-01	ND	97.450	100.00	ug/L		97.4		75 - 125
		Matrix Spike Duplicate	0700329-01	ND	103.77	100.00	ug/L	6.6	104	20	75 - 125
Total Zinc	BQA0626	Duplicate	0700329-01	166.74	156.10		ug/L	6.6		20	
		Matrix Spike	0700329-01	166.74	396.82	200.00	ug/L		115		75 - 125
		Matrix Spike Duplicate	0700329-01	166.74	408.80	200.00	ug/L	5.1	121	20	75 - 125

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Water Analysis (Metals)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
									Percent Recovery	RPD	Percent Recovery Lab Quals
Total Recoverable Arsenic	BQA0750	Duplicate	0700329-01	6.7370	5.9520		ug/L	12.4		20	
		Matrix Spike	0700329-01	6.7370	53.888	50.000	ug/L		94.3		70 - 130
		Matrix Spike Duplicate	0700329-01	6.7370	54.503	50.000	ug/L	1.3	95.5	20	70 - 130
Total Recoverable Lead	BQA0750	Duplicate	0700329-01	6.7380	6.3550		ug/L	5.9		20	
		Matrix Spike	0700329-01	6.7380	53.358	50.000	ug/L		93.2		70 - 130
		Matrix Spike Duplicate	0700329-01	6.7380	52.962	50.000	ug/L	0.9	92.4	20	70 - 130
Total Recoverable Selenium	BQA0750	Duplicate	0700329-01	1.2860	1.1230		ug/L	13.5		20	J
		Matrix Spike	0700329-01	1.2860	48.364	50.000	ug/L		94.2		70 - 130
		Matrix Spike Duplicate	0700329-01	1.2860	48.661	50.000	ug/L	0.6	94.8	20	70 - 130
Total Recoverable Thallium	BQA0750	Duplicate	0700329-01	0.21700	ND		ug/L			20	
		Matrix Spike	0700329-01	0.21700	17.387	20.000	ug/L		85.8		70 - 130
		Matrix Spike Duplicate	0700329-01	0.21700	17.805	20.000	ug/L	2.4	87.9	20	70 - 130

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Organochlorine Pesticides and PCB's (EPA Method 608)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
									Percent Recovery	RPD	Percent Recovery Lab Quals
Aldrin	BQA0704	Matrix Spike	0610676-87	ND	0.23716	0.25000	ug/L		94.9		67 - 136
		Matrix Spike Duplicate	0610676-87	ND	0.24785	0.25000	ug/L	4.3	99.1	21	67 - 136
gamma-BHC (Lindane)	BQA0704	Matrix Spike	0610676-87	ND	0.20676	0.25000	ug/L		82.7		47 - 132
		Matrix Spike Duplicate	0610676-87	ND	0.22308	0.25000	ug/L	7.6	89.2	20	47 - 132
4,4'-DDT	BQA0704	Matrix Spike	0610676-87	ND	0.20432	0.25000	ug/L		81.7		52 - 127
		Matrix Spike Duplicate	0610676-87	ND	0.21662	0.25000	ug/L	5.8	86.6	24	52 - 127
Dieldrin	BQA0704	Matrix Spike	0610676-87	ND	0.21831	0.25000	ug/L		87.3		66 - 140
		Matrix Spike Duplicate	0610676-87	ND	0.23450	0.25000	ug/L	7.2	93.8	20	66 - 140
Endrin	BQA0704	Matrix Spike	0610676-87	ND	0.23312	0.25000	ug/L		93.2		63 - 141
		Matrix Spike Duplicate	0610676-87	ND	0.25122	0.25000	ug/L	7.0	100	20	63 - 141
Heptachlor	BQA0704	Matrix Spike	0610676-87	ND	0.22259	0.25000	ug/L		89.0		68 - 134
		Matrix Spike Duplicate	0610676-87	ND	0.23283	0.25000	ug/L	4.5	93.1	20	68 - 134
PCB-1260	BQA0704	Matrix Spike	0610676-87	ND	ND		ug/L				0 - 200
		Matrix Spike Duplicate	0610676-87	ND	ND		ug/L			200	0 - 200
TCMX (Surrogate)	BQA0704	Matrix Spike	0610676-87	ND	0.30055	0.30000	ug/L		100		55 - 123
		Matrix Spike Duplicate	0610676-87	ND	0.31382	0.30000	ug/L		105	22	55 - 123
Dibutyl chlorendate (Surrogate)	BQA0704	Matrix Spike	0610676-87	ND	0.71224	0.75000	ug/L		95.0		48 - 149
		Matrix Spike Duplicate	0610676-87	ND	0.73676	0.75000	ug/L		98.2	24	48 - 149

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
Benzene	BQA0608	Matrix Spike	0700477-01	ND	28.130	25.000	ug/L		113		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	27.310	25.000	ug/L	3.6	109	20	70 - 130
Bromodichloromethane	BQA0608	Matrix Spike	0700477-01	ND	22.990	25.000	ug/L		92.0		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.480	25.000	ug/L	2.3	89.9	20	70 - 130
Bromoform	BQA0608	Matrix Spike	0700477-01	ND	23.120	25.000	ug/L		92.5		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.580	25.000	ug/L	2.4	90.3	20	70 - 130
Bromomethane	BQA0608	Matrix Spike	0700477-01	ND	30.070	25.000	ug/L		120		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	30.730	25.000	ug/L	2.5	123	20	70 - 130
Carbon tetrachloride	BQA0608	Matrix Spike	0700477-01	ND	24.690	25.000	ug/L		98.8		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.220	25.000	ug/L	1.9	96.9	20	70 - 130
Chlorobenzene	BQA0608	Matrix Spike	0700477-01	ND	26.260	25.000	ug/L		105		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.950	25.000	ug/L	1.0	104	20	70 - 130
Chloroethane	BQA0608	Matrix Spike	0700477-01	ND	29.910	25.000	ug/L		120		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	29.320	25.000	ug/L	2.5	117	20	70 - 130
Chloroform	BQA0608	Matrix Spike	0700477-01	ND	25.210	25.000	ug/L		101		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.870	25.000	ug/L	1.5	99.5	20	70 - 130
Chloromethane	BQA0608	Matrix Spike	0700477-01	ND	29.070	25.000	ug/L		116		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	28.550	25.000	ug/L	1.7	114	20	70 - 130
Dibromochloromethane	BQA0608	Matrix Spike	0700477-01	ND	22.970	25.000	ug/L		91.9		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.360	25.000	ug/L	2.8	89.4	20	70 - 130
1,2-Dichlorobenzene	BQA0608	Matrix Spike	0700477-01	ND	25.270	25.000	ug/L		101		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.580	25.000	ug/L	1.0	102	20	70 - 130
1,3-Dichlorobenzene	BQA0608	Matrix Spike	0700477-01	ND	25.420	25.000	ug/L		102		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.270	25.000	ug/L	1.0	101	20	70 - 130
1,4-Dichlorobenzene	BQA0608	Matrix Spike	0700477-01	ND	24.480	25.000	ug/L		97.9		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.670	25.000	ug/L	0.8	98.7	20	70 - 130

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
1,1-Dichloroethane	BQA0608	Matrix Spike	0700477-01	ND	27.190	25.000	ug/L		109		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.610	25.000	ug/L	2.8	106	20	70 - 130
1,2-Dichloroethane	BQA0608	Matrix Spike	0700477-01	ND	24.380	25.000	ug/L		97.5		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	23.080	25.000	ug/L	5.5	92.3	20	70 - 130
1,1-Dichloroethene	BQA0608	Matrix Spike	0700477-01	ND	27.700	25.000	ug/L		111		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.760	25.000	ug/L	3.7	107	20	70 - 130
trans-1,2-Dichloroethene	BQA0608	Matrix Spike	0700477-01	ND	27.220	25.000	ug/L		109		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.450	25.000	ug/L	2.8	106	20	70 - 130
1,2-Dichloropropane	BQA0608	Matrix Spike	0700477-01	ND	27.270	25.000	ug/L		109		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.660	25.000	ug/L	1.9	107	20	70 - 130
cis-1,3-Dichloropropene	BQA0608	Matrix Spike	0700477-01	ND	24.100	25.000	ug/L		96.4		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	23.190	25.000	ug/L	3.8	92.8	20	70 - 130
trans-1,3-Dichloropropene	BQA0608	Matrix Spike	0700477-01	ND	23.200	25.000	ug/L		92.8		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.560	25.000	ug/L	2.8	90.2	20	70 - 130
Ethylbenzene	BQA0608	Matrix Spike	0700477-01	ND	26.730	25.000	ug/L		107		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.280	25.000	ug/L	1.9	105	20	70 - 130
Methylene chloride	BQA0608	Matrix Spike	0700477-01	ND	28.050	25.000	ug/L		112		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.870	25.000	ug/L	4.6	107	20	70 - 130
Methyl t-butyl ether	BQA0608	Matrix Spike	0700477-01	ND	23.290	25.000	ug/L		93.2		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.470	25.000	ug/L	3.6	89.9	20	70 - 130
1,1,2,2-Tetrachloroethane	BQA0608	Matrix Spike	0700477-01	ND	24.990	25.000	ug/L		100		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.300	25.000	ug/L	2.8	97.2	20	70 - 130
Tetrachloroethene	BQA0608	Matrix Spike	0700477-01	ND	23.140	25.000	ug/L		92.6		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	22.800	25.000	ug/L	1.5	91.2	20	70 - 130
Toluene	BQA0608	Matrix Spike	0700477-01	ND	26.530	25.000	ug/L		106		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.800	25.000	ug/L	2.9	103	20	70 - 130

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
									Percent Recovery	RPD	Percent Recovery Lab Quals
1,1,1-Trichloroethane	BQA0608	Matrix Spike	0700477-01	ND	25.000	25.000	ug/L		100		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.350	25.000	ug/L	2.6	97.4	20	70 - 130
1,1,2-Trichloroethane	BQA0608	Matrix Spike	0700477-01	ND	24.510	25.000	ug/L		98.0		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	23.990	25.000	ug/L	2.1	96.0	20	70 - 130
Trichloroethene	BQA0608	Matrix Spike	0700477-01	ND	24.740	25.000	ug/L		99.0		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	24.830	25.000	ug/L	0.3	99.3	20	70 - 130
Trichlorofluoromethane	BQA0608	Matrix Spike	0700477-01	ND	25.750	25.000	ug/L		103		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.730	25.000	ug/L	0	103	20	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	BQA0608	Matrix Spike	0700477-01	ND	25.360	25.000	ug/L		101		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	25.900	25.000	ug/L	2.9	104	20	70 - 130
Vinyl chloride	BQA0608	Matrix Spike	0700477-01	ND	29.010	25.000	ug/L		116		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	28.910	25.000	ug/L	0	116	20	70 - 130
Total Xylenes	BQA0608	Matrix Spike	0700477-01	ND	80.610	75.000	ug/L		107		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	79.480	75.000	ug/L	0.9	106	20	70 - 130
p- & m-Xylenes	BQA0608	Matrix Spike	0700477-01	ND	54.510	50.000	ug/L		109		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	53.430	50.000	ug/L	1.9	107	20	70 - 130
o-Xylene	BQA0608	Matrix Spike	0700477-01	ND	26.100	25.000	ug/L		104		70 - 130
		Matrix Spike Duplicate	0700477-01	ND	26.050	25.000	ug/L	0	104	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	BQA0608	Matrix Spike	0700477-01	ND	10.090	10.000	ug/L		101		76 - 114
		Matrix Spike Duplicate	0700477-01	ND	9.8000	10.000	ug/L		98.0		76 - 114
Toluene-d8 (Surrogate)	BQA0608	Matrix Spike	0700477-01	ND	10.000	10.000	ug/L		100		88 - 110
		Matrix Spike Duplicate	0700477-01	ND	10.030	10.000	ug/L		100		88 - 110
4-Bromofluorobenzene (Surrogate)	BQA0608	Matrix Spike	0700477-01	ND	10.040	10.000	ug/L		100		86 - 115
		Matrix Spike Duplicate	0700477-01	ND	10.330	10.000	ug/L		103		86 - 115

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
Acenaphthene	BQA0950	Matrix Spike	0612868-79	ND	65.889	80.000	ug/L		82.4	39 - 121	
		Matrix Spike Duplicate	0612868-79	ND	67.297	80.000	ug/L	2.0	84.1	22	39 - 121
1,4-Dichlorobenzene	BQA0950	Matrix Spike	0612868-79	ND	61.718	80.000	ug/L		77.1	31 - 106	
		Matrix Spike Duplicate	0612868-79	ND	64.512	80.000	ug/L	4.4	80.6	22	31 - 106
2,4-Dinitrotoluene	BQA0950	Matrix Spike	0612868-79	ND	52.487	80.000	ug/L		65.6	20 - 129	
		Matrix Spike Duplicate	0612868-79	ND	53.640	80.000	ug/L	2.1	67.0	21	20 - 129
Hexachlorobenzene	BQA0950	Matrix Spike	0612868-79	ND	84.322	80.000	ug/L		105	45 - 117	
		Matrix Spike Duplicate	0612868-79	ND	89.319	80.000	ug/L	6.5	112	21	45 - 117
Hexachlorobutadiene	BQA0950	Matrix Spike	0612868-79	ND	58.642	80.000	ug/L		73.3	27 - 94	
		Matrix Spike Duplicate	0612868-79	ND	62.554	80.000	ug/L	6.5	78.2	29	27 - 94
Hexachloroethane	BQA0950	Matrix Spike	0612868-79	ND	51.023	80.000	ug/L		63.8	23 - 95	
		Matrix Spike Duplicate	0612868-79	ND	54.767	80.000	ug/L	7.1	68.5	25	23 - 95
Nitrobenzene	BQA0950	Matrix Spike	0612868-79	ND	65.275	80.000	ug/L		81.6	31 - 124	
		Matrix Spike Duplicate	0612868-79	ND	66.507	80.000	ug/L	1.8	83.1	23	31 - 124
N-Nitrosodi-N-propylamine	BQA0950	Matrix Spike	0612868-79	ND	65.478	80.000	ug/L		81.8	24 - 115	
		Matrix Spike Duplicate	0612868-79	ND	68.002	80.000	ug/L	3.8	85.0	24	24 - 115
Pyrene	BQA0950	Matrix Spike	0612868-79	ND	117.21	80.000	ug/L		147	48 - 139 Q03	
		Matrix Spike Duplicate	0612868-79	ND	118.54	80.000	ug/L	0.7	148	24	48 - 139 Q03
1,2,4-Trichlorobenzene	BQA0950	Matrix Spike	0612868-79	ND	63.885	80.000	ug/L		79.9	26 - 113	
		Matrix Spike Duplicate	0612868-79	ND	65.853	80.000	ug/L	3.0	82.3	24	26 - 113
4-Chloro-3-methylphenol	BQA0950	Matrix Spike	0612868-79	ND	69.092	80.000	ug/L		86.4	31 - 139	
		Matrix Spike Duplicate	0612868-79	ND	71.634	80.000	ug/L	3.5	89.5	23	31 - 139
2-Chlorophenol	BQA0950	Matrix Spike	0612868-79	ND	56.768	80.000	ug/L		71.0	30 - 105	
		Matrix Spike Duplicate	0612868-79	ND	57.744	80.000	ug/L	1.7	72.2	22	30 - 105
2-Methylphenol	BQA0950	Matrix Spike	0612868-79	ND	70.887	80.000	ug/L		88.6	31 - 93	
		Matrix Spike Duplicate	0612868-79	ND	71.275	80.000	ug/L	0.6	89.1	17	31 - 93

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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Precision & Accuracy

Constituent	Batch ID	QC Sample Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits	
										RPD	Percent Recovery Lab Quals
3- & 4-Methylphenol	BQA0950	Matrix Spike	0612868-79	ND	96.196	80.000	ug/L		120		34 - 165
		Matrix Spike Duplicate	0612868-79	ND	99.090	80.000	ug/L	3.3	124	22	34 - 165
4-Nitrophenol	BQA0950	Matrix Spike	0612868-79	ND	39.018	80.000	ug/L		48.8		12 - 75
		Matrix Spike Duplicate	0612868-79	ND	38.808	80.000	ug/L	0.6	48.5	27	12 - 75
Pentachlorophenol	BQA0950	Matrix Spike	0612868-79	ND	70.883	80.000	ug/L		88.6		22 - 123
		Matrix Spike Duplicate	0612868-79	ND	71.992	80.000	ug/L	1.6	90.0	20	22 - 123
Phenol	BQA0950	Matrix Spike	0612868-79	ND	34.502	80.000	ug/L		43.1		18 - 44
		Matrix Spike Duplicate	0612868-79	ND	34.602	80.000	ug/L	0.5	43.3	22	18 - 44
2,4,6-Trichlorophenol	BQA0950	Matrix Spike	0612868-79	ND	59.484	80.000	ug/L		74.4		32 - 128
		Matrix Spike Duplicate	0612868-79	ND	61.419	80.000	ug/L	3.2	76.8	25	32 - 128
2-Fluorophenol (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	49.152	80.000	ug/L		61.4		28 - 87
		Matrix Spike Duplicate	0612868-79	ND	50.372	80.000	ug/L		63.0		28 - 87
Phenol-d5 (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	38.210	80.000	ug/L		47.8		18 - 55
		Matrix Spike Duplicate	0612868-79	ND	38.295	80.000	ug/L		47.9		18 - 55
Nitrobenzene-d5 (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	74.292	80.000	ug/L		92.9		40 - 121
		Matrix Spike Duplicate	0612868-79	ND	75.588	80.000	ug/L		94.5		40 - 121
2-Fluorobiphenyl (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	62.816	80.000	ug/L		78.5		42 - 128
		Matrix Spike Duplicate	0612868-79	ND	65.616	80.000	ug/L		82.0		42 - 128
2,4,6-Tribromophenol (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	69.223	80.000	ug/L		86.5		44 - 137
		Matrix Spike Duplicate	0612868-79	ND	74.344	80.000	ug/L		92.9		44 - 137
p-Terphenyl-d14 (Surrogate)	BQA0950	Matrix Spike	0612868-79	ND	49.793	40.000	ug/L		124		43 - 154
		Matrix Spike Duplicate	0612868-79	ND	50.168	40.000	ug/L		125		43 - 154

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Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
Total Cyanide	BQA0781	BQA0781-BS1	LCS	0.40500	0.37500	0.020	mg/L	108		90 - 110		
Ammonia as N (Distilled)	BQA1005	BQA1005-BS1	LCS	0.68161	0.80000	0.050	mg/L	85.2		85 - 115		

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Water Analysis (Metals)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
Total Mercury	BQA0615	BQA0615-BS1	LCS	0.91500	1.0000	0.20	ug/L	91.5		85 - 115		
Total Antimony	BQA0626	BQA0626-BS1	LCS	439.88	400.00	100	ug/L	110		85 - 115		
Total Beryllium	BQA0626	BQA0626-BS1	LCS	210.64	200.00	10	ug/L	105		85 - 115		
Total Cadmium	BQA0626	BQA0626-BS1	LCS	218.51	200.00	10	ug/L	109		85 - 115		
Total Chromium	BQA0626	BQA0626-BS1	LCS	208.84	200.00	10	ug/L	104		85 - 115		
Total Copper	BQA0626	BQA0626-BS1	LCS	214.19	200.00	10	ug/L	107		85 - 115		
Total Nickel	BQA0626	BQA0626-BS1	LCS	448.27	400.00	10	ug/L	112		85 - 115		
Total Silver	BQA0626	BQA0626-BS1	LCS	100.06	100.00	10	ug/L	100		85 - 115		
Total Zinc	BQA0626	BQA0626-BS1	LCS	228.20	200.00	50	ug/L	114		85 - 115		
Total Recoverable Arsenic	BQA0750	BQA0750-BS1	LCS	49.284	50.000	2.0	ug/L	98.6		85 - 115		
Total Recoverable Lead	BQA0750	BQA0750-BS1	LCS	51.078	50.000	1.0	ug/L	102		85 - 115		
Total Recoverable Selenium	BQA0750	BQA0750-BS1	LCS	48.780	50.000	2.0	ug/L	97.6		85 - 115		
Total Recoverable Thallium	BQA0750	BQA0750-BS1	LCS	19.610	20.000	1.0	ug/L	98.0		85 - 115		

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Organochlorine Pesticides and PCB's (EPA Method 608)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
Aldrin	BQA0704	BQA0704-BS1	LCS	0.23965	0.25000	0.050	ug/L	95.9		65 - 140		
gamma-BHC (Lindane)	BQA0704	BQA0704-BS1	LCS	0.21463	0.25000	0.050	ug/L	85.9		32 - 153		
4,4'-DDT	BQA0704	BQA0704-BS1	LCS	0.21071	0.25000	0.10	ug/L	84.3		52 - 127		
Dieldrin	BQA0704	BQA0704-BS1	LCS	0.22509	0.25000	0.10	ug/L	90.0		69 - 134		
Endrin	BQA0704	BQA0704-BS1	LCS	0.23941	0.25000	0.10	ug/L	95.8		63 - 140		
Heptachlor	BQA0704	BQA0704-BS1	LCS	0.23196	0.25000	0.050	ug/L	92.8		65 - 141		
PCB-1260	BQA0704	BQA0704-BS1	LCS	ND		0.20	ug/L			0 - 200		
TCMX (Surrogate)	BQA0704	BQA0704-BS1	LCS	0.31103	0.30000	0.20	ug/L	104		49 - 132		
Dibutyl chlorendate (Surrogate)	BQA0704	BQA0704-BS1	LCS	0.70088	0.75000	0.20	ug/L	93.5		57 - 137		

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
Benzene	BQA0608	BQA0608-BS1	LCS	29.680	25.000	0.50	ug/L	119		70 - 130		
Bromodichloromethane	BQA0608	BQA0608-BS1	LCS	24.800	25.000	0.50	ug/L	99.2		70 - 130		
Bromoform	BQA0608	BQA0608-BS1	LCS	25.060	25.000	0.50	ug/L	100		70 - 130		
Bromomethane	BQA0608	BQA0608-BS1	LCS	34.450	25.000	1.0	ug/L	138		70 - 130		L02
Carbon tetrachloride	BQA0608	BQA0608-BS1	LCS	25.870	25.000	0.50	ug/L	103		70 - 130		
Chlorobenzene	BQA0608	BQA0608-BS1	LCS	28.070	25.000	0.50	ug/L	112		70 - 130		
Chloroethane	BQA0608	BQA0608-BS1	LCS	31.490	25.000	0.50	ug/L	126		70 - 130		
Chloroform	BQA0608	BQA0608-BS1	LCS	26.580	25.000	0.50	ug/L	106		70 - 130		
Chloromethane	BQA0608	BQA0608-BS1	LCS	31.570	25.000	0.50	ug/L	126		70 - 130		
Dibromochloromethane	BQA0608	BQA0608-BS1	LCS	24.500	25.000	0.50	ug/L	98.0		70 - 130		
1,2-Dichlorobenzene	BQA0608	BQA0608-BS1	LCS	27.380	25.000	0.50	ug/L	110		70 - 130		
1,3-Dichlorobenzene	BQA0608	BQA0608-BS1	LCS	27.350	25.000	0.50	ug/L	109		70 - 130		
1,4-Dichlorobenzene	BQA0608	BQA0608-BS1	LCS	26.880	25.000	0.50	ug/L	108		70 - 130		
1,1-Dichloroethane	BQA0608	BQA0608-BS1	LCS	28.970	25.000	0.50	ug/L	116		70 - 130		
1,2-Dichloroethane	BQA0608	BQA0608-BS1	LCS	25.550	25.000	0.50	ug/L	102		70 - 130		
1,1-Dichloroethene	BQA0608	BQA0608-BS1	LCS	28.770	25.000	0.50	ug/L	115		70 - 130		
trans-1,2-Dichloroethene	BQA0608	BQA0608-BS1	LCS	28.270	25.000	0.50	ug/L	113		70 - 130		
1,2-Dichloropropane	BQA0608	BQA0608-BS1	LCS	28.740	25.000	0.50	ug/L	115		70 - 130		
cis-1,3-Dichloropropene	BQA0608	BQA0608-BS1	LCS	24.960	25.000	0.50	ug/L	99.8		70 - 130		
trans-1,3-Dichloropropene	BQA0608	BQA0608-BS1	LCS	24.640	25.000	0.50	ug/L	98.6		70 - 130		
Ethylbenzene	BQA0608	BQA0608-BS1	LCS	28.720	25.000	0.50	ug/L	115		70 - 130		
Methylene chloride	BQA0608	BQA0608-BS1	LCS	29.190	25.000	1.0	ug/L	117		70 - 130		
Methyl t-butyl ether	BQA0608	BQA0608-BS1	LCS	25.300	25.000	0.50	ug/L	101		70 - 130		

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
1,1,2,2-Tetrachloroethane	BQA0608	BQA0608-BS1	LCS	21.540	25.000	0.50	ug/L	86.2		70 - 130		
Tetrachloroethene	BQA0608	BQA0608-BS1	LCS	25.390	25.000	0.50	ug/L	102		70 - 130		
Toluene	BQA0608	BQA0608-BS1	LCS	28.080	25.000	0.50	ug/L	112		70 - 130		
1,1,1-Trichloroethane	BQA0608	BQA0608-BS1	LCS	26.330	25.000	0.50	ug/L	105		70 - 130		
1,1,2-Trichloroethane	BQA0608	BQA0608-BS1	LCS	26.060	25.000	0.50	ug/L	104		70 - 130		
Trichloroethene	BQA0608	BQA0608-BS1	LCS	31.020	25.000	0.50	ug/L	124		70 - 130		
Trichlorofluoromethane	BQA0608	BQA0608-BS1	LCS	27.500	25.000	0.50	ug/L	110		70 - 130		
1,1,2-Trichloro-1,2,2-trifluoroethane	BQA0608	BQA0608-BS1	LCS	27.190	25.000	0.50	ug/L	109		70 - 130		
Vinyl chloride	BQA0608	BQA0608-BS1	LCS	30.470	25.000	0.50	ug/L	122		70 - 130		
Total Xylenes	BQA0608	BQA0608-BS1	LCS	85.840	75.000	1.0	ug/L	114		70 - 130		
p- & m-Xylenes	BQA0608	BQA0608-BS1	LCS	58.250	50.000	0.50	ug/L	116		70 - 130		
o-Xylene	BQA0608	BQA0608-BS1	LCS	27.590	25.000	0.50	ug/L	110		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BQA0608	BQA0608-BS1	LCS	9.6400	10.000		ug/L	96.4		76 - 114		
Toluene-d8 (Surrogate)	BQA0608	BQA0608-BS1	LCS	10.010	10.000		ug/L	100		88 - 110		
4-Bromofluorobenzene (Surrogate)	BQA0608	BQA0608-BS1	LCS	10.260	10.000		ug/L	103		86 - 115		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Control Limits		Lab Quals
								Percent Recovery	RPD	
Acenaphthene	BQA0950	BQA0950-BS1	LCS	61.757	80.000	2.0	ug/L	77.2	47 - 121	
1,4-Dichlorobenzene	BQA0950	BQA0950-BS1	LCS	60.125	80.000	2.0	ug/L	75.2	36 - 109	
2,4-Dinitrotoluene	BQA0950	BQA0950-BS1	LCS	48.415	80.000	2.0	ug/L	60.5	36 - 120	
Hexachlorobenzene	BQA0950	BQA0950-BS1	LCS	81.103	80.000	2.0	ug/L	101	44 - 122	
Hexachlorobutadiene	BQA0950	BQA0950-BS1	LCS	56.879	80.000	2.0	ug/L	71.1	26 - 100	
Hexachloroethane	BQA0950	BQA0950-BS1	LCS	49.213	80.000	2.0	ug/L	61.5	28 - 96	
Nitrobenzene	BQA0950	BQA0950-BS1	LCS	60.502	80.000	2.0	ug/L	75.6	43 - 122	
N-Nitrosodi-N-propylamine	BQA0950	BQA0950-BS1	LCS	60.105	80.000	2.0	ug/L	75.1	37 - 111	
Pyrene	BQA0950	BQA0950-BS1	LCS	111.52	80.000	2.0	ug/L	139	51 - 140	
1,2,4-Trichlorobenzene	BQA0950	BQA0950-BS1	LCS	61.024	80.000	2.0	ug/L	76.3	33 - 116	
4-Chloro-3-methylphenol	BQA0950	BQA0950-BS1	LCS	65.521	80.000	5.0	ug/L	81.9	37 - 141	
2-Chlorophenol	BQA0950	BQA0950-BS1	LCS	55.893	80.000	2.0	ug/L	69.9	29 - 110	
2-Methylphenol	BQA0950	BQA0950-BS1	LCS	64.710	80.000	2.0	ug/L	80.9	27 - 100	
3- & 4-Methylphenol	BQA0950	BQA0950-BS1	LCS	89.334	80.000	2.0	ug/L	112	24 - 174	
4-Nitrophenol	BQA0950	BQA0950-BS1	LCS	33.856	80.000	2.0	ug/L	42.3	15 - 74	
Pentachlorophenol	BQA0950	BQA0950-BS1	LCS	67.474	80.000	10	ug/L	84.3	22 - 127	
Phenol	BQA0950	BQA0950-BS1	LCS	32.326	80.000	2.0	ug/L	40.4	18 - 46	
2,4,6-Trichlorophenol	BQA0950	BQA0950-BS1	LCS	57.540	80.000	5.0	ug/L	71.9	44 - 124	
2-Fluorophenol (Surrogate)	BQA0950	BQA0950-BS1	LCS	46.659	80.000		ug/L	58.3	28 - 87	
Phenol-d5 (Surrogate)	BQA0950	BQA0950-BS1	LCS	34.744	80.000		ug/L	43.4	18 - 55	
Nitrobenzene-d5 (Surrogate)	BQA0950	BQA0950-BS1	LCS	66.113	80.000		ug/L	82.6	40 - 121	
2-Fluorobiphenyl (Surrogate)	BQA0950	BQA0950-BS1	LCS	60.132	80.000		ug/L	75.2	42 - 128	
2,4,6-Tribromophenol (Surrogate)	BQA0950	BQA0950-BS1	LCS	68.389	80.000		ug/L	85.5	44 - 137	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Laboratory Control Sample

Constituent	Batch ID	QC Sample ID	QC Type	Result	Spike Level	PQL	Units	Percent Recovery	RPD	Control Limits		Lab Quals
										Percent Recovery	RPD	
p-Terphenyl-d14 (Surrogate)	BQA0950	BQA0950-BS1	LCS	45.514	40.000		ug/L	114		43 - 154		

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Water Analysis (General Chemistry) Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Total Cyanide	BQA0781	BQA0781-BLK1	ND	mg/L	0.020	0.0063	
Ammonia as N (Distilled)	BQA1005	BQA1005-BLK1	ND	mg/L	0.050	0.020	

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Water Analysis (Metals)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Total Mercury	BQA0615	BQA0615-BLK1	ND	ug/L	0.20	0.026	
Total Antimony	BQA0626	BQA0626-BLK1	ND	ug/L	100	16	
Total Beryllium	BQA0626	BQA0626-BLK1	ND	ug/L	10	0.72	
Total Cadmium	BQA0626	BQA0626-BLK1	ND	ug/L	10	3.3	
Total Chromium	BQA0626	BQA0626-BLK1	1.0411	ug/L	10	0.89	J
Total Copper	BQA0626	BQA0626-BLK1	ND	ug/L	10	2.6	
Total Nickel	BQA0626	BQA0626-BLK1	ND	ug/L	10	1.7	
Total Silver	BQA0626	BQA0626-BLK1	ND	ug/L	10	9.4	
Total Zinc	BQA0626	BQA0626-BLK1	ND	ug/L	50	8.2	
Total Recoverable Arsenic	BQA0750	BQA0750-BLK1	ND	ug/L	2.0	0.89	
Total Recoverable Lead	BQA0750	BQA0750-BLK1	ND	ug/L	1.0	0.12	
Total Recoverable Selenium	BQA0750	BQA0750-BLK1	ND	ug/L	2.0	0.54	
Total Recoverable Thallium	BQA0750	BQA0750-BLK1	ND	ug/L	1.0	0.13	

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Organochlorine Pesticides and PCB's (EPA Method 608)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Aldrin	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0023	
alpha-BHC	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0016	
beta-BHC	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0027	
delta-BHC	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0020	
gamma-BHC (Lindane)	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0018	
Chlordane (Technical)	BQA0704	BQA0704-BLK1	ND	ug/L	0.50	0.44	
4,4'-DDD	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0011	
4,4'-DDE	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0019	
4,4'-DDT	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0021	
Dieldrin	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0020	
Endosulfan I	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0019	
Endosulfan II	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0021	
Endosulfan sulfate	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0021	
Endrin	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0025	
Endrin aldehyde	BQA0704	BQA0704-BLK1	ND	ug/L	0.10	0.0024	
Heptachlor	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0023	
Heptachlor epoxide	BQA0704	BQA0704-BLK1	ND	ug/L	0.050	0.0019	
Methoxychlor	BQA0704	BQA0704-BLK1	ND	ug/L	0.50	0.0021	
Toxaphene	BQA0704	BQA0704-BLK1	ND	ug/L	2.0	0.42	
PCB-1016	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.034	
PCB-1221	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.089	
PCB-1232	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.090	
PCB-1242	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.095	
PCB-1248	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.025	

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Organochlorine Pesticides and PCB's (EPA Method 608)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
PCB-1254	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.042	
PCB-1260	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.043	
Total PCB's (Summation)	BQA0704	BQA0704-BLK1	ND	ug/L	0.20	0.10	
TCMX (Surrogate)	BQA0704	BQA0704-BLK1	95.6	%	58 - 153 (LCL - UCL)		
Dibutyl chlorendate (Surrogate)	BQA0704	BQA0704-BLK1	99.2	%	56 - 151 (LCL - UCL)		

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Project: Semi-annual eff
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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Benzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.23	
Bromodichloromethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.11	
Bromoform	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.11	
Bromomethane	BQA0608	BQA0608-BLK1	ND	ug/L	1.0	0.57	
Carbon tetrachloride	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.11	
Chlorobenzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.050	
Chloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.24	
Chloroform	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.050	
Chloromethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.25	
Dibromochloromethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.12	
1,2-Dichlorobenzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.072	
1,3-Dichlorobenzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.12	
1,4-Dichlorobenzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.094	
1,1-Dichloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.11	
1,2-Dichloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.20	
1,1-Dichloroethene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.24	
trans-1,2-Dichloroethene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.13	
1,2-Dichloropropane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.16	
cis-1,3-Dichloropropene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.16	
trans-1,3-Dichloropropene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.15	
Ethylbenzene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.11	
Methylene chloride	BQA0608	BQA0608-BLK1	ND	ug/L	1.0	0.14	
Methyl t-butyl ether	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.086	
1,1,2,2-Tetrachloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.10	

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Volatile Organic Analysis (EPA Method 624)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Tetrachloroethene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.13	
Toluene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.098	
1,1,1-Trichloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.076	
1,1,2-Trichloroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.18	
Trichloroethene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.21	
Trichlorofluoromethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.14	
1,1,2-Trichloro-1,2,2-trifluoroethane	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.14	
Vinyl chloride	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.21	
Total Xylenes	BQA0608	BQA0608-BLK1	ND	ug/L	1.0	0.19	
Acrolein	BQA0608	BQA0608-BLK1	ND	ug/L	50	3.2	
Acrylonitrile	BQA0608	BQA0608-BLK1	ND	ug/L	20	0.81	
p- & m-Xylenes	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.10	
o-Xylene	BQA0608	BQA0608-BLK1	ND	ug/L	0.50	0.083	
1,2-Dichloroethane-d4 (Surrogate)	BQA0608	BQA0608-BLK1	94.8	%	76 - 114 (LCL - UCL)		
Toluene-d8 (Surrogate)	BQA0608	BQA0608-BLK1	99.1	%	88 - 110 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BQA0608	BQA0608-BLK1	101	%	86 - 115 (LCL - UCL)		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Acenaphthene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
Acenaphthylene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.32	
Aldrin	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.47	
Aniline	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	1.8	
Anthracene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.27	
Benzidine	BQA0950	BQA0950-BLK1	ND	ug/L	20	4.7	
Benzo[a]anthracene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.34	
Benzo[b]fluoranthene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.38	
Benzo[k]fluoranthene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.47	
Benzo[a]pyrene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.45	
Benzo[g,h,i]perylene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.56	
Benzoic acid	BQA0950	BQA0950-BLK1	ND	ug/L	10	0.61	
Benzyl alcohol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.44	
Benzyl butyl phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.32	
alpha-BHC	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.42	
beta-BHC	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.46	
delta-BHC	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.28	
gamma-BHC (Lindane)	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
bis(2-Chloroethoxy)methane	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	1.6	
bis(2-Chloroethyl) ether	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.49	
bis(2-Chloroisopropyl)ether	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.57	
bis(2-Ethylhexyl)phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	0.98	
4-Bromophenyl phenyl ether	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.40	
4-Chloroaniline	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.99	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
2-Chloronaphthalene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.41	
4-Chlorophenyl phenyl ether	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.33	
Chrysene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.30	
4,4'-DDD	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.38	
4,4'-DDE	BQA0950	BQA0950-BLK1	ND	ug/L	3.0	0.52	
4,4'-DDT	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.36	
Dibenzo[a,h]anthracene	BQA0950	BQA0950-BLK1	ND	ug/L	3.0	0.48	
Dibenzofuran	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.37	
1,2-Dichlorobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
1,3-Dichlorobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
1,4-Dichlorobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.25	
3,3-Dichlorobenzidine	BQA0950	BQA0950-BLK1	ND	ug/L	10	1.5	
Dieldrin	BQA0950	BQA0950-BLK1	ND	ug/L	3.0	0.52	
Diethyl phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.34	
Dimethyl phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.32	
Di-n-butyl phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.40	
2,4-Dinitrotoluene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.39	
2,6-Dinitrotoluene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.48	
Di-n-octyl phthalate	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.41	
1,2-Diphenylhydrazine	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.38	
Endosulfan I	BQA0950	BQA0950-BLK1	ND	ug/L	10	2.3	
Endosulfan II	BQA0950	BQA0950-BLK1	ND	ug/L	10	1.6	
Endosulfan sulfate	BQA0950	BQA0950-BLK1	ND	ug/L	3.0	0.67	
Endrin	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.68	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
Endrin aldehyde	BQA0950	BQA0950-BLK1	ND	ug/L	10	3.6	
Fluoranthene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.30	
Fluorene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.36	
Heptachlor	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.53	
Heptachlor epoxide	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.24	
Hexachlorobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
Hexachlorobutadiene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.40	
Hexachlorocyclopentadiene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.36	
Hexachloroethane	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.29	
Indeno[1,2,3-cd]pyrene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.47	
Isophorone	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.31	
2-Methylnaphthalene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.27	
Naphthalene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.30	
2-Naphthylamine	BQA0950	BQA0950-BLK1	ND	ug/L	20	5.3	
2-Nitroaniline	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.82	
3-Nitroaniline	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	1.6	
4-Nitroaniline	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	0.44	
Nitrobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.37	
N-Nitrosodimethylamine	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.53	
N-Nitrosodi-N-propylamine	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.88	
N-Nitrosodiphenylamine	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.42	
Phenanthrene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.29	
Pyrene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.29	
1,2,4-Trichlorobenzene	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.26	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 625)

Quality Control Report - Method Blank Analysis

Constituent	Batch ID	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
4-Chloro-3-methylphenol	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	0.39	
2-Chlorophenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.39	
2,4-Dichlorophenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.37	
2,4-Dimethylphenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	1.5	
4,6-Dinitro-2-methylphenol	BQA0950	BQA0950-BLK1	ND	ug/L	10	2.5	
2,4-Dinitrophenol	BQA0950	BQA0950-BLK1	ND	ug/L	10	0.35	
2-Methylphenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	1.3	
3- & 4-Methylphenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	1.4	
2-Nitrophenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.33	
4-Nitrophenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.35	
Pentachlorophenol	BQA0950	BQA0950-BLK1	ND	ug/L	10	0.55	
Phenol	BQA0950	BQA0950-BLK1	ND	ug/L	2.0	0.30	
2,4,5-Trichlorophenol	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	0.37	
2,4,6-Trichlorophenol	BQA0950	BQA0950-BLK1	ND	ug/L	5.0	0.47	
2-Fluorophenol (Surrogate)	BQA0950	BQA0950-BLK1	53.0	%	28 - 87 (LCL - UCL)		
Phenol-d5 (Surrogate)	BQA0950	BQA0950-BLK1	40.7	%	18 - 55 (LCL - UCL)		
Nitrobenzene-d5 (Surrogate)	BQA0950	BQA0950-BLK1	84.1	%	40 - 121 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	BQA0950	BQA0950-BLK1	80.8	%	42 - 128 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	BQA0950	BQA0950-BLK1	87.6	%	44 - 137 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	BQA0950	BQA0950-BLK1	129	%	43 - 154 (LCL - UCL)		

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Volatile Organic Analysis (EPA Method 624)

BCL Sample ID: 0700391-03 **Client Sample Name:** Travel Blank, 1/10/2007 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru-ment ID	Dilution	QC Batch ID	MB Bias	Lab Quails
Benzene	ND	ug/L	0.50	0.23	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Bromodichloromethane	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Bromoform	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Bromomethane	ND	ug/L	1.0	0.57	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Carbon tetrachloride	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Chlorobenzene	ND	ug/L	0.50	0.050	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Chloroethane	ND	ug/L	0.50	0.24	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Chloroform	ND	ug/L	0.50	0.050	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Chloromethane	ND	ug/L	0.50	0.25	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Dibromochloromethane	ND	ug/L	0.50	0.12	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.072	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.12	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.094	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1-Dichloroethane	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichloroethane	ND	ug/L	0.50	0.20	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1-Dichloroethene	ND	ug/L	0.50	0.24	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.13	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichloropropane	ND	ug/L	0.50	0.16	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.16	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.15	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Ethylbenzene	ND	ug/L	0.50	0.11	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Methylene chloride	ND	ug/L	1.0	0.14	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	

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Project: Semi-annual eff
 Project Number: [none]
 Project Manager: Doug Coats

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Volatile Organic Analysis (EPA Method 624)

BCL Sample ID:	Client Sample Name: Travel Blank, 1/10/2007 9:00:00AM												
Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instru- ment ID	Dilution	QC Batch ID	MB Bias	Lab Quals
Methyl t-butyl ether	ND	ug/L	0.50	0.086	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.10	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Tetrachloroethene	ND	ug/L	0.50	0.13	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Toluene	ND	ug/L	0.50	0.098	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.076	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.18	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Trichloroethene	ND	ug/L	0.50	0.21	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.14	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Vinyl chloride	ND	ug/L	0.50	0.21	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Total Xylenes	ND	ug/L	1.0	0.19	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
Acrolein	ND	ug/L	50	3.2	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	V01,V11
Acrylonitrile	ND	ug/L	20	0.81	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
p- & m-Xylenes	ND	ug/L	0.50	0.10	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
o-Xylene	ND	ug/L	0.50	0.083	EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608	ND	
1,2-Dichloroethane-d4 (Surrogate)	95.7	%	76 - 114 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608		
Toluene-d8 (Surrogate)	101	%	88 - 110 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608		
4-Bromofluorobenzene (Surrogate)	98.5	%	86 - 115 (LCL - UCL)		EPA-624	01/12/07	01/13/07 04:21	MGC	MS-V7	1	BQA0608		

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Project Number: [none]
Project Manager: Doug Coats

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Notes And Definitions

- J Estimated Value (CLP Flag)
- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.
- C02 The relative standard deviation of the calibration curve response factors exceeds the control limit.
- L02 The Laboratory Control Sample Water (LCSW) recovery is not within method established control limits.
- Q03 Matrix spike recovery(s) is(are) not within the control limits.
- S09 The surrogate recovery on the sample for this compound was not within the control limits.
- V01 The Initial Calibration Verification (ICV) recovery is not within established control limits.
- V11 The Continuing Calibration Verification (CCV) recovery is not within established control limits.