



## ALAMITOS BAY MARINA BASINS 6 AND 7 MAINTENANCE DREDGING

### **Prepared for**

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**Revised September 2016**

# SAMPLING AND ANALYSIS REPORT

## ALAMITOS BAY MARINA BASINS 6 AND 7 MAINTENANCE DREDGING

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### **Prepared for**

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## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Project Summary .....	2
1.2	Site History.....	2
1.3	Objectives of the Sediment Investigation .....	4
<b>2</b>	<b>METHODS .....</b>	<b>5</b>
2.1	Sampling Program for Sediment Core Collection and Handling.....	5
2.2	Physical and Chemical Analyses.....	5
2.2.1	Sediment .....	5
2.2.2	Tissue Residues .....	6
2.3	Biological Testing.....	7
<b>3</b>	<b>RESULTS.....</b>	<b>9</b>
3.1	Sample Collection and Handling.....	9
3.2	Physical and Chemical Analyses of Sediment.....	9
3.2.1	LA-2 Reference.....	15
3.2.2	Basin 6 .....	16
3.2.3	Basin 7 .....	16
3.3	Biological Testing.....	17
3.3.1	Solid Phase Testing.....	17
3.3.1.1	Amphipod Mortality Bioassay .....	17
3.3.1.2	Polychaete Mortality Bioassay.....	17
3.3.2	Suspended-Particulate-Phase Testing .....	18
3.3.2.1	Bivalve Larval Development Bioassay.....	18
3.3.2.2	Mysid Shrimp Bioassay .....	19
3.3.2.3	Juvenile Fish Bioassay .....	20
3.3.3	Bioaccumulation Potential Testing .....	21
3.3.3.1	Bivalve Bioaccumulation Test.....	21
3.3.3.2	Polychaete Bioaccumulation Test .....	21
3.4	Prediction of Water Column Toxicity During Disposal.....	22
3.4.1	Results of STFATE Modeling.....	24
3.5	Chemical Analysis of Tissue Residues.....	25

3.5.1	Comparison of Tissue Burdens to U.S. Food and Drug Administration Action Levels.....	26
3.5.2	Comparison of Tissue Burdens to Reference Sediment Tissue Burdens .....	31
3.5.3	Comparison of Tissue Burdens to Environmental Residue Effects Database.....	31
<b>4</b>	<b>QUALITY ASSURANCE/QUALITY CONTROL.....</b>	<b>36</b>
4.1.1	Physical and Chemical Analyses of Sediment .....	36
4.1.2	Chemical Analysis of Tissue Residues.....	37
4.1.3	Biological Testing .....	37
<b>5</b>	<b>CONCLUSIONS .....</b>	<b>39</b>
<b>6</b>	<b>REFERENCES .....</b>	<b>40</b>

### List of Tables

Table 1	Proposed Maintenance Dredging Volumes.....	2
Table 2	Summary of Project Dredge Volumes and Disposal Locations .....	4
Table 3	Summary of Analysis Performed on Basins 6 and 7 Tissue Samples .....	6
Table 4	Summary of Biological Testing Performed on Alamitos Basins 6 and 7 Sediment Samples .....	8
Table 5	Station Coordinates, Mudline Elevations, Estimated Penetration, and Retrieved Core Lengths for Each Sampling Station.....	10
Table 6	Sediment Physical and Chemical Results for Composite Sediment Samples from Basins 6 and 7 .....	11
Table 7	Summary of Solid Phase Test Results Using <i>Ampelisca abdita</i> .....	17
Table 8	Summary of Solid Phase Test Results Using <i>Neanthes arenaceodentata</i> .....	18
Table 9	Summary of Suspended Particulate Phase Test Results Using <i>Mytilus galloprovincialis</i> .....	19
Table 10	Summary of Suspended Particulate Phase Test Results Using <i>Americamysis bahia</i> .....	20
Table 11	Summary of Suspended Particulate Phase Test Results Using <i>Menidia beryllina</i> .....	20
Table 12	Summary of Bioaccumulation Potential Test Results Using <i>Macoma nasuta</i> .....	21

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Table 13	Summary of Bioaccumulation Potential Test Results Using <i>Nereis virens</i> ..	22
Table 14	STFATE Model Input Parameters.....	23
Table 15	STFATE Modeling Results .....	25
Table 16	Results of Chemical Analyses of <i>Macoma nasuta</i> Tissue Residues .....	27
Table 17	Results of Chemical Analyses of <i>Nereis virens</i> Tissue Residues .....	29
Table 18	Summary of Statistically Elevated <i>Macoma nasuta</i> Tissue Residues .....	32
Table 19	Summary of Statistically Elevated <i>Nereis virens</i> Tissue Residues.....	34

### List of Figures

Figure 1	Vicinity Map
Figure 2	Overview of Work at Alamitos Bay Marina
Figure 3	Basin 6 Bathymetry and Actual Core Sampling Locations
Figure 4	Basin 7 Bathymetry and Actual Core Sampling Locations
Figure 5	Comparison of Design Depth to Existing Bathymetric Conditions for Basin 6
Figure 6	Comparison of Design Depth to Existing Bathymetric Conditions for Basin 7

### List of Appendices

Appendix A	Field Logs and Core Photographs
Appendix B	Chemistry Laboratory Reports
Appendix C	Biological Laboratory Report
Appendix D	STFATE Modeling
Appendix E	Statistical Analyses of Tissue Concentrations
Appendix F	Data Validation Reports

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## LIST OF ACRONYMS AND ABBREVIATIONS

City	City of Long Beach
cy	cubic yard
BMP	best management practice
BP	bioaccumulation potential
DU	dredge unit
EC <sub>50</sub>	median effective concentration
ERED	Environmental Residue-Effects Database
ERL	effects range low
ERM	effects range median
FDA	U.S. Food and Drug Administration
ITM	<i>Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual</i>
LC <sub>50</sub>	median lethal concentration
LPC	limiting permissible concentration
MDL	method detection limit
mg/L	milligram per liter
MLLW	mean low lower water
MS	matrix spike
MSD	matrix spike duplicate
OTM	<i>Evaluation for Dredged Material Proposed for Ocean Disposal – Testing Manual</i>
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
QA/QC	quality assurance/quality control
RL	reporting limit
SAP	Sampling and Analysis Plan
SAR	Sampling and Analysis Report
SP	solid phase
SPP	suspended particulate phase
TOC	total organic carbon
USEPA	U.S. Environmental Protection Agency

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## 1 INTRODUCTION

As part of the Alamitos Bay Marina rehabilitation project, the City of Long Beach (City) is conducting overall maintenance and reconstruction of Alamitos Bay Marina, located in Long Beach, California (Figure 1). The overall reconstruction of Alamitos Bay Marina is a multi-phase/multi-year effort and includes dredging Basins 1 through 7. Reconstruction of Basins 1, 2, 3 (Docks 15 to 18, 23 to 25, and 26 to 29), 4, and 5 were completed from 2011 to 2016. A small portion of Basin 3 dredging remains and will be completed in fall 2016 (this material was previously approved for ocean disposal at LA-2).

This Sampling and Analysis Report (SAR) focuses solely on Basins 6 and 7 (Figure 2). The City proposes dredging shoaled areas within Basins 6 and 7 to restore the original design depths. Dredging is needed to improve navigation, ensure boater safety, provide adequate access for the boating public, and allow for associated improvements in marine facilities, including changes in slip layouts and designs. Proposed dredged material was previously characterized and approved for ocean disposal at LA-2, the U.S. Environmental Protection Agency (USEPA)-designated offshore disposal site (Weston 2007a, 2007b). Data from the previous investigation are not recent enough for the previous suitability determination to remain valid; therefore, a reevaluation is required to determine suitability for ocean disposal. A full Tier III evaluation was performed to determine suitability for ocean disposal at LA-2. This SAR summarizes the sediment sampling event, provides data results, and proposes recommendations for suitability determinations.

Results of sampling and analysis were presented to the Dredged Material Management Team on August 24, 2016, and USEPA concurred that sediments from Basins 6 and 7 were suitable for ocean disposal at LA-2. Following this determination, it was discovered that grain size results for Basin 6 were skewed due to an instrument error. Corrective actions were taken to fix the instrument, and affected samples were reanalyzed. This SAR has been revised to include the corrected grain size results for Basin 6. The revised results indicate that Basin 6 was sandier than originally reported. These results are not expected to affect the overall results in this report or the suitability determination.

## 1.1 Project Summary

Maintenance dredging is planned within Basins 6 and 7 to a depth of -10 feet mean lower low water (MLLW), plus 2 feet of overdepth allowance (1 foot paid and 1 foot unpaid). The total volume of material proposed for dredging is estimated to be 18,050 cubic yards (cy), consisting of 10,010 cy above project depth and 8,040 cy of allowable overdepth. This is within the permitted volume for each basin. Table 1 summarizes the proposed maintenance dredging volumes for Basins 6 and 7. Dredged material volume estimates are based on condition surveys completed by Gahagan & Bryant Associates, Inc., on March 9, 2016. One dredge unit (DU) for each basin (i.e., B6 and B7) was identified for sampling and analysis activities. Existing bathymetric conditions and DU boundaries for Basins 6 and 7 are presented in Figures 3 and 4, respectively. The proposed thickness of dredge cuts within Basins 6 and 7 are presented in Figures 5 and 6, respectively.

**Table 1**  
**Proposed Maintenance Dredging Volumes**

Dredge Unit	Project Depth (feet MLLW)	Estimated Volume to Project Depth (cy)	2-foot Overdepth Volume (cy)	Total Volume (cy)
B6	-10	9,485	6,865	16,350
B7	-10	525	1,175	1,700
<b>Total</b>	-	<b>10,010</b>	<b>8,040</b>	<b>18,050</b>

Notes:

cy= cubic yard

MLLW = mean lower low water

## 1.2 Site History

Alamitos Bay is an inlet within San Pedro Bay located just northwest of the San Gabriel River mouth and between the cities of Long Beach and Seal Beach. The first dredging event at Alamitos Bay occurred in the 1930s as part of a beach nourishment project; the Alamitos Bay Marina and jetty were further expanded in the 1950s. The Alamitos Bay Marina was opened in the early 1960s and includes eight basins.

From 2011 to 2016, the City dredged approximately 203,667 cy of sediment from Basins 1 through 5 as part of the Alamitos Bay Marina Restoration Project. Material classified as unsuitable for ocean disposal was placed at the Port of Long Beach's Middle Harbor fill site.



Material classified as suitable for ocean disposal was disposed of at LA-2. A summary of project dredge volumes and disposal locations is presented in Table 2. The total project dredge volume, including the proposed volume from Basins 6 and 7, is 221,717 cy. This volume is well below the permitted volume of 308,220 cy. If all remaining permitted volume in Basin 3 is removed, the project will still be below the permitted limit.

**Table 2**  
**Summary of Project Dredge Volumes and Disposal Locations**

Basin	Date	Permitted Dredge Volume (cy)	Actual/Planned Dredge Volume (cy)	Actual/Planned Disposal Location
1	Completed summer 2012	74,800	69,690	Middle Harbor fill site (41,900 cy); LA-2 (27,790 cy)
2 (Docks 11-14)	Completed winter 2014	89,900	34,729	LA-2
2 (Docks 15-22)	Completed summer 2015		28,630	LA-2
3 (Docks 23-25/26-29)	Completed summer 2015	55,900	16,482	LA-2
3 (Docks 15-18)	Completed spring 2016		8,853	LA-2
4	Completed fall 2011	65,300	42,565	LA-2
5	Completed winter 2013	3,870	2,718	Middle Harbor fill site
<b>Total Dredged from Basins 1 through 5</b>		--	<b>203,667</b>	--
3 (Phase 3)	TBD	55,900	TBD	LA-2
6	TBD	16,350	16,350	LA-2
7	TBD	2,100	1,700	LA-2
<b>Total Including Basins 6 and 7</b>		<b>308,220</b>	<b>221,717</b>	--

## Notes:

-- = not applicable

cy = cubic yard

TBD = to be determined

### 1.3 Objectives of the Sediment Investigation

The purpose of this sediment investigation was to determine the suitability of the proposed dredged material for ocean disposal. If suitable, dredged material will be placed at LA-2. Testing for ocean disposal included physical and chemical analyses and biological testing in accordance with guidelines specified in the *Evaluation for Dredged Material Proposed for Ocean Disposal – Testing Manual* (OTM; USEPA/USACE 1991) and the *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Inland Testing Manual* (ITM; USEPA/USACE 1998).

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## 2 METHODS

This section presents a summary of methods and procedures used to characterize sediments from Basins 6 and 7.

### 2.1 Sampling Program for Sediment Core Collection and Handling

All sample collection, handling, and processing procedures were implemented in accordance with the Sampling and Analysis Plan (SAP; Anchor QEA 2016). Sediment cores were collected using an electrically powered vibracore at eight stations (Figures 3 and 4). Sampling was performed from the research vessel *Leviathan*. The vessel is 28 feet long and equipped with an A-frame, moonpool, and winch for sample collection. The vibracore was deployed and recovered through the moonpool. Sediment cores were collected to the project depth plus 2 feet of allowable overdepth and the Z-layer.

Sediment cores were processed on the vessel in accordance with Table 6 of the SAP (Anchor QEA 2016). Two composite sediment samples (B6-COMP and B7-COMP) were created for physical, chemical, and biological analyses. Sediment from each core (to the project depth plus overdepth) and the Z-layer (-12 to -12.5 feet MLLW) were archived for potential analysis. Samples were temporarily stored in coolers with ice and delivered by courier to the appropriate laboratories for analysis. Chemistry samples were delivered to Eurofins Calscience, Inc., located in Garden Grove, California. Biological testing samples were delivered to Nautilus Environmental, located in San Diego, California. Proper chain-of-custody procedures were followed.

Reference material was collected by Seaventures Inc., at the LA-2 reference site using a pipe dredge. Site water was collected from Alamitos Bay in low-density polyethylene cubitainers.

### 2.2 Physical and Chemical Analyses

#### 2.2.1 Sediment

Physical and chemical analyses of sediment in this testing program were selected to determine suitability of proposed dredge material for ocean disposal. Composite samples and reference sediment were submitted for analysis of total solids, grain size, ammonia, sulfides,

total organic carbon (TOC), metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, organochlorine pesticides, organotins, and pyrethroids. PCBs included the list of 41 congeners recommended by USEPA for dredge material evaluations in Southern California. All analytical methods used followed USEPA, Standard Method, or ASTM protocols. Analytical methods and target method detection limits (MDLs) and reporting limits (RLs) are presented in Table 7 of the SAP (Anchor QEA 2016). Results of chemical analyses were compared to effects range low (ERL) and effects range median (ERM) values developed by Long et al. (1995).

### 2.2.2 Tissue Residues

Chemical analysis of tissue residues was conducted to determine the bioaccumulation of sediment contaminants. Based on results of sediment chemistry, a subset of chemicals was approved for analysis by USEPA. Tissue samples were analyzed for lipids and PCBs (Table 3). Composite samples from each replicate were analyzed separately. Analytical methods and target MDLs and RLs for tissues (reported in wet weight) are presented in Table 7 of the SAP (Anchor QEA 2016).

**Table 3**  
**Summary of Analysis Performed on Basins 6 and 7 Tissue Samples**

Sample	Tissue Analysis
Control	Archive
Time Zero (T0)	Lipids, PCBs
LA2-REF	Lipids, PCBs
B6-COMP	Lipids, PCBs
B7-COMP	Lipids, PCBs

Notes:

PCBs = polychlorinated biphenyls

Results of chemical analysis of tissue residues were initially compared against applicable Food and Drug Administration (FDA) action levels for poisonous or deleterious substances in fish and shellfish for human food, when such levels have been set. In the absence of action levels, or if tissue contaminant concentrations were less than action levels, results were statistically compared to tissue concentrations of organisms exposed to reference sediment in accordance

with Appendix D of the ITM (USEPA/USACE 1998). Tissue organic chemical concentrations were normalized to lipid concentrations prior to analysis. Data were log-transformed and assessed for normality using the Shapiro-Wilk test or Kolmogorov's D test. Homogeneity of variance was assessed using Levene's test. Log-normally distributed data were evaluated using analysis of variance and Dunnett's multiple comparison tests (if applicable). Non-normally distributed data were assessed using the non-parametric Wilcoxon/Kruskal-Wallis tests and non-parametric Steel multiple comparisons test (if applicable).

No statistical analysis was performed on chemistry data if both project area data and reference data were non-detects or if the mean concentration of the project area sample was less than the mean concentration in the reference sample. For situations in which all replicates from the reference area were non-detect and detection limits were identical for each replicate within an analyte group, estimated data values were calculated based on a symmetrical breakdown of the data range and in such a way that the mean of the estimates centered around a value one-half of the detection limit. This statistical manipulation of data was required to generate means and variances needed to compare project area data to reference data. This data analysis procedure is one of three recommended approaches described in Appendix D of the ITM (USEPA/USACE 1998).

If tissue concentrations of organisms exposed to test sediment were statistically elevated compared to organisms exposed to reference sediment, a weight-of-evidence approach was used. This approach included a comparison to residue-effects values provided in the Environmental Residue-Effects Database (ERED; USACE/USEPA 2010) to determine whether toxic effects could be expected at concentrations measured in tissue of exposed organisms.

### **2.3 Biological Testing**

Biological testing was conducted to determine suitability of proposed dredged material for ocean disposal at LA-2. Testing included two solid phase (SP), three suspended particulate phase (SPP), and two bioaccumulation potential (BP) tests, as specified in Table 4. All testing was performed by Nautilus Environmental, located in San Diego, California. Two composite samples and reference sediment were submitted for testing. Control samples were tested with each species to evaluate test acceptability. All testing was performed in accordance

with OTM (USEPA/USACE 1991) and ITM (USEPA/USACE 1998) guidelines. Test methods, conditions, and acceptability criteria are presented in the SAP (Anchor QEA 2016).

**Table 4**  
**Summary of Biological Testing Performed on Alamitos Basins 6 and 7 Sediment Samples**

Test Type	Organism		Reference Sediment	Control Material	Reference Toxicant Test
	Type	Taxon			
SP	Amphipod	<i>Ampelisca abdita</i>	LA-2	Native or clean sediment	Cadmium
	Polychaete	<i>Neanthes arenaceodentata</i>	LA-2	Native or clean sediment	Cadmium
SPP	Bivalve larvae	<i>Mytilus galloprovincialis</i>	N/A	Dilution water	Ammonia
	Juvenile fish	<i>Menidia beryllina</i>	N/A	Dilution water	Copper
	Mysid shrimp	<i>Americamysis bahia</i>	N/A	Dilution water	Copper
BP	Clam	<i>Macoma nasuta</i>	LA-2	Native or clean sediment	N/A
	Polychaete	<i>Nereis virens</i>	LA-2	Native or clean sediment	N/A

Notes:

BP = bioaccumulation potential

N/A = not applicable

SP = solid phase

SPP = suspended particulate phase

Interstitial ammonia concentrations were measured on project sediments prior to testing. The ammonia concentration in B6-COMP (30.4 milligrams per liter [mg/L]) exceeded the recommended threshold for *Ampelisca abdita* (30 mg/L; USEPA/USACE 1998). Test sediment was purged to reduce ammonia concentrations prior to testing by performing daily seawater exchanges per ITM guidance. Test chambers were set up 2 days prior to test initiation, and two renewals of the overlying water were performed the day following setup. The test was initiated following this acclimation process when the interstitial ammonia concentration met the recommended threshold. The Day 0 interstitial ammonia concentration for B6-COMP was 19.2 mg/L. In addition, an ammonia reference toxicant test was run with the bivalve larval development bioassay due to the sensitivity of *Mytilus galloprovincialis* to elevated ammonia concentrations.

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### 3 RESULTS

#### 3.1 Sample Collection and Handling

Sediment cores and site water were collected on June 21 and 22, 2016. Cores were collected from eight stations using a vibrocore (Figures 3 and 4). To obtain sufficient volume for analysis, two cores were required from each station within Basin 6 and four cores were required from each station within Basin 7.

Sediment cores were collected to the target core length, unless refusal was encountered. If refusal was encountered prior to the target sampling depth, the station was moved slightly, and collection was attempted again. Within Basin 6, all stations were sampled to the target sampling depth, except B6-05. At this station, refusal was encountered due to very stiff clay. The station was slightly moved, and refusal was encountered again. The Z-layer depth was not achieved; therefore, the bottom 0.5 foot of the core was archived. Within Basin 7, all stations were sampled to the target sampling depth. Station coordinates, mudline elevation, estimated penetration, and retrieved core lengths for each station are summarized in Table 5. Field logs and core photographs are provided in Appendix A.

#### 3.2 Physical and Chemical Analyses of Sediment

Reference and composite sediment samples were analyzed for the physical and chemical parameters specified in Table 7 of the SAP (Anchor QEA 2016). Results of physical and chemical analyses of sediment samples are presented below. MDLs, RLs, and raw data for the analyses are presented in the laboratory reports in Appendix B. Results of physical and chemical analyses of reference and composite sediment samples from Basins 6 and 7 are presented in Table 6. All results are expressed in dry weight unless otherwise indicated.

**Table 5**  
**Station Coordinates, Mudline Elevations, Estimated Penetration,**  
**and Retrieved Core Lengths for Each Sampling Station**

Station ID	Attempt	Latitude <sup>1</sup>	Longitude <sup>1</sup>	Mudline Elevation (feet MLLW)	Project Depth Plus Allowable Overdepth (feet MLLW)	Estimated Penetration (feet)	Retrieved Core Length (feet)	Core Length Analyzed (feet)	Core Length Archived for Z Layer (feet)	Comments
B6-01	1	33° 45.685'	-118° 07.103'	-4.6	-12	9.7	9.0	7.4	0.5	
B6-01	2	33° 45.685'	-118° 07.103'	-4.6	-12	9.0	7.2	7.2	0.0	
B6-02	1	33° 45.708'	-118° 07.048'	-5.9	-12	7.5	7.3	6.1	0.5	
B6-02	2	33° 45.708'	-118° 07.048'	-5.9	-12	7.1	7.1	6.1	0.0	
B6-03	1	33° 45.732'	-118° 06.955'	-7.2	-12	6.0	5.5	4.8	0.5	Refusal
B6-03	2	33° 45.732'	-118° 06.955'	-7.2	-12	6.0	5.0	4.8	0.0	
B6-04	1	33° 45.761'	-118° 06.883'	-6.3	-12	7.0	6.2	5.7	0.5	
B6-04	2	33° 45.761'	-118° 06.883'	-6.3	-12	7.2	5.7	5.7	0.0	
B6-05	1	33° 45.678'	-118° 07.020'	-6.5	-12	4.7	4.2	4.2	0.0 <sup>2</sup>	Refusal
B6-05	2	33° 45.678'	-118° 07.021'	-7.2	-12	4.7	3.8	3.8	0.0	Slightly adjusted location due to refusal on previous attempt; refusal
B7-01	1	33° 45.136'	-118° 07.691'	-6.5	-12	5.7	4.6	4.6	0.0	Refusal
B7-01	2	33° 45.136'	-118° 07.691'	-6.5	-12	7.4	6.2	5.5	0.5	Refusal
B7-01	3	33° 45.136'	-118° 07.691'	-6.5	-12	6.9	5.5	5.5	0.0	Refusal
B7-01	4	33° 45.136'	-118° 07.691'	-6.5	-12	6.3	5.2	5.2	0.0	Refusal
B7-02	1	33° 45.132'	-118° 07.688'	-8.2	-12	5.9	4.6	3.8	0.5	
B7-02	2	33° 45.132'	-118° 07.688'	-8.2	-12	6.0	4.2	3.8	0.0	
B7-02	3	33° 45.132'	-118° 07.688'	-8.2	-12	6.0	3.6	3.6	0.0	
B7-02	4	33° 45.132'	-118° 07.688'	-8.2	-12	6.0	4.4	3.8	0.0	
B7-03	1	33° 45.120'	-118° 07.663'	-9.3	-12	4.0	3.2	2.7	0.5	
B7-03	2	33° 45.120'	-118° 07.663'	-9.3	-12	4.7	2.8	2.7	0.0	
B7-03	3	33° 45.120'	-118° 07.663'	-9.3	-12	2.5	1.6	0.0	0.0	Refusal; sample discarded due to low recovery
B7-03	4	33° 45.120'	-118° 07.663'	-9.3	-12	3.7	2.7	2.7	0.0	
B7-03	5	33° 45.120'	-118° 07.663'	-9.3	-12	4.0	3.0	2.7	0.0	

## Notes:

1 California State Plane, Zone 7, North American Datum 27

2 Z-layer depth not achieved; archived bottom 0.5 foot of core

MLLW = mean lower low water



**Table 6**  
**Sediment Physical and Chemical Results for Composite Sediment Samples from Basins 6 and 7**

	ERL	ERM	B6-COMP-062116	B7-COMP-062216	LA-2-REF-062316
			6/21/16	6/22/16	6/23/16
<b>Conventional Parameters (mg/kg)</b>					
Ammonia	--	--	<b>11</b>	<b>1.9</b>	<b>2.1</b>
Sulfide	--	--	<b>7.8</b>	<b>51</b>	<b>1.5</b>
<b>Conventional Parameters (pct)</b>					
Total organic carbon	--	--	<b>1.1 J</b>	<b>0.12 J</b>	<b>0.09 J</b>
Total solids	--	--	<b>60.8</b>	<b>74.4</b>	<b>66.7</b>
<b>Grain Size (pct)</b>					
Gravel (>2 mm)	--	--	0.01 U	0.01 U	0.01 U
Sand (2.00 mm - 1.00 mm)	--	--	0.01 U	0.01 U	0.01 U
Sand, coarse	--	--	0.01 U	<b>15.11</b>	0.01 U
Sand, medium	--	--	<b>1.29</b>	<b>37.91</b>	<b>1.9</b>
Sand, fine	--	--	<b>14.4</b>	<b>23.81</b>	<b>23.3</b>
Sand, very fine	--	--	<b>16.2</b>	<b>7.73</b>	<b>49.8</b>
Silt	--	--	<b>55.01</b>	<b>11.8</b>	<b>21.5</b>
Clay, <5 micron	--	--	<b>13.09</b>	<b>3.63</b>	<b>3.5</b>
<b>Metals (mg/kg)</b>					
Arsenic	8.2	70	<b>5.63</b>	<b>2.95</b>	<b>2.34</b>
Cadmium	1.2	9.6	<b>0.626</b>	<b>0.257</b>	<b>0.218</b>
Chromium	81	370	<b>30.5</b>	<b>13.7</b>	<b>22.7</b>
Copper	34	270	<b>78.1 J</b>	<b>39.3 J</b>	<b>9.7 J</b>
Lead	46.7	218	<b>50.6 J</b>	<b>20.8 J</b>	<b>5.33 J</b>
Mercury	0.15	0.71	<b>0.176</b>	<b>0.18</b>	<b>0.0146 J</b>
Nickel	20.9	51.6	<b>22</b>	<b>9.41</b>	<b>12.4</b>
Selenium	--	--	<b>0.3</b>	<b>0.187</b>	<b>0.29</b>
Silver	1	3.7	<b>0.333</b>	<b>0.153</b>	<b>0.0565 J</b>
Zinc	150	410	<b>180</b>	<b>71.5</b>	<b>50.2</b>
<b>PAHs (µg/kg)</b>					
1-Methylnaphthalene	--	--	3.8 U	3.1 U	3.5 U
2-Methylnaphthalene	70	670	<b>5.6 J</b>	3.1 U	3.5 U
Acenaphthene	16	500	3.9 U	3.1 U	3.5 U
Acenaphthylene	44	640	2.9 U	<b>7.4 J</b>	2.7 U
Anthracene	85.3	1100	<b>12 J</b>	<b>10 J</b>	5.2 U

	ERL	ERM	B6-COMP-062116	B7-COMP-062216	LA-2-REF-062316
			6/21/16	6/22/16	6/23/16
Benzo(a)anthracene	261	1600	35	12 J	3.2 U
Benzo(a)pyrene	430	1600	54	26	2.8 U
Benzo(b)fluoranthene	--	--	84	36	4.1 U
Benzo(g,h,i)perylene	--	--	71	24	3.8 J
Benzo(k)fluoranthene	--	--	49	20	4.2 U
Chrysene	384	2800	57	19	3.3 U
Dibenzo(a,h)anthracene	63.4	260	20	8 J	2.9 U
Fluoranthene	600	5100	70	15	2.7 U
Fluorene	19	540	12 J	4.2 U	4.7 U
Indeno(1,2,3-c,d)pyrene	--	--	46	17	2.5 J
Naphthalene	160	2100	5.7 U	4.6 U	5.2 U
Phenanthrene	240	1500	28	6.7 J	3.3 U
Pyrene	665	2600	99	26	3.4 U
Total HPAH (10 of 18) (U = 0) <sup>1,2</sup>	552	3160	585	203 J	6.3 J
Total LPAH (8 of 18) (U = 0) <sup>1,3</sup>	1700	9600	57.6 J	24.1 J	5.2 U
Total PAH (18) (U = 0) <sup>1</sup>	4022	44792	642.6 J	227.1 J	6.3 J
<b>Organometallic Compounds (µg/kg)</b>					
Butyltin (n-Butyltin)	--	--	2.4 J	1.8 U	2.1 U
Dibutyltin	--	--	57	14	1.1 U
Tetrabutyltin	--	--	1.2 U	0.98 U	1.1 U
Tributyltin	--	--	11	7.7	2.2 U
<b>Pesticides (µg/kg)</b>					
2,4'-DDD (o,p'-DDD)	--	--	0.46 U	0.38 U	0.43 U
2,4'-DDE (o,p'-DDE)	--	--	1.6 U	1.3 U	2.4 J
2,4'-DDT (o,p'-DDT)	--	--	0.51 U	0.42 U	0.47 U
4,4'-DDD (p,p'-DDD)	2	20	0.82 U	0.67 U	0.75 U
4,4'-DDE (p,p'-DDE)	2.2	27	2.4	4.1	5.6
4,4'-DDT (p,p'-DDT)	1	7	0.71 UJ	0.59 U	0.65 U
Total DDx (U = 0) <sup>1,4</sup>	1.58	46.1	2.4 J	4.1	8 J
Aldrin	--	--	0.71 U	0.59 U	0.65 U
Chlordane, alpha- (Chlordane, cis-)	--	--	0.66 U	0.54 U	0.6 U
Chlordane, gamma- (Chlordane, trans-) <sup>5</sup>	--	--	1.4 U	1.2 U	1.3 U
Dieldrin	0.02	8	0.71 U	0.59 U	0.65 U
Endosulfan sulfate	--	--	0.85 U	0.7 U	0.78 U

	ERL	ERM	B6-COMP-062116	B7-COMP-062216	LA-2-REF-062316
			6/21/16	6/22/16	6/23/16
Endosulfan, alpha- (I)	--	--	0.65 U	0.53 U	0.59 U
Endosulfan, beta (II)	--	--	0.77 U	0.63 U	0.7 U
Endrin	--	--	0.78 U	0.65 U	0.72 U
Endrin aldehyde	--	--	0.98 U	0.81 U	0.9 U
Endrin ketone	--	--	0.82 U	0.68 U	0.75 U
Heptachlor	--	--	0.7 U	0.58 U	0.64 U
Heptachlor epoxide	--	--	1.2 U	0.99 U	1.1 U
Hexachlorocyclohexane (BHC), alpha-	--	--	1.2 U	0.99 U	1.1 U
Hexachlorocyclohexane (BHC), beta-	--	--	0.81 U	0.67 U	0.74 U
Hexachlorocyclohexane (BHC), delta-	--	--	1.4 U	1.2 U	1.3 U
Hexachlorocyclohexane (BHC), gamma- (Lindane)	--	--	0.73 U	0.6 U	0.66 U
Methoxychlor	--	--	0.91 UJ	0.75 U	0.83 U
Nonachlor, cis-	--	--	0.42 U	0.35 U	0.39 U
Nonachlor, trans-	--	--	0.44 U	0.36 U	0.4 U
Oxychlorane	--	--	0.44 U	0.36 U	0.4 U
Toxaphene	--	--	15 U	12 U	13 U
Total Chlordane (U = 0) <sup>1,6</sup>	0.5	6	1.4 U	1.2 U	1.3 U
<b>PCB Congeners (µg/kg)</b>					
PCB-018	--	--	0.12 U	<b>2</b>	0.11 U
PCB-028	--	--	<b>1.2</b>	<b>1.1</b>	0.05 U
PCB-037	--	--	0.099 U	0.08 U	0.09 U
PCB-044	--	--	0.14 U	0.12 U	0.13 U
PCB-049	--	--	<b>0.99</b>	<b>1.1</b>	0.17 U
PCB-052	--	--	<b>1.7</b>	<b>1.6</b>	0.094 U
PCB-066	--	--	<b>2.3 J</b>	<b>1.1</b>	0.15 U
PCB-070	--	--	<b>2.8</b>	<b>1.2</b>	0.089 U
PCB-074	--	--	<b>1.6</b>	<b>0.65</b>	0.13 U
PCB-077	--	--	0.13 U	0.1 U	0.12 U
PCB-081	--	--	0.2 U	0.16 U	0.18 U
PCB-087	--	--	<b>6.5</b>	0.14 U	0.16 U
PCB-099	--	--	<b>3.4</b>	<b>0.92</b>	0.091 U
PCB-101	--	--	<b>5 J</b>	<b>1.4</b>	0.15 U
PCB-105	--	--	<b>5.2</b>	<b>1</b>	0.082 U
PCB-110	--	--	<b>6</b>	<b>1.5</b>	0.068 U

	ERL	ERM	B6-COMP-062116	B7-COMP-062216	LA-2-REF-062316
			6/21/16	6/22/16	6/23/16
PCB-114	--	--	0.13 U	0.11 U	0.12 U
PCB-118	--	--	<b>11</b>	<b>1.7</b>	0.13 U
PCB-119	--	--	0.16 U	0.13 U	0.14 U
PCB-123	--	--	0.17 U	0.14 U	0.16 U
PCB-126	--	--	0.13 U	0.11 U	0.12 U
PCB-128	--	--	0.17 U	0.14 U	0.15 U
PCB-132/153	--	--	<b>12</b>	<b>2.5</b>	0.26 U
PCB-138/158	--	--	<b>8.7</b>	<b>1.8</b>	0.14 U
PCB-149	--	--	<b>4.6</b>	<b>1.2</b>	0.15 U
PCB-151	--	--	<b>2.4</b>	0.09 U	0.1 U
PCB-156	--	--	<b>1.9</b>	0.077 U	0.086 U
PCB-157	--	--	0.086 U	0.07 U	0.078 U
PCB-167	--	--	0.1 U	0.082 U	0.092 U
PCB-168	--	--	0.08 U	0.065 U	0.073 U
PCB-169	--	--	0.1 U	0.081 U	0.091 U
PCB-170	--	--	1.8	0.084 U	0.095 U
PCB-177	--	--	1.4	0.12 U	0.13 U
PCB-180	--	--	5.2	0.056 U	0.063 U
PCB-183	--	--	1.6	0.15 U	0.16 U
PCB-187	--	--	2.5	0.11 U	0.13 U
PCB-189	--	--	0.1 U	0.081 U	0.091 U
PCB-194	--	--	<b>2.1</b>	0.15 U	0.17 U
PCB-201	--	--	0.16 U	0.13 U	0.14 U
PCB-206	--	--	<b>1.1 J</b>	0.26 U	0.29 U
Total PCB Congener (U = 0) <sup>1,7</sup>	22.7	180	<b>92.99 J</b>	<b>20.77</b>	0.29 U
<b>Pyrethroids (µg/kg)</b>					
Allethrin	--	--	0.41 UJ	0.34 U	0.37 UJ
Bifenthrin	--	--	0.49 U	0.41 U	0.45 UJ
Cyfluthrin	--	--	0.41 UJ	0.34 U	0.37 UJ
Cypermethrin	--	--	0.41 UJ	0.34 U	0.37 UJ
Deltamethrin/Tralomethrin	--	--	0.41 U	0.34 U	0.37 UJ
Fenpropathrin	--	--	0.41 UJ	0.34 U	0.37 UJ
Fenvalerate	--	--	0.41 U	0.34 U	0.37 UJ
Fluvalinate	--	--	0.41 UJ	0.34 UJ	0.37 UJ
Lambda-cyhalothrin	--	--	0.41 U	0.34 U	0.37 UJ

	ERL	ERM	B6-COMP-062116	B7-COMP-062216	LA-2-REF-062316
			6/21/16	6/22/16	6/23/16
Permethrin	--	--	0.82 U	0.68 U	0.75 UJ
Phenothrin	--	--	0.41 U	0.34 U	0.37 UJ
Resmethrin/Bioresmethrin	--	--	0.7 U	0.57 U	0.64 UJ
Tetramethrin	--	--	0.49 UJ	0.41 U	0.45 UJ

## Notes:

■ Detected concentration is greater than SQUIRT\_ERL2008 screening level

*Italicized* = non-detected concentration is above one or more identified screening levels

**Bold** = detected result

-- = results not reported or not applicable

µg/kg = microgram per kilogram

ERL = effects range low

ERM = effects range median

HPAH = high-molecular weight polycyclic aromatic hydrocarbon

J = estimated value

LPAH = low-molecular-weight polycyclic aromatic hydrocarbon

mg/kg = milligram per kilogram

mm = millimeter

PAH = polycyclic aromatic hydrocarbon

PCB = polychlorinated biphenyl

pct = percent

U = compound analyzed but not detected above detection limit

UJ = compound analyzed but not detected above estimated detection limit

- 1 Totals (U=0) are calculated as the sum of all detected results. If all results are not detected, the highest detection limit value is reported as the sum.
- 2 Total HPAH (10 of 18) is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
- 3 Total LPAH (8 of 18) is the sum of 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene.
- 4 Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT, if measured.
- 5 Gamma chlordane and trans-chlordane are synonymous and refer to CAS RN 5103-74-2.
- 6 Total chlordane is the sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane.
- 7 Total PCB congener is the sum of all PCB congeners listed in this table.

### 3.2.1 LA-2 Reference

Grain size of reference sediment consisted primarily of sand, totaling 75.0%. TOC was measured at a concentration of 0.09%.

Metals, PAHs, and pesticides were detected in reference sediment. All metal and PAH concentrations were less than corresponding ERL and ERM values. DDTs were the only pesticides detected in reference sediment. One DDT derivative (4,4'-DDE) and total DDTs

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exceeded the corresponding ERL value. Organotins, PCBs, and pyrethroids were not detected in reference sediment.

### **3.2.2 Basin 6**

Grain size of sediment from Basin 6 consisted primarily of fines (silt and clay), totaling 68.1%. TOC was measured at a concentration of 1.1%.

Metals, PAHs, organotins, PCBs, and pesticides were detected in sediment from Basin 6. Copper, lead, mercury, nickel, and zinc exceeded the corresponding ERL value. Several PAHs were detected at low concentrations (less than corresponding ERL value). Total low molecular weight PAHs slightly exceeded the corresponding ERL value. Three organotins (butyltin, dibutyltin, and tributyltin) were detected in sediment from Basin 6. Several PCBs were detected and total PCBs exceeded the corresponding ERL value. DDTs were the only pesticides detected in sediment from Basin 6. One DDT derivative (4,4'-DDE) and total DDTs exceeded the corresponding ERL value; however, concentrations were less than those measured in reference sediment. Pyrethroids were not detected in sediment from Basin 6.

### **3.2.3 Basin 7**

Grain size of sediment from Basin 7 consisted primarily of sand, totaling 84.6%. TOC was measured at a concentration of 0.12%.

Metals, PAHs, organotins, PCBs, and pesticides were detected in sediment from Basin 7. Copper and mercury exceeded the corresponding ERL value. Several PAHs were detected at low concentrations (less than corresponding ERL value). Two organotins (dibutyltin and tributyltin) were detected in sediment from Basin 7. Several PCBs were detected; however, total PCBs were less than the corresponding ERL value. DDTs were the only pesticides detected in sediment from Basin 7. One DDT derivative (4,4'-DDE) and total DDTs exceeded the corresponding ERL value; however, concentrations were less than those measured in reference sediment. Pyrethroids were not detected in sediment from Basin 7.

### 3.3 Biological Testing

Biological test results for Basins 6 and 7 sediments are presented in this section. The laboratory report, including detailed results and raw data, is provided in Appendix C.

#### 3.3.1 Solid Phase Testing

##### 3.3.1.1 Amphipod Mortality Bioassay

Results of the 10-day amphipod SP test are summarized in Table 7. Mean survival in the control was 96%, which met control acceptability criterion. Mean survival in LA2-REF sediment was 99%. Survival results in Basins 6 and 7 sediments were compared to survival in the reference sediment to determine suitability for ocean disposal. Survival in test sediments ranged from 97 to 98%, which is within 20% of the reference indicating sediments from Basins 6 and 7 are not acutely toxic to marine amphipods and meet limiting permissible concentration (LPC) requirements for ocean disposal.

**Table 7**  
**Summary of Solid Phase Test Results Using *Ampelisca abdita***

Treatment	Mean Survival (%)	Standard Deviation (%)	Meets LPC for Ocean Disposal
Control	96	4.2	N/A
LA2-REF	99	2.2	N/A
B6-COMP	97	2.7	Yes
B7-COMP	98	2.7	Yes

Notes:

LPC = limiting permissible concentration

N/A = not applicable

##### 3.3.1.2 Polychaete Mortality Bioassay

Results of the 10-day polychaete SP test are summarized in Table 8. Mean survival in the control was 100%, which met control acceptability criterion. Mean survival in LA2-REF sediment was 96%. Mean survival in Basins 6 and 7 samples was compared to reference survival to determine suitability for ocean disposal. Survival in test sediments was 100%, which is within 10% of the reference indicating that sediments from Basins 6 and 7 are not acutely toxic to polychaetes and meet LPC requirements for ocean disposal.

**Table 8**  
**Summary of Solid Phase Test Results Using *Neanthes arenaceodentata***

Treatment	Mean Survival (%)	Standard Deviation (%)	Meets LPC for Ocean Disposal
Control	100	0	N/A
LA2-REF	96	8.9	N/A
B6-COMP	100	0	Yes
B7-COMP	100	0	Yes

Notes:

LPC = limiting permissible concentration

N/A = not applicable

### **3.3.2 Suspended-Particulate-Phase Testing**

#### **3.3.2.1 Bivalve Larval Development Bioassay**

Results for the 48-hour bivalve larval SPP test are summarized in Table 9. Mean normal development and survival in the control was 96.6 and 96.7%, respectively, which met control acceptability criteria. Mean normal development and survival in the site water control was 97.7 and 94.7%, respectively. Mean normal development in the test elutriates ranged from 0 to 98.6%. Mean survival in the test elutriates ranged from 96.7 to 100%. For B7-COMP, normal development and survival was greater than 50%; therefore, the median effective concentration (EC<sub>50</sub>) and median lethal concentration (LC<sub>50</sub>), respectively, were assumed to be greater than 100%. Based on these results, sediment from Basin 7 is not toxic to bivalve larvae and meets LPC requirements for ocean disposal. For B6-COMP, the survival was greater than 50%; therefore, the LC<sub>50</sub> was assumed to be greater than 100%. The EC<sub>50</sub> for development was calculated to be 74.4%. The effect on the development of *M. galloprovincialis* was not unexpected due to the elevated ammonia concentrations measured in elutriate from Basin 6. As described in Section 2.3, an ammonia reference toxicant test was run with the bivalve larval development bioassay due to the sensitivity of *M. galloprovincialis* to elevated ammonia concentrations. The EC<sub>50</sub> in the ammonia reference toxicant test was 7.1 mg/L. Ammonia concentrations in the 100% elutriate of B6-COMP on Days 0 and 2 were 9.5 and 8.3 mg/L, respectively. Both concentrations measured in elutriate exceeded the effect value for development, indicating that ammonia likely contributed to the observed toxicity in this sample. Results were further analyzed using a water column toxicity mixing model (i.e., STFATE) to determine whether sediment from Basin 6 meets LPC



requirements for ocean disposal. Results of STFATE modeling are presented separately in Section 3.4.

**Table 9**  
**Summary of Suspended Particulate Phase Test Results Using *Mytilus galloprovincialis***

Sample ID	Treatment (%)	Mean Normal Development (%)	Standard Deviation (%)	EC <sub>50</sub> (%)	Mean Survival (%)	Standard Deviation (%)	LC <sub>50</sub> (%)	Meets LPC for Ocean Disposal
Control	N/A	96.6	2.0	N/A	96.7	6.2	N/A	N/A
Site water control	N/A	97.7	1.6	N/A	94.7	7.6	N/A	N/A
B6-COMP	1	98.6	0.4	74.4	100	0.0	>100	Requires further assessment <sup>1</sup>
	10	96.3	1.9		96.7	5.1		
	50	95.4	1.3		98.2	4.1		
	100	<b>0.0</b>	0.0		97.2	2.0		
B7-COMP	1	97.7	1.3	> 100	98.2	3.2	> 100	Yes
	10	98.3	0.9		98.7	3.0		
	50	98.1	0.8		98.0	2.2		
	100	97.8	1.5		99.8	0.4		

Notes:

1 STFATE modeling was required to estimate whether disposal of sediment at the LA-2 disposal site would negatively impact aquatic life.

**Bold** = Value is significantly less than the control (P < 0.05).

EC<sub>50</sub> = median effective concentration

LC<sub>50</sub> = median lethal concentration

LPC = limiting permissible concentration

N/A = not applicable

### 3.3.2.2 Mysid Shrimp Bioassay

Results for the 96-hour mysid shrimp SPP test are summarized in Table 10. Mean survival in the control was 98%, which met control acceptability criterion. Mean survival in the site water control was 96%. Mean survival in the test elutriates ranged from 90 to 96%. For each sample, survival was greater than 50%; therefore, the LC<sub>50</sub> was assumed to be greater than 100%. Based on these results, sediments from Basins 6 and 7 are not toxic to mysid shrimp and meet LPC requirements for ocean disposal.

**Table 10**  
**Summary of Suspended Particulate Phase Test Results Using *Americamysis bahia***

Sample ID	Treatment (%)	Mean Survival (%)	Standard Deviation (%)	LC <sub>50</sub> (%)	Meets LPC for Ocean Disposal
Control	N/A	98	4.5	N/A	N/A
Site water control	N/A	96	5.5	N/A	N/A
B6-COMP	10	92	8.4	> 100	Yes
	50	90	7.1		
	100	88	8.4		
B7-COMP	10	96	5.5	> 100	Yes
	50	96	5.5		
	100	90	7.1		

## Notes:

LC<sub>50</sub> = median effective concentration

LPC = limiting permissible concentration

N/A = not applicable

### 3.3.2.3 Juvenile Fish Bioassay

Test results for the 96-hour juvenile fish SPP test are presented in Table 11. Mean survival in the control was 96%, which met control acceptability criterion. Mean survival in the site water control was 88%. Mean survival in the test elutriates ranged from 86 to 94%. For each sample, survival was greater than 50%; therefore, the LC<sub>50</sub> was assumed to be greater than 100%. Based on these results, sediments from Basins 6 and 7 are not toxic to juvenile fish and meet LPC requirements for ocean disposal.

**Table 11**  
**Summary of Suspended Particulate Phase Test Results Using *Menidia beryllina***

Sample ID	Treatment (%)	Mean Survival (%)	Standard Deviation (%)	LC <sub>50</sub> (%)	Meets LPC for Ocean Disposal
Control	N/A	96	5.5	N/A	N/A
Site water control	N/A	88	8.4	N/A	N/A
B2-6-COMP	10	92	8.4	> 100	Yes
	50	92	8.4		
	100	86	8.9		

Sample ID	Treatment (%)	Mean Survival (%)	Standard Deviation (%)	LC <sub>50</sub> (%)	Meets LPC for Ocean Disposal
B7-COMP	10	92	4.5	> 100	Yes
	50	94	5.5		
	100	90	7.1		

Notes:

LC<sub>50</sub> = median effective concentration

LPC = limiting permissible concentration

N/A = not applicable

### 3.3.3 Bioaccumulation Potential Testing

Test results for the 28-day BP tests are presented below. Following the 28-day exposure, organisms were placed into clean seawater for 24 hours to allow organisms to depurate the test sediment. After this purging process, tissues were shipped frozen to Eurofins Calscience, Inc., for chemical analysis. Tissue chemistry results are presented separately in Section 3.5.

#### 3.3.3.1 Bivalve Bioaccumulation Test

Test results for the 28-day bivalve BP test are presented in Table 12. Mean survival in the control and reference sediments was 97.6 and 91.2%, respectively. Mean survival in Basins 6 and 7 samples was 98.4 to 96.8%, respectively. Sufficient tissue mass was available at test completion for chemical analysis.

**Table 12**  
**Summary of Bioaccumulation Potential Test Results Using *Macoma nasuta***

Treatment	Mean Survival (%)	Standard Deviation (%)
Control	97.6	2.2
LA2-REF	91.2	5.2
B6-COMP	98.4	3.6
B7-COMP	96.8	4.4

#### 3.3.3.2 Polychaete Bioaccumulation Test

Test results for the 28-day polychaete BP test are presented in Table 13. Mean survival in the control and reference sediment was 100%. Mean survival in Basins 6 and 7 samples was 100%. Sufficient tissue mass was available at test completion for chemical analysis.

**Table 13**  
**Summary of Bioaccumulation Potential Test Results Using *Nereis virens***

Treatment	Mean Survival (%)	Standard Deviation (%)
Control	100	0.0
LA2-REF	100	0.0
B6-COMP	100	0.0
B7-COMP	100	0.0

### 3.4 Prediction of Water Column Toxicity During Disposal

STFATE is a data modeling tool used to evaluate the suitability of proposed dredged material for placement at an Ocean Dredged Material Disposal Site. The model simulates the movement of disposed material through the water column to the ocean bottom and then as it becomes resuspended by the current. The EC<sub>50</sub> value of B6-COMP in the bivalve larval development test was calculated to be 74.4%. Although ammonia likely contributed to the observed toxicity in this sample and is not a contaminant of concern, STFATE modeling was performed to demonstrate LPC compliance. The model uses 0.01 of the LC<sub>50</sub> or EC<sub>50</sub> value to determine compliance with the LPC; therefore, the toxicity criterion, or LPC, used in the model was 0.744%. The guidance states that the concentration of dredged material must be less than 0.01 times the LC<sub>50</sub> or EC<sub>50</sub> after 4 hours within the disposal site and at all times outside the disposal site.

The input parameters for LA-2 are listed in Table 14; complete results are included in Appendix D. Physical characteristics of sediment from B6-COMP were used as inputs to the model. Site-specific input parameters used were derived from the *Draft Environmental Impact Statement: Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California* (USEPA/USACE 2004).

**Table 14**  
**STFATE Model Input Parameters**

Parameter	Units	LA-2 Ocean Disposal Site Value
<b>Site Description</b>		
Number of Grid Points (left to right + x direction)	-	36
Number of Grid Points (top to bottom + z direction)	-	36
Grid Spacing (left to right)	feet	400
Grid Spacing (top to bottom)	feet	400
Variable Water Depth within Disposal Boundary	feet	360 - 1,115
Roughness Height at Bottom of Disposal Site	feet	0.0051
Bottom Slope (x-direction)	deg.	0
Bottom Slope (z-direction)	deg.	0
Number of Points in Density Profile	-	4
Density at Point One (depth = 0 feet)	g/cc	1.0248
Density at Point Two (depth = 500 feet)	g/cc	1.0262
Density at Point Three (depth = 1,115 feet)	g/cc	1.0273
Density at Point Three (depth = 1,865 feet)	g/cc	1.0280
<b>Velocity</b>		
Type of Velocity Profile	-	Single depth average velocity
X-Direction Velocity (depth = 0 feet)	feet/sec	0.500
Z-Direction Velocity (depth = 0 feet)	feet/sec	0.500
<b>Disposal Operation</b>		
Disposal Point Top of Grid	feet	5,000
Disposal Point Left Edge of Grid	feet	5,000
Dumping Over Depression	-	0
Solid Fraction Volume Concentration	-	Gravel = 0.0, Sand = 0.013, Silt = 0.474, Clay = 0.121 <sup>1</sup>
Volume of Each Layer	cy	2,000
Length of Disposal Vessel Bin	feet	180
Width of Disposal Vessel Bin	feet	50
Pre-disposal Draft	feet	14
Post-disposal Draft	feet	5
Duration	sec	14,400
Long-term Time Step for Diffusion	sec	900
Time to Empty Vessel	sec	30

Parameter	Units	LA-2 Ocean Disposal Site Value
Location of Upper Left Corner of Disposal Site (distance from top edge)	feet	2,000
Location of Upper Left Corner of Disposal Site (distance from left edge)	feet	2,000
Location of Lower Right Corner of Disposal Site (distance from top edge)	feet	8,000
Location of Lower Right Corner of Disposal Site (distance from left edge)	feet	8,000
<b>Coefficients</b>		
Settling Coefficient	-	0.000 <sup>2</sup>
Apparent Mass Coefficient	-	1.000 <sup>2</sup>
Drag Coefficient	-	0.500 <sup>2</sup>
Form Drag for Collapsing Cloud	-	1.000 <sup>2</sup>
Skin Friction for Collapsing Cloud	-	0.010 <sup>2</sup>
Drag for an Ellipsoidal Wedge	-	0.100 <sup>2</sup>
Drag for a Plate	-	1.000 <sup>2</sup>
Friction Between Cloud and Bottom	-	0.010 <sup>2</sup>
4/3 Law Horizontal Diffusion Dissipation Factor	-	0.001 <sup>2</sup>
Unstratified Water Vertical Diffusion Coefficient	-	0.0250 <sup>2</sup>
Cloud/Ambient Density Gradient Ratio	-	0.250 <sup>2</sup>
Turbulent Thermal Entrainment	-	0.235 <sup>2</sup>
Entrainment in Collapse	-	0.100 <sup>2</sup>
Stripping Factor	-	0.003 <sup>2</sup>

## Notes:

1 As previously described, grain size results were reanalyzed due to an instrument error. The revised grain size results were sandier than previously reported (31.89% versus 2.21%). STFATE modeling was not rerun because coarser-grained materials are expected to settle quicker; therefore, results presented in this report are believed to be conservative.

2 Model default value

cy = cubic yards

deg. = degree

feet/sec = feet per second

g/cc = grams per cubic centimeter

sec = second

### 3.4.1 Results of STFATE Modeling

STFATE modeling results predicted that the maximum concentration of dredged material would be less than 0.01 of the EC<sub>50</sub> (i.e., less than 0.744%) after 4 hours within the disposal site (Table 15). After 4 hours, the maximum concentration within the disposal boundary was 0.0096%. In addition, the model predicted that the maximum concentration of dredged material outside the disposal site boundaries was never greater than 0.744% (Table 15). The

maximum concentration observed outside the disposal site was 0.0351%. Based on STFATE modeling results, sediment from B6-COMP meets the LPC requirements for ocean disposal.

As previously described, grain size of Basin 6 was reanalyzed due to an instrument error. The revised grain size results were sandier than previously reported (31.89% versus 2.21%). STFATE modeling was not rerun because coarser-grained materials are expected to settle quicker; therefore, results presented in this report are believed to be conservative.

**Table 15**  
**STFATE Modeling Results**

Site	Time (hours)	Depth (feet)	Maximum Concentration (%)	Dilution (%)	STFATE Summary Result
<b>Maximum Concentration After 4 Hours within Disposal Site</b>					
LA-2	4	0	1.75E-40	5.71E+41	Toxicity criteria for the disposal site were not violated; LPC met
	4	500	1.75E-40	5.71E+41	
	4	676	9.58E-03	1.04E+04	
	4	1,000	1.75E-40	5.71E+41	
<b>Maximum Concentration Outside Disposal Boundary</b>					
LA-2	1.25	0	1.13E-39	8.85E+40	Toxicity criteria for the disposal site were not violated; LPC met
	1.25	500	1.13E-39	8.85E+40	
	1.75	676	3.51E-02	2.85E+03	
	1.25	1,000	1.13E-39	8.85E+40	

Note:

LPC = limiting permissible concentration

### 3.5 Chemical Analysis of Tissue Residues

Sediment bioaccumulation tests were conducted using *Macoma nasuta* and *Nereis virens*. Chemical analysis of tissue residues was conducted to determine the bioaccumulation potential of sediment contaminants. Based on results of sediment chemistry, a subset of chemicals was selected for analysis that included PCBs (see Table 3). The data evaluation consisted of comparing tissue burdens to the following:

- FDA action levels
- Reference sediment tissue burdens
- ERED (USACE/USEPA 2010)

Results of chemical analysis of bivalve and polychaete tissue residues are presented in Tables 16 and 17, respectively. All results are expressed in wet weight. MDLs, RLs, and raw data for the analyses are provided in Appendix B.

### **3.5.1 Comparison of Tissue Burdens to U.S. Food and Drug Administration Action Levels**

A comparison of FDA action levels for poisonous or deleterious substances in fish and shellfish for human food is presented in Tables 16 and 17. The FDA does not have an action level for PCBs. Total PCB concentrations were compared to the FDA tolerance level of 2,000 micrograms per kilogram. All PCBs concentrations in tissues exposed to Basins 6 and 7 sediments were less than this tolerance level. FDA actions levels were not exceeded; therefore, results were also compared to tissue concentrations of organisms exposed to reference sediment.



**Table 16**  
**Results of Chemical Analyses of *Macoma nasuta* Tissue Residues**

	FDA Action Level	T0-A-	T0-B-	T0-C-	B6-COMP-	B6-COMP-	B6-COMP-	B6-COMP-	B6-COMP-	B7-COMP-	B7-COMP-	B7-COMP-	B7-COMP-	B7-COMP-	LA-2-REF-A-	LA-2-REF-B-	LA-2-REF-C-	LA-2-REF-D-	LA-2-REF-E-
		MACOMA- -062916 6/29/16	MACOMA- 062916 6/29/16	MACOMA- 062916 6/29/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16	MACOMA- 072816 7/28/16
<b>Conventional Parameters (pct)</b>																			
Lipids	--	0.29	0.33	0.26	0.28	0.22	0.25	0.26	0.28	0.25	0.22	0.21	0.27	0.31	0.26	0.21	0.21	0.28	0.25
<b>PCB Congeners (µg/kg)</b>																			
PCB-018	--	0.071 U	0.07 U	0.071 U	0.071 U	0.07 U	0.071 U	0.071 U	0.07 U	0.63	0.41	0.46	0.49	0.62	0.07 U	0.071 U	0.07 U	0.071 U	0.07 U
PCB-028	--	0.033 U	0.033 U	0.034 U	0.19 J	0.033 U	0.19 J	0.18 J	0.2	0.83	0.44	0.4	0.56	0.57	0.033 U	0.033 U	0.033 U	0.034 U	0.033 U
PCB-037	--	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
PCB-044	--	0.086 U	0.086 U	0.087 U	0.086 U	0.086 U	0.087 U	0.086 U	0.086 U	0.087 U	0.086 U	0.087 U	0.086 U	0.087 U	0.086 U	0.086 U	0.086 U	0.087 U	0.086 U
PCB-049	--	0.11 U	0.11 U	0.11 U	0.17 J	0.12 J	0.16 J	0.22	0.19 J	0.77	0.35	0.3	0.39	0.48	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-052	--	0.062 U	0.062 U	0.063 U	0.29	0.14 J	0.32	0.4	0.34	0.89	0.5	0.49	0.68	0.68	0.062 U	0.062 U	0.062 U	0.063 U	0.062 U
PCB-066	--	0.1 U	0.1 U	0.1 U	0.34	0.2	0.27	0.41	0.38	0.86	0.49	0.43	0.6	0.61	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-070	--	0.059 U	0.059 U	0.06 U	0.3	0.23	0.24	0.3	0.36	0.68	0.35	0.34	0.49	0.54	0.059 U	0.059 U	0.059 U	0.06 U	0.059 U
PCB-074	--	0.086 U	0.086 U	0.087 U	0.17 J	0.096 J	0.2 J	0.21	0.29	0.39	0.27	0.19 J	0.34	0.29	0.086 U	0.086 U	0.086 U	0.087 U	0.086 U
PCB-077	--	0.077 U	0.077 U	0.078 U	0.077 U	0.077 U	0.078 U	0.077 U	0.077 U	0.078 U	0.077 U	0.078 U	0.077 U	0.078 U	0.077 U	0.077 U	0.077 U	0.078 U	0.077 U
PCB-081	--	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-087	--	0.11 U	0.11 U	0.11 U	0.17 J	0.11 U	0.14 J	0.24	0.17 J	0.2	0.19 J	0.11 U	0.12 J	0.13 J	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-099	--	0.06 U	0.06 U	0.061 U	0.28	0.16 J	0.22	0.36	0.36	0.42	0.26	0.18 J	0.35	0.3	0.06 U	0.06 U	0.06 U	0.086 J	0.06 U
PCB-101	--	0.097 U	0.097 U	0.098 U	0.46	0.25	0.36	0.61	0.57	0.71	0.39	0.37	0.44	0.5	0.097 U	0.097 U	0.097 U	0.12 J	0.14 J
PCB-105	--	0.054 U	0.054 U	0.055 U	0.22	0.054 U	0.13 J	0.33	0.28	0.055 U	0.054 U	0.055 U	0.17 J	0.16 J	0.054 U	0.054 U	0.054 U	0.055 U	0.054 U
PCB-110	--	0.046 U	0.045 U	0.046 U	0.47	0.34	0.38	0.56	0.46	0.6	0.33	0.35	0.39	0.45	0.045 U	0.046 U	0.045 U	0.12 J	0.12 J
PCB-114	--	0.082 U	0.081 U	0.082 U	0.082 U	0.081 U	0.082 U	0.082 U	0.081 U	0.082 U	0.082 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U
PCB-118	--	0.084 U	0.083 U	0.084 U	0.39	0.33	0.34	0.59	0.48	0.64	0.34	0.33	0.45	0.47	0.083 U	0.084 U	0.083 U	0.11 J	0.083 U
PCB-119	--	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
PCB-123	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-126	--	0.08 U	0.079 U	0.08 U	0.08 U	0.079 U	0.08 U	0.08 U	0.079 U	0.08 U	0.08 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U
PCB-128	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-132/153	--	0.17 U	0.17 U	0.17 U	0.54	0.34 J	0.43	0.67	0.67	0.74	0.39 J	0.43	0.49	0.47	0.17 U	0.17 U	0.17 U	0.24 J	0.31 J
PCB-138/158	--	0.094 U	0.093 U	0.094 U	0.44	0.26 J	0.4 J	0.53	0.52	0.55	0.32 J	0.34 J	0.38 J	0.38 J	0.093 U	0.094 U	0.093 U	0.094 U	0.14 J
PCB-149	--	0.097 U	0.097 U	0.098 U	0.29	0.2	0.26	0.37	0.35	0.35	0.2	0.18 J	0.22	0.3	0.097 U	0.097 U	0.097 U	0.098 U	0.097 U
PCB-151	--	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.12 J	0.067 U	0.067 U	0.067 U	0.067 U	0.1 J	0.093 J	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
PCB-156	--	0.057 U	0.057 U	0.058 U	0.057 U	0.057 U	0.058 U	0.057 U	0.057 U	0.058 U	0.057 U	0.058 U	0.057 U	0.058 U	0.057 U	0.057 U	0.057 U	0.058 U	0.057 U
PCB-157	--	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
PCB-167	--	0.061 U	0.061 U	0.062 U	0.061 U	0.061 U	0.062 U	0.061 U	0.061 U	0.062 U	0.061 U	0.062 U	0.061 U	0.062 U	0.061 U	0.061 U	0.061 U	0.062 U	0.061 U
PCB-168	--	0.048 U	0.048 U	0.049 U	0.048 U	0.048 U	0.049 U	0.048 U	0.048 U	0.049 U	0.048 U	0.049 U	0.048 U	0.049 U	0.048 U	0.048 U	0.048 U	0.049 U	0.048 U
PCB-169	--	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.061 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U
PCB-170	--	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U

	FDA Action Level	T0-A-MACOMA-062916	T0-B-MACOMA-062916	T0-C-MACOMA-062916	B6-COMP-A-MACOMA-072816	B6-COMP-B-MACOMA-072816	B6-COMP-C-MACOMA-072816	B6-COMP-D-MACOMA-072816	B6-COMP-E-MACOMA-072816	B7-COMP-A-MACOMA-072816	B7-COMP-B-MACOMA-072816	B7-COMP-C-MACOMA-072816	B7-COMP-D-MACOMA-072816	B7-COMP-E-MACOMA-072816	LA-2-REF-A-MACOMA-072816	LA-2-REF-B-MACOMA-072816	LA-2-REF-C-MACOMA-072816	LA-2-REF-D-MACOMA-072816	LA-2-REF-E-MACOMA-072816
		6/29/16	6/29/16	6/29/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16
PCB-177	--	0.087 U	0.086 U	0.087 U	0.087 U	0.086 U	0.087 U	0.087 U	0.086 U	0.087 U	0.087 U	0.087 U	0.086 U	0.087 U	0.086 U	0.087 U	0.086 U	0.087 U	0.086 U
PCB-180	--	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U
PCB-183	--	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-187	--	0.084 U	0.083 U	0.084 U	0.084 U	0.083 U	<b>0.1 J</b>	<b>0.14 J</b>	<b>0.15 J</b>	<b>0.11 J</b>	0.084 U	0.084 U	0.083 U	<b>0.087 J</b>	0.083 U	0.084 U	0.083 U	0.084 U	0.083 U
PCB-189	--	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.061 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U
PCB-194	--	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-201	--	0.096 U	0.096 U	0.097 U	0.096 U	0.096 U	0.097 U	0.096 U	0.096 U	0.097 U	0.096 U	0.097 U	0.096 U	0.097 U	0.096 U	0.096 U	0.096 U	0.097 U	0.096 U
PCB-206	--	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Total PCB Congener (U = 0)	2,000	0.19 U	0.19 U	0.19 U	<b>4.72 J</b>	<b>2.67 J</b>	<b>4.14 J</b>	<b>6.24 J</b>	<b>5.77 J</b>	<b>9.37 J</b>	<b>5.23 J</b>	<b>4.79 J</b>	<b>6.66 J</b>	<b>7.13 J</b>	0.19 U	0.19 U	0.19 U	<b>0.676 J</b>	<b>0.71 J</b>

Notes:

**Bold = detected result**

-- = not applicable

µg/kg = microgram per kilogram

FDA = Food and Drug Administration

J = estimated value

PCB = polychlorinated biphenyl

pct = percent

U = compound analyzed but not detected above detection limit

Totals (U=0) are calculated as the sum of all detected results. If all results are not detected, the highest detection limit value is reported as the sum.

Total PCB congener is the sum of all PCB congeners listed in this table.

**Table 17**  
**Results of Chemical Analyses of *Nereis virens* Tissue Residues**

	FDA Action Level	T0-A- NEREIS- 062916 6/29/16	T0-B- NEREIS- 062916 6/29/16	T0-C- NEREIS- 062916 6/29/16	B6-COMP- A-NEREIS- 072816 7/28/16	B6-COMP- B-NEREIS- 072816 7/28/16	B6-COMP- C-NEREIS- 072816 7/28/16	B6-COMP- D-NEREIS- 072816 7/28/16	B6-COMP- E-NEREIS- 072816 7/28/16	B7-COMP- A-NEREIS- 072816 7/28/16	B7-COMP- B-NEREIS- 072816 7/28/16	B7-COMP- C-NEREIS- 072816 7/28/16	B7-COMP- D-NEREIS- 072816 7/28/16	B7-COMP- E-NEREIS- 072816 7/28/16	LA-2-REF-A- NEREIS- 072816 7/28/16	LA-2-REF-B- NEREIS- 072816 7/28/16	LA-2-REF-C- NEREIS- 072816 7/28/16	LA-2-REF-D- NEREIS- 072816 7/28/16	LA-2-REF-E- NEREIS- 072816 7/28/16
<b>Conventional Parameters (pct)</b>																			
Lipids	--	0.83	0.99	1.2	1.1	1.1	0.88	1.2	0.75	0.86	1.2	0.93	0.87	0.93	0.95	1.1	0.71	0.75	0.95
<b>PCB Congeners (µg/kg)</b>																			
PCB-018	--	0.07 U	0.071 U	0.07 U	0.18 J	0.071 U	0.07 U	0.071 U	0.07 U	1.2	1.8	1.7	1.2	1.2	0.07 U	0.071 U	0.07 U	0.071 U	0.07 U
PCB-028	--	0.033 U	0.033 U	0.033 U	0.28	0.31	0.21	0.31	0.033 U	0.76	1	0.96	0.57	0.74	0.033 U	0.034 U	0.033 U	0.033 U	0.033 U
PCB-037	--	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
PCB-044	--	0.086 U	0.086 U	0.086 U	0.086 U	0.33	0.23	0.086 U	0.086 U	0.25	0.41	0.23	0.28	0.32	0.086 U	0.087 U	0.086 U	0.086 U	0.086 U
PCB-049	--	0.11 U	0.11 U	0.11 U	0.24	0.3	0.21	0.25	0.16 J	0.49	0.92	0.73	0.58	0.62	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-052	--	0.062 U	0.062 U	0.062 U	0.72	0.87	0.55	0.73	0.4	1.3	2	2	1.5	1.5	0.062 U	0.21	0.062 U	0.19 J	0.062 U
PCB-066	--	0.1 U	0.1 U	0.1 U	0.33	0.48	0.34	0.43	0.27	0.47	0.91	0.86	0.58	0.7	0.1 U	0.1 U	0.1 U	0.27	0.13 J
PCB-070	--	0.059 U	0.059 U	0.059 U	0.16 J	0.2	0.16 J	0.3	0.13 J	0.18 J	0.38	0.3	0.26	0.25	0.059 U	0.06 U	0.059 U	0.19 J	0.059 U
PCB-074	--	0.086 U	0.086 U	0.086 U	0.14 J	0.17 J	0.13 J	0.21	0.086 U	0.15 J	0.31	0.25	0.26	0.19 J	0.086 U	0.087 U	0.086 U	0.086 U	0.086 U
PCB-077	--	0.077 U	0.077 U	0.077 U	0.077 U	0.078 U	0.077 U	0.077 U	0.077 U	0.078 U	0.077 U	0.077 U	0.077 U	0.078 U	0.077 U	0.078 U	0.077 U	0.077 U	0.077 U
PCB-081	--	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-087	--	0.11 U	0.11 U	0.11 U	0.18 J	0.11 U	0.11 U	0.17 J	0.11 U	0.11 U	0.21	0.16 J	0.12 J	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-099	--	0.24	0.23	0.25	0.51	0.68	0.43	0.66	0.43	0.48	0.78	0.81	0.56	0.69	0.27	0.34	0.22	0.23	0.28
PCB-101	--	0.31	0.49	0.49	1.1	1.4	0.97	1.2	0.72	0.95	1.4	1.4	1.1	1.1	0.45	0.57	0.37	0.55	0.5
PCB-105	--	0.054 U	0.21	0.054 U	0.39	0.47	0.4	0.39	0.28	0.25	0.42	0.41	0.31	0.33	0.16 J	0.14 J	0.12 J	0.23	0.28
PCB-110	--	0.16 J	0.24	0.22	0.68	0.78	0.65	0.78	0.43	0.45	0.72	0.94	0.6	0.71	0.26	0.28	0.17 J	0.31	0.19 J
PCB-114	--	0.081 U	0.082 U	0.081 U	0.082 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U	0.082 U	0.081 U
PCB-118	--	0.25	0.27	0.25	0.62	0.77	0.6	0.69	0.53	0.42	0.93	0.85	0.63	0.73	0.3	0.36	0.18 J	0.32	0.28
PCB-119	--	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
PCB-123	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-126	--	0.079 U	0.08 U	0.079 U	0.08 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U	0.08 U	0.079 U
PCB-128	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-132/153	--	1.5	2.4	3	3.6	4.3	2.8	3.4	2.5	2.9	3.5	4.5	2.4	2.9	2.4	2.5	2	2.1	2.7
PCB-138/158	--	0.88	1.2	1.4	2	2.4	1.6	1.9	1.4	1.5	2	2.3	1.6	1.7	1.3	1.4	1.1	1.2	1.5
PCB-149	--	0.74	1.1	1.3	1.6	1.9	1.1	1.6	0.96	1.2	1.4	1.7	1.2	1.3	0.92	1	0.81	0.88	1
PCB-151	--	0.23	0.35	0.34	0.35	0.48	0.29	0.44	0.32	0.3	0.38	0.39	0.28	0.3	0.24	0.31	0.23	0.19 J	0.23
PCB-156	--	0.057 U	0.057 U	0.057 U	0.057 U	0.058 U	0.057 U	0.057 U	0.057 U	0.058 U	0.057 U	0.057 U	0.057 U	0.058 U	0.057 U	0.058 U	0.057 U	0.057 U	0.057 U
PCB-157	--	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
PCB-167	--	0.061 U	0.061 U	0.061 U	0.061 U	0.062 U	0.061 U	0.061 U	0.061 U	0.062 U	0.061 U	0.061 U	0.061 U	0.062 U	0.061 U	0.062 U	0.061 U	0.061 U	0.061 U
PCB-168	--	0.048 U	0.048 U	0.048 U	0.048 U	0.049 U	0.048 U	0.048 U	0.048 U	0.049 U	0.048 U	0.048 U	0.048 U	0.049 U	0.048 U	0.049 U	0.048 U	0.048 U	0.048 U
PCB-169	--	0.06 U	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U
PCB-170	--	0.34	0.48	0.57	0.59	0.72	0.46	0.63	0.42	0.52	0.55	0.69	0.6	0.44	0.42	0.4	0.41	0.35	0.44
PCB-177	--	0.23	0.32	0.26	0.32	0.44	0.33	0.31	0.26	0.28	0.29	0.36	0.29	0.22	0.23	0.24	0.16 J	0.24	0.3

	FDA Action Level	T0-A- NEREIS- 062916	T0-B- NEREIS- 062916	T0-C- NEREIS- 062916	B6-COMP- A-NEREIS- 072816	B6-COMP- B-NEREIS- 072816	B6-COMP- C-NEREIS- 072816	B6-COMP- D-NEREIS- 072816	B6-COMP- E-NEREIS- 072816	B7-COMP- A-NEREIS- 072816	B7-COMP- B-NEREIS- 072816	B7-COMP- C-NEREIS- 072816	B7-COMP- D-NEREIS- 072816	B7-COMP- E-NEREIS- 072816	LA-2-REF-A- NEREIS- 072816	LA-2-REF-B- NEREIS- 072816	LA-2-REF-C- NEREIS- 072816	LA-2-REF-D- NEREIS- 072816	LA-2-REF-E- NEREIS- 072816
		6/29/16	6/29/16	6/29/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16	7/28/16
PCB-180	--	<b>0.64</b>	<b>0.81</b>	<b>0.94</b>	<b>1</b>	<b>1.5</b>	<b>0.94</b>	<b>1.2</b>	<b>0.85</b>	<b>1</b>	<b>1.1</b>	<b>1.3</b>	<b>0.79</b>	<b>0.97</b>	<b>0.7</b>	<b>0.78</b>	<b>0.68</b>	<b>0.6</b>	<b>0.91</b>
PCB-183	--	<b>0.24</b>	<b>0.38</b>	<b>0.44</b>	<b>0.4</b>	<b>0.56</b>	<b>0.37</b>	<b>0.51</b>	<b>0.34</b>	<b>0.36</b>	<b>0.44</b>	<b>0.54</b>	<b>0.33</b>	<b>0.37</b>	<b>0.32</b>	<b>0.31</b>	<b>0.26</b>	<b>0.28</b>	<b>0.38</b>
PCB-187	--	<b>0.5</b>	<b>0.75</b>	<b>0.94</b>	<b>1</b>	<b>1.3</b>	<b>0.91</b>	<b>1.1</b>	<b>0.78</b>	<b>0.76</b>	<b>1</b>	<b>1.2</b>	<b>0.75</b>	<b>0.85</b>	<b>0.69</b>	<b>0.76</b>	<b>0.62</b>	<b>0.55</b>	<b>0.9</b>
PCB-189	--	0.06 U	0.061 U	0.06 U	0.061 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U	0.061 U	0.06 U
PCB-194	--	0.11 U	<b>0.18 J</b>	<b>0.18 J</b>	<b>0.27</b>	<b>0.26</b>	<b>0.3</b>	<b>0.31</b>	0.11 U	<b>0.21</b>	<b>0.25</b>	<b>0.32</b>	<b>0.21</b>	<b>0.16 J</b>	<b>0.15 J</b>	<b>0.19 J</b>	<b>0.14 J</b>	0.11 U	<b>0.19 J</b>
PCB-201	--	0.096 U	0.096 U	0.096 U	0.096 U	0.097 U	<b>0.11 J</b>	0.096 U	0.096 U	0.097 U	0.096 U	0.096 U	0.096 U	0.097 U	0.096 U	0.097 U	0.096 U	0.096 U	0.096 U
PCB-206	--	0.19 U	<b>0.33</b>	<b>0.44</b>	<b>0.5</b>	<b>0.43</b>	<b>0.31</b>	<b>0.42</b>	0.19 U	<b>0.35</b>	<b>0.39</b>	<b>0.36</b>	<b>0.45</b>	<b>0.31</b>	<b>0.29</b>	<b>0.34</b>	<b>0.23</b>	<b>0.22</b>	<b>0.33</b>
Total PCB Congener (U = 0)	2,000	<b>6.26 J</b>	<b>9.74 J</b>	<b>11.02 J</b>	<b>17.16 J</b>	<b>21.05 J</b>	<b>14.4 J</b>	<b>17.94 J</b>	<b>11.18 J</b>	<b>16.73 J</b>	<b>23.7</b>	<b>25.26 J</b>	<b>17.45 J</b>	<b>18.6 J</b>	<b>9.1 J</b>	<b>10.13 J</b>	<b>7.7 J</b>	<b>8.9 J</b>	<b>10.54 J</b>

## Notes:

**Bold = detected result**

-- = not applicable

µg/kg = microgram per kilogram

FDA = Food and Drug Administration

J = Estimated value

PCB = polychlorinated biphenyl

pct = percent

U = compound analyzed but not detected above detection limit

Totals (U=0) are calculated as the sum of all detected results. If all results are not detected, the highest detection limit value is reported as the sum.

Total PCB congener is the sum of all PCB congeners listed in this table.

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### **3.5.2 Comparison of Tissue Burdens to Reference Sediment Tissue Burdens**

Bioaccumulation data were analyzed by statistically comparing chemical concentrations in tissues of organisms exposed to project material to tissues of organisms exposed to reference sediment (Appendix E). Organic chemical concentrations were normalized to lipid concentrations, and all data were log-transformed prior to analysis. Results of statistical analysis are presented in Tables 18 and 19.

Several PCB congeners and total PCB were statistically elevated in *M. nasuta* and *N. virens* tissue samples exposed to sediments from Basins 6 and 7. For *M. nasuta*, the magnitudes of exceedances ranged from 3.13 to 33.7 times greater than the reference. For *N. virens*, the magnitudes of exceedances ranged from 1.38 to 48.6 times greater than the reference.

### **3.5.3 Comparison of Tissue Burdens to Environmental Residue Effects Database**

Statistically elevated tissue concentrations were compared to residue-effects values provided in the ERED, maintained by U.S. Army Corps of Engineers' Environmental Research and Development Center (USACE/USEPA 2010). The cited ERED values were based on the lowest effect level of relevant species and endpoints. The comparison to tissue residue effects data is presented in Tables 18 and 19. All concentrations were well below ERED values.

**Table 18**  
**Summary of Statistically Elevated *Macoma nasuta* Tissue Residues**

Project Area	Analyte	Units	MDL <sup>1</sup>	Day 0 Mean Tissue Concentration	Reference Mean Tissue Concentration	Project Area Mean Tissue Concentration	P Value	Project Area Mean: Reference Mean Ratio	Comparison to Relevant Environmental Residue-Effects Database Values
B6-COMP	PCB049	µg/kg	0.11	0.055 U	0.055 U	0.172	<0.0001	3.13	No relevant effects in ERED.
	PCB052	µg/kg	0.063	0.031 U	0.031 U	0.298	0.023	9.58	NOED: 54,000 µg/kg for mortality of the freshwater amphipod <i>Hyalella azteca</i> .
	PCB066	µg/kg	0.1	0.05 U	0.05 U	0.32	<0.0001	6.40	No relevant effects in ERED.
	PCB070	µg/kg	0.060	0.030 U	0.030 U	0.286	0.023	9.66	No relevant effects in ERED.
	PCB074	µg/kg	0.087	0.043 U	0.043 U	0.193	0.023	4.48	No relevant effects in ERED.
	PCB099	µg/kg	0.061	0.030 U	0.041	0.276	0.023	6.70	No relevant effects in ERED.
	PCB101	µg/kg	0.098	0.049 U	0.081	0.450	0.023	5.55	No relevant effects in the ERED for this species. NOED: 1,115,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB110	µg/kg	0.046	0.023 U	0.062	0.442	0.023	7.18	No relevant effects in ERED.
	PCB118	µg/kg	0.084	0.042 U	0.055	0.426	0.023	7.70	NOED: 3,260 µg/kg for mortality of the starfish ( <i>Asterias rubens</i> ).
	PCB132/153	µg/kg	0.084	0.085 U	0.161	0.53	0.023	3.29	LOED for PCB 153: 126,310 µg/kg for mortality of the oligochaete ( <i>Lumbriculus variegatus</i> ).
	PCB138/158	µg/kg	0.094	0.049 U	0.065	0.430	0.023	6.57	No relevant effects in the ERED for this species. NOED for PCB 138: 946,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB149	µg/kg	0.098	0.049 U	0.049 U	0.294	0.023	6.05	No relevant effects in ERED.
	Total PCB Congeners (ND = 0)	µg/kg	0.071	0.095 U	0.385	4.71	0.023	12.2	NOED: 1,700 µg/kg for mortality and growth of the clam <i>Macoma nasuta</i> .
B7-COMP	PCB018	µg/kg	0.071	0.035 U	0.035 U	0.522	0.023	14.8	No relevant effects in ERED.
	PCB028	µg/kg	0.034	0.017 U	0.017 U	0.560	0.023	33.7	No relevant effects in ERED.
	PCB049	µg/kg	0.11	0.055 U	0.055 U	0.458	<0.0001	8.33	No relevant effects in ERED.
	PCB052	µg/kg	0.063	0.031 U	0.031 U	0.648	0.023	20.8	NOED: 54,000 µg/kg for mortality of the freshwater amphipod <i>Hyalella azteca</i> .
	PCB066	µg/kg	0.1	0.05 U	0.05 U	0.598	<0.0001	12.0	No relevant effects in ERED.
	PCB070	µg/kg	0.06	0.030 U	0.030 U	0.480	0.023	16.2	No relevant effects in ERED.
	PCB074	µg/kg	0.087	0.043 U	0.043 U	0.296	0.023	6.87	No relevant effects in ERED.
	PCB099	µg/kg	0.061	0.030 U	0.041	0.302	0.023	7.33	No relevant effects in ERED.
	PCB101	µg/kg	0.098	0.049 U	0.081	0.482	0.023	5.94	No relevant effects in the ERED for this species. NOED: 1,115,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB110	µg/kg	0.046	0.023 U	0.062	0.424	0.023	6.88	No relevant effects in ERED.

Project Area	Analyte	Units	MDL <sup>1</sup>	Day 0 Mean Tissue Concentration	Reference Mean Tissue Concentration	Project Area Mean Tissue Concentration	P Value	Project Area Mean: Reference Mean Ratio	Comparison to Relevant Environmental Residue-Effects Database Values
	PCB118	µg/kg	0.084	0.042 U	0.055	0.446	0.023	8.07	NOED: 3,260 µg/kg for mortality of the starfish ( <i>Asterias rubens</i> ).
	PCB132/153	µg/kg	0.084	0.085 U	0.161	0.504	0.023	3.13	LOED for PCB 153: 126,310 µg/kg for mortality of the oligochaete ( <i>Lumbriculus variegatus</i> ).
	PCB138/158	µg/kg	0.094	0.047 U	0.065	0.394	0.023	6.02	No relevant effects in the ERED for this species. NOED for PCB 138: 946,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB149	µg/kg	0.098	0.049 U	0.049 U	0.25	0.023	5.14	No relevant effects in ERED.
	Total PCB Congeners (ND = 0)	µg/kg	0.071	0.095 U	0.385	6.63	0.023	17.2	NOED: 1,700 µg/kg for mortality and growth of the clam <i>Macoma nasuta</i> .

## Notes:

µg/kg = microgram per kilogram

ERED = Environmental Residue Effects Database

LD<sub>50</sub> = median lethal dose

LOED = lowest observed effect dose

MDL = method detection limit

NOED = no observed effect dose

PCB = polychlorinated biphenyl

U = non-detect; half the detection limit shown

1 If MDL differed between samples, maximum MDL presented.

2 Organics were normalized to percent lipids prior to statistical analysis.

3 All data was log-transformed prior to statistical analysis.

**Table 19**  
**Summary of Statistically Elevated *Nereis virens* Tissue Residues**

Project Area	Analyte	Units	MDL <sup>1</sup>	Day 0 Mean Tissue Concentration	Reference Mean Tissue Concentration	Project Area Mean Tissue Concentration	P Value	Project Area Mean: Reference Mean Ratio	Comparison to Relevant Environmental Residue-Effects Database Values
B6-COMP	PCB049	µg/kg	0.11	0.055 U	0.055 U	0.232	<0.0001	4.22	No relevant effects in ERED.
	PCB052	µg/kg	0.063	0.031 U	0.099	0.654	0.023	6.63	NOED: 54,000 µg/kg for mortality of the freshwater amphipod <i>Hyalella azteca</i> .
	PCB074	µg/kg	0.087	0.043 U	0.043 U	0.139	<0.0001	3.22	No relevant effects in ERED.
	PCB099	µg/kg	0.061	0.240	0.268	0.542	0.023	2.02	No relevant effects in ERED.
	PCB101	µg/kg	0.098	0.430	0.488	1.08	0.023	2.21	No relevant effects in the ERED for this species. NOED: 1,115,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB105	µg/kg	0.055	0.088	0.186	0.386	0.023	2.08	No relevant effects in ERED.
	PCB110	µg/kg	0.046	0.207	0.242	0.664	<0.0001	2.74	No relevant effects in ERED.
	PCB118	µg/kg	0.084	0.257	0.288	0.642	0.0001	2.23	NOED: 3,260 µg/kg for mortality of the starfish ( <i>Asterias rubens</i> ).
	PCB138/158	µg/kg	0.094	1.16	1.3	1.86	0.040	1.43	No relevant effects in the ERED for this species. NOED for PCB 138: 946,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB149	µg/kg	0.098	1.05	0.922	1.43	0.009	1.55	No relevant effects in ERED.
	PCB151	µg/kg	0.067	0.307	0.240	0.376	0.003	1.57	No relevant effects in ERED.
	PCB180	µg/kg	0.042	0.797	0.734	1.10	0.034	1.50	No relevant effects in the ERED for this species. NOED: 1,210,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB187	µg/kg	0.084	0.73	0.704	1.02	0.321	1.45	No relevant effects in ERED.
Total PCB Congeners (ND = 0)	µg/kg	0.071	9.01	9.27	16.3	0.0002	1.76	NOED: 1,700 µg/kg for mortality and growth of the clam <i>Macoma nasuta</i> .	
B7-COMP	PCB018	µg/kg	0.071	0.035 U	0.035 U	1.42	0.023	40.3	No relevant effects in ERED.
	PCB028	µg/kg	0.034	0.017 U	0.017 U	0.806	0.023	48.6	No relevant effects in ERED.
	PCB044	µg/kg	0.087	0.043 U	0.043 U	0.298	0.023	6.91	No relevant effects in ERED.
	PCB049	µg/kg	0.11	0.055 U	0.055 U	0.668	<0.0001	12.1	No relevant effects in ERED.
	PCB052	µg/kg	0.063	0.031 U	0.099	1.66	0.023	16.8	NOED: 54,000 µg/kg for mortality of the freshwater amphipod <i>Hyalella azteca</i> .
	PCB066	µg/kg	0.1	0.05 U	0.11	0.704	0.023	6.40	No relevant effects in ERED.
	PCB070	µg/kg	0.06	0.030 U	0.0617	0.274	0.040	4.44	No relevant effects in ERED.
	PCB074	µg/kg	0.087	0.043 U	0.043 U	0.232	0.001	5.38	No relevant effects in ERED.
	PCB099	µg/kg	0.061	0.240	0.268	0.664	0.023	2.48	No relevant effects in ERED.



Project Area	Analyte	Units	MDL <sup>1</sup>	Day 0 Mean Tissue Concentration	Reference Mean Tissue Concentration	Project Area Mean Tissue Concentration	P Value	Project Area Mean: Reference Mean Ratio	Comparison to Relevant Environmental Residue-Effects Database Values
	PCB101	µg/kg	0.098	0.43	0.488	1.19	0.023	2.44	No relevant effects in the ERED for this species. NOED: 1,115,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB110	µg/kg	0.046	0.207	0.242	0.684	<0.0001	2.83	No relevant effects in ERED.
	PCB118	µg/kg	0.084	0.257	0.288	0.712	<0.0001	2.47	NOED: 3,260 µg/kg for mortality of the starfish ( <i>Asterias rubens</i> ).
	PCB138/158	µg/kg	0.094	1.16	1.30	1.82	0.015	1.40	No relevant effects in the ERED for this species. NOED for PCB 138: 946,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	PCB149	µg/kg	0.098	1.05	0.922	1.36	0.001	1.48	No relevant effects in ERED.
	PCB151	µg/kg	0.067	0.307	0.24	0.33	0.019	1.38	No relevant effects in ERED.
	PCB180	µg/kg	0.042	0.797	0.734	1.03	0.043	1.41	No relevant effects in the ERED for this species. NOED: 1,210,000 µg/kg for mortality, growth, and reproduction of the fathead minnow ( <i>Pimephales promelas</i> ).
	Total PCB Congeners (ND = 0)	µg/kg	0.071	9.01	9.27	21.3	<0.0001	2.30	NOED: 1,700 µg/kg for mortality and growth of the clam <i>Macoma nasuta</i> .

## Notes:

µg/kg = microgram per kilogram

ERED = Environmental Residue Effects Database

LD<sub>50</sub> = median lethal dose

LOED = lowest observed effect dose

MDL = method detection limit

NOED = no observed effect dose

PCB = polychlorinated biphenyl

U = non-detect; half the detection limit shown

1 If MDL differed between samples, maximum MDL presented.

2 Organics were normalized to percent lipids prior to statistical analysis.

3 All data was log-transformed prior to statistical analysis.

---

## 4 QUALITY ASSURANCE/QUALITY CONTROL

A review of analytical results was conducted to evaluate the laboratory's performance in meeting quality assurance/quality control (QA/QC) guidelines outlined in the SAP (Anchor QEA 2016).

### 4.1.1 *Physical and Chemical Analyses of Sediment*

The data validation report prepared by Anchor QEA for physical and chemical analyses of sediment is presented in Appendix F. All samples were analyzed within the appropriate holding times. Generally, QA/QC sample results were within the project-specified control limits, with the following exceptions:

- The surrogate recovery for the pyrethroid surrogate dibutylchlorendate in LA-2-REF was below the control limit. Results were qualified to indicate a potentially low bias.
- The laboratory control sample/laboratory control sample duplicate recovery values for fluvalinate were below the control limit. Associated results were qualified to indicate a potentially low bias.
- The matrix spike/matrix spike duplicate (MS/MSD) percent recovery values for TOC were below the control limit. Associated results were qualified to indicate a potentially low bias.
- The MS and/or MSD percent recovery values for several pyrethroids were below the control limit. Parent sample results (B6-COMP) were qualified to indicate a potentially low bias.
- The MS and MSD percent recovery values for copper and lead exceeded the control limit. Associated detected results were qualified to indicate a potentially high bias.
- The zinc percent recovery value was not calculated because the sample concentration was significantly (4 times) higher than the concentration of the spike. Data are not expected to be affected.
- The MS percent recovery value for 4,4'-DDT and methoxychlor were below the control limit. Parent sample results were qualified to indicate a potentially low bias.
- The MS/MSD relative percent difference value for five PCB congeners exceeded the control limit. Detected parent sample results were qualified to indicate they are estimated.

- The MSD percent recovery value for PCB 128 exceeded the control limit; however, this compound was not detected, so no data were qualified.

Results of this assessment concluded that most data were acceptable as reported; all other data were acceptable as qualified.

#### **4.1.2 Chemical Analysis of Tissue Residues**

The data validation report prepared by Anchor QEA for chemical analysis of tissue residues is presented in Appendix F. All samples were analyzed within the appropriate holding times. QA/QC sample results were within the project-specified control limits. Results of this assessment concluded that all data were acceptable as reported.

#### **4.1.3 Biological Testing**

Biological testing of Basins 6 and 7 sediments incorporated standard QA/QC procedures, consistent with OTM (USEPA/USACE 1991) and ITM (USEPA/USACE 1998) guidelines.

Sediments were stored at 4 degrees Celsius (°C) plus or minus 2 °C and used within the 8-week holding period. All test organism responses within the negative (laboratory) controls met acceptability criteria. All reference toxicant tests LC<sub>50</sub> and/or EC<sub>50</sub> for each test species were within two standard deviations of the laboratory mean, indicating that sensitivity of test organisms was normal.

Water quality was measured prior to and during testing. All water quality conditions were within the appropriate limits, with minor exceptions. On Day 1, dissolved oxygen concentrations in the *Menidia beryllina* test approached 4 mg/L; therefore, test chambers were aerated to prevent further decline. In the *M. beryllina* and *Americamysis bahia* tests, salinity concentrations were slightly outside the recommended range. On Day 2, temperatures in the *M. galloprovincialis* test were slightly below the recommended range of 16 °C plus or minus 1 °C; however, concentrations were within the recommended range for SPP tests provided in the OTM (USEPA/USACE 1991). These minor water quality deviations are not believed to affect the overall test results. Raw water quality data are provided in Appendix C.

As discussed in Section 2.3, interstitial ammonia concentrations were measured on project sediments prior to testing. The ammonia concentration of B6-COMP was above the recommended threshold for *A. abdita* in the ITM (USEPA/USACE 1998). Test sediment was purged to reduce ammonia concentrations prior to testing. In addition, ammonia reference toxicant tests were run for *M. galloprovincialis* to evaluate the contribution of ammonia to toxicity.

As described in Section 3.3.2, the EC<sub>50</sub> in the ammonia reference toxicant test was 7.1 mg/L. Ammonia concentrations in the 100% elutriate of B6-COMP on Days 0 and 2 were 9.5 and 8.3 mg/L, respectively, indicating that ammonia likely contributed to the abnormal development of *M. galloprovincialis* in this sample.

---

## 5 CONCLUSIONS

Physical, chemical, and biological analyses were conducted to evaluate the suitability of proposed dredge material from Basins 6 and 7 for placement at LA-2. This assessment finds the following:

- Concentrations of contaminants were relatively low (less than ERM values).
- SP testing indicated that sediments were not acutely toxic to benthic organisms.
- SPP testing and STFATE modeling indicated that sediments do not pose a toxicity risk to water column organisms after discharge.
- BP testing and tissue chemistry showed low bioaccumulation potential, with PCB concentrations less than FDA action levels and those that have been shown to cause toxicity.

Based on these results, it is recommended that the proposed dredge material from Basins 6 and 7 be considered suitable for placement at LA-2.

---

## 6 REFERENCES

- Anchor QEA, LLC, 2016. *Sampling and Analysis Plan: Alamitos Bay Marina Basins 6 and 7 Maintenance Dredging*. Prepared for the City of Long Beach. May 2016.
- Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder, 1995. Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. *Environmental Management* 19:81-97.
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- USEPA/USACE, 2004. *Draft Environmental Impact Statement: Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California*. December 2004.
- Weston (Weston Solutions, Inc.), 2007a. *Results of a Tier III Sediment Characterization Performed with Samples from Alamitos Bay Marina, Long Beach, California*. Prepared for City of Long Beach and TranSystems Corporation. July 2007.
- Weston, 2007b. *Follow-up Testing to the 2007 Alamitos Bay Marina Sediment Suitability Study*. Prepared for TranSystems Corporation. October 2007.

# FIGURES

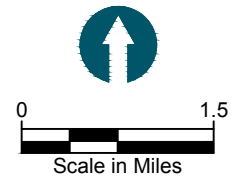
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L:\AutoCAD Project Files\Projects\0548-City of LB\Alamitos Bay Basins 6 and 7\0548-RP-001 BASIN 6-7 VMAP.dwg FIG 1

Apr 01, 2016 1:38pm mpratschner



**SOURCE:** Aerial from Google Earth Pro, 2012.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27, U.S. Feet.



**Figure 1**  
 Vicinity Map  
 Alamitos Bay Marina Basins 6 and 7

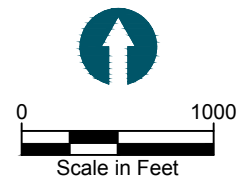


L:\AutoCAD Project Files\Projects\0548-City of LB\Alamitos Bay Basins 6 and 7\0548-RP-002 BASINS 6-7.dwg FIG 2

Apr 07, 2016 8:28am mprattschmer

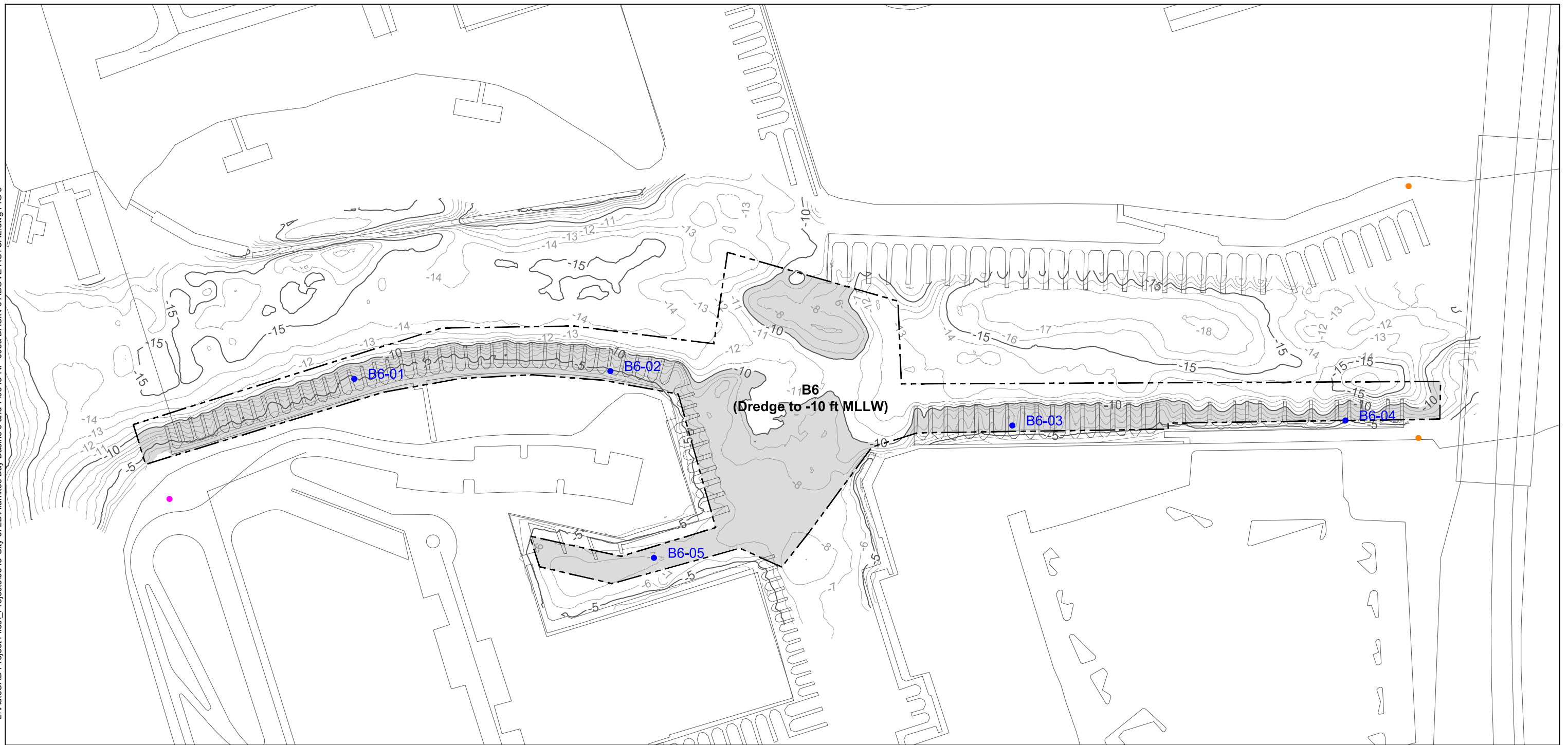


**SOURCE:** Aerial from Google Earth Pro, 2012.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27,  
U.S. Feet.



L:\AutoCAD Project Files\Projects\0548-City of LBA\Alamitos Bay Basins 6 and 7\0548-RP-003a BASIN 6 ABOVE ACTUAL.dwg FIG 3

Jul01, 2016 11:43am mpratschner



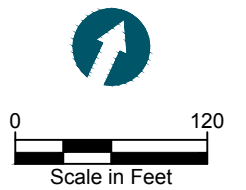
**SOURCE:** Basemaps and bathymetric data from Gahagan & Bryant Associates, Inc. survey performed March 9, 2016.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27.  
**VERTICAL DATUM:** Mean Lower Low Water (MLLW).

**LEGEND:**

- B6-## Actual Core Sampling Location
- ▭ Dredge Area at -10 ft MLLW
- - - Dredge Limits

- Existing Dock
- 5- Existing Bathymetric Contour

- Stormwater Outfall (Major)
- Stormwater Outfall (Minor)



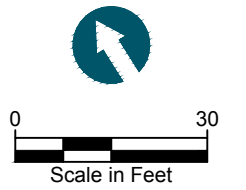


**SOURCE:** Basemaps and bathymetric data from Gahagan & Bryant Associates, Inc. survey performed March 9, 2016.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27.  
**VERTICAL DATUM:** Mean Lower Low Water (MLLW).

**NOTE:** No stormwater outfalls within the vicinity of Basin 7.

**LEGEND:**

- B7-## Actual Core Sampling Location
- Dredge Area at -10 ft MLLW
- Dredge Limits
- Existing Dock
- Existing Bathymetric Contour



L:\AutoCAD Project Files\Projects\0548-City of LBA\Alamitos Bay Basins 6 and 7\0548-RP-004a BASIN 6 ELEV ACTUAL.dwg FIG 5

Jul01, 2016 11:33am mpratschner

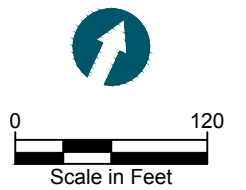


Thickness of Proposed Dredge Cut in Feet	
7 or More	
6 to 7	
5 to 6	
4 to 5	
3 to 4	
2 to 3	
1 to 2	
0 to 1	
No Cut	

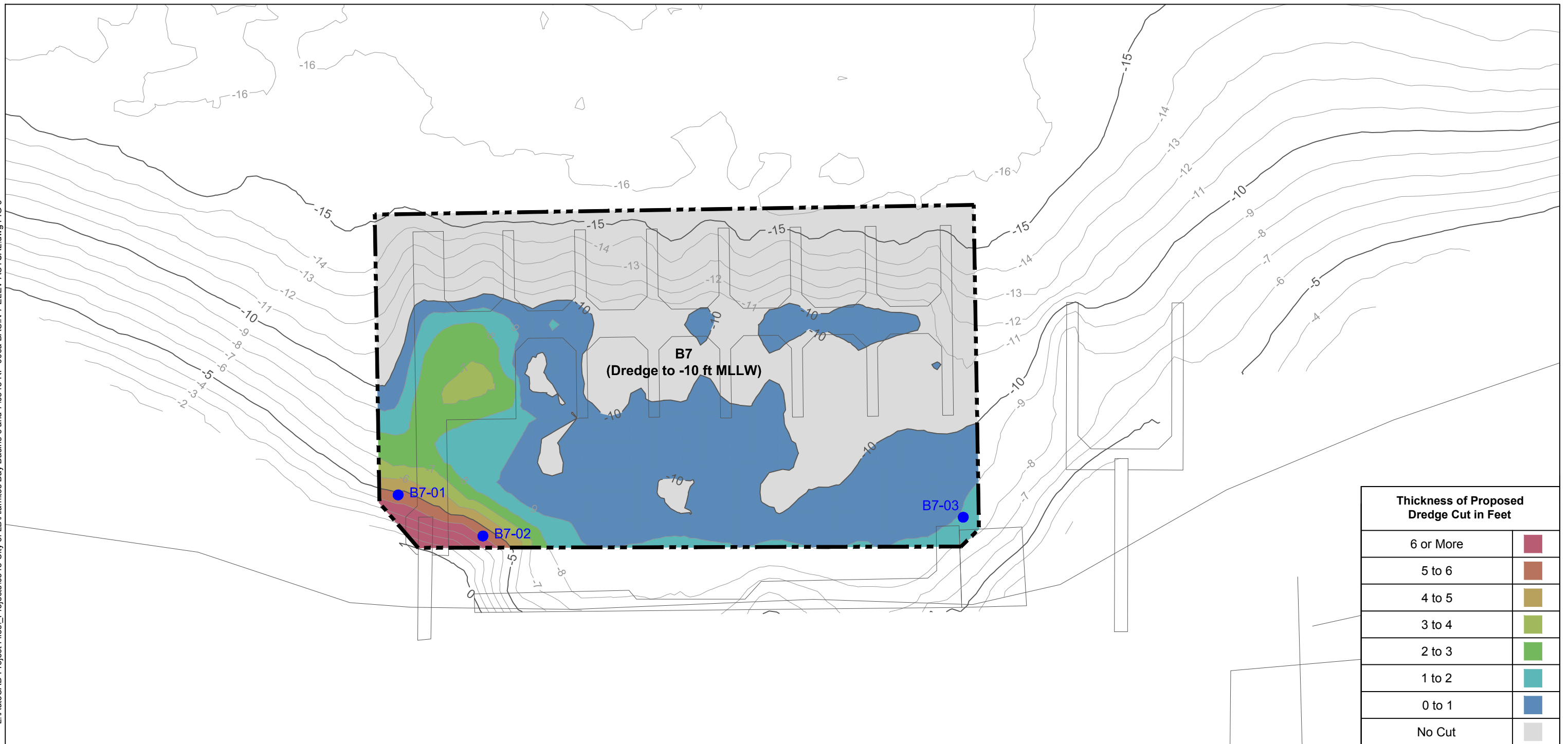
**SOURCE:** Basemaps and bathymetric data from Gahagan & Bryant Associates, Inc. survey performed March 9, 2016.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27.  
**VERTICAL DATUM:** Mean Lower Low Water (MLLW).

**LEGEND:**

- B6-## Actual Core Sampling Location
- Existing Bathymetric Contour
- Stormwater Outfalls (Major)
- Stormwater Outfalls (Minor)
- Existing Dock
- Dredge Limits



L:\AutoCAD Project Files\Projects\0548-City of LB\Alamitos Bay Basins 6 and 7\0548-RP-006a BASIN 7 ELEV ACTUAL.dwg FIG 6



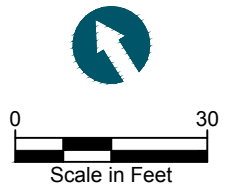
Thickness of Proposed Dredge Cut in Feet	
6 or More	
5 to 6	
4 to 5	
3 to 4	
2 to 3	
1 to 2	
0 to 1	
No Cut	

**SOURCE:** Basemaps and bathymetric data from Gahagan & Bryant Associates, Inc. survey performed March 9, 2016.  
**HORIZONTAL DATUM:** California State Plane, Zone 7, NAD27.  
**VERTICAL DATUM:** Mean Lower Low Water (MLLW).

**NOTE:** No stormwater outfalls within the vicinity of Basin 7.

**LEGEND:**

- B7-## Actual Core Sampling Location
- Existing Dock
- Dredge Limits
- Existing Bathymetric Contour



Jul01, 2016 2:44pm mpraischmer

APPENDIX A  
FIELD LOGS AND CORE PHOTOGRAPHS

---

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-01  
 Type of Core Vibracore  
 Mudline Elevation (ft MLLW) -3.74.6  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 4:15:30  
 Latitude 33°45.685' Longitude -118°07.1043'  
 Water Depth (ft) 6.28 Tide (ft) 2.82  
 Target Core Length (ft) 7.98.8 (includes 2-layer)  
 Penetration Length (ft) 9.7 Core Recovery (ft) 9.2

Depth In (ft.)	Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B6-01-062116	Dark greenish soft moist gray SILT moderate H <sub>2</sub> S
2			1.2 medium stiff
3			
4			moderate shells from 4.1-4.2'
5			
6			
7			6.5 gray medium dense
7.4		B6-01-Z-062116	Slightly silty vf-f SAND
7.9			
8		Discard	
9			8.6 dense damp clayey SAND
9.0			

3 No. Photos Taken

Recorded By: Chris Orsuel

Attempt No. 1 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/2/16 Time 1600

Station ID B6-01

Latitude 33°45.685' Longitude -118°07.103'

Type of Core Vibracore

Water Depth (ft) 6.7 Tide (ft) 2.1

Mudline Elevation (ft MLLW) -4.6

Target Core Length (ft) 7.4

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 9.0 Core Recovery (ft) 7.2

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
	<p><u>B6-01-062116</u></p>	<p><u>Dark greenish gray soft moist SILT moderate H<sub>2</sub>S</u></p> <p><u>1.9</u></p> <p><u>medium stiff</u></p> <p><u>gray</u></p> <p><u>medium dense</u></p> <p><u>damp</u></p> <p><u>slightly silty w/ f SAND</u></p> <p><u>w/ occasional shells</u></p> <p><u>moderate H<sub>2</sub>S</u></p>

No. Photos Taken

Recorded By: Chen Ouel

Attempt No. 2 of 2



# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-02  
 Type of Core Vibracore  
 Mudline Elevation (ft MLLW) -5.9  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 1336  
 Latitude 33°45.708' Longitude -118°07.048  
 Water Depth (ft) 9.0 Tide (ft) 3.1  
 Target Core Length (ft) 6.6 (includes 2-layer)  
 Penetration Length (ft) 7.5 Core Recovery (ft) 7.3

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B6-02-062116	dark greenish soft moist SILT Trace gray shells
2		medium stiff 1.9 - - - soft w/ moderate shells
3		2.5 - - - medium stiff
4		- w/ moderate shells
5		w/ moderate shells
6	6.1 B6-02-Z-062116	gray stiff dense CLAY w/ trace shells w/ sandy silt
7	6.6 discarded	6.2 very damp clayey stiff w/ sand
7.3		dense

2 No. Photos Taken

Recorded By: Chris Oshro

Attempt No. 1 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-02  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -5.9  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 1415  
 Latitude 33°45.708' Longitude -118°07.048'  
 Water Depth (ft) 8.6 Tide (ft) 2.7  
 Target Core Length (ft) 6.1  
 Penetration Length (ft) 7.1 Core Recovery (ft) 7.1

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B6-02-062116	dark greenish soft moist SILT w/ occasional shells Trace H <sub>2</sub> S
2		1.3 - medium stiff 1.6 - soft 2.2 - medium stiff
3		moderate shells @ 2.7
4		
5		4.8 - gray medium dense stiff
6	6.1	5.8 - very dense damp clayey w/ SAND
7	7.1	Discard
8		
9		

No. Photos Taken \_\_\_\_\_ Recorded By: Chris Oesch Attempt No. 2 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-03  
 Type of Core Vibracore  
 Mudline Elevation (ft MLLW) -7.2  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 1003  
 Latitude 33°45.732' Longitude -118°06.955'  
 Water Depth (ft) 10.4 Tide (ft) 3.2  
 Target Core Length (ft) 5.3 (includes 2-layer)  
 Penetration Length (ft) 6.0 Core Recovery (ft) 5.5

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B6-03-062116	very dark greenish gray soft 0.5 - medium stiff wet silt moist w/ occasional shells slight
2			dark gray 2.5 - medium or dense silt
3			3.6 - 3.7 very stiff clay
4			gray 4.9 - very stiff damp sandy clay
5	4.8	B6-03-2-062116	light gray 4.9 - very stiff damp sandy clay
6	5.3		discard
7	5.5		discard
8			Refusal @ 6'
9			

2 No. Photos Taken

Recorded By: Chris Owsen

Attempt No. 1 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-03  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -7.2  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 1050  
 Latitude 33°45.732' Longitude -118°06.955'  
 Water Depth (ft) 10.8 Tide (ft) 3.6  
 Target Core Length (ft) 4.8  
 Penetration Length (ft) 6.0 Core Recovery (ft) 5.0

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B6-03-062116	very dark soft wet SILT occasional slight greenish 0.5 - - - - shells H <sub>2</sub> S gray medium moist
2			stiff
3			2.8 dark gray sandy medium w. SILT stiff
3.4			tan very stiff
3.5			gray stiff
4			4.1 light gray very stiff dump sandy CLAY CLAY
5			discard
6			
7			
8			
9			

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/21/16 Time 0831

Station ID B6-04

Latitude 33°45.761' Longitude -118°06.883'

Type of Core vibracore

Water Depth (ft) 8.2 Tide (ft) 1.9

Mudline Elevation (ft MLLW) -6.3

Target Core Length (ft) 6.2 (includes 2-layer)

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 7.0 Core Recovery (ft) 6.2

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B6-04-062116	very dark soft wet SILT moderate greenish gray ↓ medium moist ↓ w/ occasional shells stiff ↓
2			
3			dark gray ↓ dense ↓ VF-F SAND
4			
5			
5.7		B6-04-Z-062116	↓ damp ↓
6.2			
7			
8			
9			

2 No. Photos Taken

Recorded By: Chris Oser

Attempt No. 1 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-04  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -6.3  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 0925  
 Latitude 33°45.761' Longitude -118°06.883'  
 Water Depth (ft) 9.0 Tide (ft) 2.7  
 Target Core Length (ft) 5.7  
 Penetration Length (ft) 7.2 Core Recovery (ft) 5.7

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B6-04-062116	very dark greenish gray soft moist wet SILT w/ occasional shells moderate H <sub>2</sub> S
2		medium stiff moist polychaetes @ 0.5'
3		dark gray organics @ 3'
4		
5		4.6 stiff 5.1 dense 5.1 v-f SAND
6		
7		
8		
9		

No. Photos Taken

Recorded By: Chris Osuch

Attempt No. 2 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B6-05  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -6.5  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/21/16 Time 1139  
 Latitude 33°45.678' Longitude -118°07.020'  
 Water Depth (ft) 10.2 Tide (ft) 3.7  
 Target Core Length (ft) 6.0 (includes z-layer)  
 Penetration Length (ft) 4.7 Core Recovery (ft) 4.2

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B6-05-062116	dark greenish soft wet SILT gr 7
2		1.3 medium stiff moist 1.6 soft
3	2.3	gr 7 very stiff damp CLAY w/ trace v. sand
4	3.7 B6-05-Z-062116	1.40 shell @ 4'
5		
6		refusal @ 4.7'
7		stiff clay @ bottom of each core. After 2 attempts, z-layer depth not achieved. Archived bottom 0.5' of attempt 1.
8		
9		

3 No. Photos Taken

Recorded By: Chris Osvet

Attempt No. 1 of 2

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/21/16 Time 1213

Station ID B6-05

Latitude 33°45.678' Longitude -118°07.021'

Type of Core vibracore

Water Depth (ft) 10.8 Tide (ft) 3.6

Mudline Elevation (ft MLLW) -7.2

Target Core Length (ft) 5.3 (includes 2-lager)

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 4.7 Core Recovery (ft) 3.8

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B6-05-062116	dark greenish soft wet SILT gray
2			1.3 medium moist stiff
3		2.3	gray very damp slightly stiff sand
4	3.8		CLAY w/ shells @ 3.5'
5			
6			Slightly adjusted location. Refusal @ 4.7'. consistent with <del>to</del> previous attempt. Stiff clay @ bottom of core.
7			
8			
9			

— No. Photos Taken

Recorded By: Chris Owsen

Attempt No. 2 of 2



# Sediment Core Collection Form



Project ABM Basins 6 and 7  
 Station ID B7-01  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -6.5  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1327 (NY)  
 Latitude 33°45'36" N Longitude -118°07'63" W  
 Water Depth (ft) 10.30 Tide (ft) 3.5  
 Target Core Length (ft) 6.0 (includes 2-layer)  
 Penetration Length (ft) 5.7 Core Recovery (ft) 4.6

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-01- 062216	dark gray dense moist f-SAND
2		1.8 dark greenish gray medium dense sl. silty silty SAND w/ occasional shells
3	4.6	3.0 gray dense damp f-SAND
4		
5		
6		Refusal @ 5.7'
7		
8		
9		

2 No. Photos Taken

Recorded By: Chris O'neil

Attempt No. 1 of 4

# Sediment Core Collection Form



Project Alamitos Bay Marine Basins 617 Date 6/22/16 Time 1420  
 Station ID B7-01 Latitude 33°45.136' Longitude -118°07.691'  
 Type of Core Vibracore Water Depth (ft) 9.7 Tide (ft) 3.2  
 Mudline Elevation (ft MLLW) -6.5 Target Core Length (ft) 6.0 (includes z-layer)  
 Project Depth+Overdepth (ft MLLW) -12 Penetration Length (ft) 7.4 Core Recovery (ft) 6.2

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-01- 062216	gray dense damp f-SAND
2		1.9 dark greenish gray medium dense moist silty SAND w/ occasional shells
3		3.1 gray dense damp f-SAND
4		4.1 4.3 light gray gray
5		5.6 dark greenish gray medium moist stiff sand & SILT
6	B7-01-z- 062216	
6.2	Discard	
7		
8		Refusal @ 7.4'
9		

2 No. Photos Taken

Recorded By: Chris Osuch

Attempt No. 2 of 4

# Sediment Core Collection Form



Project ABM Basins 6 and 7  
 Station ID B7-01  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -6.5  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1442  
 Latitude 33°45.136' Longitude -118°07.691'  
 Water Depth (ft) 9.4 Tide (ft) 2.9  
 Target Core Length (ft) 5.5  
 Penetration Length (ft) 6.9 Core Recovery (ft) 5.5

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-01-062216	gray dense damp f-SAND
2		2.0 dark greenish gray medium dense moist silty SAND
3		2.6 gray dense damp f-SAND
4		3.5 light gray
5		3.7 gray
5		4.8 dark greenish gray medium stiff moist sandy SILT
6		Refusal @ 6.9
7		
8		
9		

No. Photos Taken \_\_\_\_\_

Recorded By: Chris Ornel

Attempt No. 3 of 4

# Sediment Core Collection Form



Project ABM basins 6 and 7  
 Station ID B7-01  
 Type of Core Vibracore  
 Mudline Elevation (ft MLLW) -6.5  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1504  
 Latitude 33°45.136' Longitude -118°07.691'  
 Water Depth (ft) 9.2 Tide (ft) 2.7  
 Target Core Length (ft) 5.5  
 Penetration Length (ft) 6.3 Core Recovery (ft) 5.2

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-01-062216	gray dense damp f-SAND
2		2.0 dark greenish gray medium dense moist slightly w/ occasional shells silty SAND
3		3.0 gray dense damp f-SAND
4		
5		4.8 dark greenish gray medium stiff moist sand silt
6		
7		refusal @ 6.3'
8		
9		

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/22/16 Time 1121

Station ID B7-02

Latitude 33°45.132' Longitude -118°07.688'

Type of Core Vibracore

Water Depth (ft) 11.7 Tide (ft) 3.5

Mudline Elevation (ft MLLW) -8.2

Target Core Length (ft) 4.3 (includes 2-layer)

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 5.9 Core Recovery (ft) 4.6

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-02-062216	gray medium dense moist f-SAND w/ trace shells throughout 0.5 loose 0.5
2		dark greenish gray silty SAND
3		gray dense damp f-SAND 2.6
4	B7-02-2-062216	
4.3	Discard	
4.6		
5		
6		
7		
8		
9		

2 No. Photos Taken

Recorded By: Chris Orsak

Attempt No. 1 of 4

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7 Date 6/22/16 Time 1154  
 Station ID B7-02 Latitude 33°45.132' Longitude -118°07.688'  
 Type of Core vibracore Water Depth (ft) 11.9 Tide (ft) 3.7  
 Mudline Elevation (ft MLLW) -8.2 Target Core Length (ft) 3.8  
 Project Depth+Overdepth (ft MLLW) -12 Penetration Length (ft) 6.0 Core Recovery (ft) 4.2

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
0.6	B7-02-062216	gray medium moist f-SAND dense
1		dark loose silty SAND greenish gray
2		medium stiff sandy SILT
3		gray dense damp f-SAND
3.8		
4	Discard	
4.2		
5		
6		
7		
8		
9		

No. Photos Taken \_\_\_\_\_ Recorded By: Chris Deneke Attempt No. 2 of 4

# Sediment Core Collection Form



Project ABM Basins 6 and 7  
 Station ID B7-02  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -8.2  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1216  
 Latitude 33°45.132' Longitude -118°07.688'  
 Water Depth (ft) 11.9 Tide (ft) 3.7  
 Target Core Length (ft) 3.8  
 Penetration Length (ft) 6.0 Core Recovery (ft) 3.6

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1</div> <div style="margin-bottom: 10px;">2</div> <div style="margin-bottom: 10px;">3</div> <div style="margin-bottom: 10px;">4</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">6</div> <div style="margin-bottom: 10px;">7</div> <div style="margin-bottom: 10px;">8</div> <div style="margin-bottom: 10px;">9</div> </div>	<p style="text-align: center;">B7-02-062216</p> <p style="text-align: center;">0.6</p> <p style="text-align: center;">3.6</p>	<p>gray medium moist f-SAND              dense</p> <p>dark loose silty              greenish gray SAND</p> <p>gray dense damp moist f-SAND              or</p>

No. Photos Taken \_\_\_\_\_

Recorded By: Chris Dusk

Attempt No. 3 of 4

# Sediment Core Collection Form



Project ABM Basins 6 and 7  
 Station ID B7-02  
 Type of Core Vibracore  
 Mudline Elevation (ft MLLW) -8.2  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1234  
 Latitude 33°45.132' Longitude -118°07.688'  
 Water Depth (ft) 11.9 Tide (ft) 3.7  
 Target Core Length (ft) 3.8  
 Penetration Length (ft) 6.0 Core Recovery (ft) 4.4

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-02-062216	gray medium moist f-SAND
1.8		↓
2		dark greenish gray loose medium dense 1.2
2.3		↓
2.9		silty SAND f-SAND
3		↓
3.8		gray dense damp f-SAND
4	Discard	↓
4.4		↓
5		
6		
7		
8		
9		

— No. Photos Taken

Recorded By: Chris Osuel

Attempt No. 4 of 4



# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/22/16 Time 08480928

Station ID B7-03

Latitude 33°45.120' Longitude -118°07.633' (level 3)

Type of Core Vibracore

Water Depth (ft) 211.5 Tide (ft) 2.2

Mudline Elevation (ft MLLW) -9.53

Target Core Length (ft) 3.2 (includes 2-layer)

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 4.0 Core Recovery (ft) 3.2

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B7-03-062216	very dark greenish gray soft wet SILT w/ trace f. sand occasional shells
2		1.9 - 2.1	medium stiff moist dense F-SAND
3		2.7 - 3.2	gray damp
4			
5			
6			
7			
8			
9			

2 No. Photos Taken

Recorded By: Chris Dew

Attempt No. 1 of 5

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B7-03  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -9.3  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 0951  
 Latitude 33°45.120' Longitude -118°07.633'  
 Water Depth (ft) 11.8 Tide (ft) 2.5  
 Target Core Length (ft) 2.7  
 Penetration Length (ft) 4.7 Core Recovery (ft) 2.8

Depth In (ft.)	Actual	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1		B7-03 - 062216	very dark greenish gray soft wet SILT w/ trace f-sand occasional shells
2			medium stiff moist black dense damp f-SAND
3	2.7 2.8		Discard
4			
5			
6			
7			
8			
9			

No. Photos Taken \_\_\_\_\_ Recorded By: Chris Ouel Attempt No. 2 of 5

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7

Date 6/22/16 Time 1001

Station ID B7-03

Latitude 33°45.120 Longitude -118°07.633' (603' W)

Type of Core vibracore

Water Depth (ft) 12.0 Tide (ft) 2.7

Mudline Elevation (ft MLLW) -9.3

Target Core Length (ft) 2.7

Project Depth+Overdepth (ft MLLW) -12

Penetration Length (ft) 2.5 Core Recovery (ft) 1.6

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	Discard	very dark soft wet SILT greenish 0.3 - - - w/ trace gray <del>0.7</del> medium moist F-SAND stiff
1.6		w/ moderate shells from 1.4-1.6
2		
3		Refusal @ 2.5'
4		
5		
6		
7		
8		
9		

No. Photos Taken \_\_\_\_\_

Recorded By: Chris Douch

Attempt No. 3 of 5

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B7-03  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -9.3  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1019  
 Latitude 33°45.120' Longitude -118°07.633' W 63' 00  
 Water Depth (ft) 12.3 Tide (ft) 3.0  
 Target Core Length (ft) 2.7  
 Penetration Length (ft) 3.7 Core Recovery (ft) 2.7

Depth In Actual Core Sections (ft.)	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-03-062216	very dark soft wet SILTY w/ occasional shells greenish gray medium moist trace f-sand stiff
2	1.5 to 1.6	black dense damp f-SAND gray
3	2.7	
4		
5		
6		
7		
8		
9		

No. Photos Taken

Recorded By: Cheri Ouse

Attempt No. 4 of 5

# Sediment Core Collection Form



Project ABM Sediment Basins 6 and 7  
 Station ID B7-03  
 Type of Core vibracore  
 Mudline Elevation (ft MLLW) -9.3  
 Project Depth+Overdepth (ft MLLW) -12

Date 6/22/16 Time 1039  
 Latitude 33°45.120' Longitude -118°07.633' West  
 Water Depth (ft) 12.5 Tide (ft) 3.2  
 Target Core Length (ft) 2.7  
 Penetration Length (ft) 4.0 Core Recovery (ft) 3.0

Depth In (ft.) Actual Core Sections	Sample Interval	Classification and Remarks (Color, Consistency, Moisture, Grain Size, Sheen, Odor)
1	B7-03-062216	very dark soft wet SILT w/ occasional shells greenish medium moist gray stiff f-sand
2	1.9	gray dense damp f-SAND
3	2.7 3.0	Discard
4		
5		
6		
7		
8		
9		

No. Photos Taken \_\_\_\_\_

Recorded By: Chris Oseph

Attempt No. 5 of 5

**CORE PHOTOGRAPHS**



**B6-01 (Top)**



**B6-01 (Middle)**



**B6-01 (Bottom)**



**B6-02 (Top)**



**B6-02 (Bottom)**



**B6-03 (Top)**



**B6-03 (Bottom)**



**B6-04 (Top)**



**B6-04 (Bottom)**



**B6-05**



**B7-01 (Top)**



**B7-01 (Bottom)**



**B7-02**



**B7-03**



APPENDIX B  
CHEMISTRY LABORATORY REPORTS

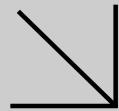
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Supplemental Report 1

The original report has been revised/corrected.



**WORK ORDER NUMBER: 16-06-1737**

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

### Analytical Report For

**Client:** ANCHOR QEA, LLC

**Client Project Name:** Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

**Attention:** Chris Osuch  
27201 Puerta Real  
Suite 350  
Mission Viejo, CA 92691-8306

*Carla Hollowell* FOL

Approved for release on 09/14/2016 by:  
Carla Hollowell  
Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

# Contents

Client Project Name: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7  
 Work Order Number: 16-06-1737

1	Work Order Narrative. . . . .	3
2	Sample Summary. . . . .	4
3	Client Sample Data. . . . .	5
	3.1 EPA 376.2 (M) Total Sulfide (Solid). . . . .	5
	3.2 EPA 9060A Total Organic Carbon (Solid). . . . .	6
	3.3 SM 2540 B (M) Total Solids (Solid). . . . .	7
	3.4 SM 4500-NH3 B/C (M) Ammonia (Solid). . . . .	8
	3.5 Pyrethroids by EPA 8270D (M)/TQ/EI (Solid). . . . .	9
	3.6 EPA 6020 ICP/MS Metals (Solid). . . . .	13
	3.7 EPA 7471A Mercury (Solid). . . . .	15
	3.8 ASTM D4464 (M) Particle Size Laser (Solid). . . . .	16
	3.9 EPA 8081A Organochlorine Pesticides (Solid). . . . .	18
	3.10 EPA 8270C SIM PAHs (Solid). . . . .	22
	3.11 EPA 8270C SIM PCB Congeners (Solid). . . . .	26
	3.12 Krone et al. Organotins (Solid). . . . .	34
4	Particle Size Summary - 16-06-1737. . . . .	36
5	Quality Control Sample Data. . . . .	39
	5.1 MS/MSD. . . . .	39
	5.2 PDS/PDSD. . . . .	47
	5.3 Sample Duplicate. . . . .	48
	5.4 LCS/LCSD. . . . .	50
6	Glossary of Terms and Qualifiers. . . . .	60
7	Chain-of-Custody/Sample Receipt Form. . . . .	61

**Condition Upon Receipt:**

Samples were received under Chain-of-Custody (COC) on 06/23/16. They were assigned to Work Order 16-06-1737.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

**Additional Comments:**

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



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## Sample Summary

Client: ANCHOR QEA, LLC	Work Order: 16-06-1737
27201 Puerta Real, Suite 350	Project Name: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7
Mission Viejo, CA 92691-8306	PO Number: 160548-04.01
	Date/Time Received: 06/23/16 19:05
	Number of Containers: 26

Attn: Chris Osuch

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B6-04-062116	16-06-1737-1	06/21/16 08:31	1	Sediment
B6-04-Z-062116	16-06-1737-2	06/21/16 08:31	1	Sediment
B6-03-062116	16-06-1737-3	06/21/16 10:03	1	Sediment
B6-03-Z-062116	16-06-1737-4	06/21/16 10:03	1	Sediment
B6-05-062116	16-06-1737-5	06/21/16 11:39	1	Sediment
B6-05-Z-062116	16-06-1737-6	06/21/16 11:39	1	Sediment
B6-02-062116	16-06-1737-7	06/21/16 13:36	1	Sediment
B6-02-Z-062116	16-06-1737-8	06/21/16 13:36	1	Sediment
B6-01-062116	16-06-1737-9	06/21/16 15:30	1	Sediment
B6-01-Z-062116	16-06-1737-10	06/21/16 15:30	1	Sediment
B6-COMP-062116	16-06-1737-11	06/21/16 16:35	6	Sediment
B7-03-062216	16-06-1737-12	06/22/16 09:28	1	Sediment
B7-03-Z-062216	16-06-1737-13	06/22/16 09:28	1	Sediment
B7-02-062216	16-06-1737-14	06/22/16 11:21	1	Sediment
B7-02-Z-062216	16-06-1737-15	06/22/16 11:21	1	Sediment
B7-01-062216	16-06-1737-16	06/22/16 13:27	1	Sediment
B7-01-Z-062216	16-06-1737-17	06/22/16 14:20	1	Sediment
B7-COMP-062216	16-06-1737-18	06/22/16 16:15	2	Sediment
LA-2-REF-062316	16-06-1737-19	06/23/16 08:05	2	Sediment


 Return to Contents



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: EPA 376.2M  
Units: mg/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-E</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/24/16</b>	<b>06/24/16 18:10</b>	<b>G0624SL2</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Sulfide, Total	7.8	0.82	0.69	5.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-A</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/24/16</b>	<b>06/24/16 18:10</b>	<b>G0624SL2</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Sulfide, Total	51	2.7	2.3	20.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-062316</b>	<b>16-06-1737-19-A</b>	<b>06/23/16 08:05</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/24/16</b>	<b>06/24/16 18:10</b>	<b>G0624SL2</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Sulfide, Total	1.5	0.15	0.13	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-16-352-111</b>	<b>N/A</b>	<b>Solid</b>	<b>N/A</b>	<b>06/24/16</b>	<b>06/24/16 18:10</b>	<b>G0624SL2</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Sulfide, Total	ND	0.10	0.084	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: EPA 9060A  
Units: %

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>TOC 9</b>	<b>07/07/16</b>	<b>07/07/16 18:30</b>	<b>G0707TOCL1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	1.1	0.082	0.029	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>TOC 9</b>	<b>07/07/16</b>	<b>07/07/16 18:30</b>	<b>G0707TOCL1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	0.12	0.067	0.023	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-062316</b>	<b>16-06-1737-19-AA</b>	<b>06/23/16 08:05</b>	<b>Sediment</b>	<b>TOC 9</b>	<b>07/07/16</b>	<b>07/07/16 18:30</b>	<b>G0707TOCL1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	0.090	0.075	0.026	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-06-013-1571</b>	<b>N/A</b>	<b>Solid</b>	<b>TOC 9</b>	<b>07/07/16</b>	<b>07/07/16 18:30</b>	<b>G0707TOCL1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	ND	0.050	0.017	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: SM 2540 B (M)  
Units: %

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/27/16</b>	<b>06/27/16 23:00</b>	<b>G0627TSB1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	60.8	0.100	0.100	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/27/16</b>	<b>06/27/16 23:00</b>	<b>G0627TSB1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	74.4	0.100	0.100	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-062316</b>	<b>16-06-1737-19-AA</b>	<b>06/23/16 08:05</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/27/16</b>	<b>06/27/16 23:00</b>	<b>G0627TSB1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	66.7	0.100	0.100	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-05-019-3322</b>	<b>N/A</b>	<b>Solid</b>	<b>N/A</b>	<b>06/27/16</b>	<b>06/27/16 23:00</b>	<b>G0627TSB1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	ND	0.100	0.100	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: SM 4500-NH3 B/C (M)  
Units: mg/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-E</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>BUR05</b>	<b>06/28/16</b>	<b>06/28/16 18:09</b>	<b>G0628NH3L1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	11	0.33	0.18	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-A</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>BUR05</b>	<b>06/28/16</b>	<b>06/28/16 18:09</b>	<b>G0628NH3L1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	1.9	0.27	0.15	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-062316</b>	<b>16-06-1737-19-A</b>	<b>06/23/16 08:05</b>	<b>Sediment</b>	<b>BUR05</b>	<b>06/28/16</b>	<b>06/28/16 18:09</b>	<b>G0628NH3L1</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	2.1	0.30	0.17	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-816-142</b>	<b>N/A</b>	<b>Solid</b>	<b>BUR05</b>	<b>06/28/16</b>	<b>06/28/16 18:09</b>	<b>G0628NH3L1</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	ND	0.20	0.11	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>GCTQ 2</b>	<b>06/30/16</b>	<b>07/08/16 00:00</b>	<b>160630L09</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.82	0.41	1.00	
Bifenthrin	ND	0.82	0.49	1.00	
Cyfluthrin	ND	0.82	0.41	1.00	
Cypermethrin	ND	0.82	0.41	1.00	
Deltamethrin/Tralomethrin	ND	0.82	0.41	1.00	
Fenpropathrin	ND	0.82	0.41	1.00	
Fenvalerate/Esfenvalerate	ND	0.82	0.41	1.00	
Fluvalinate	ND	0.82	0.41	1.00	
Permethrin (cis/trans)	ND	1.6	0.82	1.00	
Phenothrin	ND	0.82	0.41	1.00	
Resmethrin/Bioresmethrin	ND	0.82	0.70	1.00	
Tetramethrin	ND	0.82	0.49	1.00	
lambda-Cyhalothrin	ND	0.82	0.41	1.00	
Surrogate	Rec. (%)	Control Limits	Qualifiers		
Dibutylchloroendate	44	40-160			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>GCTQ 2</b>	<b>06/30/16</b>	<b>07/07/16 22:27</b>	<b>160630L09</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Allethrin	ND	0.68	0.34	1.00	
Bifenthrin	ND	0.68	0.41	1.00	
Cyfluthrin	ND	0.68	0.34	1.00	
Cypermethrin	ND	0.68	0.34	1.00	
Deltamethrin/Tralomethrin	ND	0.68	0.34	1.00	
Fenpropathrin	ND	0.68	0.34	1.00	
Fenvalerate/Esfenvalerate	ND	0.68	0.34	1.00	
Fluvalinate	ND	0.68	0.34	1.00	
Permethrin (cis/trans)	ND	1.4	0.68	1.00	
Phenothrin	ND	0.68	0.34	1.00	
Resmethrin/Bioresmethrin	ND	0.68	0.57	1.00	
Tetramethrin	ND	0.68	0.41	1.00	
lambda-Cyhalothrin	ND	0.68	0.34	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
Dibutylchloroendate	43	40-160			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	GCTQ 2	06/30/16	07/07/16 23:13	160630L09

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.75	0.37	1.00	
Bifenthrin	ND	0.75	0.45	1.00	
Cyfluthrin	ND	0.75	0.37	1.00	
Cypermethrin	ND	0.75	0.37	1.00	
Deltamethrin/Tralomethrin	ND	0.75	0.37	1.00	
Fenpropathrin	ND	0.75	0.37	1.00	
Fenvalerate/Esfenvalerate	ND	0.75	0.37	1.00	
Fluvalinate	ND	0.75	0.37	1.00	
Permethrin (cis/trans)	ND	1.5	0.75	1.00	
Phenothrin	ND	0.75	0.37	1.00	
Resmethrin/Bioresmethrin	ND	0.75	0.64	1.00	
Tetramethrin	ND	0.75	0.45	1.00	
lambda-Cyhalothrin	ND	0.75	0.37	1.00	
Surrogate	Rec. (%)	Control Limits	Qualifiers		
Dibutylchloroendate	37	40-160	1,2,6		

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-403-106	N/A	Solid	GCTQ 2	06/30/16	07/07/16 21:41	160630L09

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.50	0.25	1.00	
Bifenthrin	ND	0.50	0.30	1.00	
Cyfluthrin	ND	0.50	0.25	1.00	
Cypermethrin	ND	0.50	0.25	1.00	
Deltamethrin/Tralomethrin	ND	0.50	0.25	1.00	
Fenpropathrin	ND	0.50	0.25	1.00	
Fenvalerate/Esfenvalerate	ND	0.50	0.25	1.00	
Fluvalinate	ND	0.50	0.25	1.00	
Permethrin (cis/trans)	ND	1.0	0.50	1.00	
Phenothrin	ND	0.50	0.25	1.00	
Resmethrin/Bioresmethrin	ND	0.50	0.42	1.00	
Tetramethrin	ND	0.50	0.30	1.00	
lambda-Cyhalothrin	ND	0.50	0.25	1.00	
Surrogate	Rec. (%)	Control Limits	Qualifiers		
Dibutylchloroendate	99	40-160			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3050B  
Method: EPA 6020  
Units: mg/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16</b>	<b>07/05/16 17:55</b>	<b>160630L01E</b>

Comment(s): - Results are reported on a dry weight basis.  
- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Arsenic	5.63	0.164	0.144	1.00	
Cadmium	0.626	0.164	0.0941	1.00	
Chromium	30.5	0.164	0.102	1.00	
Copper	78.1	0.164	0.0689	1.00	
Lead	50.6	0.164	0.108	1.00	
Nickel	22.0	0.164	0.0833	1.00	
Selenium	0.300	0.164	0.120	1.00	
Silver	0.333	0.164	0.0515	1.00	
Zinc	180	1.64	1.31	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16</b>	<b>07/05/16 17:58</b>	<b>160630L01E</b>

Comment(s): - Results are reported on a dry weight basis.  
- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Arsenic	2.95	0.134	0.117	1.00	
Cadmium	0.257	0.134	0.0769	1.00	
Chromium	13.7	0.134	0.0834	1.00	
Copper	39.3	0.134	0.0563	1.00	
Lead	20.8	0.134	0.0886	1.00	
Nickel	9.41	0.134	0.0680	1.00	
Selenium	0.187	0.134	0.0982	1.00	
Silver	0.153	0.134	0.0421	1.00	
Zinc	71.5	1.34	1.07	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3050B  
Method: EPA 6020  
Units: mg/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	ICP/MS 03	06/30/16	07/05/16 18:00	160630L01E

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Arsenic	2.34	0.150	0.131	1.00	
Cadmium	0.218	0.150	0.0858	1.00	
Chromium	22.7	0.150	0.0931	1.00	
Copper	9.70	0.150	0.0628	1.00	
Lead	5.33	0.150	0.0988	1.00	
Nickel	12.4	0.150	0.0759	1.00	
Selenium	0.290	0.150	0.110	1.00	
Silver	0.0565	0.150	0.0469	1.00	J
Zinc	50.2	1.50	1.19	1.00	

Method Blank	099-15-254-429	N/A	Solid	ICP/MS 03	06/30/16	06/30/16 13:06	160630L01E
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Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Arsenic	ND	0.100	0.0873	1.00	
Cadmium	ND	0.100	0.0572	1.00	
Chromium	ND	0.100	0.0621	1.00	
Copper	ND	0.100	0.0419	1.00	
Lead	ND	0.100	0.0659	1.00	
Nickel	ND	0.100	0.0506	1.00	
Selenium	ND	0.100	0.0731	1.00	
Silver	ND	0.100	0.0313	1.00	
Zinc	ND	1.00	0.795	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 7471A Total  
Method: EPA 7471A  
Units: mg/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>Mercury 05</b>	<b>07/01/16</b>	<b>07/05/16 13:17</b>	<b>160701L05E</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Mercury	0.176	0.0346	0.0102	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>Mercury 05</b>	<b>07/01/16</b>	<b>07/05/16 13:24</b>	<b>160701L05E</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Mercury	0.180	0.0256	0.00752	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-062316</b>	<b>16-06-1737-19-AA</b>	<b>06/23/16 08:05</b>	<b>Sediment</b>	<b>Mercury 05</b>	<b>07/01/16</b>	<b>07/05/16 13:30</b>	<b>160701L05E</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Mercury	0.0146	0.0295	0.00866	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-16-278-246</b>	<b>N/A</b>	<b>Solid</b>	<b>Mercury 05</b>	<b>07/01/16</b>	<b>07/01/16 18:46</b>	<b>160701L05E</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Mercury	ND	0.0194	0.00568	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
 Work Order: 16-06-1737  
 Preparation: N/A  
 Method: ASTM D4464 (M)  
 Units: %

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-A</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>LPSA 1</b>	<b>N/A</b>	<b>07/21/16 15:28</b>	

<u>Parameter</u>	<u>Result</u>	<u>Qualifiers</u>
Clay (less than 0.00391mm)	13.09	
Silt (0.00391 to 0.0625mm)	55.01	
Total Silt and Clay (0 to 0.0625mm)	68.10	
Very Fine Sand (0.0625 to 0.125mm)	16.20	
Fine Sand (0.125 to 0.25mm)	14.40	
Medium Sand (0.25 to 0.5mm)	1.29	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>LPSA 1</b>	<b>N/A</b>	<b>06/29/16 16:17</b>	
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<u>Parameter</u>	<u>Result</u>	<u>Qualifiers</u>
Clay (less than 0.00391mm)	3.63	
Silt (0.00391 to 0.0625mm)	11.80	
Total Silt and Clay (0 to 0.0625mm)	15.44	
Very Fine Sand (0.0625 to 0.125mm)	7.73	
Fine Sand (0.125 to 0.25mm)	23.81	
Medium Sand (0.25 to 0.5mm)	37.91	
Coarse Sand (0.5 to 1mm)	15.11	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: ASTM D4464 (M)  
Units: %

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	LPSA 1	N/A	06/29/16 16:22	

<u>Parameter</u>	<u>Result</u>	<u>Qualifiers</u>
Clay (less than 0.00391mm)	3.50	
Silt (0.00391 to 0.0625mm)	21.50	
Total Silt and Clay (0 to 0.0625mm)	25.00	
Very Fine Sand (0.0625 to 0.125mm)	49.80	
Fine Sand (0.125 to 0.25mm)	23.30	
Medium Sand (0.25 to 0.5mm)	1.90	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	


  
Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>GC 44</b>	<b>06/29/16</b>	<b>07/06/16 12:52</b>	<b>160629L29</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aldrin	ND	1.6	0.71	1.00	
Alpha-BHC	ND	3.3	1.2	1.00	
Beta-BHC	ND	1.6	0.81	1.00	
Delta-BHC	ND	3.3	1.4	1.00	
Gamma-BHC	ND	1.6	0.73	1.00	
Dieldrin	ND	1.6	0.71	1.00	
Trans-nonachlor	ND	1.6	0.44	1.00	
2,4'-DDD	ND	1.6	0.46	1.00	
2,4'-DDE	ND	3.3	1.6	1.00	
2,4'-DDT	ND	1.6	0.51	1.00	
4,4'-DDD	ND	1.6	0.82	1.00	
4,4'-DDE	2.4	1.6	0.72	1.00	
4,4'-DDT	ND	1.6	0.71	1.00	
Endosulfan I	ND	1.6	0.65	1.00	
Endosulfan II	ND	1.6	0.77	1.00	
Endosulfan Sulfate	ND	1.6	0.85	1.00	
Endrin	ND	1.6	0.78	1.00	
Endrin Aldehyde	ND	1.6	0.98	1.00	
Endrin Ketone	ND	1.6	0.82	1.00	
Heptachlor	ND	1.6	0.70	1.00	
Heptachlor Epoxide	ND	3.3	1.2	1.00	
Methoxychlor	ND	1.6	0.91	1.00	
Toxaphene	ND	33	15	1.00	
Alpha Chlordane	ND	1.6	0.66	1.00	
Gamma Chlordane	ND	3.3	1.4	1.00	
Cis-nonachlor	ND	1.6	0.42	1.00	
Oxychlordane	ND	1.6	0.44	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2,4,5,6-Tetrachloro-m-Xylene	70	25-145			
Decachlorobiphenyl	80	24-168			

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>GC 44</b>	<b>06/29/16</b>	<b>07/06/16 13:07</b>	<b>160629L29</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aldrin	ND	1.3	0.59	1.00	
Alpha-BHC	ND	2.7	0.99	1.00	
Beta-BHC	ND	1.3	0.67	1.00	
Delta-BHC	ND	2.7	1.2	1.00	
Gamma-BHC	ND	1.3	0.60	1.00	
Dieldrin	ND	1.3	0.59	1.00	
Trans-nonachlor	ND	1.3	0.36	1.00	
2,4'-DDD	ND	1.3	0.38	1.00	
2,4'-DDE	ND	2.7	1.3	1.00	
2,4'-DDT	ND	1.3	0.42	1.00	
4,4'-DDD	ND	1.3	0.67	1.00	
4,4'-DDE	4.1	1.3	0.60	1.00	
4,4'-DDT	ND	1.3	0.59	1.00	
Endosulfan I	ND	1.3	0.53	1.00	
Endosulfan II	ND	1.3	0.63	1.00	
Endosulfan Sulfate	ND	1.3	0.70	1.00	
Endrin	ND	1.3	0.65	1.00	
Endrin Aldehyde	ND	1.3	0.81	1.00	
Endrin Ketone	ND	1.3	0.68	1.00	
Heptachlor	ND	1.3	0.58	1.00	
Heptachlor Epoxide	ND	2.7	0.99	1.00	
Methoxychlor	ND	1.3	0.75	1.00	
Toxaphene	ND	27	12	1.00	
Alpha Chlordane	ND	1.3	0.54	1.00	
Gamma Chlordane	ND	2.7	1.2	1.00	
Cis-nonachlor	ND	1.3	0.35	1.00	
Oxychlordane	ND	1.3	0.36	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2,4,5,6-Tetrachloro-m-Xylene	101	25-145			
Decachlorobiphenyl	110	24-168			

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	GC 44	06/29/16	07/06/16 13:21	160629L29

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aldrin	ND	1.5	0.65	1.00	
Alpha-BHC	ND	3.0	1.1	1.00	
Beta-BHC	ND	1.5	0.74	1.00	
Delta-BHC	ND	3.0	1.3	1.00	
Gamma-BHC	ND	1.5	0.66	1.00	
Dieldrin	ND	1.5	0.65	1.00	
Trans-nonachlor	ND	1.5	0.40	1.00	
2,4'-DDD	ND	1.5	0.43	1.00	
2,4'-DDE	2.4	3.0	1.5	1.00	J
2,4'-DDT	ND	1.5	0.47	1.00	
4,4'-DDD	ND	1.5	0.75	1.00	
4,4'-DDE	5.6	1.5	0.66	1.00	
4,4'-DDT	ND	1.5	0.65	1.00	
Endosulfan I	ND	1.5	0.59	1.00	
Endosulfan II	ND	1.5	0.70	1.00	
Endosulfan Sulfate	ND	1.5	0.78	1.00	
Endrin	ND	1.5	0.72	1.00	
Endrin Aldehyde	ND	1.5	0.90	1.00	
Endrin Ketone	ND	1.5	0.75	1.00	
Heptachlor	ND	1.5	0.64	1.00	
Heptachlor Epoxide	ND	3.0	1.1	1.00	
Methoxychlor	ND	1.5	0.83	1.00	
Toxaphene	ND	30	13	1.00	
Alpha Chlordane	ND	1.5	0.60	1.00	
Gamma Chlordane	ND	3.0	1.3	1.00	
Cis-nonachlor	ND	1.5	0.39	1.00	
Oxychlordane	ND	1.5	0.40	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2,4,5,6-Tetrachloro-m-Xylene	84	25-145			
Decachlorobiphenyl	85	24-168			

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-858-413	N/A	Solid	GC 44	06/29/16	07/01/16 14:53	160629L29

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aldrin	ND	1.0	0.44	1.00	
Alpha-BHC	ND	2.0	0.74	1.00	
Beta-BHC	ND	1.0	0.50	1.00	
Delta-BHC	ND	2.0	0.88	1.00	
Gamma-BHC	ND	1.0	0.45	1.00	
Dieldrin	ND	1.0	0.44	1.00	
Trans-nonachlor	ND	1.0	0.27	1.00	
2,4'-DDD	ND	1.0	0.29	1.00	
2,4'-DDE	ND	2.0	0.99	1.00	
2,4'-DDT	ND	1.0	0.31	1.00	
4,4'-DDD	ND	1.0	0.50	1.00	
4,4'-DDE	ND	1.0	0.44	1.00	
4,4'-DDT	ND	1.0	0.44	1.00	
Endosulfan I	ND	1.0	0.40	1.00	
Endosulfan II	ND	1.0	0.47	1.00	
Endosulfan Sulfate	ND	1.0	0.52	1.00	
Endrin	ND	1.0	0.48	1.00	
Endrin Aldehyde	ND	1.0	0.60	1.00	
Endrin Ketone	ND	1.0	0.50	1.00	
Heptachlor	ND	1.0	0.43	1.00	
Heptachlor Epoxide	ND	2.0	0.74	1.00	
Methoxychlor	ND	1.0	0.56	1.00	
Toxaphene	ND	20	9.0	1.00	
Alpha Chlordane	ND	1.0	0.41	1.00	
Gamma Chlordane	ND	2.0	0.89	1.00	
Cis-nonachlor	ND	1.0	0.26	1.00	
Oxychlordane	ND	1.0	0.27	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2,4,5,6-Tetrachloro-m-Xylene	79	25-145			
Decachlorobiphenyl	84	24-168			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>GC/MS AAA</b>	<b>07/01/16</b>	<b>07/05/16 16:53</b>	<b>160701L14</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	16	3.9	1.00	
Acenaphthylene	ND	16	2.9	1.00	
Anthracene	12	16	5.7	1.00	J
Benzo (a) Anthracene	35	16	3.5	1.00	
Benzo (a) Pyrene	54	16	3.0	1.00	
Benzo (b) Fluoranthene	84	16	4.5	1.00	
Benzo (g,h,i) Perylene	71	16	2.5	1.00	
Benzo (k) Fluoranthene	49	16	4.6	1.00	
Chrysene	57	16	3.7	1.00	
Dibenz (a,h) Anthracene	20	16	3.2	1.00	
Fluoranthene	70	16	3.0	1.00	
Fluorene	12	16	5.1	1.00	J
Indeno (1,2,3-c,d) Pyrene	46	16	2.6	1.00	
2-Methylnaphthalene	5.6	16	3.8	1.00	J
1-Methylnaphthalene	ND	16	3.8	1.00	
Naphthalene	ND	16	5.7	1.00	
Phenanthrene	28	16	3.6	1.00	
Pyrene	99	16	3.7	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	74	14-146	
Nitrobenzene-d5	62	18-162	
p-Terphenyl-d14	91	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>GC/MS AAA</b>	<b>07/01/16</b>	<b>07/05/16 17:13</b>	<b>160701L14</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	13	3.1	1.00	
Acenaphthylene	7.4	13	2.4	1.00	J
Anthracene	10	13	4.6	1.00	J
Benzo (a) Anthracene	12	13	2.9	1.00	J
Benzo (a) Pyrene	26	13	2.4	1.00	
Benzo (b) Fluoranthene	36	13	3.6	1.00	
Benzo (g,h,i) Perylene	24	13	2.0	1.00	
Benzo (k) Fluoranthene	20	13	3.7	1.00	
Chrysene	19	13	3.0	1.00	
Dibenz (a,h) Anthracene	8.0	13	2.6	1.00	J
Fluoranthene	15	13	2.4	1.00	
Fluorene	ND	13	4.2	1.00	
Indeno (1,2,3-c,d) Pyrene	17	13	2.1	1.00	
2-Methylnaphthalene	ND	13	3.1	1.00	
1-Methylnaphthalene	ND	13	3.1	1.00	
Naphthalene	ND	13	4.6	1.00	
Phenanthrene	6.7	13	3.0	1.00	J
Pyrene	26	13	3.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	68	14-146	
Nitrobenzene-d5	54	18-162	
p-Terphenyl-d14	91	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	GC/MS AAA	07/01/16	07/05/16 17:33	160701L14

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	15	3.5	1.00	
Acenaphthylene	ND	15	2.7	1.00	
Anthracene	ND	15	5.2	1.00	
Benzo (a) Anthracene	ND	15	3.2	1.00	
Benzo (a) Pyrene	ND	15	2.8	1.00	
Benzo (b) Fluoranthene	ND	15	4.1	1.00	
Benzo (g,h,i) Perylene	3.8	15	2.3	1.00	J
Benzo (k) Fluoranthene	ND	15	4.2	1.00	
Chrysene	ND	15	3.3	1.00	
Dibenz (a,h) Anthracene	ND	15	2.9	1.00	
Fluoranthene	ND	15	2.7	1.00	
Fluorene	ND	15	4.7	1.00	
Indeno (1,2,3-c,d) Pyrene	2.5	15	2.4	1.00	J
2-Methylnaphthalene	ND	15	3.5	1.00	
1-Methylnaphthalene	ND	15	3.5	1.00	
Naphthalene	ND	15	5.2	1.00	
Phenanthrene	ND	15	3.3	1.00	
Pyrene	ND	15	3.4	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	59	14-146	
Nitrobenzene-d5	47	18-162	
p-Terphenyl-d14	94	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-437-178	N/A	Solid	GC/MS AAA	07/01/16	07/05/16 15:53	160701L14

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	10	2.4	1.00	
Acenaphthylene	ND	10	1.8	1.00	
Anthracene	ND	10	3.5	1.00	
Benzo (a) Anthracene	ND	10	2.2	1.00	
Benzo (a) Pyrene	ND	10	1.8	1.00	
Benzo (b) Fluoranthene	ND	10	2.7	1.00	
Benzo (g,h,i) Perylene	ND	10	1.5	1.00	
Benzo (k) Fluoranthene	ND	10	2.8	1.00	
Chrysene	ND	10	2.2	1.00	
Dibenz (a,h) Anthracene	ND	10	2.0	1.00	
Fluoranthene	ND	10	1.8	1.00	
Fluorene	ND	10	3.1	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	10	1.6	1.00	
2-Methylnaphthalene	ND	10	2.3	1.00	
1-Methylnaphthalene	ND	10	2.3	1.00	
Naphthalene	ND	10	3.5	1.00	
Phenanthrene	ND	10	2.2	1.00	
Pyrene	ND	10	2.2	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	65	14-146	
Nitrobenzene-d5	62	18-162	
p-Terphenyl-d14	89	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-062116	16-06-1737-11-AA	06/21/16 16:35	Sediment	GC/MS HHH	07/01/16	07/05/16 20:38	160701L09

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.33	0.12	1.00	
PCB028	1.2	0.33	0.055	1.00	
PCB037	ND	0.33	0.099	1.00	
PCB044	ND	0.33	0.14	1.00	
PCB049	0.99	0.33	0.19	1.00	
PCB052	1.7	0.33	0.10	1.00	
PCB066	2.3	0.33	0.17	1.00	
PCB070	2.8	0.33	0.098	1.00	
PCB074	1.6	0.33	0.14	1.00	
PCB077	ND	0.33	0.13	1.00	
PCB081	ND	0.33	0.20	1.00	
PCB087	6.5	0.33	0.18	1.00	
PCB099	3.4	0.33	0.10	1.00	
PCB101	5.0	0.33	0.16	1.00	
PCB105	5.2	0.33	0.090	1.00	
PCB110	6.0	0.33	0.076	1.00	
PCB114	ND	0.33	0.13	1.00	
PCB118	11	0.33	0.14	1.00	
PCB119	ND	0.33	0.16	1.00	
PCB123	ND	0.33	0.17	1.00	
PCB126	ND	0.33	0.13	1.00	
PCB128	ND	0.33	0.17	1.00	
PCB132/153	12	0.66	0.28	1.00	
PCB138/158	8.7	0.66	0.16	1.00	
PCB149	4.6	0.33	0.16	1.00	
PCB151	2.4	0.33	0.11	1.00	
PCB156	1.9	0.33	0.095	1.00	
PCB157	ND	0.33	0.086	1.00	
PCB167	ND	0.33	0.10	1.00	
PCB168	ND	0.33	0.080	1.00	
PCB169	ND	0.33	0.10	1.00	
PCB170	1.8	0.33	0.10	1.00	
PCB177	1.4	0.33	0.14	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 2 of 8

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB180	5.2	0.33	0.069	1.00	
PCB183	1.6	0.33	0.18	1.00	
PCB187	2.5	0.33	0.14	1.00	
PCB189	ND	0.33	0.10	1.00	
PCB194	2.1	0.33	0.18	1.00	
PCB201	ND	0.33	0.16	1.00	
PCB206	1.1	0.33	0.32	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	95	50-150			
p-Terphenyl-d14	144	50-150			


 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>GC/MS HHH</b>	<b>07/01/16</b>	<b>07/05/16 21:01</b>	<b>160701L09</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	2.0	0.27	0.095	1.00	
PCB028	1.1	0.27	0.045	1.00	
PCB037	ND	0.27	0.080	1.00	
PCB044	ND	0.27	0.12	1.00	
PCB049	1.1	0.27	0.15	1.00	
PCB052	1.6	0.27	0.083	1.00	
PCB066	1.1	0.27	0.14	1.00	
PCB070	1.2	0.27	0.079	1.00	
PCB074	0.65	0.27	0.12	1.00	
PCB077	ND	0.27	0.10	1.00	
PCB081	ND	0.27	0.16	1.00	
PCB087	ND	0.27	0.14	1.00	
PCB099	0.92	0.27	0.081	1.00	
PCB101	1.4	0.27	0.13	1.00	
PCB105	1.0	0.27	0.073	1.00	
PCB110	1.5	0.27	0.061	1.00	
PCB114	ND	0.27	0.11	1.00	
PCB118	1.7	0.27	0.11	1.00	
PCB119	ND	0.27	0.13	1.00	
PCB123	ND	0.27	0.14	1.00	
PCB126	ND	0.27	0.11	1.00	
PCB128	ND	0.27	0.14	1.00	
PCB132/153	2.5	0.53	0.23	1.00	
PCB138/158	1.8	0.53	0.13	1.00	
PCB149	1.2	0.27	0.13	1.00	
PCB151	ND	0.27	0.090	1.00	
PCB156	ND	0.27	0.077	1.00	
PCB157	ND	0.27	0.070	1.00	
PCB167	ND	0.27	0.082	1.00	
PCB168	ND	0.27	0.065	1.00	
PCB169	ND	0.27	0.081	1.00	
PCB170	ND	0.27	0.084	1.00	
PCB177	ND	0.27	0.12	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 4 of 8

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB180	ND	0.27	0.056	1.00	
PCB183	ND	0.27	0.15	1.00	
PCB187	ND	0.27	0.11	1.00	
PCB189	ND	0.27	0.081	1.00	
PCB194	ND	0.27	0.15	1.00	
PCB201	ND	0.27	0.13	1.00	
PCB206	ND	0.27	0.26	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	62	50-150			
p-Terphenyl-d14	79	50-150			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 5 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	GC/MS HHH	07/01/16	07/05/16 21:25	160701L09

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.30	0.11	1.00	
PCB028	ND	0.30	0.050	1.00	
PCB037	ND	0.30	0.090	1.00	
PCB044	ND	0.30	0.13	1.00	
PCB049	ND	0.30	0.17	1.00	
PCB052	ND	0.30	0.094	1.00	
PCB066	ND	0.30	0.15	1.00	
PCB070	ND	0.30	0.089	1.00	
PCB074	ND	0.30	0.13	1.00	
PCB077	ND	0.30	0.12	1.00	
PCB081	ND	0.30	0.18	1.00	
PCB087	ND	0.30	0.16	1.00	
PCB099	ND	0.30	0.091	1.00	
PCB101	ND	0.30	0.15	1.00	
PCB105	ND	0.30	0.082	1.00	
PCB110	ND	0.30	0.068	1.00	
PCB114	ND	0.30	0.12	1.00	
PCB118	ND	0.30	0.13	1.00	
PCB119	ND	0.30	0.14	1.00	
PCB123	ND	0.30	0.16	1.00	
PCB126	ND	0.30	0.12	1.00	
PCB128	ND	0.30	0.15	1.00	
PCB132/153	ND	0.60	0.26	1.00	
PCB138/158	ND	0.60	0.14	1.00	
PCB149	ND	0.30	0.15	1.00	
PCB151	ND	0.30	0.10	1.00	
PCB156	ND	0.30	0.086	1.00	
PCB157	ND	0.30	0.078	1.00	
PCB167	ND	0.30	0.092	1.00	
PCB168	ND	0.30	0.073	1.00	
PCB169	ND	0.30	0.091	1.00	
PCB170	ND	0.30	0.095	1.00	
PCB177	ND	0.30	0.13	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
 Work Order: 16-06-1737  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 6 of 8

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB180	ND	0.30	0.063	1.00	
PCB183	ND	0.30	0.16	1.00	
PCB187	ND	0.30	0.13	1.00	
PCB189	ND	0.30	0.091	1.00	
PCB194	ND	0.30	0.17	1.00	
PCB201	ND	0.30	0.14	1.00	
PCB206	ND	0.30	0.29	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	66	50-150	
p-Terphenyl-d14	127	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 7 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-16-418-213	N/A	Solid	GC/MS HHH	07/01/16	07/06/16 14:32	160701L09

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.061	1.00	
PCB101	ND	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 8 of 8

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	105	50-150			
p-Terphenyl-d14	91	50-150			


 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3550B (M)  
Method: Organotins by Krone et al.  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-062116</b>	<b>16-06-1737-11-AA</b>	<b>06/21/16 16:35</b>	<b>Sediment</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 18:02</b>	<b>160627L13</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Dibutyltin	57	4.9	1.2	1.00	
Monobutyltin	2.4	4.9	2.3	1.00	J
Tetrabutyltin	ND	4.9	1.2	1.00	
Tributyltin	11	4.9	2.4	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	77	27-135	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-062216</b>	<b>16-06-1737-18-AA</b>	<b>06/22/16 16:15</b>	<b>Sediment</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 18:18</b>	<b>160627L13</b>

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Dibutyltin	14	4.0	0.96	1.00	
Monobutyltin	ND	4.0	1.8	1.00	
Tetrabutyltin	ND	4.0	0.98	1.00	
Tributyltin	7.7	4.0	2.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	78	27-135	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3550B (M)  
Method: Organotins by Krone et al.  
Units: ug/kg

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-062316	16-06-1737-19-AA	06/23/16 08:05	Sediment	GC/MS Y	06/27/16	07/05/16 18:34	160627L13

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Dibutyltin	ND	4.5	1.1	1.00	
Monobutyltin	ND	4.5	2.1	1.00	
Tetrabutyltin	ND	4.5	1.1	1.00	
Tributyltin	ND	4.5	2.2	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	86	27-135	

Method Blank	099-07-016-1422	N/A	Solid	GC/MS Y	06/27/16	07/05/16 16:11	160627L13
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Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Dibutyltin	ND	3.0	0.73	1.00	
Monobutyltin	ND	3.0	1.4	1.00	
Tetrabutyltin	ND	3.0	0.74	1.00	
Tributyltin	ND	3.0	1.5	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	90	27-135	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## PARTICLE SIZE SUMMARY (ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo

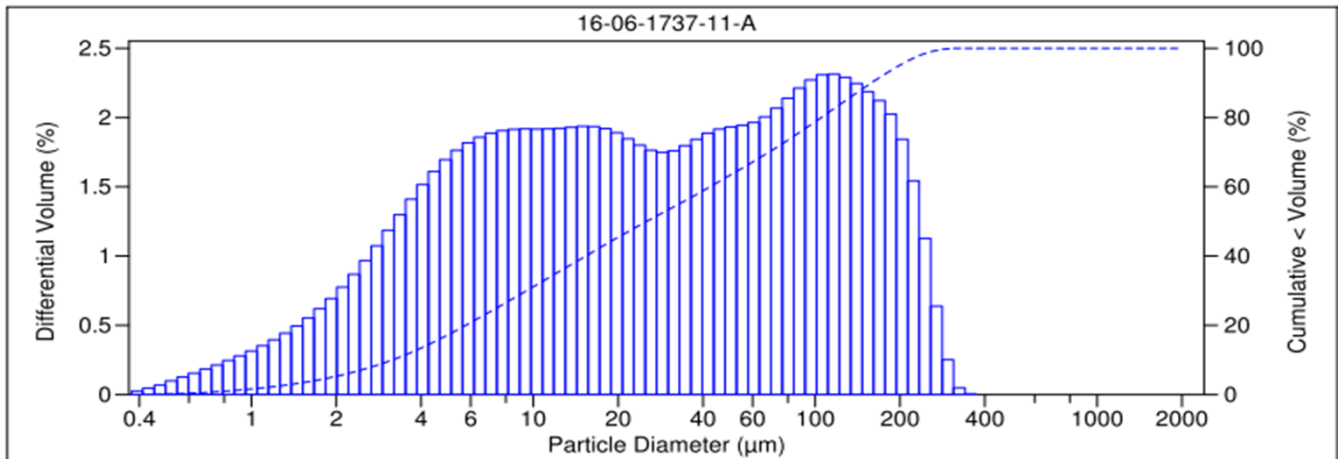
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 Date Received: 06/23/16  
 Work Order No: 16-06-1737  
 Date Analyzed: 07/21/16  
 Method: ASTM D4464M

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 1

Sample ID	Depth ft	Description	Mean Grain Size mm
B6-COMP-062116		Silt	0.055

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	1.29	14.40	16.20	55.01	13.09	68.10



V 3.0

Return to Contents

## PARTICLE SIZE SUMMARY (ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo

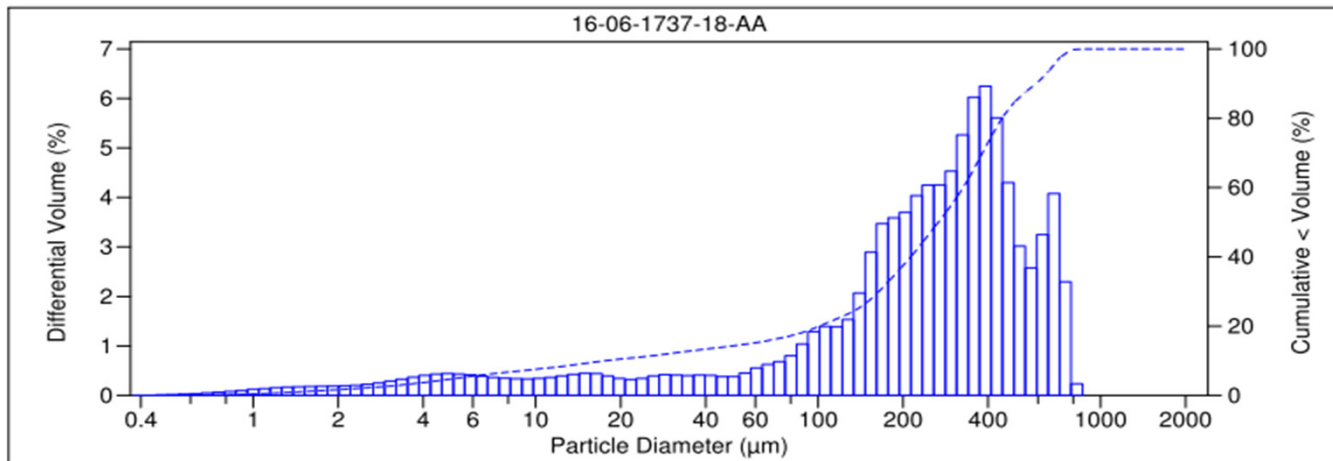
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 Date Received: 06/23/16  
 Work Order No: 16-06-1737  
 Date Analyzed: 06/29/16  
 Method: ASTM D4464M

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 3

Sample ID	Depth ft	Description	Mean Grain Size mm
B7-COMP-062216		Medium Sand	0.288

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	15.11	37.91	23.81	7.73	11.80	3.63	15.44



V 3.0

Return to Contents

## PARTICLE SIZE SUMMARY (ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo

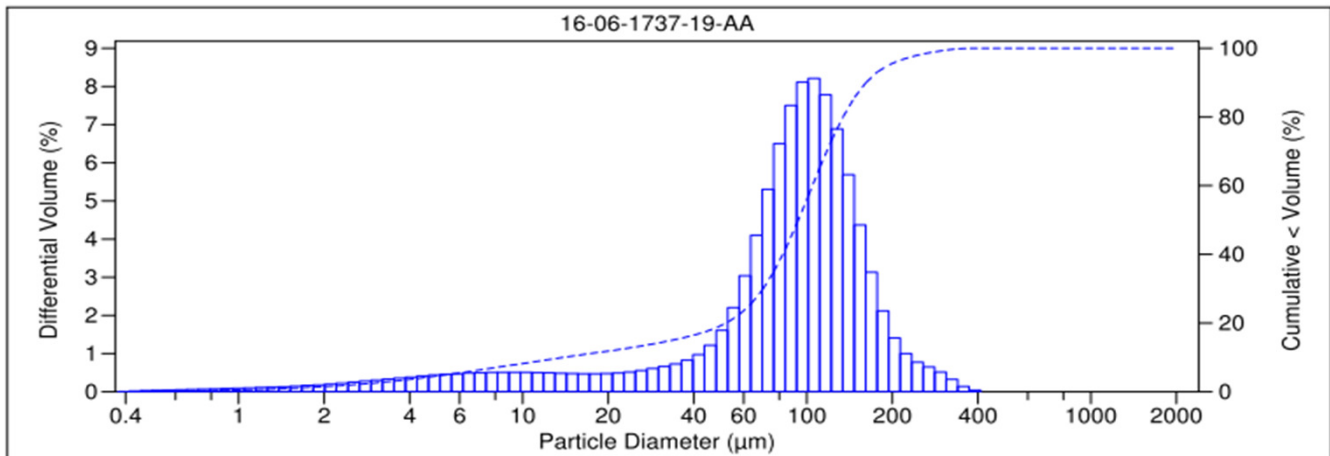
Date Sampled: 06/23/16  
 Date Received: 06/23/16  
 Work Order No: 16-06-1737  
 Date Analyzed: 06/29/16  
 Method: ASTM D4464M

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 3

Sample ID	Depth ft	Description	Mean Grain Size mm
LA-2-REF-062316		Very Fine Sand	0.096

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	1.90	23.30	49.80	21.50	3.50	25.00



V 3.0

Return to Contents



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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: EPA 9060A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B6-COMP-062116	Sample	Sediment	TOC 9	07/07/16	07/07/16 18:30	G0707TOCS1
B6-COMP-062116	Matrix Spike	Sediment	TOC 9	07/07/16	07/07/16 18:30	G0707TOCS1
B6-COMP-062116	Matrix Spike Duplicate	Sediment	TOC 9	07/07/16	07/07/16 18:30	G0707TOCS1

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.6840	3.000	1.357	22	1.395	24	75-125	3	0-25	3

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits





Calscience

## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 2 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>GCTQ 2</b>	<b>06/30/16</b>	<b>07/08/16 00:00</b>	<b>160630S09</b>				
<b>B6-COMP-062116</b>	<b>Matrix Spike</b>	<b>Sediment</b>	<b>GCTQ 2</b>	<b>06/30/16</b>	<b>07/08/16 00:46</b>	<b>160630S09</b>				
<b>B6-COMP-062116</b>	<b>Matrix Spike Duplicate</b>	<b>Sediment</b>	<b>GCTQ 2</b>	<b>06/30/16</b>	<b>07/08/16 01:32</b>	<b>160630S09</b>				
<u>Parameter</u>	<u>Sample Conc.</u>	<u>Spike Added</u>	<u>MS Conc.</u>	<u>MS %Rec.</u>	<u>MSD Conc.</u>	<u>MSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Allethrin	ND	5.000	1.594	32	1.374	27	10-148	15	0-30	
Bifenthrin	ND	5.000	3.131	63	2.854	57	26-128	9	0-30	
Cyfluthrin	ND	5.000	2.203	44	2.278	46	10-131	3	0-30	
Cypermethrin	ND	5.000	2.064	41	2.100	42	10-136	2	0-30	
Deltamethrin/Tralomethrin	ND	5.000	4.003	80	3.782	76	13-190	6	0-30	
Fenpropathrin	ND	5.000	2.433	49	2.066	41	10-148	16	0-30	
Fenvalerate/Esfenvalerate	ND	5.000	2.969	59	2.941	59	10-149	1	0-30	
Fluvalinate	ND	5.000	1.554	31	1.554	31	10-121	0	0-30	
Permethrin (cis/trans)	ND	5.000	2.778	56	2.526	51	45-123	10	0-30	
Phenothrin	ND	5.000	5.077	102	4.817	96	45-165	5	0-30	
Resmethrin/Bioresmethrin	ND	5.000	2.988	60	2.652	53	38-164	12	0-30	
Tetramethrin	ND	5.000	2.471	49	2.550	51	15-153	3	0-30	
lambda-Cyhalothrin	ND	5.000	2.993	60	3.093	62	10-123	3	0-30	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3050B  
Method: EPA 6020

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 3 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16</b>	<b>07/05/16 17:55</b>	<b>160630S01A</b>
<b>B6-COMP-062116</b>	<b>Matrix Spike</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16</b>	<b>07/05/16 17:45</b>	<b>160630S01A</b>
<b>B6-COMP-062116</b>	<b>Matrix Spike Duplicate</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16</b>	<b>07/05/16 17:48</b>	<b>160630S01A</b>

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Arsenic	3.423	25.00	30.68	109	30.20	107	80-120	2	0-20	
Cadmium	0.3807	25.00	27.51	109	27.17	107	80-120	1	0-20	
Chromium	18.52	25.00	45.88	109	46.34	111	80-120	1	0-20	
Copper	47.51	25.00	80.25	131	79.57	128	80-120	1	0-20	3
Lead	30.78	25.00	63.18	130	63.00	129	80-120	0	0-20	3
Nickel	13.37	25.00	40.67	109	40.64	109	80-120	0	0-20	
Selenium	0.1824	25.00	29.21	116	29.19	116	80-120	0	0-20	
Silver	0.2025	12.50	13.57	107	13.37	105	80-120	1	0-20	
Zinc	109.3	25.00	151.4	4X	148.5	4X	80-120	4X	0-20	Q

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
 Work Order: 16-06-1737  
 Preparation: EPA 7471A Total  
 Method: EPA 7471A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 4 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B6-COMP-062116	Sample	Sediment	Mercury 05	07/01/16	07/05/16 13:17	160701S05E
B6-COMP-062116	Matrix Spike	Sediment	Mercury 05	07/01/16	07/05/16 13:40	160701S05E
B6-COMP-062116	Matrix Spike Duplicate	Sediment	Mercury 05	07/01/16	07/05/16 13:42	160701S05E

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.1073	0.8350	0.9519	101	0.9608	102	76-136	1	0-16	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 5 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B6-COMP-062116	Sample	Sediment	GC 44	06/29/16	07/06/16 12:52	160629S29A
B6-COMP-062116	Matrix Spike	Sediment	GC 44	06/29/16	07/06/16 13:35	160629S29A
B6-COMP-062116	Matrix Spike Duplicate	Sediment	GC 44	06/29/16	07/06/16 13:49	160629S29A

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aldrin	ND	5.000	3.584	72	4.035	81	50-135	12	0-25	
Alpha-BHC	ND	5.000	3.699	74	4.095	82	50-135	10	0-25	
Beta-BHC	ND	5.000	3.846	77	4.183	84	50-135	8	0-25	
Delta-BHC	ND	5.000	3.591	72	4.007	80	50-135	11	0-25	
Gamma-BHC	ND	5.000	3.815	76	4.212	84	50-135	10	0-25	
Dieldrin	ND	5.000	4.008	80	4.460	89	50-135	11	0-25	
4,4'-DDD	ND	5.000	4.957	99	5.406	108	50-135	9	0-25	
4,4'-DDE	1.465	5.000	5.268	76	5.695	85	50-135	8	0-25	
4,4'-DDT	ND	5.000	2.018	40	2.505	50	50-135	22	0-25	3
Endosulfan I	ND	5.000	3.870	77	4.272	85	50-135	10	0-25	
Endosulfan II	ND	5.000	4.617	92	5.057	101	50-135	9	0-25	
Endosulfan Sulfate	ND	5.000	3.486	70	3.894	78	50-135	11	0-25	
Endrin	ND	5.000	4.101	82	4.533	91	50-135	10	0-25	
Endrin Aldehyde	ND	5.000	4.293	86	4.719	94	50-135	9	0-25	
Endrin Ketone	ND	5.000	3.590	72	3.872	77	50-135	8	0-25	
Heptachlor	ND	5.000	3.681	74	3.961	79	50-135	7	0-25	
Heptachlor Epoxide	ND	5.000	4.140	83	4.553	91	50-135	10	0-25	
Methoxychlor	ND	5.000	2.218	44	2.728	55	50-135	21	0-25	3
Alpha Chlordane	ND	5.000	4.302	86	4.662	93	50-135	8	0-25	
Gamma Chlordane	ND	5.000	5.165	103	5.447	109	50-135	5	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 6 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>GC/MS AAA</b>	<b>07/01/16</b>	<b>07/05/16 16:53</b>	<b>160701S14</b>				
<b>B6-COMP-062116</b>	<b>Matrix Spike</b>	<b>Sediment</b>	<b>GC/MS AAA</b>	<b>07/01/16</b>	<b>07/05/16 17:53</b>	<b>160701S14</b>				
<b>B6-COMP-062116</b>	<b>Matrix Spike Duplicate</b>	<b>Sediment</b>	<b>GC/MS AAA</b>	<b>07/01/16</b>	<b>07/05/16 18:13</b>	<b>160701S14</b>				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acenaphthene	ND	100.0	79.04	79	76.33	76	40-160	3	0-20	
Acenaphthylene	ND	100.0	78.34	78	77.73	78	40-160	1	0-20	
Anthracene	ND	100.0	90.94	91	97.29	97	40-160	7	0-20	
Benzo (a) Anthracene	21.43	100.0	107.9	87	103.8	82	40-160	4	0-20	
Benzo (a) Pyrene	32.86	100.0	119.4	87	113.2	80	40-160	5	0-20	
Benzo (b) Fluoranthene	51.24	100.0	136.4	85	122.5	71	40-160	11	0-20	
Benzo (g,h,i) Perylene	43.30	100.0	108.1	65	97.20	54	40-160	11	0-20	
Benzo (k) Fluoranthene	29.70	100.0	114.1	84	113.7	84	40-160	0	0-20	
Chrysene	34.56	100.0	121.2	87	109.6	75	40-160	10	0-20	
Dibenz (a,h) Anthracene	12.27	100.0	84.84	73	80.27	68	40-160	6	0-20	
Fluoranthene	42.69	100.0	140.6	98	118.6	76	40-160	17	0-20	
Fluorene	ND	100.0	85.29	85	82.46	82	40-160	3	0-20	
Indeno (1,2,3-c,d) Pyrene	28.00	100.0	93.78	66	88.64	61	40-160	6	0-20	
2-Methylnaphthalene	ND	100.0	78.78	79	78.50	78	40-160	0	0-20	
1-Methylnaphthalene	ND	100.0	67.97	68	64.90	65	40-160	5	0-20	
Naphthalene	ND	100.0	67.02	67	65.40	65	40-160	2	0-20	
Phenanthrene	17.09	100.0	109.3	92	104.6	87	40-160	4	0-20	
Pyrene	60.22	100.0	147.5	87	127.6	67	40-160	14	0-46	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 7 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
B6-COMP-062116	Sample	Sediment	GC/MS HHH	07/01/16	07/05/16 20:38	160701S09A				
B6-COMP-062116	Matrix Spike	Sediment	GC/MS HHH	07/01/16	07/05/16 22:34	160701S09A				
B6-COMP-062116	Matrix Spike Duplicate	Sediment	GC/MS HHH	07/01/16	07/05/16 22:57	160701S09A				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	50.00	36.90	74	40.79	82	50-150	10	0-25	
PCB028	0.7230	50.00	40.01	79	47.44	93	50-150	17	0-25	
PCB044	ND	50.00	37.64	75	63.02	126	50-150	50	0-25	4
PCB052	1.056	50.00	39.38	77	46.98	92	50-150	18	0-25	
PCB066	1.426	50.00	46.44	90	70.15	137	50-150	41	0-25	4
PCB077	ND	50.00	49.89	100	70.56	141	50-150	34	0-25	4
PCB101	3.046	50.00	41.76	77	65.24	124	50-150	44	0-25	4
PCB105	3.132	50.00	55.99	106	68.64	131	50-150	20	0-25	
PCB118	6.828	50.00	61.34	109	80.56	147	50-150	27	0-25	4
PCB126	ND	50.00	53.07	106	62.82	126	50-150	17	0-25	
PCB128	ND	50.00	56.79	114	77.23	154	50-150	30	0-25	3,4
PCB170	1.088	50.00	48.96	96	60.22	118	50-150	21	0-25	
PCB180	3.164	50.00	66.57	127	78.30	150	50-150	16	0-25	
PCB187	1.502	50.00	57.91	113	72.22	141	50-150	22	0-25	
PCB195	ND	50.00	47.11	94	56.92	114	50-150	19	0-25	
PCB206	0.6953	50.00	42.51	84	61.09	121	50-150	36	0-25	4
PCB209	ND	50.00	42.36	85	63.97	128	50-150	41	0-25	4

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3550B (M)  
Method: Organotins by Krone et al.

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 8 of 8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 18:02</b>	<b>160627S13A</b>
<b>B6-COMP-062116</b>	<b>Matrix Spike</b>	<b>Sediment</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 19:22</b>	<b>160627S13A</b>
<b>B6-COMP-062116</b>	<b>Matrix Spike Duplicate</b>	<b>Sediment</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 19:38</b>	<b>160627S13A</b>

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	ND	100.0	89.77	90	89.65	90	33-129	0	0-36	
Tributyltin	6.735	100.0	80.77	74	79.56	73	34-142	2	0-50	

  
Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - PDS

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3050B  
Method: EPA 6020

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number	
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16 00:00</b>	<b>07/05/16 17:55</b>	<b>160630S01A</b>	
<b>B6-COMP-062116</b>	<b>PDS</b>	<b>Sediment</b>	<b>ICP/MS 03</b>	<b>06/30/16 00:00</b>	<b>07/05/16 17:50</b>	<b>160630S01A</b>	
<u>Parameter</u>		<u>Sample Conc.</u>	<u>Spike Added</u>	<u>PDS Conc.</u>	<u>PDS %Rec.</u>	<u>%Rec. CL</u>	<u>Qualifiers</u>
Arsenic		3.423	25.00	28.34	100	75-125	
Cadmium		0.3807	25.00	25.10	99	75-125	
Chromium		18.52	25.00	45.28	107	75-125	
Copper		47.51	25.00	71.38	95	75-125	
Lead		30.78	25.00	53.83	92	75-125	
Nickel		13.37	25.00	36.82	94	75-125	
Selenium		0.1824	25.00	29.96	119	75-125	
Silver		0.2025	12.50	12.09	95	75-125	
Zinc		109.3	25.00	135.4	4X	75-125	Q

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits





Calscience

### Quality Control - Sample Duplicate

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
 Work Order: 16-06-1737  
 Preparation: N/A  
 Method: EPA 376.2M

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/24/16 00:00</b>	<b>06/24/16 18:10</b>	<b>G0624SD2</b>
<b>B6-COMP-062116</b>	<b>Sample Duplicate</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/24/16 00:00</b>	<b>06/24/16 18:10</b>	<b>G0624SD2</b>

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Sulfide, Total	4.750	4.750	0	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - Sample Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: SM 2540 B (M)

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>B6-COMP-062116</b>	<b>Sample</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/27/16 00:00</b>	<b>06/27/16 23:00</b>	<b>G0627TSD1</b>
<b>B6-COMP-062116</b>	<b>Sample Duplicate</b>	<b>Sediment</b>	<b>N/A</b>	<b>06/27/16 00:00</b>	<b>06/27/16 23:00</b>	<b>G0627TSD1</b>
<u>Parameter</u>		<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total		60.80	60.60	0	0-10	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: EPA 376.2M

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 1 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-352-111	LCS	Solid	N/A	06/24/16	06/24/16 18:10	G0624SL2
099-16-352-111	LCSD	Solid	N/A	06/24/16	06/24/16 18:10	G0624SL2

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Sulfide, Total	1.000	0.9000	90	0.8500	85	80-120	6	0-20	

  
Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: N/A  
Method: EPA 9060A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 2 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-06-013-1571	LCS	Solid	TOC 9	07/07/16	07/07/16 18:30	G0707TOCL1			
099-06-013-1571	LCSD	Solid	TOC 9	07/07/16	07/07/16 18:30	G0707TOCL1			
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.6000	0.6480	108	0.5964	99	80-120	8	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
 Work Order: 16-06-1737  
 Preparation: N/A  
 Method: SM 4500-NH3 B/C (M)

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 3 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-816-142	LCS	Solid	BUR05	06/28/16	06/28/16 18:09	G0628NH3L1
099-12-816-142	LCSD	Solid	BUR05	06/28/16	06/28/16 18:09	G0628NH3L1

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Ammonia (as N)	10.00	8.400	84	8.189	82	80-120	3	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270D (M)/TQ/EI

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 4 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-14-403-106	LCS	Solid	GCTQ 2	06/30/16	07/07/16 19:23	160630L09					
099-14-403-106	LCSD	Solid	GCTQ 2	06/30/16	07/07/16 20:09	160630L09					
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers	
Allethrin	5.000	5.167	103	5.175	103	10-148	0-171	0	0-25		
Bifenthrin	5.000	4.852	97	4.765	95	26-128	9-145	2	0-25		
Cyfluthrin	5.000	3.241	65	3.023	60	10-131	0-151	7	0-25		
Cypermethrin	5.000	3.139	63	2.867	57	10-136	0-157	9	0-25		
Deltamethrin/Tralomethrin	5.000	3.774	75	3.648	73	13-190	0-220	3	0-25		
Fenpropathrin	5.000	4.105	82	3.971	79	10-148	0-171	3	0-25		
Fenvalerate/Esfenvalerate	5.000	3.161	63	3.075	62	10-149	0-172	3	0-25		
Fluvalinate	5.000	2.276	46	2.159	43	10-121	0-140	5	0-25		
Permethrin (cis/trans)	5.000	3.565	71	3.468	69	45-123	32-136	3	0-25		
Phenothrin	5.000	4.134	83	4.187	84	45-165	25-185	1	0-25		
Resmethrin/Bioresmethrin	5.000	3.823	76	3.862	77	38-164	17-185	1	0-25		
Tetramethrin	5.000	4.397	88	4.338	87	15-153	0-176	1	0-25		
lambda-Cyhalothrin	5.000	4.142	83	4.170	83	10-123	0-142	1	0-25		

Total number of LCS compounds: 13

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3050B  
Method: EPA 6020

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 5 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-15-254-429	LCS	Solid	ICP/MS 03	06/30/16	06/30/16 13:08	160630L01E			
099-15-254-429	LCSD	Solid	ICP/MS 03	06/30/16	07/07/16 10:56	160630L01E			
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	24.53	98	24.60	98	80-120	0	0-20	
Cadmium	25.00	25.01	100	24.28	97	80-120	3	0-20	
Chromium	25.00	24.67	99	24.04	96	80-120	3	0-20	
Copper	25.00	26.58	106	25.13	101	80-120	6	0-20	
Lead	25.00	23.85	95	23.83	95	80-120	0	0-20	
Nickel	25.00	25.73	103	24.19	97	80-120	6	0-20	
Selenium	25.00	25.99	104	27.20	109	80-120	5	0-20	
Silver	12.50	12.61	101	11.72	94	80-120	7	0-20	
Zinc	25.00	25.18	101	25.40	102	80-120	1	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 7471A Total  
Method: EPA 7471A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 6 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-16-278-246	LCS	Solid	Mercury 05	07/01/16	07/01/16 18:48	160701L05E			
099-16-278-246	LCSD	Solid	Mercury 05	07/01/16	07/05/16 13:12	160701L05E			
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	0.8392	100	0.8714	104	82-124	4	0-16	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits





Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8081A

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 7 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-12-858-413	LCS	Solid	GC 44	06/29/16	07/01/16 17:46	160629L29					
099-12-858-413	LCSD	Solid	GC 44	06/29/16	07/01/16 19:12	160629L29					
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers	
Aldrin	5.000	3.845	77	4.864	97	50-135	36-149	23	0-25		
Alpha-BHC	5.000	3.811	76	4.152	83	50-135	36-149	9	0-25		
Beta-BHC	5.000	3.243	65	3.841	77	50-135	36-149	17	0-25		
Delta-BHC	5.000	3.966	79	4.107	82	50-135	36-149	3	0-25		
Gamma-BHC	5.000	3.859	77	4.153	83	50-135	36-149	7	0-25		
Dieldrin	5.000	4.045	81	4.209	84	50-135	36-149	4	0-25		
4,4'-DDD	5.000	3.920	78	4.019	80	50-135	36-149	2	0-25		
4,4'-DDE	5.000	4.046	81	4.174	83	50-135	36-149	3	0-25		
4,4'-DDT	5.000	3.927	79	3.857	77	50-135	36-149	2	0-25		
Endosulfan I	5.000	3.853	77	4.072	81	50-135	36-149	6	0-25		
Endosulfan II	5.000	4.168	83	4.234	85	50-135	36-149	2	0-25		
Endosulfan Sulfate	5.000	3.740	75	3.835	77	50-135	36-149	3	0-25		
Endrin	5.000	4.046	81	3.949	79	50-135	36-149	2	0-25		
Endrin Aldehyde	5.000	4.044	81	4.182	84	50-135	36-149	3	0-25		
Endrin Ketone	5.000	4.073	81	4.083	82	50-135	36-149	0	0-25		
Heptachlor	5.000	3.973	79	4.351	87	50-135	36-149	9	0-25		
Heptachlor Epoxide	5.000	4.293	86	4.102	82	50-135	36-149	5	0-25		
Methoxychlor	5.000	3.789	76	3.789	76	50-135	36-149	0	0-25		
Alpha Chlordane	5.000	3.918	78	4.088	82	50-135	36-149	4	0-25		
Gamma Chlordane	5.000	3.732	75	4.073	81	50-135	36-149	9	0-25		

Total number of LCS compounds: 20

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PAHs

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 8 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-14-437-178	LCS	Solid	GC/MS AAA	07/01/16	07/05/16 16:13	160701L14					
099-14-437-178	LCSD	Solid	GC/MS AAA	07/01/16	07/05/16 16:33	160701L14					
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers	
Acenaphthene	100.0	64.71	65	63.23	63	48-108	38-118	2	0-11		
Acenaphthylene	100.0	63.52	64	61.42	61	40-160	20-180	3	0-20		
Anthracene	100.0	68.14	68	70.11	70	40-160	20-180	3	0-20		
Benzo (a) Anthracene	100.0	74.38	74	76.30	76	40-160	20-180	3	0-20		
Benzo (a) Pyrene	100.0	75.88	76	76.64	77	40-160	20-180	1	0-20		
Benzo (b) Fluoranthene	100.0	75.36	75	77.10	77	40-160	20-180	2	0-20		
Benzo (g,h,i) Perylene	100.0	80.74	81	78.56	79	40-160	20-180	3	0-20		
Benzo (k) Fluoranthene	100.0	79.56	80	80.58	81	40-160	20-180	1	0-20		
Chrysene	100.0	75.76	76	76.85	77	40-160	20-180	1	0-20		
Dibenz (a,h) Anthracene	100.0	77.56	78	77.60	78	40-160	20-180	0	0-20		
Fluoranthene	100.0	67.94	68	68.07	68	40-160	20-180	0	0-20		
Fluorene	100.0	65.40	65	64.12	64	40-160	20-180	2	0-20		
Indeno (1,2,3-c,d) Pyrene	100.0	75.60	76	74.54	75	40-160	20-180	1	0-20		
2-Methylnaphthalene	100.0	72.11	72	72.43	72	40-160	20-180	0	0-20		
1-Methylnaphthalene	100.0	59.16	59	59.77	60	40-160	20-180	1	0-20		
Naphthalene	100.0	59.55	60	58.09	58	40-160	20-180	2	0-20		
Phenanthrene	100.0	73.41	73	73.57	74	40-160	20-180	0	0-20		
Pyrene	100.0	81.74	82	83.92	84	40-160	20-180	3	0-16		

Total number of LCS compounds: 18

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos Bay Marina Sediment Sampling, Basins 6 and 7

Page 9 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-16-418-213	LCS	Solid	GC/MS HHH	07/01/16	07/05/16 17:50	160701L09					
099-16-418-213	LCSD	Solid	GC/MS HHH	07/01/16	07/05/16 18:15	160701L09					
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers	
PCB018	50.00	41.82	84	39.88	80	50-150	33-167	5	0-25		
PCB028	50.00	44.72	89	43.14	86	50-150	33-167	4	0-25		
PCB044	50.00	42.51	85	42.47	85	50-150	33-167	0	0-25		
PCB052	50.00	44.24	88	44.11	88	50-150	33-167	0	0-25		
PCB066	50.00	50.12	100	51.41	103	50-150	33-167	3	0-25		
PCB077	50.00	44.21	88	46.05	92	50-150	33-167	4	0-25		
PCB101	50.00	41.27	83	42.05	84	50-150	33-167	2	0-25		
PCB105	50.00	42.04	84	47.52	95	50-150	33-167	12	0-25		
PCB118	50.00	46.90	94	50.08	100	50-150	33-167	7	0-25		
PCB126	50.00	44.13	88	45.07	90	50-150	33-167	2	0-25		
PCB128	50.00	41.36	83	43.87	88	50-150	33-167	6	0-25		
PCB170	50.00	45.79	92	44.80	90	50-150	33-167	2	0-25		
PCB180	50.00	46.34	93	47.95	96	50-150	33-167	3	0-25		
PCB187	50.00	40.54	81	43.43	87	50-150	33-167	7	0-25		
PCB195	50.00	49.12	98	44.19	88	50-150	33-167	11	0-25		
PCB206	50.00	43.86	88	42.86	86	50-150	33-167	2	0-25		
PCB209	50.00	44.10	88	40.52	81	50-150	33-167	8	0-25		

Total number of LCS compounds: 17

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 06/23/16  
Work Order: 16-06-1737  
Preparation: EPA 3550B (M)  
Method: Organotins by Krone et al.

Project: Alamitos Bay Marina Sediment Sampling, Basins 6  
and 7

Page 10 of 10

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
<b>099-07-016-1422</b>	<b>LCS</b>	<b>Solid</b>	<b>GC/MS Y</b>	<b>06/27/16</b>	<b>07/05/16 16:27</b>	<b>160627L13</b>
<u>Parameter</u>		<u>Spike Added</u>	<u>Conc. Recovered</u>	<u>LCS %Rec.</u>	<u>%Rec. CL</u>	<u>Qualifiers</u>
Tetrabutyltin		100.0	99.10	99	40-142	
Tributyltin		100.0	83.94	84	33-147	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

## Glossary of Terms and Qualifiers

Work Order: 16-06-1737

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494  
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J# / LAB USE ONLY

**16-06-1737**

DATE: 6/23/16  
 PAGE: 1 OF 2

LABORATORY CLIENT: **Anchor QEA**

ADDRESS: **27201 Puerta Real, Suite 350**

CITY: **Mission Viejo** STATE: **CA** ZIP: **92691**

TEL: **949.347.2780** E-MAIL: cosuch@anchoragea.com

CLIENT PROJECT NAME / NUMBER: **Alamitos Bay Marina Sediment Sampling, Basins 6 and 7**

P.O. NO.: **160548-04.01**

PROJECT CONTACT: **Chris Osuch**

SAMPLER(S): (PRINT) Chris Osuch

**REQUESTED ANALYSES**

Please check box or fill in blank as needed.

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD

COELT EDF GLOBAL ID: \_\_\_\_\_ LOG CODE: \_\_\_\_\_

SPECIAL INSTRUCTIONS:  
 Report detects between the MDL and the RL with J-flags.  
 Specific analytes, methods, and QA/QC in accordance with the SAP.

Unpreserved	Preserved	Field Filtered	ASTM D4464 (M) Particle Size	EPA 376.2 (M) Total Sulfide	EPA 6020 Metals As, Cd, Cr, Cu, Pb, Ag, Se, Ni, Zn	EPA 7471A Mercury	EPA 8081A Organochlorine Pesticides	EPA 8270C SIM PAHs	EPA 8270C SIM PCB Congeners	EPA 9060A Total Organic Carbon	Krone et al. Organotins	Pyrethroids by EPA 8270D (M/TQ/EI)	SM 2540 B (M) Total Solids	SM 4500-NH3 B/C (M) Ammonia	Archive	MS/MSD
															X	

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.
		DATE	TIME		
1	B6-04-062116	6/21/16	0831	sed	1
2	B6-04-Z-062116				
3	B6-03-062116		1003		
4	B6-03-Z-062116				
5	B6-05-062116		1139		
6	B6-05-Z-062116				
7	B6-02-062116		1336		
8	B6-02-Z-062116				
9	B6-01-062116		1530		
10	B6-01-Z-062116				

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
<i>[Signature]</i>	<i>[Signature]</i> BOJ	06/23/16	1905
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
<i>[Signature]</i>			

Page 61 of 63

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#7 LAB USE ONLY:  
 16-06-1737

DATE: 6/23/16  
 PAGE: 2 OF 2

LABORATORY CLIENT: **Anchor QEA**

ADDRESS: **27201 Puerta Real, Suite 350**

CITY: **Mission Viejo** STATE: **CA** ZIP: **92691**

TEL: **949.347.2780** E-MAIL: cosuch@anchoragea.com

CLIENT PROJECT NAME / NUMBER: **Alamitos Bay Marina Sediment Sampling, Basins 6 and 7**

P.O. NO.: **160548-04.01**

PROJECT CONTACT: **Chris Osuch**

SAMPLER(S): (PRINT) Chris Osuch

**REQUESTED ANALYSES**

Please check box or fill in blank as needed.

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD

COELT EDF GLOBAL ID: \_\_\_\_\_ LOG CODE: \_\_\_\_\_

SPECIAL INSTRUCTIONS:  
 Report detects between the MDL and the RL with J-flags.  
 Specific analytes, methods, and QA/QC in accordance with the SAP.

LAB USE ONLY	SAMPLE ID	DATE	TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	ASTM D4464 (M) Particle Size	EPA 376.2 (M) Total Sulfide	EPA 6020 Metals As, Cd, Cr, Cu, Pb, Ag, Se, Ni, Zn	EPA 7471A Mercury	EPA 8081A Organochlorine Pesticides	EPA 8270C SIM PAHs	EPA 8270C SIM PCB Congeners	EPA 9060A Total Organic Carbon	Krone et al. Organotins	Pyrethroids by EPA 8270D (M/TQ/EI)	SM 2540 B (M) Total Solids	SM 4500-NH3 B/C (M) Ammonia	Archive	MS/MSD	
1	B6-COMP-062116	6/21/16	1635	sed	6				X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	B7-03-062216	6/22/16	0928		1																	X	
3	B7-03-Z-062216		↓																				
4	B7-02-062216		1121																				
5	B7-02-Z-062216		↓																				
6	B7-01-062216		1327																				
7	B7-01-Z-062216		1420																				
8	B7-COMP-062216		1615		2				X	X	X	X	X	X	X	X	X	X	X	X	X		
9	LA-2-DEF-062316	6/23/16	0805		2				X	X	X	X	X	X	X	X	X	X	X	X			

Relinquished by: (Signature) <u>Attenne</u>	Received by: (Signature/Affiliation) <u>W. J. BCI</u>	Date: <u>06/23/16</u>	Time: <u>1905</u>
Relinquished by: (Signature) <u>Nick Berry</u>	Received by: (Signature/Affiliation) <u>W. J. BCI</u>	Date: <u>06/23/16</u>	Time: <u>1905</u>
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

**SAMPLE RECEIPT CHECKLIST**

COOLER 1 OF 1

CLIENT: Anchor QEA

DATE: 06/23/2016

**TEMPERATURE:** (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)  
 Thermometer ID: SC2A (CF: 0.0°C); Temperature (w/o CF): 3.1 °C (w/ CF): 3.1 °C;  Blank  Sample  
 Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_)  
 Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling  
 Sample(s) received at ambient temperature; placed on ice for transport by courier  
 Ambient Temperature:  Air  Filter Checked by: 778

**CUSTODY SEAL:**

Cooler	<input type="checkbox"/> Present and Intact	<input type="checkbox"/> Present but Not Intact	<input checked="" type="checkbox"/> Not Present	<input type="checkbox"/> N/A	Checked by: <u>778</u>
Sample(s)	<input type="checkbox"/> Present and Intact	<input type="checkbox"/> Present but Not Intact	<input checked="" type="checkbox"/> Not Present	<input type="checkbox"/> N/A	Checked by: <u>778</u>

<b>SAMPLE CONDITION:</b>	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sampling date <input type="checkbox"/> Sampling time <input type="checkbox"/> Matrix <input type="checkbox"/> Number of containers			
<input type="checkbox"/> No analysis requested <input type="checkbox"/> Not relinquished <input type="checkbox"/> No relinquished date <input type="checkbox"/> No relinquished time			
Sampler's name indicated on COC .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and in good condition .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers for analyses requested .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sufficient volume/mass for analyses requested .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples for certain analyses received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfide <input type="checkbox"/> Dissolved Oxygen .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation chemical(s) noted on COC and/or sample container .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Unpreserved aqueous sample(s) received for certain analyses			
<input type="checkbox"/> Volatile Organics <input type="checkbox"/> Total Metals <input type="checkbox"/> Dissolved Metals			
Container(s) for certain analysis free of headspace .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Volatile Organics <input type="checkbox"/> Dissolved Gases (RSK-175) <input type="checkbox"/> Dissolved Oxygen (SM 4500)			
<input type="checkbox"/> Carbon Dioxide (SM 4500) <input type="checkbox"/> Ferrous Iron (SM 3500) <input type="checkbox"/> Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:** (Trip Blank Lot Number: \_\_\_\_\_)

**Aqueous:**  VOA  VOAh  VOAn<sub>2</sub>  100PJ  100PJna<sub>2</sub>  125AGB  125AGBh  125AGBp  125PB  
 125PBz<sub>anna</sub>  250AGB  250CGB  250CGBs  250PB  250PBn  500AGB  500AGJ  500AGJs  
 500PB  1AGB  1AGBna<sub>2</sub>  1AGBs  1PB  1PBna  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_

**Solid:**  4ozCGJ  8ozCGJ  16ozCGJ  Sleeve (\_\_\_\_\_)  EnCores® (\_\_\_\_\_)  TerraCores® (\_\_\_\_\_)  \_\_\_\_\_

**Air:**  Tedlar™  Canister  Sorbent Tube  PUF  \_\_\_\_\_ **Other Matrix** (sediment):  802CG  1602CG

Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag  
 Preservative: b = buffered, f = filtered, h = HCl, n = HNO<sub>3</sub>, na = NaOH, na<sub>2</sub> = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, p = H<sub>3</sub>PO<sub>4</sub>, Labeled/Checked by: 778  
 s = H<sub>2</sub>SO<sub>4</sub>, u = ultra-pure, z<sub>anna</sub> = Zn (CH<sub>3</sub>CO<sub>2</sub>)<sub>2</sub> + NaOH Reviewed by: 1017

Return to Contents

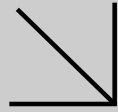




Environmental  
**Calscience**

Supplemental Report 1

The original report has been revised/corrected.



**WORK ORDER NUMBER: 16-07-2046**

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

**Analytical Report For**

**Client:** ANCHOR QEA, LLC

**Client Project Name:** Alamitos - Bioaccumulation Tissue (Zero Time)

**Attention:** Chris Osuch  
 27201 Puerta Real  
 Suite 350  
 Mission Viejo, CA 92691-8306

Approved for release on 08/11/2016 by:  
 Carla Hollowell  
 Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



# Contents

Client Project Name: Alamitos - Bioaccumulation Tissue (Zero Time)  
Work Order Number: 16-07-2046

1	Work Order Narrative. . . . .	3
2	Sample Summary. . . . .	4
3	Client Sample Data. . . . .	6
	3.1 EPA 8270C SIM PCB Congeners (Tissue). . . . .	6
	3.2 % Lipids via MeCl2 Ext. (NOAA 1993a) (Solid). . . . .	82
4	Quality Control Sample Data. . . . .	89
	4.1 MS/MSD. . . . .	89
	4.2 Sample Duplicate. . . . .	91
	4.3 LCS/LCSD. . . . .	93
5	Glossary of Terms and Qualifiers. . . . .	95
6	Chain-of-Custody/Sample Receipt Form. . . . .	96

**Condition Upon Receipt:**

Samples were received under Chain-of-Custody (COC) on 07/29/16. They were assigned to Work Order 16-07-2046.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

**Additional Comments:**

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

The T0- samples (#1 - #6) were received, analyzed, and extracted outside the EPA Method recommended solid sample holding times for all analyses. However, the samples were frozen after collection (prior to holding time expiration) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.



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## Sample Summary

Client: ANCHOR QEA, LLC	Work Order: 16-07-2046
27201 Puerta Real, Suite 350	Project Name: Alamitos - Bioaccumulation Tissue (Zero Time)
Mission Viejo, CA 92691-8306	PO Number: CF-061416 / 160548.04.01
	Date/Time Received: 07/29/16 19:25
	Number of Containers: 46

Attn: Chris Osuch

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
T0-A-MACOMA-062916	16-07-2046-1	06/29/16 11:00	1	Tissue
T0-B-MACOMA-062916	16-07-2046-2	06/29/16 11:00	1	Tissue
T0-C-MACOMA-062916	16-07-2046-3	06/29/16 11:00	1	Tissue
T0-A-NEREIS-062916	16-07-2046-4	06/29/16 11:00	1	Tissue
T0-B-NEREIS-062916	16-07-2046-5	06/29/16 11:00	1	Tissue
T0-C-NEREIS-062916	16-07-2046-6	06/29/16 11:00	1	Tissue
CONTROL-A-MACOMA-072816	16-07-2046-7	07/28/16 09:00	1	Tissue
CONTROL-B-MACOMA-072816	16-07-2046-8	07/28/16 09:00	1	Tissue
CONTROL-C-MACOMA-072816	16-07-2046-9	07/28/16 09:00	1	Tissue
CONTROL-D-MACOMA-072816	16-07-2046-10	07/28/16 09:00	1	Tissue
CONTROL-E-MACOMA-072816	16-07-2046-11	07/28/16 09:00	1	Tissue
LA-2-REF-A-MACOMA-072816	16-07-2046-12	07/28/16 09:00	1	Tissue
LA-2-REF-B-MACOMA-072816	16-07-2046-13	07/28/16 09:00	1	Tissue
LA-2-REF-C-MACOMA-072816	16-07-2046-14	07/28/16 09:00	1	Tissue
LA-2-REF-D-MACOMA-072816	16-07-2046-15	07/28/16 09:00	1	Tissue
LA-2-REF-E-MACOMA-072816	16-07-2046-16	07/28/16 09:00	1	Tissue
B6-COMP-A-MACOMA-072816	16-07-2046-17	07/28/16 09:00	1	Tissue
B6-COMP-B-MACOMA-072816	16-07-2046-18	07/28/16 09:00	1	Tissue
B6-COMP-C-MACOMA-072816	16-07-2046-19	07/28/16 09:00	1	Tissue
B6-COMP-D-MACOMA-072816	16-07-2046-20	07/28/16 09:00	1	Tissue
B6-COMP-E-MACOMA-072816	16-07-2046-21	07/28/16 09:00	1	Tissue
B7-COMP-A-MACOMA-072816	16-07-2046-22	07/28/16 09:00	1	Tissue
B7-COMP-B-MACOMA-072816	16-07-2046-23	07/28/16 09:00	1	Tissue
B7-COMP-C-MACOMA-072816	16-07-2046-24	07/28/16 09:00	1	Tissue
B7-COMP-D-MACOMA-072816	16-07-2046-25	07/28/16 09:00	1	Tissue
B7-COMP-E-MACOMA-072816	16-07-2046-26	07/28/16 09:00	1	Tissue
CONTROL-A-NEREIS-072816	16-07-2046-27	07/28/16 09:00	1	Tissue
CONTROL-B-NEREIS-072816	16-07-2046-28	07/28/16 09:00	1	Tissue
CONTROL-C-NEREIS-072816	16-07-2046-29	07/28/16 09:00	1	Tissue
CONTROL-D-NEREIS-072816	16-07-2046-30	07/28/16 09:00	1	Tissue
CONTROL-E-NEREIS-072816	16-07-2046-31	07/28/16 09:00	1	Tissue
LA-2-REF-A-NEREIS-072816	16-07-2046-32	07/28/16 09:00	1	Tissue
LA-2-REF-B-NEREIS-072816	16-07-2046-33	07/28/16 09:00	1	Tissue
LA-2-REF-C-NEREIS-072816	16-07-2046-34	07/28/16 09:00	1	Tissue
LA-2-REF-D-NEREIS-072816	16-07-2046-35	07/28/16 09:00	1	Tissue
LA-2-REF-E-NEREIS-072816	16-07-2046-36	07/28/16 09:00	1	Tissue
B6-COMP-A-NEREIS-072816	16-07-2046-37	07/28/16 09:00	1	Tissue
B6-COMP-B-NEREIS-072816	16-07-2046-38	07/28/16 09:00	1	Tissue
B6-COMP-C-NEREIS-072816	16-07-2046-39	07/28/16 09:00	1	Tissue
B6-COMP-D-NEREIS-072816	16-07-2046-40	07/28/16 09:00	1	Tissue
B6-COMP-E-NEREIS-072816	16-07-2046-41	07/28/16 09:00	1	Tissue
B7-COMP-A-NEREIS-072816	16-07-2046-42	07/28/16 09:00	1	Tissue


 Return to Contents



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## Sample Summary

Client: ANCHOR QEA, LLC	Work Order: 16-07-2046
27201 Puerta Real, Suite 350	Project Name: Alamitos - Bioaccumulation Tissue (Zero Time)
Mission Viejo, CA 92691-8306	PO Number: CF-061416 / 160548.04.01
	Date/Time Received: 07/29/16 19:25
	Number of Containers: 46

Attn: Chris Osuch

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B7-COMP-B-NEREIS-072816	16-07-2046-43	07/28/16 09:00	1	Tissue
B7-COMP-C-NEREIS-072816	16-07-2046-44	07/28/16 09:00	1	Tissue
B7-COMP-D-NEREIS-072816	16-07-2046-45	07/28/16 09:00	1	Tissue
B7-COMP-E-NEREIS-072816	16-07-2046-46	07/28/16 09:00	1	Tissue

Return to Contents



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 1 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-A-MACOMA-062916	16-07-2046-1-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/02/16 15:45	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	ND	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 2 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	81	14-146			
p-Terphenyl-d14	70	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 3 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-B-MACOMA-062916	16-07-2046-2-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/02/16 16:09	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	ND	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	ND	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	ND	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.093	1.00	
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 4 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	78	14-146			
p-Terphenyl-d14	60	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 5 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-C-MACOMA-062916	16-07-2046-3-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/02/16 17:50	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.061	1.00	
PCB101	ND	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg
Project: Alamitos - Bioaccumulation Tissue (Zero Time)		Page 6 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	97	14-146			
p-Terphenyl-d14	64	34-148			

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 7 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-A-NEREIS-062916	16-07-2046-4-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/02/16 18:14	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.24	0.20	0.060	1.00	
PCB101	0.31	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	0.16	0.20	0.045	1.00	J
PCB114	ND	0.20	0.081	1.00	
PCB118	0.25	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	1.5	0.40	0.17	1.00	
PCB138/158	0.88	0.40	0.093	1.00	
PCB149	0.74	0.20	0.097	1.00	
PCB151	0.23	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.34	0.20	0.063	1.00	
PCB177	0.23	0.20	0.086	1.00	
PCB180	0.64	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 8 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.24	0.20	0.11	1.00	
PCB187	0.50	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	76	14-146			
p-Terphenyl-d14	42	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 9 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-B-NEREIS-062916	16-07-2046-5-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/04/16 14:05	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.23	0.20	0.060	1.00	
PCB101	0.49	0.20	0.097	1.00	
PCB105	0.21	0.20	0.054	1.00	
PCB110	0.24	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.27	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.4	0.40	0.17	1.00	
PCB138/158	1.2	0.40	0.094	1.00	
PCB149	1.1	0.20	0.097	1.00	
PCB151	0.35	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.48	0.20	0.063	1.00	
PCB177	0.32	0.20	0.087	1.00	
PCB180	0.81	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 10 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.38	0.20	0.11	1.00	
PCB187	0.75	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.18	0.20	0.11	1.00	J
PCB201	ND	0.20	0.096	1.00	
PCB206	0.33	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	78	14-146			
p-Terphenyl-d14	61	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 11 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-C-NEREIS-062916	16-07-2046-6-AA	06/29/16 11:00	Tissue	GC/MS HHH	07/30/16	08/04/16 14:29	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.25	0.20	0.060	1.00	
PCB101	0.49	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	0.22	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.25	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	3.0	0.40	0.17	1.00	
PCB138/158	1.4	0.40	0.093	1.00	
PCB149	1.3	0.20	0.097	1.00	
PCB151	0.34	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.57	0.20	0.063	1.00	
PCB177	0.26	0.20	0.086	1.00	
PCB180	0.94	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 12 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.44	0.20	0.11	1.00	
PCB187	0.94	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.18	0.20	0.11	1.00	J
PCB201	ND	0.20	0.096	1.00	
PCB206	0.44	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	76	14-146	
p-Terphenyl-d14	51	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 13 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-A-MACOMA-072816	16-07-2046-12-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 19:25	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	ND	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	ND	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	ND	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.093	1.00	
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 14 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	84	14-146			
p-Terphenyl-d14	53	34-148			

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 15 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-B-MACOMA-072816	16-07-2046-13-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 19:49	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	ND	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 16 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	104	14-146			
p-Terphenyl-d14	88	34-148			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 17 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-C-MACOMA-072816	16-07-2046-14-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 20:12	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	ND	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	ND	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	ND	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.093	1.00	
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 18 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	87	14-146	
p-Terphenyl-d14	68	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 19 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-D-MACOMA-072816	16-07-2046-15-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 20:36	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.086	0.20	0.061	1.00	J
PCB101	0.12	0.20	0.098	1.00	J
PCB105	ND	0.20	0.055	1.00	
PCB110	0.12	0.20	0.046	1.00	J
PCB114	ND	0.20	0.082	1.00	
PCB118	0.11	0.20	0.084	1.00	J
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.24	0.40	0.17	1.00	J
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 20 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	75	14-146			
p-Terphenyl-d14	65	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 21 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-E-MACOMA-072816	16-07-2046-16-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 20:59	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.060	1.00	
PCB101	0.14	0.20	0.097	1.00	J
PCB105	ND	0.20	0.054	1.00	
PCB110	0.12	0.20	0.045	1.00	J
PCB114	ND	0.20	0.081	1.00	
PCB118	ND	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.31	0.40	0.17	1.00	J
PCB138/158	0.14	0.40	0.093	1.00	J
PCB149	ND	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 22 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	75	14-146	
p-Terphenyl-d14	59	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 23 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-A-MACOMA-072816	16-07-2046-17-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 21:23	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	0.19	0.20	0.033	1.00	J
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.17	0.20	0.11	1.00	J
PCB052	0.29	0.20	0.062	1.00	
PCB066	0.34	0.20	0.10	1.00	
PCB070	0.30	0.20	0.059	1.00	
PCB074	0.17	0.20	0.086	1.00	J
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.17	0.20	0.11	1.00	J
PCB099	0.28	0.20	0.060	1.00	
PCB101	0.46	0.20	0.097	1.00	
PCB105	0.22	0.20	0.054	1.00	
PCB110	0.47	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.39	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.54	0.40	0.17	1.00	
PCB138/158	0.44	0.40	0.094	1.00	
PCB149	0.29	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 24 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	67	14-146			
p-Terphenyl-d14	42	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 25 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-B-MACOMA-072816	16-07-2046-18-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 21:46	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.12	0.20	0.11	1.00	J
PCB052	0.14	0.20	0.062	1.00	J
PCB066	0.20	0.20	0.10	1.00	
PCB070	0.23	0.20	0.059	1.00	
PCB074	0.096	0.20	0.086	1.00	J
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.16	0.20	0.060	1.00	J
PCB101	0.25	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	0.34	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.33	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.34	0.40	0.17	1.00	J
PCB138/158	0.26	0.40	0.093	1.00	J
PCB149	0.20	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 26 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	70	14-146			
p-Terphenyl-d14	67	34-148			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 27 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-C-MACOMA-072816	16-07-2046-19-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 22:09	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	0.19	0.20	0.034	1.00	J
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	0.16	0.20	0.11	1.00	J
PCB052	0.32	0.20	0.063	1.00	
PCB066	0.27	0.20	0.10	1.00	
PCB070	0.24	0.20	0.060	1.00	
PCB074	0.20	0.20	0.087	1.00	J
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.14	0.20	0.11	1.00	J
PCB099	0.22	0.20	0.061	1.00	
PCB101	0.36	0.20	0.098	1.00	
PCB105	0.13	0.20	0.055	1.00	J
PCB110	0.38	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.34	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.43	0.40	0.17	1.00	
PCB138/158	0.40	0.40	0.094	1.00	J
PCB149	0.26	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg
Project: Alamitos - Bioaccumulation Tissue (Zero Time)		Page 28 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	0.10	0.20	0.084	1.00	J
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	63	14-146	
p-Terphenyl-d14	64	34-148	

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 29 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-D-MACOMA-072816	16-07-2046-20-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 22:32	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	0.18	0.20	0.033	1.00	J
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.22	0.20	0.11	1.00	
PCB052	0.40	0.20	0.062	1.00	
PCB066	0.41	0.20	0.10	1.00	
PCB070	0.30	0.20	0.059	1.00	
PCB074	0.21	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.24	0.20	0.11	1.00	
PCB099	0.36	0.20	0.060	1.00	
PCB101	0.61	0.20	0.097	1.00	
PCB105	0.33	0.20	0.054	1.00	
PCB110	0.56	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.59	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.67	0.40	0.17	1.00	
PCB138/158	0.53	0.40	0.094	1.00	
PCB149	0.37	0.20	0.097	1.00	
PCB151	0.12	0.20	0.067	1.00	J
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 30 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	0.14	0.20	0.084	1.00	J
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	65	14-146	
p-Terphenyl-d14	45	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 31 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-E-MACOMA-072816	16-07-2046-21-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 22:55	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	0.20	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.19	0.20	0.11	1.00	J
PCB052	0.34	0.20	0.062	1.00	
PCB066	0.38	0.20	0.10	1.00	
PCB070	0.36	0.20	0.059	1.00	
PCB074	0.29	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.17	0.20	0.11	1.00	J
PCB099	0.36	0.20	0.060	1.00	
PCB101	0.57	0.20	0.097	1.00	
PCB105	0.28	0.20	0.054	1.00	
PCB110	0.46	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.48	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.67	0.40	0.17	1.00	
PCB138/158	0.52	0.40	0.093	1.00	
PCB149	0.35	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 32 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	0.15	0.20	0.083	1.00	J
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	69	14-146	
p-Terphenyl-d14	41	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 33 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-A-MACOMA-072816	16-07-2046-22-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/02/16 23:18	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	0.63	0.20	0.071	1.00	
PCB028	0.83	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	0.77	0.20	0.11	1.00	
PCB052	0.89	0.20	0.063	1.00	
PCB066	0.86	0.20	0.10	1.00	
PCB070	0.68	0.20	0.060	1.00	
PCB074	0.39	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.20	0.20	0.11	1.00	
PCB099	0.42	0.20	0.061	1.00	
PCB101	0.71	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	0.60	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.64	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.74	0.40	0.17	1.00	
PCB138/158	0.55	0.40	0.094	1.00	
PCB149	0.35	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 34 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	0.11	0.20	0.084	1.00	J
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	77	14-146			
p-Terphenyl-d14	46	34-148			

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 35 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-B-MACOMA-072816</b>	<b>16-07-2046-23-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>GC/MS HHH</b>	<b>07/30/16</b>	<b>08/02/16 23:41</b>	<b>160730L06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB018	0.41	0.20	0.071	1.00	
PCB028	0.44	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.35	0.20	0.11	1.00	
PCB052	0.50	0.20	0.062	1.00	
PCB066	0.49	0.20	0.10	1.00	
PCB070	0.35	0.20	0.059	1.00	
PCB074	0.27	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.19	0.20	0.11	1.00	J
PCB099	0.26	0.20	0.060	1.00	
PCB101	0.39	0.20	0.097	1.00	
PCB105	ND	0.20	0.054	1.00	
PCB110	0.33	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.34	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.39	0.40	0.17	1.00	J
PCB138/158	0.32	0.40	0.094	1.00	J
PCB149	0.20	0.20	0.097	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 36 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	63	14-146	
p-Terphenyl-d14	66	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 37 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-C-MACOMA-072816</b>	<b>16-07-2046-24-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>GC/MS HHH</b>	<b>07/30/16</b>	<b>08/03/16 00:04</b>	<b>160730L06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	0.46	0.20	0.071	1.00	
PCB028	0.40	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	0.30	0.20	0.11	1.00	
PCB052	0.49	0.20	0.063	1.00	
PCB066	0.43	0.20	0.10	1.00	
PCB070	0.34	0.20	0.060	1.00	
PCB074	0.19	0.20	0.087	1.00	J
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.18	0.20	0.061	1.00	J
PCB101	0.37	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	0.35	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.33	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.43	0.40	0.17	1.00	
PCB138/158	0.34	0.40	0.094	1.00	J
PCB149	0.18	0.20	0.098	1.00	J
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg
Project: Alamitos - Bioaccumulation Tissue (Zero Time)		Page 38 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	61	14-146			
p-Terphenyl-d14	66	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 39 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-D-MACOMA-072816	16-07-2046-25-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 00:27	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	0.49	0.20	0.070	1.00	
PCB028	0.56	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.39	0.20	0.11	1.00	
PCB052	0.68	0.20	0.062	1.00	
PCB066	0.60	0.20	0.10	1.00	
PCB070	0.49	0.20	0.059	1.00	
PCB074	0.34	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.12	0.20	0.11	1.00	J
PCB099	0.35	0.20	0.060	1.00	
PCB101	0.44	0.20	0.097	1.00	
PCB105	0.17	0.20	0.054	1.00	J
PCB110	0.39	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.45	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.49	0.40	0.17	1.00	
PCB138/158	0.38	0.40	0.093	1.00	J
PCB149	0.22	0.20	0.097	1.00	
PCB151	0.10	0.20	0.067	1.00	J
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.086	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 40 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	82	14-146			
p-Terphenyl-d14	84	34-148			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 41 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-E-MACOMA-072816	16-07-2046-26-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 13:38	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	0.62	0.20	0.071	1.00	
PCB028	0.57	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	0.48	0.20	0.11	1.00	
PCB052	0.68	0.20	0.063	1.00	
PCB066	0.61	0.20	0.10	1.00	
PCB070	0.54	0.20	0.060	1.00	
PCB074	0.29	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.13	0.20	0.11	1.00	J
PCB099	0.30	0.20	0.061	1.00	
PCB101	0.50	0.20	0.098	1.00	
PCB105	0.16	0.20	0.055	1.00	J
PCB110	0.45	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.47	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	0.47	0.40	0.17	1.00	
PCB138/158	0.38	0.40	0.094	1.00	J
PCB149	0.30	0.20	0.098	1.00	
PCB151	0.093	0.20	0.067	1.00	J
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 42 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	0.087	0.20	0.084	1.00	J
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	70	14-146			
p-Terphenyl-d14	78	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 43 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-A-NEREIS-072816	16-07-2046-32-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 14:54	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.27	0.20	0.060	1.00	
PCB101	0.45	0.20	0.097	1.00	
PCB105	0.16	0.20	0.054	1.00	J
PCB110	0.26	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.30	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.4	0.40	0.17	1.00	
PCB138/158	1.3	0.40	0.093	1.00	
PCB149	0.92	0.20	0.097	1.00	
PCB151	0.24	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.42	0.20	0.063	1.00	
PCB177	0.23	0.20	0.086	1.00	
PCB180	0.70	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 44 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.32	0.20	0.11	1.00	
PCB187	0.69	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.15	0.20	0.11	1.00	J
PCB201	ND	0.20	0.096	1.00	
PCB206	0.29	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	68	14-146	
p-Terphenyl-d14	52	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 45 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-B-NEREIS-072816	16-07-2046-33-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 15:18	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	0.21	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.34	0.20	0.061	1.00	
PCB101	0.57	0.20	0.098	1.00	
PCB105	0.14	0.20	0.055	1.00	J
PCB110	0.28	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.36	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.5	0.40	0.17	1.00	
PCB138/158	1.4	0.40	0.094	1.00	
PCB149	1.0	0.20	0.098	1.00	
PCB151	0.31	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.40	0.20	0.063	1.00	
PCB177	0.24	0.20	0.087	1.00	
PCB180	0.78	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 46 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.31	0.20	0.11	1.00	
PCB187	0.76	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.19	0.20	0.11	1.00	J
PCB201	ND	0.20	0.097	1.00	
PCB206	0.34	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	63	14-146			
p-Terphenyl-d14	69	34-148			

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 47 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-C-NEREIS-072816	16-07-2046-34-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 14:50	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.22	0.20	0.060	1.00	
PCB101	0.37	0.20	0.097	1.00	
PCB105	0.12	0.20	0.054	1.00	J
PCB110	0.17	0.20	0.045	1.00	J
PCB114	ND	0.20	0.081	1.00	
PCB118	0.18	0.20	0.083	1.00	J
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.0	0.40	0.17	1.00	
PCB138/158	1.1	0.40	0.093	1.00	
PCB149	0.81	0.20	0.097	1.00	
PCB151	0.23	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.41	0.20	0.063	1.00	
PCB177	0.16	0.20	0.086	1.00	J
PCB180	0.68	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 48 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.26	0.20	0.11	1.00	
PCB187	0.62	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.14	0.20	0.11	1.00	J
PCB201	ND	0.20	0.096	1.00	
PCB206	0.23	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	71	14-146	
p-Terphenyl-d14	40	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 49 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-D-NEREIS-072816	16-07-2046-35-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 15:14	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	0.19	0.20	0.062	1.00	J
PCB066	0.27	0.20	0.10	1.00	
PCB070	0.19	0.20	0.059	1.00	J
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.23	0.20	0.060	1.00	
PCB101	0.55	0.20	0.097	1.00	
PCB105	0.23	0.20	0.054	1.00	
PCB110	0.31	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.32	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.1	0.40	0.17	1.00	
PCB138/158	1.2	0.40	0.094	1.00	
PCB149	0.88	0.20	0.097	1.00	
PCB151	0.19	0.20	0.067	1.00	J
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.35	0.20	0.063	1.00	
PCB177	0.24	0.20	0.087	1.00	
PCB180	0.60	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 50 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.28	0.20	0.11	1.00	
PCB187	0.55	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.22	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	71	14-146	
p-Terphenyl-d14	48	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 51 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-E-NEREIS-072816	16-07-2046-36-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 15:37	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.062	1.00	
PCB066	0.13	0.20	0.10	1.00	J
PCB070	ND	0.20	0.059	1.00	
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.28	0.20	0.060	1.00	
PCB101	0.50	0.20	0.097	1.00	
PCB105	0.28	0.20	0.054	1.00	
PCB110	0.19	0.20	0.045	1.00	J
PCB114	ND	0.20	0.081	1.00	
PCB118	0.28	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.7	0.40	0.17	1.00	
PCB138/158	1.5	0.40	0.093	1.00	
PCB149	1.0	0.20	0.097	1.00	
PCB151	0.23	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.44	0.20	0.063	1.00	
PCB177	0.30	0.20	0.086	1.00	
PCB180	0.91	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 52 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.38	0.20	0.11	1.00	
PCB187	0.90	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.19	0.20	0.11	1.00	J
PCB201	ND	0.20	0.096	1.00	
PCB206	0.33	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	77	14-146	
p-Terphenyl-d14	45	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 53 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-A-NEREIS-072816	16-07-2046-37-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 15:42	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	0.18	0.20	0.071	1.00	J
PCB028	0.28	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.24	0.20	0.11	1.00	
PCB052	0.72	0.20	0.062	1.00	
PCB066	0.33	0.20	0.10	1.00	
PCB070	0.16	0.20	0.059	1.00	J
PCB074	0.14	0.20	0.086	1.00	J
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.18	0.20	0.11	1.00	J
PCB099	0.51	0.20	0.060	1.00	
PCB101	1.1	0.20	0.097	1.00	
PCB105	0.39	0.20	0.054	1.00	
PCB110	0.68	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.62	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	3.6	0.40	0.17	1.00	
PCB138/158	2.0	0.40	0.094	1.00	
PCB149	1.6	0.20	0.097	1.00	
PCB151	0.35	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.59	0.20	0.063	1.00	
PCB177	0.32	0.20	0.087	1.00	
PCB180	1.0	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 54 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.40	0.20	0.11	1.00	
PCB187	1.0	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.27	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.50	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	75	14-146			
p-Terphenyl-d14	67	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 55 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-B-NEREIS-072816	16-07-2046-38-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 16:06	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	0.31	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.33	0.20	0.087	1.00	
PCB049	0.30	0.20	0.11	1.00	
PCB052	0.87	0.20	0.063	1.00	
PCB066	0.48	0.20	0.10	1.00	
PCB070	0.20	0.20	0.060	1.00	
PCB074	0.17	0.20	0.087	1.00	J
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.68	0.20	0.061	1.00	
PCB101	1.4	0.20	0.098	1.00	
PCB105	0.47	0.20	0.055	1.00	
PCB110	0.78	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.77	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	4.3	0.40	0.17	1.00	
PCB138/158	2.4	0.40	0.094	1.00	
PCB149	1.9	0.20	0.098	1.00	
PCB151	0.48	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.72	0.20	0.063	1.00	
PCB177	0.44	0.20	0.087	1.00	
PCB180	1.5	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 56 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.56	0.20	0.11	1.00	
PCB187	1.3	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.26	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	0.43	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	73	14-146			
p-Terphenyl-d14	64	34-148			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 57 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-C-NEREIS-072816	16-07-2046-39-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 16:31	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	0.21	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.23	0.20	0.086	1.00	
PCB049	0.21	0.20	0.11	1.00	
PCB052	0.55	0.20	0.062	1.00	
PCB066	0.34	0.20	0.10	1.00	
PCB070	0.16	0.20	0.059	1.00	J
PCB074	0.13	0.20	0.086	1.00	J
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.43	0.20	0.060	1.00	
PCB101	0.97	0.20	0.097	1.00	
PCB105	0.40	0.20	0.054	1.00	
PCB110	0.65	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.60	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.8	0.40	0.17	1.00	
PCB138/158	1.6	0.40	0.093	1.00	
PCB149	1.1	0.20	0.097	1.00	
PCB151	0.29	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.46	0.20	0.063	1.00	
PCB177	0.33	0.20	0.086	1.00	
PCB180	0.94	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 58 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.37	0.20	0.11	1.00	
PCB187	0.91	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.30	0.20	0.11	1.00	
PCB201	0.11	0.20	0.096	1.00	J
PCB206	0.31	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	78	14-146	
p-Terphenyl-d14	55	34-148	

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 59 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-D-NEREIS-072816	16-07-2046-40-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 16:55	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	0.31	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.25	0.20	0.11	1.00	
PCB052	0.73	0.20	0.062	1.00	
PCB066	0.43	0.20	0.10	1.00	
PCB070	0.30	0.20	0.059	1.00	
PCB074	0.21	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.17	0.20	0.11	1.00	J
PCB099	0.66	0.20	0.060	1.00	
PCB101	1.2	0.20	0.097	1.00	
PCB105	0.39	0.20	0.054	1.00	
PCB110	0.78	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.69	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	3.4	0.40	0.17	1.00	
PCB138/158	1.9	0.40	0.094	1.00	
PCB149	1.6	0.20	0.097	1.00	
PCB151	0.44	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.63	0.20	0.063	1.00	
PCB177	0.31	0.20	0.087	1.00	
PCB180	1.2	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 60 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.51	0.20	0.11	1.00	
PCB187	1.1	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.31	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.42	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	67	14-146			
p-Terphenyl-d14	72	34-148			

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 61 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-E-NEREIS-072816	16-07-2046-41-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/03/16 17:35	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	ND	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.086	1.00	
PCB049	0.16	0.20	0.11	1.00	J
PCB052	0.40	0.20	0.062	1.00	
PCB066	0.27	0.20	0.10	1.00	
PCB070	0.13	0.20	0.059	1.00	J
PCB074	ND	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.43	0.20	0.060	1.00	
PCB101	0.72	0.20	0.097	1.00	
PCB105	0.28	0.20	0.054	1.00	
PCB110	0.43	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.53	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.5	0.40	0.17	1.00	
PCB138/158	1.4	0.40	0.093	1.00	
PCB149	0.96	0.20	0.097	1.00	
PCB151	0.32	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.42	0.20	0.063	1.00	
PCB177	0.26	0.20	0.086	1.00	
PCB180	0.85	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 62 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.34	0.20	0.11	1.00	
PCB187	0.78	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	71	14-146			
p-Terphenyl-d14	37	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 63 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-A-NEREIS-072816	16-07-2046-42-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 17:19	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	1.2	0.20	0.071	1.00	
PCB028	0.76	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.25	0.20	0.087	1.00	
PCB049	0.49	0.20	0.11	1.00	
PCB052	1.3	0.20	0.063	1.00	
PCB066	0.47	0.20	0.10	1.00	
PCB070	0.18	0.20	0.060	1.00	J
PCB074	0.15	0.20	0.087	1.00	J
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.48	0.20	0.061	1.00	
PCB101	0.95	0.20	0.098	1.00	
PCB105	0.25	0.20	0.055	1.00	
PCB110	0.45	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.42	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.9	0.40	0.17	1.00	
PCB138/158	1.5	0.40	0.094	1.00	
PCB149	1.2	0.20	0.098	1.00	
PCB151	0.30	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.52	0.20	0.063	1.00	
PCB177	0.28	0.20	0.087	1.00	
PCB180	1.0	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 64 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.36	0.20	0.11	1.00	
PCB187	0.76	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.21	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	0.35	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	75	14-146	
p-Terphenyl-d14	69	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 65 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-B-NEREIS-072816	16-07-2046-43-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 17:43	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	1.8	0.20	0.070	1.00	
PCB028	1.0	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.41	0.20	0.086	1.00	
PCB049	0.92	0.20	0.11	1.00	
PCB052	2.0	0.20	0.062	1.00	
PCB066	0.91	0.20	0.10	1.00	
PCB070	0.38	0.20	0.059	1.00	
PCB074	0.31	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.21	0.20	0.11	1.00	
PCB099	0.78	0.20	0.060	1.00	
PCB101	1.4	0.20	0.097	1.00	
PCB105	0.42	0.20	0.054	1.00	
PCB110	0.72	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.93	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	0.21	0.20	0.10	1.00	
PCB132/153	3.5	0.40	0.17	1.00	
PCB138/158	2.0	0.40	0.093	1.00	
PCB149	1.4	0.20	0.097	1.00	
PCB151	0.38	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.55	0.20	0.063	1.00	
PCB177	0.29	0.20	0.086	1.00	
PCB180	1.1	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 66 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.44	0.20	0.11	1.00	
PCB187	1.0	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.25	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.39	0.20	0.19	1.00	

<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>
2-Fluorobiphenyl	73	14-146	
p-Terphenyl-d14	64	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 67 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-C-NEREIS-072816	16-07-2046-44-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 18:07	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	1.7	0.20	0.071	1.00	
PCB028	0.96	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.23	0.20	0.086	1.00	
PCB049	0.73	0.20	0.11	1.00	
PCB052	2.0	0.20	0.062	1.00	
PCB066	0.86	0.20	0.10	1.00	
PCB070	0.30	0.20	0.059	1.00	
PCB074	0.25	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.16	0.20	0.11	1.00	J
PCB099	0.81	0.20	0.060	1.00	
PCB101	1.4	0.20	0.097	1.00	
PCB105	0.41	0.20	0.054	1.00	
PCB110	0.94	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.85	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	4.5	0.40	0.17	1.00	
PCB138/158	2.3	0.40	0.094	1.00	
PCB149	1.7	0.20	0.097	1.00	
PCB151	0.39	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.69	0.20	0.063	1.00	
PCB177	0.36	0.20	0.087	1.00	
PCB180	1.3	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 68 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.54	0.20	0.11	1.00	
PCB187	1.2	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.32	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.36	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	84	14-146			
p-Terphenyl-d14	73	34-148			



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 69 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-D-NEREIS-072816	16-07-2046-45-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 18:31	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	1.2	0.20	0.070	1.00	
PCB028	0.57	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.28	0.20	0.086	1.00	
PCB049	0.58	0.20	0.11	1.00	
PCB052	1.5	0.20	0.062	1.00	
PCB066	0.58	0.20	0.10	1.00	
PCB070	0.26	0.20	0.059	1.00	
PCB074	0.26	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.12	0.20	0.11	1.00	J
PCB099	0.56	0.20	0.060	1.00	
PCB101	1.1	0.20	0.097	1.00	
PCB105	0.31	0.20	0.054	1.00	
PCB110	0.60	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	0.63	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.4	0.40	0.17	1.00	
PCB138/158	1.6	0.40	0.093	1.00	
PCB149	1.2	0.20	0.097	1.00	
PCB151	0.28	0.20	0.067	1.00	
PCB156	ND	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.60	0.20	0.063	1.00	
PCB177	0.29	0.20	0.086	1.00	
PCB180	0.79	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 70 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.33	0.20	0.11	1.00	
PCB187	0.75	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.21	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.45	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	63	14-146			
p-Terphenyl-d14	70	34-148			

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 71 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-E-NEREIS-072816	16-07-2046-46-AA	07/28/16 09:00	Tissue	GC/MS HHH	07/30/16	08/04/16 18:54	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	1.2	0.20	0.071	1.00	
PCB028	0.74	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.32	0.20	0.087	1.00	
PCB049	0.62	0.20	0.11	1.00	
PCB052	1.5	0.20	0.063	1.00	
PCB066	0.70	0.20	0.10	1.00	
PCB070	0.25	0.20	0.060	1.00	
PCB074	0.19	0.20	0.087	1.00	J
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	0.69	0.20	0.061	1.00	
PCB101	1.1	0.20	0.098	1.00	
PCB105	0.33	0.20	0.055	1.00	
PCB110	0.71	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	0.73	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	2.9	0.40	0.17	1.00	
PCB138/158	1.7	0.40	0.094	1.00	
PCB149	1.3	0.20	0.098	1.00	
PCB151	0.30	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.44	0.20	0.063	1.00	
PCB177	0.22	0.20	0.087	1.00	
PCB180	0.97	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners  
Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 72 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	0.37	0.20	0.11	1.00	
PCB187	0.85	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.16	0.20	0.11	1.00	J
PCB201	ND	0.20	0.097	1.00	
PCB206	0.31	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	69	14-146			
p-Terphenyl-d14	88	34-148			

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 73 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-16-780-5	N/A	Tissue	GC/MS HHH	07/30/16	08/02/16 13:29	160730L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.061	1.00	
PCB101	ND	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 74 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	89	14-146			
p-Terphenyl-d14	99	34-148			

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	EPA 3541
	Method:	EPA 8270C SIM PCB Congeners
	Units:	ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time) Page 75 of 76

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-16-780-6	N/A	Tissue	GC/MS HHH	07/30/16	08/03/16 12:27	160730L07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.061	1.00	
PCB101	ND	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





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### Analytical Report

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: EPA 3541  
 Method: EPA 8270C SIM PCB Congeners  
 Units: ug/kg

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 76 of 76

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	
<u>Surrogate</u>	<u>Rec. (%)</u>	<u>Control Limits</u>	<u>Qualifiers</u>		
2-Fluorobiphenyl	99	14-146			
p-Terphenyl-d14	114	34-148			

Return to Contents 

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 1 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-A-MACOMA-062916	16-07-2046-1-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.29	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-B-MACOMA-062916	16-07-2046-2-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.33	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-C-MACOMA-062916	16-07-2046-3-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.26	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-A-NEREIS-062916	16-07-2046-4-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.83	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-B-NEREIS-062916	16-07-2046-5-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.99	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T0-C-NEREIS-062916	16-07-2046-6-AA	06/29/16 11:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.2	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 2 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-A-MACOMA-072816	16-07-2046-12-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.26	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-B-MACOMA-072816	16-07-2046-13-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.21	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-C-MACOMA-072816	16-07-2046-14-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.21	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-D-MACOMA-072816	16-07-2046-15-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.28	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-E-MACOMA-072816	16-07-2046-16-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.25	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-A-MACOMA-072816	16-07-2046-17-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B06

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.28	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 3 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-B-MACOMA-072816</b>	<b>16-07-2046-18-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.22	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-C-MACOMA-072816</b>	<b>16-07-2046-19-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.25	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-D-MACOMA-072816</b>	<b>16-07-2046-20-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.26	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B6-COMP-E-MACOMA-072816</b>	<b>16-07-2046-21-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.28	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-A-MACOMA-072816</b>	<b>16-07-2046-22-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.25	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-B-MACOMA-072816</b>	<b>16-07-2046-23-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.22	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 4 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-C-MACOMA-072816</b>	<b>16-07-2046-24-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.21	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-D-MACOMA-072816</b>	<b>16-07-2046-25-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.27	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>B7-COMP-E-MACOMA-072816</b>	<b>16-07-2046-26-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B07</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.31	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-A-NEREIS-072816</b>	<b>16-07-2046-32-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B07</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.95	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-B-NEREIS-072816</b>	<b>16-07-2046-33-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B07</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.1	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>LA-2-REF-C-NEREIS-072816</b>	<b>16-07-2046-34-AA</b>	<b>07/28/16 09:00</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B07</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.71	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 5 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-D-NEREIS-072816	16-07-2046-35-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.75	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
LA-2-REF-E-NEREIS-072816	16-07-2046-36-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.95	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-A-NEREIS-072816	16-07-2046-37-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.1	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-B-NEREIS-072816	16-07-2046-38-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.1	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-C-NEREIS-072816	16-07-2046-39-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.88	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-D-NEREIS-072816	16-07-2046-40-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.2	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



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## Analytical Report

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: N/A  
Method: MeCl2 Ext. (NOAA 1993a)  
Units: %

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 6 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B6-COMP-E-NEREIS-072816	16-07-2046-41-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.75	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-A-NEREIS-072816	16-07-2046-42-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.86	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-B-NEREIS-072816	16-07-2046-43-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.2	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-C-NEREIS-072816	16-07-2046-44-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.93	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-D-NEREIS-072816	16-07-2046-45-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.87	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B7-COMP-E-NEREIS-072816	16-07-2046-46-AA	07/28/16 09:00	Tissue	B03/B13	07/30/16	08/02/16 00:00	160730B07

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	0.93	0.10	0.10	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

## Analytical Report

ANCHOR QEA, LLC	Date Received:	07/29/16
27201 Puerta Real, Suite 350	Work Order:	16-07-2046
Mission Viejo, CA 92691-8306	Preparation:	N/A
	Method:	MeCl2 Ext. (NOAA 1993a)
	Units:	%

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 7 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-14-104-125</b>	<b>N/A</b>	<b>Solid</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B06</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
% Lipids	ND	0.10	0.10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-14-104-126</b>	<b>N/A</b>	<b>Solid</b>	<b>B03/B13</b>	<b>07/30/16</b>	<b>08/02/16 00:00</b>	<b>160730B07</b>

Comment(s): - Results were evaluated to the MDL (DL), concentrations  $\geq$  to the MDL (DL) but  $<$  RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
% Lipids	ND	0.10	0.10	1.00	





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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
T0-A-MACOMA-062916	Sample	Tissue	GC/MS HHH	07/30/16	08/02/16 15:45	160730S06
T0-A-MACOMA-062916	Matrix Spike	Tissue	GC/MS HHH	07/30/16	08/03/16 00:50	160730S06
T0-A-MACOMA-062916	Matrix Spike Duplicate	Tissue	GC/MS HHH	07/30/16	08/03/16 01:12	160730S06

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	50.00	47.19	94	42.92	86	50-150	9	0-25	
PCB028	ND	50.00	49.52	99	48.35	97	50-150	2	0-25	
PCB044	ND	50.00	46.54	93	45.05	90	50-150	3	0-25	
PCB052	ND	50.00	47.20	94	46.07	92	50-150	2	0-25	
PCB066	ND	50.00	54.59	109	50.83	102	50-150	7	0-25	
PCB077	ND	50.00	48.56	97	46.46	93	50-150	4	0-25	
PCB101	ND	50.00	45.82	92	39.24	78	50-150	15	0-25	
PCB105	ND	50.00	50.38	101	44.61	89	50-150	12	0-25	
PCB118	ND	50.00	53.14	106	45.85	92	50-150	15	0-25	
PCB126	ND	50.00	45.90	92	42.00	84	50-150	9	0-25	
PCB128	ND	50.00	46.60	93	40.91	82	50-150	13	0-25	
PCB170	ND	50.00	49.29	99	51.06	102	50-150	4	0-25	
PCB180	ND	50.00	49.53	99	43.43	87	50-150	13	0-25	
PCB187	ND	50.00	47.27	95	46.07	92	50-150	3	0-25	
PCB206	ND	50.00	52.63	105	53.05	106	50-150	1	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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## Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
<b>B7-COMP-E-MACOMA-072816</b>	<b>Sample</b>	<b>Tissue</b>	<b>GC/MS HHH</b>	<b>07/30/16</b>	<b>08/03/16 13:38</b>	<b>160730S07</b>
<b>B7-COMP-E-MACOMA-072816</b>	<b>Matrix Spike</b>	<b>Tissue</b>	<b>GC/MS HHH</b>	<b>07/30/16</b>	<b>08/03/16 19:57</b>	<b>160730S07</b>
<b>B7-COMP-E-MACOMA-072816</b>	<b>Matrix Spike Duplicate</b>	<b>Tissue</b>	<b>GC/MS HHH</b>	<b>07/30/16</b>	<b>08/03/16 20:20</b>	<b>160730S07</b>

<u>Parameter</u>	<u>Sample Conc.</u>	<u>Spike Added</u>	<u>MS Conc.</u>	<u>MS %Rec.</u>	<u>MSD Conc.</u>	<u>MSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
PCB018	0.6202	50.00	42.27	83	37.15	73	50-150	13	0-25	
PCB028	0.5703	50.00	42.93	85	42.87	85	50-150	0	0-25	
PCB044	ND	50.00	39.67	79	40.57	81	50-150	2	0-25	
PCB052	0.6781	50.00	39.96	79	41.40	81	50-150	4	0-25	
PCB066	0.6131	50.00	51.43	102	47.82	94	50-150	7	0-25	
PCB077	ND	50.00	45.48	91	42.48	85	50-150	7	0-25	
PCB101	0.5034	50.00	42.71	84	39.93	79	50-150	7	0-25	
PCB105	ND	50.00	47.28	95	43.95	88	50-150	7	0-25	
PCB118	0.4682	50.00	49.82	99	46.36	92	50-150	7	0-25	
PCB126	ND	50.00	44.56	89	40.75	81	50-150	9	0-25	
PCB128	ND	50.00	43.38	87	39.64	79	50-150	9	0-25	
PCB170	ND	50.00	42.04	84	38.33	77	50-150	9	0-25	
PCB180	ND	50.00	46.61	93	43.05	86	50-150	8	0-25	
PCB187	ND	50.00	43.04	86	40.18	80	50-150	7	0-25	
PCB206	ND	50.00	43.05	86	38.59	77	50-150	11	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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Quality Control - Sample Duplicate

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: N/A  
 Method: MeCl2 Ext. (NOAA 1993a)

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
T0-A-MACOMA-062916	Sample	Tissue	B03/B13	07/30/16 00:00	08/02/16 00:00	160730D06
T0-A-MACOMA-062916	Sample Duplicate	Tissue	B03/B13	07/30/16 00:00	08/02/16 00:00	160730D06

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
% Lipids	0.2900	0.3100	7	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



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Quality Control - Sample Duplicate

ANCHOR QEA, LLC  
 27201 Puerta Real, Suite 350  
 Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
 Work Order: 16-07-2046  
 Preparation: N/A  
 Method: MeCl2 Ext. (NOAA 1993a)

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>B7-COMP-E-MACOMA-072816</b>	<b>Sample</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16 00:00</b>	<b>08/02/16 00:00</b>	<b>160730D07</b>
<b>B7-COMP-E-MACOMA-072816</b>	<b>Sample Duplicate</b>	<b>Tissue</b>	<b>B03/B13</b>	<b>07/30/16 00:00</b>	<b>08/02/16 00:00</b>	<b>160730D07</b>

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
% Lipids	0.3100	0.3200	3	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 1 of 2

Quality Control Sample ID	Type	Matrix		Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-16-780-5	LCS	Tissue		GC/MS HHH	07/30/16	08/02/16 13:53	160730L06			
099-16-780-5	LCSD	Tissue		GC/MS HHH	07/30/16	08/02/16 14:17	160730L06			
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
PCB018	50.00	53.48	107	53.73	107	50-150	33-167	0	0-25	
PCB028	50.00	55.80	112	56.02	112	50-150	33-167	0	0-25	
PCB044	50.00	54.23	108	54.27	109	50-150	33-167	0	0-25	
PCB052	50.00	55.71	111	56.42	113	50-150	33-167	1	0-25	
PCB066	50.00	63.78	128	64.08	128	50-150	33-167	0	0-25	
PCB077	50.00	56.13	112	56.22	112	50-150	33-167	0	0-25	
PCB101	50.00	53.56	107	53.39	107	50-150	33-167	0	0-25	
PCB105	50.00	58.87	118	58.73	117	50-150	33-167	0	0-25	
PCB118	50.00	62.02	124	62.08	124	50-150	33-167	0	0-25	
PCB126	50.00	54.31	109	54.42	109	50-150	33-167	0	0-25	
PCB128	50.00	55.26	111	55.10	110	50-150	33-167	0	0-25	
PCB170	50.00	60.01	120	60.32	121	50-150	33-167	1	0-25	
PCB180	50.00	62.73	125	61.96	124	50-150	33-167	1	0-25	
PCB187	50.00	56.67	113	57.00	114	50-150	33-167	1	0-25	
PCB206	50.00	59.93	120	60.87	122	50-150	33-167	2	0-25	

Total number of LCS compounds: 15

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

## Quality Control - LCS/LCSD

ANCHOR QEA, LLC  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691-8306

Date Received: 07/29/16  
Work Order: 16-07-2046  
Preparation: EPA 3541  
Method: EPA 8270C SIM PCB Congeners

Project: Alamitos - Bioaccumulation Tissue (Zero Time)

Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
099-16-780-6	LCS	Tissue	GC/MS HHH	07/30/16	08/03/16 12:51	160730L07				
099-16-780-6	LCSD	Tissue	GC/MS HHH	07/30/16	08/03/16 13:15	160730L07				
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
PCB018	50.00	51.01	102	60.17	120	50-150	33-167	16	0-25	
PCB028	50.00	53.10	106	62.28	125	50-150	33-167	16	0-25	
PCB044	50.00	51.47	103	60.18	120	50-150	33-167	16	0-25	
PCB052	50.00	53.21	106	62.31	125	50-150	33-167	16	0-25	
PCB066	50.00	61.67	123	70.92	142	50-150	33-167	14	0-25	
PCB077	50.00	55.54	111	62.87	126	50-150	33-167	12	0-25	
PCB101	50.00	51.13	102	58.35	117	50-150	33-167	13	0-25	
PCB105	50.00	57.25	115	61.79	124	50-150	33-167	8	0-25	
PCB118	50.00	59.77	120	67.52	135	50-150	33-167	12	0-25	
PCB126	50.00	54.81	110	53.44	107	50-150	33-167	3	0-25	
PCB128	50.00	53.50	107	52.02	104	50-150	33-167	3	0-25	
PCB170	50.00	53.06	106	56.81	114	50-150	33-167	7	0-25	
PCB180	50.00	59.89	120	60.64	121	50-150	33-167	1	0-25	
PCB187	50.00	53.12	106	56.94	114	50-150	33-167	7	0-25	
PCB206	50.00	53.71	107	61.62	123	50-150	33-167	14	0-25	

Total number of LCS compounds: 15

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

## Glossary of Terms and Qualifiers

Work Order: 16-07-2046

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494  
 For courier service / sample drop off information, contact us26\_sales@eurofinsus.com or call us.

WO.# / LAB USE ONLY  
**16-07-2046**

DATE: 07/29/16  
 PAGE: 1 OF 5

LABORATORY CLIENT: **Anchor QEA**  
 ADDRESS: **27201 Puerta Real, Suite 350**  
 CITY: **Mission Viejo** STATE: **CA** ZIP: **92691**  
 TEL: **949-347-2780** E-MAIL: **cosuch@anchoragea.com**

CLIENT PROJECT NAME / NUMBER: **Alamitos - Bioaccumulation Tissue (Zero Time)** P.O. NO.:  
 PROJECT CONTACT: **Chris Osuch** SAMPLER(S): (PRINT) **Arielle Beaulien**

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):  
 SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD  
 COELT EDF GLOBAL ID: LOG CODE:

**REQUESTED ANALYSES**

SPECIAL INSTRUCTIONS:  
 Frozen zero time tissue from 6/29/16 bioaccumulation study.  
 Performed at Nautilus Environmental's San Diego Laboratory.

Please check box or fill in blank as needed.

TPH(g) <input type="checkbox"/> GRO	TPH(d) <input type="checkbox"/> DRO	TPH <input type="checkbox"/> C6-C36 <input type="checkbox"/> C6-C44	TPH	BTEX / MTBE <input type="checkbox"/> 8260 <input type="checkbox"/>	VOCs (8260)	Oxygenates (8260)	Prep (5035) <input type="checkbox"/> En Core <input type="checkbox"/> Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs <input type="checkbox"/> 8270 <input type="checkbox"/> 8270 SIM	T22 Metals <input type="checkbox"/> 6010/747X <input type="checkbox"/> 6020/747X	Cr(VI) <input type="checkbox"/> 7196 <input type="checkbox"/> 7199 <input type="checkbox"/> 218.6	Contact Anchor QEA for specific analyses
														x
														x
														x
														x
														x
														x

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered
		DATE	TIME					
1	T0-A-MACOMA-062916	6/29/2016	1100	Tissue	1			
2	T0-B-MACOMA-062916	6/29/2016	1100	Tissue	1			
3	T0-C-MACOMA-062916	6/29/2016	1100	Tissue	1			
4	T0-A-NEREIS-062916	6/29/2016	1100	Tissue	1			
5	T0-B-NEREIS-062916	6/29/2016	1100	Tissue	1			
6	T0-C-NEREIS-062916	6/29/2016	1100	Tissue	1			

Relinquished by: (Signature)	Received by: (Signature/Affiliation)  ECI	Date: <u>7/28/16</u>	Time: <u>1435</u>
Relinquished by: (Signature)	Received by: (Signature/Affiliation)  ECF	Date: <u>7/29/16</u>	Time: <u>1642</u>
Relinquished by: (Signature)	Received by: (Signature/Affiliation)  Danielle ECF	Date: <u>7/27/16</u>	Time: <u>19:25</u>

Page 5 of 10





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# CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY  
*16-07-2046*

DATE: 07/29/16  
PAGE: 2 OF 5

LABORATORY CLIENT: **Anchor QEA**

ADDRESS: **27201 Puerta Real, Suite 350**

CITY: **Mission Viejo** STATE: **CA** ZIP: **92691**

TEL: **949-347-2780** E-MAIL: **cosuch@anchorgea.com**

CLIENT PROJECT NAME / NUMBER: **Alamitos - Bioaccumulation Tissue** P.O. NO.:

PROJECT CONTACT: **Chris Osuch** SAMPLER(S): (PRINT)  
*Avielle Beaujeu*

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD

COELT EDF GLOBAL ID: LOG CODE:

## REQUESTED ANALYSES

Please check box or fill in blank as needed.

Unpreserved	Preserved	Field Filtered	<input type="checkbox"/> TPH(g) <input type="checkbox"/> GRO	<input type="checkbox"/> TPH(d) <input type="checkbox"/> DRO	TPH <input type="checkbox"/> C6-C36 <input type="checkbox"/> C6-C44	TPH	BTEX / MTBE <input type="checkbox"/> 8260 <input type="checkbox"/>	VOCs (8260)	Oxygenates (8260)	Prep (5035) <input type="checkbox"/> En Core <input type="checkbox"/> Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs <input type="checkbox"/> 8270 <input type="checkbox"/> 8270 SIM	T22 Metals <input type="checkbox"/> 6010/747X <input type="checkbox"/> 6020/747X	Cr(VI) <input type="checkbox"/> 7196 <input type="checkbox"/> 7199 <input type="checkbox"/> 218.6	Contact Anchor QEA for specific analyses
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x

SPECIAL INSTRUCTIONS:

Frozen tissue from 6/29/16 bioaccumulation study.  
Test ended 7/27/16. Organisms depurated for 24 hrs prior to freezing.  
Performed at Nautilus Environmental's San Diego Laboratory.

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.
		DATE	TIME		
7	CONTROL-A-MACOMA-072816	7/28/2016	0900	Tissue	1
8	CONTROL-B-MACOMA-072816	7/28/2016	0900	Tissue	1
9	CONTROL-C-MACOMA-072816	7/28/2016	0900	Tissue	1
10	CONTROL-D-MACOMA-072816	7/28/2016	0900	Tissue	1
11	CONTROL-E-MACOMA-072816	7/28/2016	0900	Tissue	1
12	LA-2-REF-A-MACOMA-072816	7/28/2016	0900	Tissue	1
13	LA-2-REF-B-MACOMA-072816	7/28/2016	0900	Tissue	1
14	LA-2-REF-C-MACOMA-072816	7/28/2016	0900	Tissue	1
15	LA-2-REF-D-MACOMA-072816	7/28/2016	0900	Tissue	1
16	LA-2-REF-E-MACOMA-072816	7/28/2016	0900	Tissue	1

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature/Affiliation) <i>[Signature]</i> <b>ECI</b>	Date: <i>7/28/16</i>	Time: <i>1435</i>
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature/Affiliation) <i>[Signature]</i> <b>ECI</b>	Date: <i>7/29/16</i>	Time: <i>1104Z</i>
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature/Affiliation) <i>[Signature]</i> <b>Dannyle ECI</b>	Date: <i>7/29/16</i>	Time: <i>19:25</i>

Page 07 of 102



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WO # / LAB USE ONLY
16-07-2046

DATE: 07/29/16
PAGE: 3 OF 5

LABORATORY CLIENT: Anchor QEA
ADDRESS: 27201 Puerta Real, Suite 350
CITY: Mission Viejo STATE: CA ZIP: 92691
TEL: 949-347-2780 E-MAIL: cosuch@anchoragea.com

CLIENT PROJECT NAME / NUMBER: Alamitos - Bioaccumulation Tissue
P.O. NO.:
PROJECT CONTACT: Chris Osuch
SAMPLER(S): (PRINT) Arielle Beauvieu

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
[ ] SAME DAY [ ] 24 HR [ ] 48 HR [ ] 72 HR [X] 5 DAYS [ ] STANDARD
[ ] COELT EDF GLOBAL ID: LOG CODE:

REQUESTED ANALYSES

SPECIAL INSTRUCTIONS:
Frozen tissue from 6/29/16 bioaccumulation study.
Test ended 7/27/16. Organisms depurated for 24 hrs prior to freezing.
Performed at Nautilus Environmental's San Diego Laboratory.

Table with columns for various analytes: GRO, DRO, C6-C36, C6-C44, TPH, BTEX / MTBE, VOCs, Oxygenates, En Core, Terra Core, SVOCs, Pesticides, PCBs, PAHs, T22 Metals, Cr(VI). Includes checkboxes for each.

Table with columns: LAB USE ONLY, SAMPLE ID, SAMPLING (DATE, TIME), MATRIX, NO. OF CONT., and columns for preservation status (Unpreserved, Preserved, Field Filtered).

Relinquished by: (Signature) Received by: (Signature/Affiliation) Date: Time:
Three rows of signature and date information.



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WO # / LAB USE ONLY
16-07-2046

DATE: 07/29/16
PAGE: 4 OF 5

LABORATORY CLIENT: Anchor QEA
ADDRESS: 27201 Puerta Real, Suite 350
CITY: Mission Viejo STATE: CA ZIP: 92691
TEL: 949-347-2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Alamitos - Bioaccumulation Tissue
P.O. NO.:
PROJECT CONTACT: Chris Osuch
SAMPLER(S): (PRINT) Anielle Beauharnois

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
[ ] SAME DAY [ ] 24 HR [ ] 48 HR [ ] 72 HR [X] 5 DAYS [ ] STANDARD
[ ] COELT EDF GLOBAL ID: LOG CODE:

REQUESTED ANALYSES

SPECIAL INSTRUCTIONS:
Frozen tissue from 6/29/16 bioaccumulation study.
Test ended 7/27/16. Organisms depurated for 24 hrs prior to freezing.
Performed at Nautilus Environmental's San Diego Laboratory.

Table with columns for various analytes: TPH(g) GRO, TPH(d) DRO, TPH C6-C36 C6-C44, TPH, BTEX / MTBE 8260, VOCs (8260), Oxygenates (8260), Prep (5035) En Core Terra Core, SVOCs (8270), Pesticides (8081), PCBs (8082), PAHs 8270 8270 SIM, T22 Metals 6010/747X 6020/747X, Cr(VI) 7196 7199 218.6, and Contact Anchor QEA for specific analyses.

Table with columns: LAB USE ONLY, SAMPLE ID, SAMPLING DATE, TIME, MATRIX, NO. OF CONT., Unpreserved, Preserved, Field Filtered, and checkboxes for various analytes.

Relinquished by: (Signature) Received by: (Signature/Affiliation) Date: 7/28/16 Time: 14:35
Relinquished by: (Signature) Received by: (Signature/Affiliation) Date: 7/29/16 Time: 10:42
Relinquished by: (Signature) Received by: (Signature/Affiliation) Date: 7/29/16 Time: 19:25

Page 09 of 102



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WO # / LAB USE ONLY  
**16-07-2046**

DATE: 07/29/16

PAGE: 5 OF 5

LABORATORY CLIENT: **Anchor QEA**

ADDRESS: **27201 Puerta Real, Suite 350**

CITY: **Mission Viejo** STATE: **CA** ZIP: **92691**

CLIENT PROJECT NAME / NUMBER: **Alamitos - Bioaccumulation Tissue**

P.O. NO.:

PROJECT CONTACT: **Chris Osuch**

SAMPLER(S): (PRINT)

TEL: **949-347-2780** E-MAIL: **cosuch@anchorgea.com**

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD

COELT EDF GLOBAL ID: LOG CODE:

## REQUESTED ANALYSES

Please check box or fill in blank as needed.

Unpreserved	Preserved	Field Filtered	<input type="checkbox"/> TPH(g) <input type="checkbox"/> GRO	<input type="checkbox"/> TPH(d) <input type="checkbox"/> DRO	TPH <input type="checkbox"/> C6-C36 <input type="checkbox"/> C6-C44	TPH	BTEX / MTBE <input type="checkbox"/> 8260 <input type="checkbox"/>	VOCs (8260)	Oxygenates (8260)	Prep (5035) <input type="checkbox"/> En Core <input type="checkbox"/> Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs <input type="checkbox"/> 8270 <input type="checkbox"/> 8270 SIM	T22 Metals <input type="checkbox"/> 6010/747X <input type="checkbox"/> 6020/747X	Cr(VI) <input type="checkbox"/> 7196 <input type="checkbox"/> 7199 <input type="checkbox"/> 218.6	Contact Anchor QEA for specific analyses
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x
																	x

SPECIAL INSTRUCTIONS:

Frozen tissue from 6/29/16 bioaccumulation study.

Test ended 7/27/16. Organisms deperated for 24 hrs prior to freezing.

Performed at Nautilus Environmental's San Diego Laboratory.

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.
		DATE	TIME		
37	B6-COMP-A-NEREIS-072816	7/28/2016	0900	Tissue	1
38	B6-COMP-B-NEREIS-072816	7/28/2016	0900	Tissue	1
39	B6-COMP-C-NEREIS-072816	7/28/2016	0900	Tissue	1
40	B6-COMP-D-NEREIS-072816	7/28/2016	0900	Tissue	1
41	B6-COMP-E-NEREIS-072816	7/28/2016	0900	Tissue	1
42	B7-COMP-A-NEREIS-072816	7/28/2016	0900	Tissue	1
43	B7-COMP-B-NEREIS-072816	7/28/2016	0900	Tissue	1
44	B7-COMP-C-NEREIS-072816	7/28/2016	0900	Tissue	1
45	B7-COMP-D-NEREIS-072816	7/28/2016	0900	Tissue	1
46	B7-COMP-E-NEREIS-072816	7/28/2016	0900	Tissue	1

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
<i>[Signature]</i>	<i>[Signature]</i> <b>ECI</b>	<u>7/28/16</u>	<u>1435</u>
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
<i>[Signature]</i>	<i>[Signature]</i> <b>ECI</b>	<u>7/29/16</u>	<u>1442</u>
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
<i>[Signature]</i>	<i>[Signature]</i> <b>ECI</b>	<u>7/29/16</u>	<u>19:25</u>

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: Anchor QEA

DATE: 07/29/2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): -1.4 °C (w/ CF): -1.4 °C;  Blank  Sample

Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_)

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature:  Air  Filter

Checked by: 802

CUSTODY SEAL:

Cooler  Present and Intact  Present but Not Intact  Not Present  N/A

Checked by: 802

Sample(s)  Present and Intact  Present but Not Intact  Not Present  N/A

Checked by: 1053

SAMPLE CONDITION:

Chain-of-Custody (COC) document(s) received with samples .....  Yes  No  N/A

COC document(s) received complete .....  Yes  No  N/A

Sampling date  Sampling time  Matrix  Number of containers

No analysis requested  Not relinquished  No relinquished date  No relinquished time

Sampler's name indicated on COC .....  Yes  No  N/A

Sample container label(s) consistent with COC .....  Yes  No  N/A

Sample container(s) intact and in good condition .....  Yes  No  N/A

Proper containers for analyses requested .....  Yes  No  N/A

Sufficient volume/mass for analyses requested .....  Yes  No  N/A

Samples received within holding time .....  Yes  No  N/A

Aqueous samples for certain analyses received within 15-minute holding time

pH  Residual Chlorine  Dissolved Sulfide  Dissolved Oxygen .....  Yes  No  N/A

Proper preservation chemical(s) noted on COC and/or sample container .....  Yes  No  N/A

Unpreserved aqueous sample(s) received for certain analyses

Volatile Organics  Total Metals  Dissolved Metals

Container(s) for certain analysis free of headspace .....  Yes  No  N/A

Volatile Organics  Dissolved Gases (RSK-175)  Dissolved Oxygen (SM 4500)

Carbon Dioxide (SM 4500)  Ferrous Iron (SM 3500)  Hydrogen Sulfide (Hach)

Tedlar™ bag(s) free of condensation .....  Yes  No  N/A

CONTAINER TYPE:

(Trip Blank Lot Number: \_\_\_\_\_)

Aqueous:  VOA  VOA<sub>h</sub>  VOA<sub>na2</sub>  100PJ  100PJ<sub>na2</sub>  125AGB  125AGB<sub>h</sub>  125AGB<sub>p</sub>  125PB

125PB<sub>z<sub>na</sub></sub>  250AGB  250CGB  250CGB<sub>s</sub>  250PB  250PB<sub>n</sub>  500AGB  500AGJ  500AGJ<sub>s</sub>

500PB  1AGB  1AGB<sub>na2</sub>  1AGB<sub>s</sub>  1PB  1PB<sub>na</sub>  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_

Solid:  4ozCGJ  8ozCGJ  16ozCGJ  Sleeve (\_\_\_\_)  EnCores® (\_\_\_\_)  TerraCores® (\_\_\_\_)  \_\_\_\_\_

Air:  Tedlar™  Canister  Sorbent Tube  PUF  \_\_\_\_\_ Other Matrix (Tissue):  Z  \_\_\_\_\_

Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag

Preservative: b = buffered, f = filtered, h = HCl, n = HNO<sub>3</sub>, na = NaOH, na<sub>2</sub> = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, p = H<sub>3</sub>PO<sub>4</sub>, Labeled/Checked by: 1053

s = H<sub>2</sub>SO<sub>4</sub>, u = ultra-pure, z<sub>na</sub> = Zn(CH<sub>3</sub>CO<sub>2</sub>)<sub>2</sub> + NaOH

Reviewed by: 778

Return to Contents

**SAMPLE ANOMALY REPORT**

DATE: 07 / 29 / 2016

**SAMPLES, CONTAINERS, AND LABELS:**

- Sample(s) NOT RECEIVED but listed on COC
- Sample(s) received but NOT LISTED on COC
- Holding time expired (list client or ECI sample ID and analysis)
- Insufficient sample amount for requested analysis (list analysis)
- Improper container(s) used (list analysis)
- Improper preservative used (list analysis)
- No preservative noted on COC or label (list analysis and notify lab)
- Sample container(s) not labeled
- Client sample label(s) illegible (list container type and analysis)
- Client sample label(s) do not match COC (comment)
  - Project information
  - Client sample ID
  - Sampling date and/or time
  - Number of container(s)
  - Requested analysis
- Sample container(s) compromised (comment)
  - Broken
  - Water present in sample container
- Air sample container(s) compromised (comment)
  - Flat
  - Very low in volume
  - Leaking (not transferred; duplicate bag submitted)
  - Leaking (transferred into ECI Tedlar™ bags\*)
  - Leaking (transferred into client's Tedlar™ bags\*)

\* Transferred at client's request.

**Comments**

labeled as  
 (1) Time zero # 1 Macoma  
 (2) " 2 Nereis  
 (3) " 3  
 (4) " 1  
 (5) " 2  
 (6) " 3

**MISCELLANEOUS:** (Describe)

**Comments**

**HEADSPACE:**

(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)

(Containers with bubble for other analysis)

ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**

ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis

Comments: \_\_\_\_\_

Reported by: 1053

Reviewed by: 78

\*\* Record the total number of containers (i.e., vials or bottles) for the affected sample.

APPENDIX C

BIOLOGICAL LABORATORY REPORT

---



# Alamitos Bay Dredge Material Evaluation – Toxicity and Bioaccumulation Testing Report

*June 2016 Sampling Event*

**Prepared for:**           **Anchor OEA**  
27201 Puerta Real, Suite 350  
Mission Viejo, CA 92691

**Testing Location:**   **Nautilus Environmental**  
4340 Vandever Avenue  
San Diego, CA 92120

## Data Quality Assurance:

- Nautilus Environmental is accredited in accordance with NELAP by the State of Oregon Environmental Laboratory Accreditation Program (ORELAP ID No. 4053). It is also certified by the State of California Water Resources Control Board Environmental Laboratory Accreditation Program (Certificate No. 1802) and the State of Washington Department of Ecology (Lab ID C552).
- All data have been reviewed and verified.
- All test results have met minimum test acceptability criteria under their respective EPA protocols, unless otherwise noted in this report.
- All test results have met internal Quality Assurance Program requirements.

Verified by:

Kasey Skrivseth, Environmental Scientist  
Date: August 5, 2016



## INTRODUCTION

Anchor QEA (Anchor) partnered with Nautilus Environmental (Nautilus) to perform toxicity testing on sediment samples from Alamitos Bay Marina in Long Beach, CA. Two site samples and reference sediment were evaluated in accordance with test methods found in Evaluation of Dredged Material Proposed for Ocean Disposal (OTM; USEPA/USACE 1991), Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. (ITM; USEPA/USACE 1998), as well as guidance from other relevant protocols and documents. Please see the reference section following this report for a complete listing.

Nautilus conducted sediment evaluations as a part of the testing program described in the biological testing section of the Sampling Analysis Plan (SAP) provided by Anchor. This report summarizes testing results for samples collected between June 21<sup>st</sup> and 23<sup>rd</sup>, 2016. Test exposures were initiated between June 29<sup>th</sup> and July 13<sup>th</sup>, 2016.

## MATERIALS AND METHODS

Sample materials were hand delivered by Anchor staff to the Nautilus laboratory in San Diego, California. Upon arrival, each sample was thoroughly homogenized and interstitial pore water was collected for measurement of total ammonia (NH<sub>3</sub>). Samples were stored in the dark at 4°C until used for testing. A summary of sample collection and receipt dates and times is provided in Table 1. Test methods and acceptability criteria are summarized in Tables 2 through 4. Chain of Custody documentation and sample receipt information are included in Appendices A and B, respectively.

**Table 1. Sample Identification, Collection, Receipt and Testing Information**

Sample ID	Date/Time Collected	Date/Time Received at Nautilus	Test Types Performed
LA2-REF (Reference)	6/23/16 08:05	6/23/16 14:40	SP, BP
B6-Comp	6/21/16 16:35	6/23/16 14:50	SP, SPP (SET), BP
B7-Comp	6/22/16 16:15		
B6/7-SW (Site Water)	6/22/16 16:50	6/23/16 14:50	Used for SPP preparations

BP - Bioaccumulation Phase  
 SP - Solid Phase  
 SPP - Suspended Particulate Phase

**Table 2. 10-day Survival Solid-Phase (SP) Toxicity Test Specifications**

Method-Specific Conditions: <b>Marine amphipod <i>Ampelisca abdita</i></b>	
Source	Aquatic Research Organisms, Hampton, NH
Size & Origin	3–5 mm, field collected
Chambers	1-L glass jar, 4-cm sediment with 700-mL overlying water
Negative Control	Aquatic BioSystems marine sediment
Reference Toxicant	Cadmium chloride
Method-Specific Conditions: <b>Marine polychaete <i>Neanthes arenaceodentata</i></b>	
Source	Aquatic Toxicology Support, Bremerton, WA
Age & Origin	2–3 weeks, post emergence; laboratory cultured
Chambers	1-L glass jar, 2.5-cm sediment with 800-mL overlying water
Negative Control	Clean, rinsed beach sand collected near SIO, La Jolla, CA
Reference Toxicant	Cadmium chloride
Shared SP Conditions:	
Overlying water	Natural seawater collected offshore of Scripps Institution of Oceanography (SIO) Pier in La Jolla, CA. Seawater is 20- $\mu$ m filtered and diluted to 30 ppt with deionized water prior to testing
Sample preparation	Sediments sieved through 500- $\mu$ m Nitex <sup>®</sup> mesh
Acceptability criterion	$\geq$ 90 percent mean lab control survival

**Table 3. Suspended Particulate-Phase (SPP) Toxicity Test Specifications**

Method-Specific Conditions: <b>Mediterranean mussel (<i>M. galloprovincialis</i>)</b>	
Duration & Endpoints	48 hours, normal shell development and survival
Source	Carlsbad Aquafarms, Carlsbad, CA
Age	<4 hr old larvae
Concentrations	100, 50, 10, and 1%, plus lab control and site water
Acceptability	$\geq$ 70 percent mean normal shell development and survival in lab control
Reference Toxicant	Ammonium chloride
Method-Specific Conditions: <b>Mysid shrimp (<i>A. bahia</i>) &amp; Inland Silverside (<i>M. beryllina</i>)</b>	
Duration & Endpoint	96 hours, Survival
Source	Aquatic BioSystems Inc., Fort Collins, CO
Age & Origin	5 days, lab cultured (Mysid); 14 days, lab cultured (Silverside)
Concentrations	100, 50, and 10%, plus lab control and site water control
Acceptability	$\geq$ 90 percent mean lab control survival
Reference Toxicant	Copper chloride
Shared SPP Conditions:	
Dilution & control water	Natural seawater collected offshore of SIO Pier, La Jolla, CA. Seawater is 20- $\mu$ m filtered and was diluted to 32 ppt with deionized water prior to testing
Test solution preparation	Standard elutriate test (SET) method

**Table 4. 28-day Bioaccumulation (BP) Toxicity Test Specifications**

Test species	<b>Bent-nose clam (<i>M. nasuta</i>); Polychaete worm (<i>N. virens</i>)</b>
Test organism sources	Brezina and Associates, Dillon Beach, CA (Clam) Aquatic Research Organisms, Hampton, NH (Worm)
Test organism size/origin	Adult, field collected
Test chambers	10-gallon glass aquaria, 5-6cm sediment and 26 L overlying water
Overlying water	Natural seawater collected offshore of SIO Pier, La Jolla, CA. Seawater is 20- $\mu$ m filtered and continuously chilled; test conducted on constant flow through
Negative Control	Sediment from clam collection location
Reference toxicant	None

## RESULTS

A brief summary of toxicity test results with significance is shown in Table 5 below. Detailed results for all tests are provided in Appendix C. Raw datasheets including water quality data, ammonia analyses, and summaries of statistical analyses are included in Appendix D.

For both solid phase test species, laboratory controls met the control survival criterion for both species. The mean survival in the reference samples exceeded 90 percent for both species. None of the samples were statistically reduced or below the effect threshold when compared to reference in either solid phase species.

For all suspended particulate phase tests, the controls met or exceeded the test acceptability criterion. Sample B6-Comp was statistically reduced, with regards to development rate in the 100 percent elutriate, when compared to the lab control in the *Mytilus* suspended particulate phase test (see Table 5).

The approach to data analyses for all data sets generated was to first conduct an evaluation of normality and assess homogeneity of variance. Generally, data were subjected to arcsine square-root transformations for survival comparisons using an ad hoc test for significance as indicated by ANOVA results. Statistical analyses of solid phase test data were performed using GraphPad Prism, Version 6.05. Statistical analysis for all other test data was performed using Comprehensive Environmental Toxicity Information System Software (CETIS™), Version 1.8.7.20. (Tidepool Scientific Software 2000-2012). Analyses followed standard USEPA flow chart methods specified by test type.

**Table 5. Summary of Results for Samples with a Statistically Significant SPP Response**

Sample	Species	Endpoint	Mean Result in undiluted sample	EC <sub>50</sub>
B6-COMP	<i>M. galloprovincialis</i>	Development rate	0% normally developed	74.4

EC<sub>50</sub>: concentration expected to cause an adverse or lethal effect to 50 percent of the organisms

## QUALITY ASSURANCE

All of the data presented have been thoroughly reviewed and deemed acceptable for reporting in accordance with our internal QA/QC program and applicable protocols.

All testing was initiated within holding time requirements. Any deviations with respect to test conditions or acceptability criteria are reported below. Copies of reference toxicant results and a list of qualifier codes can be found in Appendices E and F, respectively.

### Solid-Phase Toxicity Tests

Controls met or exceeded the test acceptability criterion for both species. All water quality values were within the required ranges as defined by the test protocols for both species.

### Suspended Particulate-Phase Toxicity Tests

Controls met or exceeded the test acceptability criterion for all exposures. The dissolved oxygen concentrations approached 4 mg/L in the *Menidia* tests on Day 1 for both samples, triggering the initiation of aeration to ensure no further decline. Salinity varied slightly beyond the recommended range for both the *Americamysis* and *Menidia* tests during the exposure period. Test temperatures in the bivalve test were below the recommended range of 16 ± 1°C on Day 2. However, the OTM allows for a temperature range of ± 2°C for all SPP tests and temperatures fell within this range. All water quality values were within the required ranges as defined by the test protocols for all species.

### Bioaccumulation Tests

Mean clam and worm survival in each replicate was sufficient to exceed minimum tissue requirements for chemical analysis. The test-wide mean temperature did not deviate by more than 1°C over the course of the exposure and instantaneous temperature remained within ± 3°C. Water quality parameters satisfied test protocol requirements and data are valid without qualification.

## Reference Toxicant Tests

### *Solid Phase Reference Toxicant Tests*

Median lethal effect (LC<sub>50</sub>) concentration values for concurrent cadmium chloride reference toxicant tests were within two standard deviations of the internal control charts means for both solid phase species tested. All reference toxicant test controls met acceptability criteria.

### *Suspended Particulate Reference Toxicant Tests*

Median effect (EC<sub>50</sub>) concentration values for concurrent copper chloride reference toxicant tests associated with SPP test species (*Menidia* and *Americamysis*) were within two standard deviations of the internal control chart means. A reference toxicant test using ammonium chloride was conducted with *Mytilus* to provide additional interpretational context for potential effects from ammonia. EC<sub>50</sub> value for the ammonium chloride reference toxicant test associated with *Mytilus* was within two standard deviations of the internal control chart mean for development rate. All reference toxicant test controls met acceptability criteria.

## Potential Confounding Factor: Ammonia

Total ammonia values in the interstitial water prior to testing of the test sediments and reference ranged from 1.7 to 30.4 mg/L. Due to measured ammonia levels slightly above the threshold reported for *Ampelisca*, sample B6-Comp was purged prior to introduction of organisms. The target interstitial ammonia level for *Ampelisca* directed by Anchor was below 30 mg/L. Test replicates and surrogates were set up on July 6<sup>th</sup>, 2016 and allowed to purge until test initiation on July 8<sup>th</sup>, 2016. Purging consisted of test chambers being aerated and given two renewals of overlying water on the day following setup. Total ammonia levels were reduced to concentrations below species thresholds prior to initiation. The Day 0 porewater total ammonia value for sample B6-Comp was 19.2 mg/L in the *Ampelisca* test. This is below the threshold of 30 mg/L (USEPA). No significant effects were observed in the test (Dillon et al. 1993, USEPA 1994, Kohn et al. 1994).

Toxicity was observed in the SPP *Mytilus* tests for sample B6-Comp. The development endpoint exhibited an EC<sub>50</sub> below 100 percent. Ammonia concentrations in the *Mytilus* 50 and 100 percent test concentrations exceeded the calculated no effect value for development in the associated ammonia reference test suggesting effects may be, at least in part, due to ammonia (Marine Pollution Studies Laboratory, Tang et al. 1997).

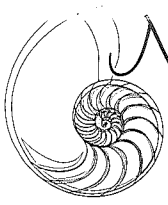
## REFERENCES AND COMMONLY-USED ACRONYMS AND ABBREVIATIONS

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- USEPA/USACE. 1998. Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual (ITM). February 1998. Environmental Protection Agency, Office of Water & United States Army Corps of Engineers, Department of The Army. EPA 823/B-98/004.

ASTM – American Society for Testing and Materials  
cm – centimeter  
ITM – Inland Testing Manual  
USEPA –United States Environmental Protection Agency  
SIO – Scripps Institution of Oceanography

mL – milliliter  
mm – millimeter  
ppt – parts per thousand  
L – Liter  
µm – micrometer

**Appendix A**  
**Chain-of-Custody Forms**



**Nautilus Environmental**  
 40 Vandever Avenue  
 San Diego, CA 92120  
 Phone 858.587.7333  
 Fax 858.587.3961

Alamitos

Sample Collection By: <u>Chris Osuch, Anchor QEA</u>							<b>ANALYSES REQUIRED</b>										Receipt Temperature (°C)				
<b>Report to:</b> Company <u>Anchor QEA</u> Address <u>27201 Puerta Real, Suite 350</u> City/State/Zip <u>Mission Viejo CA 92691</u> Contact <u>Chris Osuch</u> Phone <u>(619) 794-3032</u> Email <u>cosuch@anchorage.com</u>				<b>Invoice To:</b> Company <u>Same</u> Address _____ City/State/Zip _____ Contact _____ Phone _____ Email _____			<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">Tier III testing CSP, SPP, BP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">SPP preparation</div> </div>											10.5			
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS															
1	B6-COMP-062216	6/22/16	1635	sed	20L bag	4	testing per SAP														10.5
2	B7-COMP-062216	6/22/16	1615	sed	20L bag	4															11.0
3	B6/7-SW-062216	6/22/16	1650	water	20L water	4															6.0
4																					
5																					
6																					
7																					
8																					
9																					
10																					
<b>PROJECT INFORMATION</b>			<b>SAMPLE RECEIPT</b>			<b>1) RELINQUISHED BY (CLIENT)</b>				<b>2) RECEIVED BY (COURIER)</b>											
Client:			Total No. of Containers				(Signature) <u>Nikem</u> (Time) <u>1450</u>		(Signature) _____ (Time) _____												
PO No.:			Received Good Condition?				(Printed Name) <u>Nick Kennedy</u> (Date) <u>6/23/16</u>		(Printed Name) _____ (Date) _____												
Shipped Via:			Matches Test Schedule?				(Company) <u>Anchor QEA</u>		(Company) _____												
<b>SPECIAL INSTRUCTIONS/COMMENTS:</b>						<b>3) RELINQUISHED BY (COURIER)</b>				<b>4) RECEIVED BY (LABORATORY)</b>											
						(Signature) _____ (Time) _____		(Signature) <u>Alexi Gabriel</u> (Time) <u>1450</u>													
						(Printed Name) _____ (Date) _____		(Printed Name) <u>Alexi Gabriel</u> (Date) <u>6/23/16</u>													
						(Company) _____		(Company) <u>Nautilus</u>													

Additional costs maybe required for sample disposal or storage.  
 Payment Net 30 unless otherwise contracted.



Alamitos

Date 6/23/16 Page 1 of 1

Sample Collection By: <u>ROBERT LOHRMAN SEAVENTURES, INC.</u>							<b>ANALYSES REQUIRED</b>										Receipt Temperature (°C)			
Report to: Company: <u>Anchor QEA</u> Address: <u>27201 Ruffa Real Suite 370</u> City/State/Zip: <u>MISSION Viejo CA 92691</u> Contact: <u>CHRIS OSUN</u> Phone: <u>949-794-3052</u> Email: <u>COSUN@ANCHORQEA.COM</u>				Invoice To: Company: <u>SAME</u> Address: _____ City/State/Zip: _____ Contact: _____ Phone: _____ Email: _____																
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	JP	BP												
1	LA-2-REF-062316	6/23/16	0805	SEA	PLASTIC BOTTLE ICE CHEST	4	COLLECTED AT GPS 33° 33.200 N 118° 10.800 W	X	X											11.0
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
<b>PROJECT INFORMATION</b>		<b>SAMPLE RECEIPT</b>			<b>1) RELINQUISHED BY (CLIENT)</b>				<b>2) RECEIVED BY (COURIER)</b>											
Client:		Total No. of Containers	4	(Signature)	<u>Robert P. Lu</u>	(Time)	1230	(Signature)	<u>N. Kennedy</u>	(Time)	1230									
PO No.:		Received Good Condition?	✓	(Printed Name)	<u>ROBERT LOHRMAN</u>	(Date)		(Printed Name)	<u>Nick Kennedy</u>	(Date)										
Shipped Via:		Matches Test Schedule?	✓	(Company)	<u>SEAVENTURES</u>	(Company)		(Company)	<u>Anchor QEA</u>	(Company)										
<b>SPECIAL INSTRUCTIONS/COMMENTS:</b> <u>as per SAP Bag 1 of 4: leaking interior bag</u>				<b>3) RELINQUISHED BY (COURIER)</b>				<b>4) RECEIVED BY (LABORATORY)</b>												
				(Signature)	<u>N. Kennedy</u>	(Time)	1440	(Signature)	<u>Alexi Gabriel</u>	(Time)	1440									
				(Printed Name)	<u>Nick Kennedy</u>	(Date)	6/23/16	(Printed Name)	<u>Alexi Gabriel</u>	(Date)	6/23/16									
				(Company)	<u>Anchor QEA</u>	(Company)		(Company)	<u>Nautilus</u>	(Company)										

Additional costs maybe required for sample disposal or storage.  
Payment Net 30 unless otherwise contracted.

**Appendix B**  
**Sample Receipt Information**

Client: Ancora QEA  
Project: Alamitos Bay

Suspended Particulate Phase (*Mysid*, *Menidia*, Bivalve); Solid Phase  
(*Neanthes*, *Eohaustorius*); Bioaccumulation (*Macoma*, *Nereis*)  
Test Type(s):  
Test IDs: 1007-5009 to 5011, 1007-5012 to 5015  
1007-5030 to 5041, 1007-5170 to 5172

Nautilus Log-in 16-xxxx	Sample ID	Collection Date & Time	Receipt Date & Time	Receipt Temp. (°C)	No. Containers	Container Type	Approx. Total Volume Received (L)	Sample Description	Tech Initials
3128	LA-2-REF-062316	6/23/16 0805	6/23/16 1440	11.0	4	bag	~80L	Marine Sediment	AUB
3129	BLE-COMP-062316	6/23/16 1039	6/23/16 1450	10.0	4	↓	↓	↓	↓
3130	BT-COMP-062316	6/23/16 1015	↓	11.0	4	↓	↓	↓	↓
4									
5									
6									
7									
8									
9									
10									
11									
12									

Samples Shipped Via: Courier

COC Present?  N

Sieving Required?  N Screen Size: 0.5mm

Lab Control Sediment: Neanthes (Scraps Sed)  
Eohaustorius (Home Sediment)  
Macoma + Nereis (Macoma Home Sediment)

Sub-samples for additional chemistry:

Collect Porewater Tech Initials AUB/EG

Other \_\_\_\_\_ Tech Initials \_\_\_\_\_

Other \_\_\_\_\_ Tech Initials \_\_\_\_\_

Test Organism:	Macoma/Nereis	Ampelisca (Amp) OR Eohaustorius (Eoh)	Neanthes (Na)	Mysid (My)	Menidia (Mb)	Bivalve (Mg)
Supplier:	Brezina / APD	7/15/16 - HAS APD	ATS	ABS	ABS	Carlsbad Aquaculture
Receipt Date:	6/29/16 / 6/28/16	7/6/16	6/30/16	7/12/16	7/12/16	6/16/16
Condition:	good / good	good	good	good	good	good

Comments: Bag 104 of LA-2-REF-062316: Inner bag leaking  
06/23/16 10:39

QC Check: AUB 7/21/16

Final Review:

vs 7/28/16

Nautilus Environmental  
4340 Vandever Avenue  
San Diego, CA 92120

Client: Anchor QEA  
Sample ID: B6/7-SW-062216  
Test ID No(s): 1607-S009 to -S011, 1607-S016 to -S018  
1607-S036 to -S041, 1606-S170 to -S172

Sample Check-In Information

Sample Description:

no odor, clear, no odor, no debris

Sample (A, B, C):	-			
Log-in No. (16-xxxx):	0501			
Sample Collection Date & Time:	6/22/16 1450			
Sample Receipt Date & Time:	6/23/16 1450			
Number of Containers & Container Type:	4 20L CW			
Approx. Total Volume Received (L):	40L			
Check-in Temperature (°C)	6.0			
Temperature OK? <sup>1</sup>	<input checked="" type="radio"/> Y	<input type="radio"/> N	<input type="radio"/> Y	<input type="radio"/> N
DO (mg/L)	9.2			
pH (units)	7.79 8.07			
Conductivity (µS/cm)	-			
Salinity (ppt)	32.6			
Alkalinity (mg/L) <sup>2</sup>	NA 111			
Hardness (mg/L) <sup>2,3</sup>	-			
Total Chlorine (mg/L)	0.02			
Technician Initials	JW			

COC Complete (Y/N)?

A  B  C

Filtration? Y  N

Pore Size: \_\_\_\_\_

Organisms \_\_\_\_\_ or \_\_\_\_\_ Debris

Salinity Adjustment? Y  N

Test: \_\_\_\_\_ Source: \_\_\_\_\_ Target ppt: \_\_\_\_\_

Test: \_\_\_\_\_ Source: \_\_\_\_\_ Target ppt: \_\_\_\_\_

Test: \_\_\_\_\_ Source: \_\_\_\_\_ Target ppt: \_\_\_\_\_

pH Adjustment? Y  N

	A	B	C
Initial pH:			
Amount of HCl added:			
Final pH:			

Cl<sub>2</sub> Adjustment? Y  N

	A	B	C
Initial Free Cl <sub>2</sub> :			
STS added:			
Final Free Cl <sub>2</sub> :			

Sample Aeration? Y  N

	A	B	C
Initial D.O.			
Duration & Rate			
Final D.O.			

Subsamples for Additional Chemistry Required? Y  N

NH3 Other \_\_\_\_\_

Tech Initials A \_\_\_\_\_ B \_\_\_\_\_ C \_\_\_\_\_

QC Check: VS 7/28/16

Final Review: ES 8/4/16

Test Performed:  B Control/Dilution Water: 8:2 / Lab SW / Lab ART Other: \_\_\_\_\_

Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Additional Control?  Y  N = \_\_\_\_\_ Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Test Performed: \_\_\_\_\_ Control/Dilution Water: 8:2 / Lab SW / Lab ART Other: \_\_\_\_\_

Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Additional Control?  Y  N = \_\_\_\_\_ Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Test Performed: \_\_\_\_\_ Control/Dilution Water: 8:2 / Lab SW / Lab ART Other: \_\_\_\_\_

Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Additional Control?  Y  N = \_\_\_\_\_ Alkalinity: \_\_\_\_\_ Hardness or Salinity: \_\_\_\_\_

Notes: <sup>1</sup> Temperature of sample should be 0-6°C, if received more than 24 hours past collection time.

<sup>2</sup> mg/L as CaCO<sub>3</sub>, <sup>3</sup> Measured for freshwater samples only, NA = Not Applicable

Additional Comments:  SW QW E/22/16  site water for electrode preparations 6/22/16

**Total Ammonia Analysis  
Marine**

**Pore Water**

Client: Anchor QEA  
Project: Alamitos Bay  
Test Type: Various

DI Blank: 0.0      Test Start Date: 6/29/16-7/12/16      Analyst: SG  
SW Blank: 0.0      Analysis Date: 6/24/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	pH (units)	Salinity (ppt)	NH3-N (mg/L)	Ammonia (mg/L)
Blank Spike (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	8.3	10.1
Lab Control (bioaccumulation)	1	6/24/16	Check-In	7.28	35.0 (A)	2.4	2.9
LA2-REF	2	6/23/16	Check-In	7.32	33.9	1.4	1.7
Basin 6-Comp	3	↓	Check-In	7.63	33.7	24.9	30.4
Basin 7-Comp	4		Check-In	8.05	32.0 (A)	4.3	5.2
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	8.3	10.1
Sample Duplicate <sup>a</sup>	4	NA	NA	NA	NA	4.1	5.0
Sample Duplicate + Spike <sup>a</sup>		NA	NA	NA	NA	11.3	13.8
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	8.3	10.1

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] \text{ (mg/L)} - [\text{sample duplicate}] \text{ (mg/L)}}{\text{average ammonia} \text{ (mg/L)}} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] \text{ (mg/L)} - [\text{sample}] \text{ (mg/L)}}{\text{nominal [spike]} \text{ (mg/L)}} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	10.1	10	NA	101
4	5.2	5.0	13.8	10	3.9	86

Comments: \_\_\_\_\_

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or more values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

(A) measured with a refractometer due to low volume

QC Check: AVB 7/2/16

Final Review:

KB 7/7/16

**Appendix C**  
**Summary of Results Tables**

Anchor QEA - Alamitos Bay  
*Ampelisca* 10-day Survival  
Test Date: 7/8/2016

Site ID	Replicate	Rand No.	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Lab Control	A	45	19	95	96.0	4.2
	B	37	19	95		
	C	28	18	90		
	D	31	20	100		
	E	33	20	100		
LA2-REF	A	32	20	100	99.0	2.2
	B	35	20	100		
	C	38	20	100		
	D	43	19	95		
	E	36	20	100		
Basin 6-Comp	A	44	20	100	97.0	2.7
	B	39	19	95		
	C	26	20	100		
	D	30	19	95		
	E	29	19	95		
Basin 7-Comp	A	34	19	95	98.0	2.7
	B	41	19	95		
	C	42	20	100		
	D	40	20	100		
	E	27	20	100		

Anchor QEA - Alamitos Bay  
Neanthes 10-day Survival  
Test Date: 7/1/2016

Site ID	Replicate	Rand No.	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Lab Control	A	41	5	100	100	0.0
	B	38	5	100		
	C	36	5	100		
	D	42	5	100		
	E	32	5	100		
LA2-REF	A	26	5	100	96.0	8.9
	B	28	5	100		
	C	43	5	100		
	D	45	4	80		
	E	34	5	100		
Basin 6-Comp	A	29	5	100	100	0.0
	B	35	5	100		
	C	37	5	100		
	D	30	5	100		
	E	27	5	100		
Basin 7-Comp	A	31	5	100	100	0.0
	B	39	5	100		
	C	44	5	100		
	D	40	5	100		
	E	33	5	100		



Anchor QEA  
 Alamitos Bay  
*Americamysis bahia* 96-Hr Suspended Particulate Phase (SPP) Survival  
 Standard Elutriate Preparation (SET)  
 Test Initiation: July 13, 2016

Site: Basin-6-Comp					
Treatment	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	10	100	98.0	4.5
	B	9	90		
	C	10	100		
	D	10	100		
	E	10	100		
Site Water Control #1	A	9	90	96.0	5.5
	B	10	100		
	C	9	90		
	D	10	100		
	E	10	100		
10:90 (Sample:Clean Seawater)	A	10	100	92.0	8.4
	B	9	90		
	C	9	90		
	D	10	100		
	E	8	80		
50:50 (Sample:Clean Seawater)	A	9	90	90.0	7.1
	B	8	80		
	C	10	100		
	D	9	90		
	E	9	90		
100:0 (Sample:Clean Seawater)	A	8	80	88.0	8.4
	B	9	90		
	C	9	90		
	D	10	100		
	E	8	80		
NOEC	100	EC <sub>50</sub>	>100		

Anchor QEA  
 Alamitos Bay  
*Americamysis bahia* 96-Hr Suspended Particulate Phase (SPP) Survival  
 Standard Elutriate Preparation (SET)  
 Test Initiation: July 13, 2016

Site: Basin-7-Comp					
Treatment	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	10	100	98.0	4.5
	B	9	90		
	C	10	100		
	D	10	100		
	E	10	100		
Site Water Control #1	A	9	90	96.0	5.5
	B	10	100		
	C	9	90		
	D	10	100		
	E	10	100		
10:90 (Sample:Clean Seawater)	A	9	90	96.0	5.5
	B	10	100		
	C	10	100		
	D	9	90		
	E	10	100		
50:50 (Sample:Clean Seawater)	A	9	90	96.0	5.5
	B	10	100		
	C	10	100		
	D	10	100		
	E	9	90		
100:0 (Sample:Clean Seawater)	A	9	90	90.0	7.1
	B	9	90		
	C	10	100		
	D	8	80		
	E	9	90		
NOEC	100	EC <sub>50</sub>	>100		

Anchor QEA  
Alamitos Bay  
*Menidia beryllina* 96-Hr Suspended Particulate Phase (SPP) Survival  
Standard Elutriate Preparation (SET)  
Test Initiation: July 13, 2016

Site: Basin-6-Comp					
Treatment	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	10	100	96.0	5.5
	B	9	90		
	C	10	100		
	D	10	100		
	E	9	90		
Site Water Control #1	A	8	80	88.0	8.4
	B	9	90		
	C	8	80		
	D	10	100		
	E	9	90		
10:90 (Sample:Clean Seawater)	A	8	80	92.0	8.4
	B	9	90		
	C	10	100		
	D	10	100		
	E	9	90		
50:50 (Sample:Clean Seawater)	A	8	80	92.0	8.4
	B	10	100		
	C	9	90		
	D	10	100		
	E	9	90		
100:0 (Sample:Clean Seawater)	A	8	80	86.0	8.9
	B	8	80		
	C	10	100		
	D	9	90		
	E	8	80		
NOEC	100	EC <sub>50</sub>	>100		

Anchor QEA  
Alamitos Bay  
*Menidia beryllina* 96-Hr Suspended Particulate Phase (SPP) Survival  
Standard Elutriate Preparation (SET)  
Test Initiation: July 13, 2016

Site: Basin-7-Comp					
Treatment	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	10	100	96.0	5.5
	B	9	90		
	C	10	100		
	D	10	100		
	E	9	90		
Site Water Control #1	A	8	80	88.0	8.4
	B	9	90		
	C	8	80		
	D	10	100		
	E	9	90		
10:90 (Sample:Clean Seawater)	A	9	90	92.0	4.5
	B	9	90		
	C	10	100		
	D	9	90		
	E	9	90		
50:50 (Sample:Clean Seawater)	A	9	90	94.0	5.5
	B	10	100		
	C	9	90		
	D	9	90		
	E	10	100		
100:0 (Sample:Clean Seawater)	A	9	90	90.0	7.1
	B	9	90		
	C	10	100		
	D	9	90		
	E	8	80		
NOEC	100	EC <sub>50</sub>	>100		

Anchor QEA  
Alamitos Bay  
*Mytilus galloprovincialis* 48-Hr Suspended Particulate Phase (SPP) Standard Elutriate Test (SET)  
Test Initiation: July 7, 2016

Site: Basin-6-Comp										
Treatment	Replicate	Zero Time Average	Total No. Counted	No. Normally Developed	Percent Normal	Mean Percent Normal	Standard Deviation	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	124	124	118	95.2	96.6	2.0	100	96.7	6.2
	B	120	117	113	96.6			97.5		
	C	129	129	123	95.3			100		
	D	128	128	123	96.1			100		
	E	120	103	103	100			85.8		
Site Water Control #1	A	120	98	96	98.0	97.7	1.6	81.7	94.7	7.6
	B	120	116	111	95.7			96.7		
	C	137	137	136	99.3			100		
	D	150	150	145	96.7			100		
	E	120	114	113	99.1			95.0		
1:99 (Sample:Clean Seawater)	A	133	133	132	99.2	98.6	0.4	100	100	0.0
	B	152	152	149	98.0			100		
	C	147	147	145	98.6			100		
	D	140	140	138	98.6			100		
	E	130	130	128	98.5			100		
10:90 (Sample:Clean Seawater)	A	137	137	132	96.4	96.3	1.9	100	96.7	5.1
	B	145	145	143	98.6			100		
	C	120	106	101	95.3			88.3		
	D	120	114	107	93.9			95.0		
	E	121	121	118	97.5			100		
50:50 (Sample:Clean Seawater)	A	121	121	114	94.2	95.4	1.3	100	98.2	4.1
	B	120	109	106	97.2			90.8		
	C	122	122	116	95.1			100		
	D	131	131	126	96.2			100		
	E	122	122	115	94.3			100		
100:0 (Sample:Clean Seawater)	A	127	127	0	0.0	0.0	0.0	100	97.2	2.0
	B	120	114	0	0.0			95.0		
	C	120	115	0	0.0			95.8		
	D	120	116	0	0.0			96.7		
	E	120	118	0	0.0			98.3		
Development	NOEC	50	EC <sub>50</sub>	74.4		Survival	NOEC	100	EC <sub>50</sub>	>100

Values in **bold** indicates statistically reduced when compared with the Lab Control

When the final number counted was larger than the initial time zero mean of 120, the time zero value was changed to the total number counted (see Quality Assurance section).

Anchor QEA  
Alamitos Bay  
*Mytilus galloprovincialis* 48-Hr Suspended Particulate Phase (SPP) Standard Elutriate Test (SET)  
Test Initiation: July 7, 2016

Site: Basin-7-Comp										
Treatment	Replicate	Zero Time Average	Total No. Counted	No. Normally Developed	Percent Normal	Mean Percent Normal	Standard Deviation	Percent Survival	Mean Percent Survival	Standard Deviation
Laboratory Control #1 (Clean Seawater)	A	124	124	118	95.2	96.6	2.0	100	96.7	6.2
	B	120	117	113	96.6			97.5		
	C	129	129	123	95.3			100		
	D	128	128	123	96.1			100		
	E	120	103	103	100			85.8		
Site Water Control #1	A	120	98	96	98.0	97.7	1.6	81.7	94.7	7.6
	B	120	116	111	95.7			96.7		
	C	137	137	136	99.3			100		
	D	150	150	145	96.7			100		
	E	120	114	113	99.1			95.0		
1:99 (Sample:Clean Seawater)	A	120	111	108	97.3	97.7	1.3	92.5	98.2	3.2
	B	134	134	131	97.8			100		
	C	134	134	133	99.3			100		
	D	126	126	124	98.4			100		
	E	120	118	113	95.8			98		
10:90 (Sample:Clean Seawater)	A	134	134	132	98.5	98.3	0.9	100	98.7	3.0
	B	120	112	111	99.1			93.3		
	C	122	122	120	98.4			100		
	D	126	126	122	96.8			100		
	E	141	141	139	98.6			100		
50:50 (Sample:Clean Seawater)	A	138	138	134	97.1	98.1	0.8	100	98.0	2.2
	B	120	114	113	99.1			95		
	C	127	127	125	98.4			100		
	D	120	116	113	97.4			96.7		
	E	120	118	116	98.3			98.3		
100:0 (Sample:Clean Seawater)	A	120	119	114	95.8	97.8	1.5	99.2	99.8	0.4
	B	134	134	130	97.0			100		
	C	121	121	120	99.2			100		
	D	140	140	139	99.3			100		
	E	122	122	119	97.5			100		
Development	NOEC	100	EC <sub>50</sub>	>100		Survival	NOEC	100	EC <sub>50</sub>	>100

When the final number counted was larger than the initial time zero mean of 120, the time zero value was changed to the total number counted (see Quality Assurance section).

Anchor QEA - Alamitos Bay  
*N. virens* 28-day Survival  
Test Initiation: June, 29, 2016

Site ID	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Lab Control	A	10	100	100	0.0
	B	10	100		
	C	10	100		
	D	10	100		
	E	10	100		
LA2-REF	A	10	100	100	0.0
	B	10	100		
	C	10	100		
	D	10	100		
	E	10	100		
Basin 6-Comp	A	10	100	100	0.0
	B	10	100		
	C	10	100		
	D	10	100		
	E	10	100		
Basin 7-Comp	A	10	100	100	0.0
	B	10	100		
	C	10	100		
	D	10	100		
	E	10	100		

**Anchor QEA - Alamitos Bay**  
***M. nasuta* 28-day Survival**  
**Test Initiation: June 29, 2016**

Site ID	Replicate	No. Alive	Percent Survival	Mean Percent Survival	Standard Deviation
Lab Control	A	24	96.0	97.6	2.2
	B	24	96.0		
	C	25	100		
	D	24	96.0		
	E	25	100		
LA2-REF	A	24	96.0	91.2	5.2
	B	23	92.0		
	C	24	96.0		
	D	21	84.0		
	E	22	88.0		
Basin 6-Comp	A	25	100	98.4	3.6
	B	23	92.0		
	C	25	100		
	D	25	100		
	E	25	100		
Basin 7-Comp	A	25	100	96.8	4.4
	B	25	100		
	C	23	92.0		
	D	25	100		
	E	23	92.0		



**Appendix D**  
**Raw Datasheets and Statistical Summaries**

*Ampelisca* SP 10-day

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: Ampelisca abdita

Test No(s): 1607-SOIL to -SOIR

Start Date/Time: 7/8/2016 1200

Sample ID: Lab Control

End Date/Time: 7/18/2016 1000

Log-in No.: 10-3131

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.4	29.8	7.5	7.90	ALB	Collect Ammonia <sup>ALB</sup>
1	19.6	29.9	7.4	7.80	AD	
2	19.6	29.8	7.2	7.83	MM	
3	20.0	29.7	7.0	7.80	MR	
4	20.1	29.8	6.7	7.75	MR	
5	19.9	29.7	6.7	7.76	MR	
6	19.9	29.8	7.4	7.74	MM	
7	20.1	29.8	6.9	7.64	NHG	
8	20.1	29.6	6.9	7.64	MR	
9	19.9	29.7	6.7	7.60	NHG	
10	20.3	29.3	7.1	7.62	CH	Collect Ammonia <sup>CH</sup>

QC Check: ALB 7/20/16

Final Review: KB 7/20/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: Ampelisca abdita

Test No(s): 1607 - 5014

Start Date/Time: 7/8/2016 1200

Sample ID: LA2- REF

End Date/Time: 7/18/2016 1600

Log-in No.: 14-3128

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.5	30.4	7.4	8.09	AUB	Collect Ammonia <sup>AUB</sup>
1	19.6	30.8	7.4	8.10	AD	
2	19.5	30.8	7.2	8.16	MM	
3	20.1	30.8	6.9	8.08	MR	
4	19.9	31.2	6.5	8.10	MR	
5	20.1	31.2	<del>7.6</del> 6.7	8.12	MR	
6	20.0	31.2	7.3	8.21	MM	
7	20.3	31.4	6.9	8.14	N+E	
8	20.1	31.2	6.8	8.22	MR	
9	20.1	31.3	6.8	8.20	N+E	
10	20.5	31.2	6.8	8.16	CH	Collect Ammonia <sup>CH</sup>

QC Check: ALB 7/21/16

Final Review: KB 7/28/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

Ⓢ Q18MP 7/13/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: Ampelisca abdita

Test No(s): 1007-5017

Start Date/Time: 7/8/2016 1200

Sample ID: Basin 6-Comp

End Date/Time: 7/18/2016 1000

Log-in No.: 10-3129

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.6	30.1	7.4	8.00	ALB	Collect Ammonia <sup>ALB</sup>
1	19.8	30.6	7.4	8.10	AD	
2	19.8	30.7	7.1	8.17	MM	
3	20.4	30.7	7.0	8.13	MR	
4	20.3	30.7	6.7	8.12	MR	
5	20.1	30.7	6.7	8.08	MR	
6	20.4	30.6	7.2	8.23	MM	
7	20.4	30.8	6.9	8.18	NHE	
8	20.2	30.6	6.8	8.21	MR	
9	20.3	30.9	6.7	8.25	NHE	
10	20.4	30.6	6.9	8.23	CH	Collect Ammonia <sup>FEH</sup>

QC Check: ALB 7/21/16

Final Review: KB 7/28/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamos Bay

Test Species: Ampelisca abdita

Test No(s): 1607 - 5018

Start Date/Time: 7/8/2016 1200

Sample ID: Basin 7-Comp

End Date/Time: 7/18/2016 1600

Log-in No.: 16-3130

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.5	30.0	7.3	8.00	AUB	Collect Ammonia <sup>AUB</sup>
1	19.7	30.2	7.4	8.04	AD	
2	19.7	30.3	7.1	8.07	MM	
3	20.4	30.1	6.9	8.02	MR	
4	20.3	30.3	6.7	8.01	MR	
5	20.3	30.1	6.7	8.05	MR	
6	20.3	29.7	7.3	8.08	MM	
7	20.3	30.0	6.7	8.04	NHE	
8	20.2	29.7	6.7	8.10	MR	
9	20.2	29.7	6.7	8.09	NHE	
10	20.3	29.7	6.9	8.12	CH	Collect Ammonia <sup>CH</sup>

QC Check: AUB 7/21/16

Final Review: KB 7/28/16







Anchor QEA - Alamos Bay  
Ampelisca 10-day Survival  
Test Date: 7/8/2016

Site	Rep	Rand #
Lab Control	A	45
	B	37
	C	28
	D	31
	E	33
LA2-REF	A	32
	B	35
	C	38
	D	43
	E	36
Basin 6-Comp	A	44
	B	39
	C	26
	D	30
	E	29
Basin 7-Comp	A	34
	B	41
	C	42
	D	40
	E	27

B6 Rand # ac: AFS

QC: JH/NHE

*Neanthes* SP 10-day

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: *N. arenaceodentata*

Test No(s): 1007-5009 to ~~5012~~ 5011

Start Date/Time: 7/1/2016 1145

Sample ID: Lab Control

End Date/Time: 7/11/2016 1400

Log-in No.: 10-~~3130~~ ~~3131~~ 3127

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.4	30.2	7.8	8.07	AUB	Collect Ammonia <sup>AUB</sup>
1	19.6	30.1	7.3	8.09	AUB	
2	19.8	30.5	7.2	8.02	AS	
3	19.4	30.5	7.4	7.99	EG	
4	19.5	30.5	6.9	7.98	MR	
5	19.5	30.3	7.1	8.06	MM	
6	19.6	30.2	7.1	7.95	MR	
7	19.3	30.1	7.4	8.07	AUB	
8	19.2	30.4	7.4	8.02	AD	
9	19.1	30.3	7.1	8.00	MM	
10	19.8	30.1	7.1	8.00	MR	Collect Ammonia <sup>EG</sup>

QC Check: AUB 7/2/16

Final Review: KB 7/28/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

<sup>Ⓢ</sup>AUB 9/8 7/2/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamos Bay

Test Species: N. arenaceodentata

Test No(s): 1007-~~5010~~ 5009

Start Date/Time: 7/1/2016 1145

Sample ID: LA2-REF

End Date/Time: 7/11/2016 1400

Log-in No.: 10-3128

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.5	30.2	7.8	8.08	AUB	Collect <sup>AUB</sup> Ammonia
1	19.5	30.3	7.2	8.10	AUB	
2	19.7	30.6	7.1	8.05	ACS	
3	19.6	30.3	7.4	8.08	EG	
4	19.3	30.5	7.0	8.11	MR	
5	19.5	30.4	7.1	8.12	MM	
6	19.4	30.4	6.9	8.05	MR	
7	19.2	30.4	7.4	8.14	AUB	
8	19.4	30.6	7.3	8.10	AD	
9	19.1	30.7	7.1	8.11	MM	
10	19.7	30.7	7.1	8.06	MR	Collect <sup>EG</sup> Ammonia

QC Check: ALD 7/2/16

Final Review: KB 7/28/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

Ⓢ AUB 9/8 7/2/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: N. arenaceodentata

Test No(s): 1007-8010

Start Date/Time: 7/11/2016 1145

Sample ID: Basin 6-Comp

End Date/Time: 7/11/2016 1400

Log-in No.: 10-3129

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.5	30.1	7.7	8.07	AUB	Collect <sup>AUB</sup> Ammonia
1	19.6	30.2	7.2	8.17	AUB	
2	19.7	30.5	7.0	8.16	HS	
3	19.5	30.4	7.2	8.22	EG	
4	19.5	30.6	6.9	<del>8.17</del> <sup>8.22</sup>	MR	
5	19.4	30.5	7.0	8.23	MM	
6	19.5	30.4	7.1	8.16	MR	
7	19.2	30.4	7.4	8.24	AUB	
8	19.1	30.5	7.4	8.21	AD	
9	19.0	30.6	7.0	8.20	MM	
10	19.6	30.4	7.0	8.17	MR	Collect <sup>EG</sup> Ammonia

QC Check: AUB 7/21/16

Final Review: KB 7/20/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

@ 618 m 7/15/16

**10-Day Marine Sediment Bioassay  
Static Conditions**

**Water Quality Measurements**

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: N. arenaceodentata

Test No(s): 1007-502-5011

Start Date/Time: 7/1/2016 1145

Sample ID: Basin 7-Comp

End Date/Time: 7/11/2016 1400

Log-in No.: 14-3130

Test Day	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (units)	Technician Initials	Comments
0	19.4	29.8	7.8	8.02	AUB	Collect <sup>AUB</sup> Ammonia
1	19.5	29.8	7.2	8.03	ALB	
2	19.5	30.1	7.1	8.00	ACS	
3	19.4	29.8	7.4	8.04	EQ	
4	19.3	29.9	7.1	8.06	MR	
5	19.3	29.9	7.1	8.02	MM	
6	19.4	29.9	7.2	7.99	MR	
7	19.1	29.9	7.5	8.05	AUB	
8	19.1	30.1	7.6	8.05	AD	
9	19.0	30.0	7.2	8.08	MM	
10	19.4	29.9	7.3	8.09	MR	Collect <sup>EQ</sup> Ammonia

QC Check: AUB 7/2/16

Final Review: KB 7/28/16

**Sediment Bioassay**

**Daily Observations**

Client: Anchor QEA

Test Species: N. arenaceodentata

Project ID: Alamitos Bay

Start Date/Time: 7/1/2016 1145

Test No.: 1607-S009 to -S011

End Date/Time: 7/11/2016 1400

Random Number	Daily Observations (Use Codes Provided)									
	1	2	3	4	5	6	7	8	9	10
26	N	N	N	N	N	N	N	N	N	N
27	N	N	N	N	N	N	N	N	N	N
28	N	N	N	N	N	N	N	N	N	N
29	N	N	N	N	N	N	N	N	N	N
30	N	N	N	N	N	N	N	N	N	N
31	N	N	N	N	N	N	N	N	N	N
32	N	N	N	N	N	N	N	N	N	N
33	N	N	N	N	N	N	N	N <sup>AD 11:1</sup>	N	N
34	N	N	N	N	N	N	N	N	N	N
35	N	N	N	N	N	N	N	N	N	N
36	N	N	N	N	N	N	N	N	N	N
37	N	N	N	N	N	N	N	N	N	N
38	N	N	N	N	N	N	N	N	N	N
39	N	N	N	N	N	N	N	N	N	N
40	N	N	N	N	N	N	N	N	N	N
41	N	N	N	N	N	N	N	N	N	N
42	N	N	N	N	N	N	N	N <sup>AD 11:4</sup>	N	N
43	N	N	N	N	N	N	N	N	N	N
44	N	N	N	N	N	N	N	N	N	N
45	N	N	N	N	N	N	N	N	N	N
Tech	ALB	AG	EG	MR	MM	MR	AVB	AD	MM	MR

Observations Key

E = Emerged, specify number S = Trapped on surface, specify number  
 N = Normal G = Abnormal growth on or discoloration of sediment surface  
 A = No/low aeration B = Body or molt on sediment surface, specify number  
 © DO in mg/L

QC Check: AVB 7/2/16

Final Review: KB 7/20/16

**Marine Polychaete Sediment Bioassay**

**Organism Survival**

Client/Project ID: Anchor QEA/ Alamitos Bay Test Species: N. arenaceodentata

Test No(s): 11007-5009 ED-S011 Start Date/Time: 7/1/2016 1145

Initial No. Organisms: 5/rep End Date/Time: 7/11/2016 1406

Random Number	Number Alive	10% QC Check of final counts	Random Number	Number Alive	10% QC Check of final counts
26	5				
27	5	5			
28	5				
29	5				
30	5				
31	5				
32	5				
33	5	5			
34	5				
35	5				
36	5				
37	5				
38	5	5			
39	5				
40	5				
41	5				
42	5				
43	5				
44	5				
45	4	4			
Tech Initials:	<u>EG/AG</u>	<u>NHE</u>	Tech Initials:		

**Initiation QC Check Initials:**

Counts EG All Jars initiated EG Air EG Lights (12:12) EG  
 T<sub>0</sub> pore water WQ (pH, salinity, ammonia) EG AND AUB All pore water ammonia <60 mg/L EG

**Termination QC Check Initials:**

T<sub>f</sub> pore water WQ (pH, salinity, ammonia) EG

Animal Source/Date Received: ATS | 6/30/16 Age at Initiation: emerged 10/8/16

Comments: \_\_\_\_\_

QC Check: ALB 7/2/16

Final Review: KB 7/20/16



Anchor QEA - Alamitos Bay  
Neanthes 10-day Survival  
Test Date: 7/1/2016

Site	Rep	Rand #
Lab Control	A	41
	B	38
	C	36
	D	42
	E	32
LA2-REF	A	26
	B	28
	C	43
	D	45
	E	34
Basin 6-Comp	A	29
	B	35
	C	37
	D	30
	E	27
Basin 7-Comp	A	31
	B	39
	C	44
	D	40
	E	33

QC:

Random #QC: m7

*Mytilus* SPP 48-hour

**Standard Elutriate Preparation**

Client: Anchor QEA/ Alamitos Bay Test Species: A. bahia

Sample IDs: Basin 6-Comp, 7-Comp M. beryllina

Analyst: ALB M. galloprovincialis

Test IDs: 1607-S036, -S037

Protocols: EPA-503/8-91/001 Feb 1991 (ITM) & EPA-823/B-98/004 Feb 1998 (OTM)

Water used to prepare elutriate (circle): Lab SW or Site Water

Salinity (ppt): 32.0 33.4

Ratio 1:4 (Sediment:Water): Example: 2 L Sediment : 8 L Water

Site ID:	Sediment Volume:	Water Volume:
<u>LA2-REF</u>		
Basin 6-Comp	<u>1L</u>	<u>4L</u>
Basin 7-Comp	<u>1L</u>	<u>4L</u>

Mix sediment and water in polyethylene plastic-lined 5-gallon bucket with stainless steel mixing blade for a total of 30 min.

Every 10 minutes, use a stainless steel spoon to manually suspend settled sediment.

Site ID:	Settling Start Date/Time:	Settling End Date/Time:
<u>LA2-REF</u>	<u>7/17/16 11:38</u>	<u>7/17/16 11:38</u>
Basin 6-Comp	<u>7/17/16 11:38</u>	<u>7/17/16 11:38</u>
Basin 7-Comp	<u>7/17/16 11:38</u>	<u>7/17/16 11:38</u>

Settle for 1-hour at room temperature. (See project manager if settling is insufficient)  
Siphon overlying water (elutriate) into a new container without disturbing the sediment  
If necessary, centrifuge elutriate to remove particulates (especially for larval testing).

Check Dissolved Oxygen (DO) before preparing dilutions (aerate if < 6.0 mg/L).

Site ID:	Initial DO (mg/L):	Final DO (mg/L):
<u>LA2-REF</u>	<u>2.3</u>	<u>8.2</u>
Basin 6-Comp	<u>2.3</u>	<u>8.2</u>
Basin 7-Comp	<u>2.3</u>	<u>8.2</u>

Prepare dilutions if necessary and collect ammonia subsamples

Comments: Samples were centrifuged to remove particulates

QC Check: KB 7/13/16 Final Review: KB 7/14/16

Nautilus Environmental, 4340 Vandever Avenue, San Diego, CA 92120

ALB Q18 7/17/16 BAUB 7/17/16 Q18

**Marine Chronic Bioassay  
Suspended Particulate Phase**

**Water Quality Measurements**

Client: Anchor QEA/ Alamitos Bay

Test Species: Mytilus galloprovincialis

Sample ID: Basin 6-Comp

Start Date/Time: 7/7/16 1620

Sample Log No.: 16-3129

End Date/Time: 7/9/16 1650

Test No.: 1607-5036

Concentration (%)	Salinity (ppt)			Temperature (°C)			Dissolved Oxygen (mg/L)			pH (pH units)		
	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	31.7	32.3	32.1	17.0	15.4	15.0 <sup>Q2</sup> <del>14.9</del>	8.6	8.1	8.1	7.98	7.95	7.90
Site Control	33.2	33.7	33.8	17.0	15.3	14.7	8.6	8.1	8.3	8.04	7.98	7.95
1	31.9	32.5	32.4	17.0	15.4	14.7	8.4	8.1	8.4	8.01	7.95	7.95
10	32.0	32.6	32.5	17.0	15.3	15.0	8.4	8.1	8.4	8.05	7.97	7.99
50	32.6	33.2	33.1	17.0	15.3	14.7	8.3	7.9	8.4	8.12	8.11	8.13
100	33.4	33.9	33.8	17.0	15.4	14.7	8.0	7.7	8.3	8.17	8.20	8.23

Technician Initials:      0                  24                  48

WQ Readings:            AB      AD

Dilutions made by:                     

Collect NH<sub>3</sub> Subsample (overlying water):                      AD

Comments:      0 hrs: sharing controls w/ Basin 7-Comp ; 16±1°C  
 24 hrs: \_\_\_\_\_  
 48 hrs: AD @ 18 7/9/16

QC Check:      KB 7/13/16

Final Review:      YS 7/14/16

**CETIS Summary Report**

Report Date: 13 Jul-16 16:46 (p 1 of 2)  
 Test Code: 1607-S036 | 12-3358-8704

Bivalve Larval Survival and Development Test							Nautilus Environmental (CA)				
<b>Batch ID:</b>	16-5262-8297	<b>Test Type:</b>	Development-Survival			<b>Analyst:</b>					
<b>Start Date:</b>	07 Jul-16 16:20	<b>Protocol:</b>	EPA-823-B-98-004 (1998)			<b>Diluent:</b>	Diluted Natural Seawater				
<b>Ending Date:</b>	09 Jul-16 16:50	<b>Species:</b>	Mytilus galloprovincialis			<b>Brine:</b>	Not Applicable				
<b>Duration:</b>	49h	<b>Source:</b>	Carlsbad Aquafarms			<b>Age:</b>					
<b>Sample ID:</b>	07-6111-3870	<b>Code:</b>	16-3129			<b>Client:</b>	Anchor QEA				
<b>Sample Date:</b>	07 Jul-16 10:38	<b>Material:</b>	Sediment Elutriate			<b>Project:</b>	Alamitos Bay				
<b>Receive Date:</b>	07 Jul-16 11:38	<b>Source:</b>	Anchor QEA								
<b>Sample Age:</b>	6h (10 °C)	<b>Station:</b>	Basin-6-Comp								
<b>Sample Note:</b> Sediment collection date and time: 6/21/16, 16:35; receipt date and time: 6/23/16 14:50											
<b>Comparison Summary</b>											
<b>Analysis ID</b>	<b>Endpoint</b>	<b>NOEL</b>	<b>LOEL</b>	<b>TOEL</b>	<b>PMSD</b>	<b>TU</b>	<b>Method</b>				
18-0525-0047	Development Rate	50	100	70.71	2.48%	2	Dunnett Multiple Comparison Test				
12-5179-5032	Survival Rate	100	>100	NA	5.37%	1	Steel Many-One Rank Sum Test				
<b>Point Estimate Summary</b>											
<b>Analysis ID</b>	<b>Endpoint</b>	<b>Level</b>	<b>%</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>TU</b>	<b>Method</b>				
20-9589-0884	Development Rate	EC25	61.65	60.89	62.31	1.622	Linear Interpolation (ICPIN)				
		EC50	74.43	73.93	74.87	1.344					
<b>Development Rate Summary</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	Lab Control	5	0.9664	0.942	0.9908	0.9516	1	0.008788	0.01965	2.03%	0.0%
0	Site Water Contr	5	0.9774	0.9581	0.9967	0.9569	0.9927	0.006949	0.01554	1.59%	-1.14%
1		5	0.9859	0.9804	0.9913	0.9803	0.9925	0.001962	0.004388	0.45%	-2.02%
10		5	0.9633	0.9402	0.9864	0.9386	0.9862	0.008326	0.01862	1.93%	0.32%
50		5	0.954	0.9378	0.9702	0.9421	0.9725	0.005843	0.01306	1.37%	1.28%
100		5	0	0	0	0	0	0	0		100.0%
<b>Survival Rate Summary</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	Lab Control	5	0.9667	0.8903	1	0.8583	1	0.02751	0.06152	6.36%	0.0%
0	Site Water Contr	5	0.9467	0.8525	1	0.8167	1	0.03391	0.07583	8.01%	2.07%
1		5	1	1	1	1	1	0	0	0.0%	-3.45%
10		5	0.9667	0.9029	1	0.8833	1	0.02297	0.05137	5.31%	0.0%
50		5	0.9817	0.9308	1	0.9083	1	0.01833	0.04099	4.18%	-1.55%
100		5	0.9717	0.9467	0.9966	0.95	1	0.008975	0.02007	2.07%	-0.52%
<b>Development Rate Detail</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Rep 1</b>	<b>Rep 2</b>	<b>Rep 3</b>	<b>Rep 4</b>	<b>Rep 5</b>					
0	Lab Control	0.9516	0.9658	0.9535	0.9609	1					
0	Site Water Contr	0.9796	0.9569	0.9927	0.9667	0.9912					
1		0.9925	0.9803	0.9864	0.9857	0.9846					
10		0.9635	0.9862	0.9528	0.9386	0.9752					
50		0.9421	0.9725	0.9508	0.9618	0.9426					
100		0	0	0	0	0					
<b>Survival Rate Detail</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Rep 1</b>	<b>Rep 2</b>	<b>Rep 3</b>	<b>Rep 4</b>	<b>Rep 5</b>					
0	Lab Control	1	0.975	1	1	0.8583					
0	Site Water Contr	0.8167	0.9667	1	1	0.95					
1		1	1	1	1	1					
10		1	1	0.8833	0.95	1					
50		1	0.9083	1	1	1					
100		1	0.95	0.9583	0.9667	0.9833					

**CETIS Summary Report**

Report Date: 13 Jul-16 16:46 (p 2 of 2)  
 Test Code: 1607-S036 | 12-3358-8704

Bivalve Larval Survival and Development Test							Nautilus Environmental (CA)
<b>Development Rate Binomials</b>							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	118/124	113/117	123/129	123/128	103/103	
0	Site Water Contr	96/98	111/116	136/137	145/150	113/114	
1		132/133	149/152	145/147	138/140	128/130	
10		132/137	143/145	101/106	107/114	118/121	
50		114/121	106/109	116/122	126/131	115/122	
100		0/127	0/114	0/115	0/116	0/118	
<b>Survival Rate Binomials</b>							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	120/120	117/120	120/120	120/120	103/120	
0	Site Water Contr	98/120	116/120	120/120	120/120	114/120	
1		120/120	120/120	120/120	120/120	120/120	
10		120/120	120/120	106/120	114/120	120/120	
50		120/120	109/120	120/120	120/120	120/120	
100		120/120	114/120	115/120	116/120	118/120	

**CETIS Analytical Report**

Report Date: 13 Jul-16 16:46 (p 1 of 2)

Test Code: 1607-S036 | 12-3358-8704

**Bivalve Larval Survival and Development Test** Nautilus Environmental (CA)

Analysis ID: 18-0525-0047	Endpoint: Development Rate	CETIS Version: CETISv1.8.7	
Analyzed: 13 Jul-16 16:45	Analysis: Parametric-Control vs Treatments	Official Results: Yes	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	2.48%	50	100	70.71	2

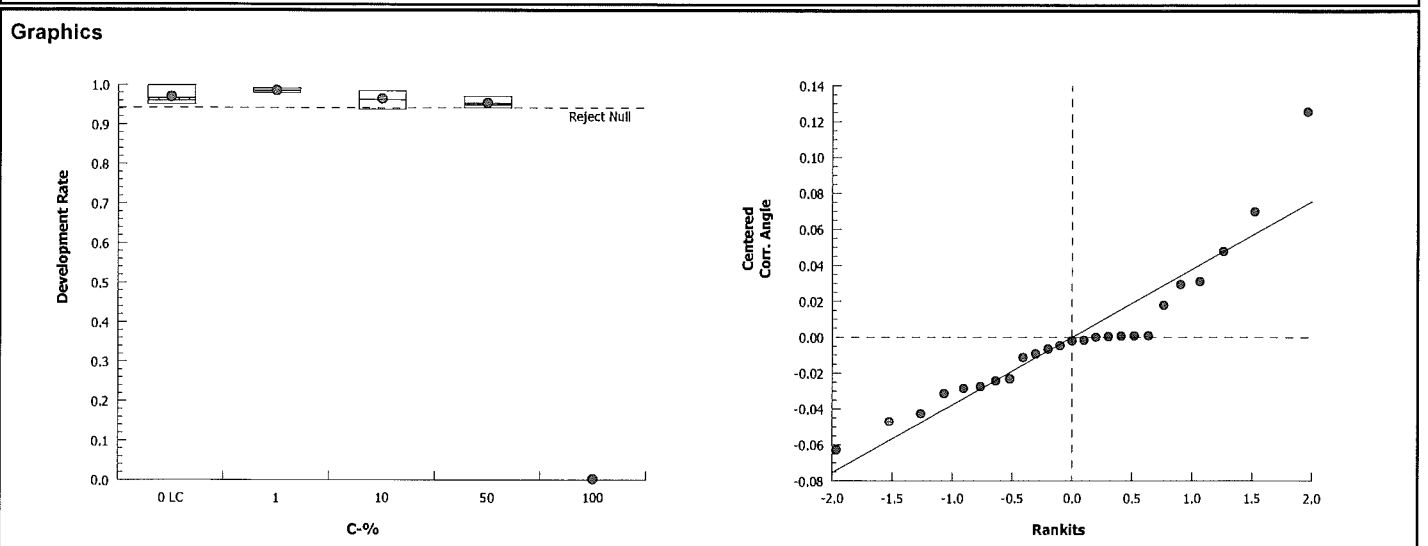
Dunnett Multiple Comparison Test									
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		1	-1.872	2.227	0.068	8	0.9958	CDF	Non-Significant Effect
		10	0.4212	2.227	0.068	8	0.5794	CDF	Non-Significant Effect
		50	1.305	2.227	0.068	8	0.2248	CDF	Non-Significant Effect

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)	
Between	0.02485432	0.008284776	3	3.585	0.0373	Significant Effect	
Error	0.03697287	0.002310804	16				
Total	0.06182719		19				

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)	
Variances	Bartlett Equality of Variance	5.888	11.34	0.1172	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9061	0.866	0.0538	Normal Distribution	

Development Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9664	0.942	0.9908	0.9609	0.9516	1	0.008788	2.03%	0.0%
1		5	0.9859	0.9804	0.9913	0.9857	0.9803	0.9925	0.001962	0.45%	-2.02%
10		5	0.9633	0.9402	0.9864	0.9635	0.9386	0.9862	0.008326	1.93%	0.32%
50		5	0.954	0.9378	0.9702	0.9508	0.9421	0.9725	0.005843	1.37%	1.28%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.396	1.307	1.485	1.372	1.349	1.522	0.032	5.13%	0.0%
1		5	1.453	1.429	1.477	1.451	1.43	1.484	0.008785	1.35%	-4.08%
10		5	1.383	1.319	1.448	1.379	1.32	1.453	0.02313	3.74%	0.92%
50		5	1.356	1.316	1.397	1.347	1.328	1.404	0.01457	2.4%	2.84%
100		5	0.04607	0.04484	0.0473	0.04644	0.04438	0.04685	0.000443	2.15%	96.7%



**CETIS Analytical Report**

Report Date: 13 Jul-16 16:46 (p 2 of 2)  
 Test Code: 1607-S036 | 12-3358-8704

<b>Bivalve Larval Survival and Development Test</b>						<b>Nautilus Environmental (CA)</b>			
<b>Analysis ID:</b> 12-5179-5032	<b>Endpoint:</b> Survival Rate			<b>CETIS Version:</b> CETISv1.8.7					
<b>Analyzed:</b> 13 Jul-16 16:45	<b>Analysis:</b> Nonparametric-Control vs Treatments			<b>Official Results:</b> Yes					

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	5.37%	100	>100	NA	1

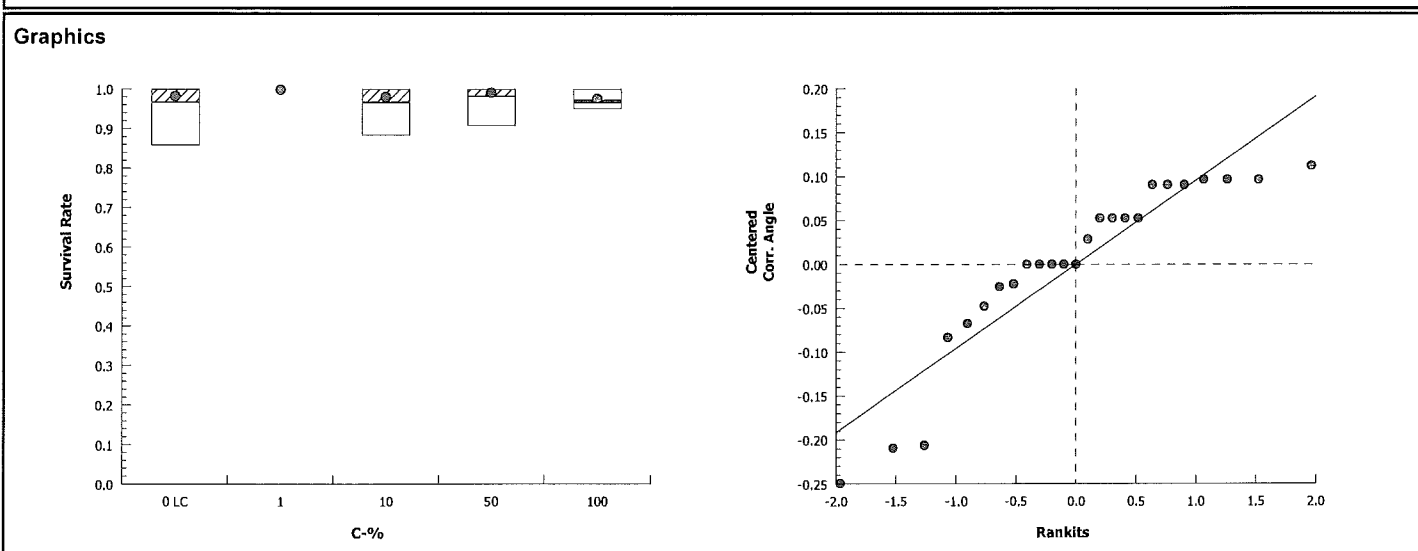
<b>Steel Many-One Rank Sum Test</b>									
Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		1	32.5	17	1	8	0.9812	Asymp	Non-Significant Effect
		10	27.5	17	1	8	0.8000	Asymp	Non-Significant Effect
		50	30	17	1	8	0.9275	Asymp	Non-Significant Effect
		100	23.5	17	1	8	0.4471	Asymp	Non-Significant Effect

<b>ANOVA Table</b>							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)	
Between	0.04065705	0.01016426	4	0.8444	0.5135	Non-Significant Effect	
Error	0.2407422	0.01203711	20				
Total	0.2813993		24				

<b>Distributional Tests</b>						
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)	
Variances	Bartlett Equality of Variance	109.9	13.28	<0.0001	Unequal Variances	
Distribution	Shapiro-Wilk W Normality	0.8562	0.8877	0.0023	Non-normal Distribution	

<b>Survival Rate Summary</b>											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9667	0.8903	1	1	0.8583	1	0.02751	6.36%	0.0%
1		5	1	1	1	1	1	1	0	0.0%	-3.45%
10		5	0.9667	0.9029	1	1	0.8833	1	0.02297	5.31%	0.0%
50		5	0.9817	0.9308	1	1	0.9083	1	0.01833	4.18%	-1.55%
100		5	0.9717	0.9467	0.9966	0.9667	0.95	1	0.008975	2.07%	-0.52%

<b>Angular (Corrected) Transformed Summary</b>											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.434	1.251	1.618	1.525	1.185	1.525	0.06612	10.31%	0.0%
1		5	1.525	1.525	1.525	1.525	1.525	1.525	0	0.0%	-6.32%
10		5	1.429	1.256	1.601	1.525	1.222	1.525	0.06225	9.74%	0.41%
50		5	1.473	1.327	1.618	1.525	1.263	1.525	0.05239	7.95%	-2.67%
100		5	1.413	1.323	1.503	1.387	1.345	1.525	0.03234	5.12%	1.51%





**CETIS Analytical Report**

Report Date: 13 Jul-16 16:46 (p 1 of 1)

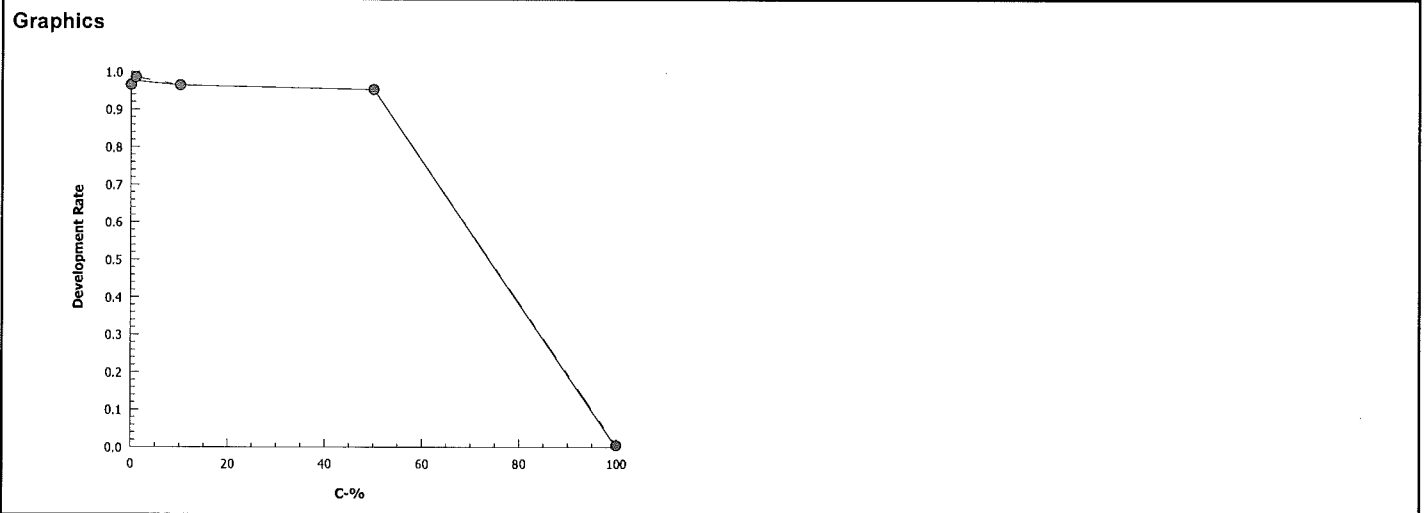
Test Code: 1607-S036 | 12-3358-8704

<b>Bivalve Larval Survival and Development Test</b>			<b>Nautilus Environmental (CA)</b>		
<b>Analysis ID:</b> 20-9589-0884	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv1.8.7			
<b>Analyzed:</b> 13 Jul-16 16:45	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Official Results:</b> Yes			

<b>Linear Interpolation Options</b>					
<b>X Transform</b>	<b>Y Transform</b>	<b>Seed</b>	<b>Resamples</b>	<b>Exp 95% CL</b>	<b>Method</b>
Linear	Linear	396776	1000	Yes	Two-Point Interpolation

<b>Point Estimates</b>						
<b>Level</b>	<b>%</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>TU</b>	<b>95% LCL</b>	<b>95% UCL</b>
EC25	61.65	60.89	62.31	1.622	1.605	1.642
EC50	74.43	73.93	74.87	1.344	1.336	1.353

<b>Development Rate Summary</b>			<b>Calculated Variate(A/B)</b>									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Lab Control	5	0.9664	0.9516	1	0.008788	0.01965	2.03%	0.0%	580	601	
1		5	0.9859	0.9803	0.9925	0.001962	0.004387	0.45%	-2.02%	692	702	
10		5	0.9633	0.9386	0.9862	0.008326	0.01862	1.93%	0.32%	601	623	
50		5	0.954	0.9421	0.9725	0.005843	0.01306	1.37%	1.28%	577	605	
100		5	0	0	0	0	0		100.0%	0	590	



**Marine Chronic Bioassay  
Suspended Particulate Phase**

**Water Quality Measurements**

Client: Anchor QEA/ Alamitos Bay

Test Species: Mytilus galloprovincialis

Sample ID: Basin 7-Comp

Start Date/Time: 7/7/16 1620

Sample Log No.: 16-3130

End Date/Time: 7/9/16 1650

Test No.: 1607-5037

Concentration (%)	Salinity (ppt)			Temperature (°C)			Dissolved Oxygen (mg/L)			pH (pH units)		
	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	31.7	32.3	32.1	17.0	15.4	15.0 <del>14.7</del> <sup>AD</sup>	8.6	8.1	8.1	7.98	7.95	7.90
Site Control	33.2	33.7	33.8	17.0	15.3	14.7 <sup>AD</sup>	8.6	8.1	8.3	8.04	7.98	7.95
1	31.7	32.3	32.0	17.0	15.3	15.2	8.3	7.9	8.2	8.04	7.98	7.94
10	32.0	32.5	32.3	17.0	15.4	15.1	8.3	8.0	8.3	8.04	7.97	7.95
50	32.3	32.9	32.9	17.0	15.4	15.1	8.2	7.9	8.4	8.11	8.01	7.99
100	32.8	33.4	33.3	17.0	15.5	15.0	8.0	7.9	8.4	8.20	8.09	8.04

Technician Initials:	0	24	48
WQ Readings:	YS	AG	AD
Dilutions made by:	YS		
Collect NH <sub>3</sub> Subsample (overlying water):	YS		AD

Comments: 0 hrs: Sharing controls w/ Basin 6-Comp ; 16±1°C  
 24 hrs: \_\_\_\_\_  
 48 hrs: AD 7/9/16

QC Check: KB 7/13/16

Final Review: YS 7/14/16

Embryo Larval Bioassay

48-hour Development

Client: Anchor - Alamos Bay

Test Species: M. galloprovincialis

Project ID: Alamos Bay

Start Date/Time: 7/7/2016 1620

End Date/Time: 7/9/2016 1650

Random Number	Number Normal	Total Number	Technician Initials	Comments	
31	145	150	AB	7/12/16	
32	113	114	AB	↓	
33	111	116	AB		
34	131	134	AB		
35	111	112	AB		
36	139	140	AB		
37	107	114	AB		
38	118	124	AB		
39	0	115	AB		7/13/16
40	138	140	AB		
41	0	116	AB		
42	120	122	AB		
43	<del>114</del> 114	<del>114</del> 119	AB		
44	<del>114</del> 114	<del>114</del> 121	AB		
45	132	133	AB		
46	122	126	AB		
47	113	117	AB		
48	123	129	AB		
49	<del>139</del> 139	141	AB		
50	0	114	AB		
51	120	121	AB		
52	0	118	AB		
53	132	134	AB		
54	145	147	AB		
55	132	137	AB		
56	116	118	AB		
57	96	98	AB		
58	108	111	AB		
59	133	134	AB		
60	101	106	AB		
61	<del>128</del> 128	127	AB		
62	128	130	AB		
63	116	122	AB		
64	126	131	AB		
65	113	116	AB	✓	

QC Check: AB Q28 7/13/16

Final Review: AB 7/14/16

## Embryo Larval Bioassay

48-hour Development

Client: Anchor - Alamitos BayTest Species: M. galloprovincialisProject ID: Alamitos BayStart Date/Time: 7/7/2016 1620End Date/Time: 7/9/2016 1650

Random Number	Number Normal	Total Number	Technician Initials	Comments
66	119	122	AB	7/13/16
67	115	122	AB	
68	125	127	AB	
69	124	126	AB	
70	136	137	AB	
71	130	134	AB	
72	134	138	AB	
73	103	103	AB	
74	118	121	AB	
75	123	128	AB	
76	149	152	AB	
77	143	145	AB	
78	113	118	AB	
79	106	109	AB	
80	113	114	AB	✓

QC Check: KB 7/13/16Final Review: KB 7/14/16

**CETIS Summary Report**

Report Date: 13 Jul-16 16:47 (p 1 of 2)

Test Code: 1607-S037 | 12-6283-4913

**Bivalve Larval Survival and Development Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 16-5262-8297	<b>Test Type:</b> Development-Survival	<b>Analyst:</b>
<b>Start Date:</b> 07 Jul-16 16:20	<b>Protocol:</b> EPA-823-B-98-004 (1998)	<b>Diluent:</b> Diluted Natural Seawater
<b>Ending Date:</b> 09 Jul-16 16:50	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 49h	<b>Source:</b> Carlsbad Aquafarms	<b>Age:</b>

<b>Sample ID:</b> 03-6198-0356	<b>Code:</b> 16-3130	<b>Client:</b> Anchor QEA
<b>Sample Date:</b> 07 Jul-16 10:38	<b>Material:</b> Sediment Elutriate	<b>Project:</b> Alamitos Bay
<b>Receive Date:</b> 07 Jul-16 11:38	<b>Source:</b> Anchor QEA	
<b>Sample Age:</b> 6h (11 °C)	<b>Station:</b> Basin-7-Comp	

**Sample Note:** Sediment collection date and time: 6/22/16 16:15; receipt date and time: 6/23/16, 14:50

**Comparison Summary**

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
00-3101-1127	Development Rate	100	>100	NA	2.64%	1	Dunnett Multiple Comparison Test
18-1740-5481	Survival Rate	100	>100	NA	4.43%	1	Steel Many-One Rank Sum Test

**Development Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9664	0.942	0.9908	0.9516	1	0.008788	0.01965	2.03%	0.0%
0	Site Water Contr	5	0.9774	0.9581	0.9967	0.9569	0.9927	0.006949	0.01554	1.59%	-1.14%
1		5	0.977	0.9607	0.9932	0.9576	0.9925	0.005848	0.01308	1.34%	-1.1%
10		5	0.9828	0.9721	0.9934	0.9683	0.9911	0.00384	0.008587	0.87%	-1.7%
50		5	0.9807	0.9706	0.9909	0.971	0.9912	0.003646	0.008152	0.83%	-1.49%
100		5	0.9776	0.9592	0.996	0.958	0.9929	0.006625	0.01481	1.52%	-1.17%

**Survival Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9667	0.8903	1	0.8583	1	0.02751	0.06152	6.36%	0.0%
0	Site Water Contr	5	0.9467	0.8525	1	0.8167	1	0.03391	0.07583	8.01%	2.07%
1		5	0.9817	0.9413	1	0.925	1	0.01453	0.03249	3.31%	-1.55%
10		5	0.9867	0.9496	1	0.9333	1	0.01333	0.02981	3.02%	-2.07%
50		5	0.98	0.953	1	0.95	1	0.009718	0.02173	2.22%	-1.38%
100		5	0.9983	0.9937	1	0.9917	1	0.001667	0.003727	0.37%	-3.28%

**Development Rate Detail**

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Control	0.9516	0.9658	0.9535	0.9609	1
0	Site Water Contr	0.9796	0.9569	0.9927	0.9667	0.9912
1		0.973	0.9776	0.9925	0.9841	0.9576
10		0.9851	0.9911	0.9836	0.9683	0.9858
50		0.971	0.9912	0.9843	0.9741	0.9831
100		0.958	0.9701	0.9917	0.9929	0.9754

**Survival Rate Detail**

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Control	1	0.975	1	1	0.8583
0	Site Water Contr	0.8167	0.9667	1	1	0.95
1		0.925	1	1	1	0.9833
10		1	0.9333	1	1	1
50		1	0.95	1	0.9667	0.9833
100		0.9917	1	1	1	1

**CETIS Summary Report**

Report Date: 13 Jul-16 16:47 (p 2 of 2)  
 Test Code: 1607-S037 | 12-6283-4913

Bivalve Larval Survival and Development Test							Nautilus Environmental (CA)
<b>Development Rate Binomials</b>							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	118/124	113/117	123/129	123/128	103/103	
0	Site Water Contr	96/98	111/116	136/137	145/150	113/114	
1		108/111	131/134	133/134	124/126	113/118	
10		132/134	111/112	120/122	122/126	139/141	
50		134/138	113/114	125/127	113/116	116/118	
100		114/119	130/134	120/121	139/140	119/122	
<b>Survival Rate Binomials</b>							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	120/120	117/120	120/120	120/120	103/120	
0	Site Water Contr	98/120	116/120	120/120	120/120	114/120	
1		111/120	120/120	120/120	120/120	118/120	
10		120/120	112/120	120/120	120/120	120/120	
50		120/120	114/120	120/120	116/120	118/120	
100		119/120	120/120	120/120	120/120	120/120	

**CETIS Analytical Report**

Report Date: 13 Jul-16 16:47 (p 1 of 2)

Test Code: 1607-S037 | 12-6283-4913

**Bivalve Larval Survival and Development Test** Nautilus Environmental (CA)

Analysis ID: 00-3101-1127	Endpoint: Development Rate	CETIS Version: CETISv1.8.7	
Analyzed: 13 Jul-16 16:47	Analysis: Parametric-Control vs Treatments	Official Results: Yes	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	2.64%	100	>100	NA	1

**Dunnett Multiple Comparison Test**

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control	1	-0.8951	2.305	0.071	8	0.9687	CDF	Non-Significant Effect
	10	-1.489	2.305	0.071	8	0.9937	CDF	Non-Significant Effect
	50	-1.237	2.305	0.071	8	0.9872	CDF	Non-Significant Effect
	100	-1.04	2.305	0.071	8	0.9783	CDF	Non-Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.006098	0.0015245	4	0.6425	0.6385	Non-Significant Effect
Error	0.0474553	0.002372765	20			
Total	0.0535533		24			

**Distributional Tests**

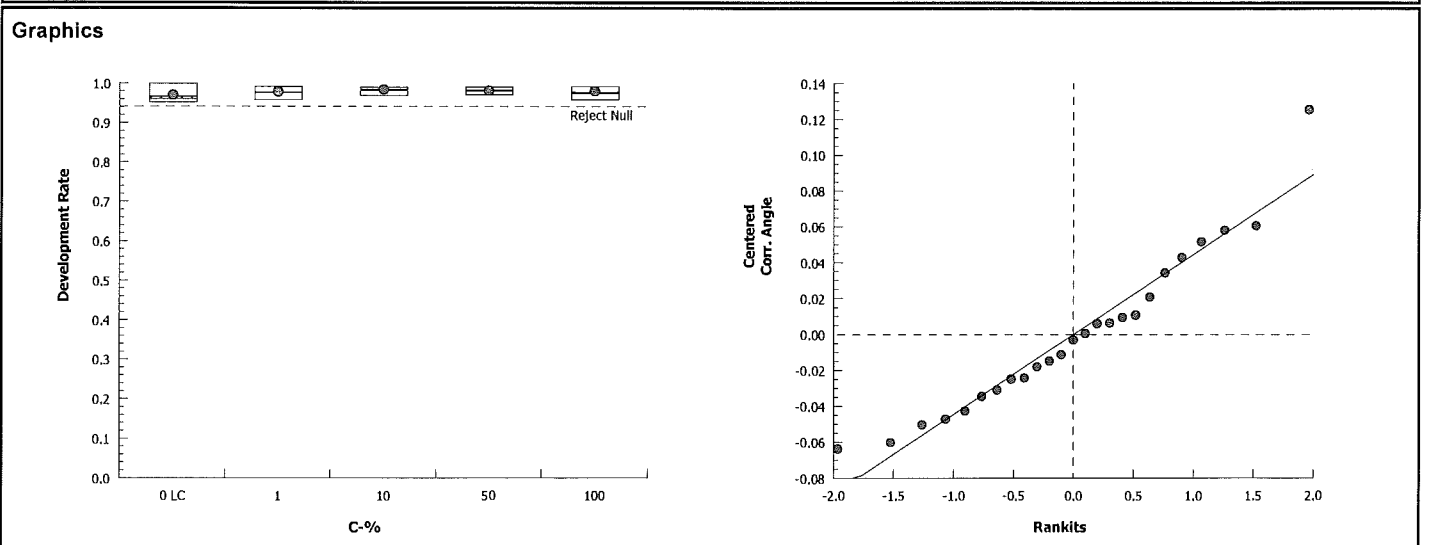
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	3.799	13.28	0.4339	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.946	0.8877	0.2038	Normal Distribution

**Development Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9664	0.942	0.9908	0.9609	0.9516	1	0.008788	2.03%	0.0%
1		5	0.977	0.9607	0.9932	0.9776	0.9576	0.9925	0.005848	1.34%	-1.1%
10		5	0.9828	0.9721	0.9934	0.9851	0.9683	0.9911	0.00384	0.87%	-1.7%
50		5	0.9807	0.9706	0.9909	0.9831	0.971	0.9912	0.003646	0.83%	-1.49%
100		5	0.9776	0.9592	0.996	0.9754	0.958	0.9929	0.006625	1.52%	-1.17%

**Angular (Corrected) Transformed Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.396	1.307	1.485	1.372	1.349	1.522	0.032	5.13%	0.0%
1		5	1.424	1.368	1.479	1.421	1.363	1.484	0.02008	3.15%	-1.98%
10		5	1.442	1.404	1.48	1.448	1.392	1.476	0.01384	2.15%	-3.29%
50		5	1.434	1.396	1.472	1.44	1.4	1.477	0.01378	2.15%	-2.73%
100		5	1.428	1.362	1.494	1.413	1.364	1.486	0.02375	3.72%	-2.29%



**CETIS Analytical Report**

Report Date: 13 Jul-16 16:47 (p 2 of 2)

Test Code: 1607-S037 | 12-6283-4913

**Bivalve Larval Survival and Development Test** **Nautilus Environmental (CA)**

<b>Analysis ID:</b> 18-1740-5481	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 13 Jul-16 16:47	<b>Analysis:</b> Nonparametric-Control vs Treatments	<b>Official Results:</b> Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	4.43%	100	>100	NA	1

**Steel Many-One Rank Sum Test**

Control	vs C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control	1	28.5	17	1	8	0.8616	Asymp	Non-Significant Effect
	10	30	17	1	8	0.9275	Asymp	Non-Significant Effect
	50	26	17	1	8	0.6824	Asymp	Non-Significant Effect
	100	31	17	1	8	0.9559	Asymp	Non-Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.02098628	0.005246569	4	0.543	0.7060	Non-Significant Effect
Error	0.1932326	0.009661628	20			
Total	0.2142188		24			

**Distributional Tests**

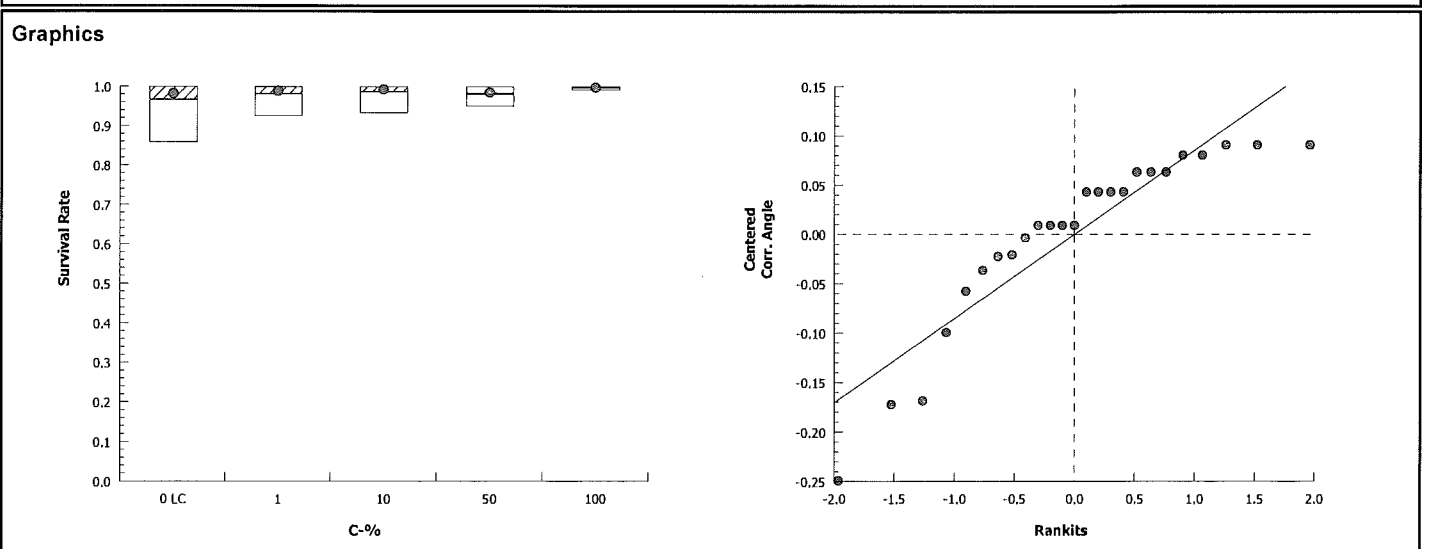
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	9.811	13.28	0.0437	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8491	0.8877	0.0017	Non-normal Distribution

**Survival Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9667	0.8903	1	1	0.8583	1	0.02751	6.36%	0.0%
1		5	0.9817	0.9413	1	1	0.925	1	0.01453	3.31%	-1.55%
10		5	0.9867	0.9496	1	1	0.9333	1	0.01333	3.02%	-2.07%
50		5	0.98	0.953	1	0.9833	0.95	1	0.009718	2.22%	-1.38%
100		5	0.9983	0.9937	1	1	0.9917	1	0.001667	0.37%	-3.28%

**Angular (Corrected) Transformed Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.434	1.251	1.618	1.525	1.185	1.525	0.06612	10.31%	0.0%
1		5	1.462	1.337	1.587	1.525	1.293	1.525	0.04517	6.91%	-1.92%
10		5	1.482	1.362	1.602	1.525	1.31	1.525	0.0431	6.5%	-3.32%
50		5	1.445	1.344	1.545	1.441	1.345	1.525	0.03615	5.6%	-0.72%
100		5	1.516	1.491	1.541	1.525	1.479	1.525	0.009151	1.35%	-5.68%





**Marine Chronic Bioassay**

**Larval Development Worksheet**

Client: Ancha QEA / Alamos Bay  
 Test No.: 1607-5036, -5037  
 Test Species: Mytilus galloprovincialis  
 Animal Source: Carlsbad Aqua Farms  
 Date Received: 6/16/16  
 Test Chambers: 30 ml glass vial  
 Sample Volume: 10 ml

Start Date/Time: 7/7/16 1620  
 End Date/Time: 7/9/16 1650  
 Technician Initials: YS

**Spawn Information**

First Gamete Release Time: 12:20

Sex	Number Spawning
Male	4
Female	2

**Gamete Selection**

Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape, etc.)
Male	1, 2, 3	excellent motility + density
Female 1	1	good density, pale orange, good shape
Female 2	2	Fair density, pale orange, good shape
Female 3		

Egg Fertilization Time: 13:30

**Embryo Stock Selection**

Stock Number	% of embryos at 2-cell division stage
Female 1	98
Female 2	100
Female 3	

Stock(s) chosen for testing: 1

**Embryo Inoculum Preparation**

Target count on Sedgwick-Rafter slide for desired density is 6 embryos

Number Counted: 6      6  
5                      5  
5                      6  
5                      10  
4                      8

Mean: 6

Mean 6 X 50 = 300 embryos/ml

Initial Density: 300 = 1 (dilution factor)

Desired Final Density: 300  
 (to inoculate with 0.5 ml)

Prepare the embryo inoculum according to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (1 part) and 125 ml of dilution water (1.25 parts).

**Time Zero Control Counts**

Rand. No.	No. Dividing	Total	% Dividing	Mean % Dividing
T01	113	117	96.6	98.5
T02	124	126	98.4	
T03	127	127	100	
T04	125	127	98.4	
T05	112	113	99.1	

48-h QC: 123/132 93.2%

Comments: x̄ = 120

QC Check: KB 7/13/16

Final Review: YS 7/14/16

Anchor QEA  
 Alamitos Bay SPP: 48-hr Bivalve Development Test  
 Random Number Assignment  
 Sample Collection Date:  
 Test Initiation Date: 7/7/16

B-6-Comp Site	Rep	Rand #	B-7-Comp Site	Rep	Rand #
Lab Control <i>105/105</i>	A	38	1 <i>111/103</i>	A	58
	B	47		B	34
	C	48		C	59
	D	75		D	69
	E	73		E	78
Site Control <i>114/112</i>	A	57	10 <i>138/135</i>	A	53
	B	33		B	35
	C	70		C	42
	D	31		D	46
	E	80		E	49
1 <i>134/131</i>	A	45	50 <i>117/115</i>	A	72
	B	76		B	32
	C	54		C	68
	D	40		D	65
	E	62		E	56
10 <i>119/117</i>	A	55	100 <i>118/116</i>	A	43
	B	77		B	71
	C	60		C	51
	D	37		D	36
	E	74		E	66
50 <i>125/113</i>	A	44			
	B	79			
	C	63			
	D	64			
	E	67			
100 <i>121/0</i>	A	61			
	B	50			
	C	39			
	D	41			
	E	52			

Rand # QC: *1/3*

QC counts: *43*

*Americamysis SPP 96-hour*

**Standard Elutriate Preparation**

Client: Anchor QEA/ Alamitos Bay Test Species: A. bahia

Sample IDs: Basin 6-Comp, 7-Comp M. beryllina

Analyst: AUB

Test IDs: 1607-5038 to 5041

Protocols : EPA-503/8-91/001 Feb 1991 (ITM) & EPA-823/B-98/004 Feb 1998 (OTM)

Water used to prepare elutriate (circle): Lab SW or Site Water

Salinity (ppt): 34.1

Ratio 1:4 (Sediment:Water): Example: 2 L Sediment : 8 L Water

Site ID:	Sediment Volume:	Water Volume:
<u>Basin 6-Comp</u>	<u>3L</u>	<u>12L</u>
<u>Basin 7-Comp</u>	<u>3L</u>	<u>12L</u>

Mix sediment and water in polyethylene plastic-lined 5-gallon bucket with stainless steel mixing blade for a total of 30 min.

Every 10 minutes, use a stainless steel spoon to manually suspend settled sediment.

Site ID:	Settling Start Date/Time:	Settling End Date/Time:
<u>Basin 6-Comp</u>	<u>7/13/14 07:10:23</u>	<u>7/13/14 09:23</u>
<u>Basin 7-Comp</u>	<u>7/13/14 07:41</u>	<u>7/13/14 08:41</u>

Settle for 1-hour at room temperature. (See project manager if settling is insufficient)  
Siphon overlying water (elutriate) into a new container without disturbing the sediment  
If necessary, centrifuge elutriate to remove particulates (especially for larval testing).

Check Dissolved Oxygen (DO) before preparing dilutions (aerate if < 6.0 mg/L).

Site ID:	Initial DO (mg/L):	Final DO (mg/L):
<u>Basin 6-Comp</u>	<u>5.7</u>	<u>U.U</u>
<u>Basin 7-Comp</u>	<u>5.6</u>	<u>U.U</u>

Prepare dilutions if necessary and collect ammonia subsamples

Comments: DAUB 018 7/13/14

QC Check: KB 7/19/14 Final Review: VS 8/11/16

96-Hour Marine Sediment Bioassay  
Suspended Particulate Phase

Water Quality Measurements  
& Test Organism Survival

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: A. bahia

Sample ID: Basin 6-Comp

Start Date/Time: 7/12/2016 7:13:14 1345

Test No.: 1607-5038

End Date/Time: 7/14/2016 7:17:14 1250

Concentration %	Rep	Number of Live Organisms			Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Percent Survival				
		0*	48	96*	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96					
Lab	A	10	10	10	32.4	33.9	35.5	37.0	38.4	24.1	24.3	25.2	24.6	24.9	6.6	5.9	5.9	5.8	5.3	7.95	7.82	7.88	8.01	7.95	100				
Control #2	B	10	9	9																				90					
	C	10	10	10																				100					
	D	10	10	10																				100					
	E	10	10	10																				100					
Site Water	A	10	10	9	34.1	35.6	37.2	37.7	41.1	24.3	25.1	25.6	24.5	25.3	7.9	5.6	5.9	5.9	5.4	7.97	7.92	7.91	8.10	8.09	90				
Control #2	B	10	10	10																				100					
	C	10	10	9																				90					
	D	10	10	10																				100					
	E	10	10	10																				100					
10	A	10	10	10	32.5	33.5	34.0	35.0	35.7	24.1	24.0	26.0	24.6	24.6	6.5	5.6	5.6	5.8	5.9	7.96	7.94	7.94	8.07	8.05	100				
	B	10	9	9																				90					
	C	10	10	9																				90					
	D	10	10	10																				100					
	E	10	8	8																				80					
50	A	10	10	9	33.3	34.2	34.5	35.4	36.2	24.9	24.9	26.0	24.6	24.9	6.5	5.6	5.4	6.0	5.5	8.02	8.02	8.06	8.17	8.23	90				
	B	10	10	8																				80					
	C	10	10	10																				100					
	D	10	9	9																				90					
	E	10	9	9																				90					
100	A	10	9	8	34.2	34.5	34.4	35.2	35.6	24.9	25.2	26.1	24.7	25.1	6.6	5.4	4.9	5.9	5.8	8.04	8.09	8.14	8.30	8.35	80				
	B	10	9	9																				90					
	C	10	10	9																				90					
	D	10	10	10																				100					
	E	10	8	8																				80					
Tech Initials (counts)		EM MM MR			Tech Initials (readings)																				CM MR MM MR MR				

Animal Source/Date Received: ABS 7/12/16

Age at Initiation: 5 days

Comments: Organisms fed prior to initiation, circle one (y/n) (y)  
 \*Collect NH<sub>3</sub> sub-sample 223 CR QR 7/13/16  
RAVB R18 7/12/16 @ AUB R18 7/17/16  
 Q21 - Test aerated due to dropping D.O. values.

Feeding Times (hr):

	0	24	48	72	96
-	0835	0845	0840	0820	
1545	1600	1600	1600	-	

QC Check: KB 7/19/16

Final Review: VS 8/1/16

**CETIS Summary Report**

Report Date: 20 Jul-16 12:53 (p 1 of 1)  
 Test Code: 1607-S038 | 17-9591-2730

Mysid 96-h Acute Survival Test								Nautilus Environmental (CA)			
<b>Batch ID:</b>	18-8409-1889	<b>Test Type:</b>	Survival (96h)	<b>Analyst:</b>							
<b>Start Date:</b>	13 Jul-16 13:45	<b>Protocol:</b>	EPA/821/R-02-012 (2002)	<b>Diluent:</b>	Diluted Natural Seawater						
<b>Ending Date:</b>	17 Jul-16 12:50	<b>Species:</b>	Americamysis bahia	<b>Brine:</b>	Not Applicable						
<b>Duration:</b>	95h	<b>Source:</b>	Aquatic Biosystems, CO	<b>Age:</b>	5 d						
<b>Sample ID:</b>	05-3887-6792	<b>Code:</b>	16-3129	<b>Client:</b>	Anchor QEA						
<b>Sample Date:</b>	13 Jul-16 08:23	<b>Material:</b>	Sediment Elutriate	<b>Project:</b>	Alamitos Bay						
<b>Receive Date:</b>	13 Jul-16 09:23	<b>Source:</b>	Anchor QEA								
<b>Sample Age:</b>	5h (10 °C)	<b>Station:</b>	Basin-6-Comp								
<b>Sample Note:</b> Sediment collection date and time: 6/21/16, 16:35; receipt date and time: 6/23/15, 14:50											
<b>Comparison Summary</b>											
<b>Analysis ID</b>	<b>Endpoint</b>	<b>NOEL</b>	<b>LOEL</b>	<b>TOEL</b>	<b>PMSD</b>	<b>TU</b>	<b>Method</b>				
17-2967-4004	96h Survival Rate	100	>100	NA	9.84%	1	Dunnett Multiple Comparison Test				
<b>96h Survival Rate Summary</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	Lab Control	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0	Site Water Contr	5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	2.04%
10		5	0.92	0.8161	1	0.8	1	0.03742	0.08367	9.09%	6.12%
50		5	0.9	0.8122	0.9878	0.8	1	0.03162	0.07071	7.86%	8.16%
100		5	0.88	0.7761	0.9839	0.8	1	0.03742	0.08367	9.51%	10.2%
<b>96h Survival Rate Detail</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Rep 1</b>	<b>Rep 2</b>	<b>Rep 3</b>	<b>Rep 4</b>	<b>Rep 5</b>					
0	Lab Control	1	0.9	1	1	1					
0	Site Water Contr	0.9	1	0.9	1	1					
10		1	0.9	0.9	1	0.8					
50		0.9	0.8	1	0.9	0.9					
100		0.8	0.9	0.9	1	0.8					

**CETIS Analytical Report**

Report Date: 20 Jul-16 12:52 (p 1 of 1)  
 Test Code: 1607-S038 | 17-9591-2730

<b>Mysid 96-h Acute Survival Test</b>			<b>Nautilus Environmental (CA)</b>		
Analysis ID: 17-2967-4004	Endpoint: 96h Survival Rate	CETIS Version: CETISv1.8.7			
Analyzed: 20 Jul-16 12:52	Analysis: Parametric-Control vs Treatments	Official Results: Yes			

**Sample Note:** Sediment collection date and time: 6/21/16, 16:35; receipt date and time: 6/23/15, 14:50

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.84%	100	>100	NA	1

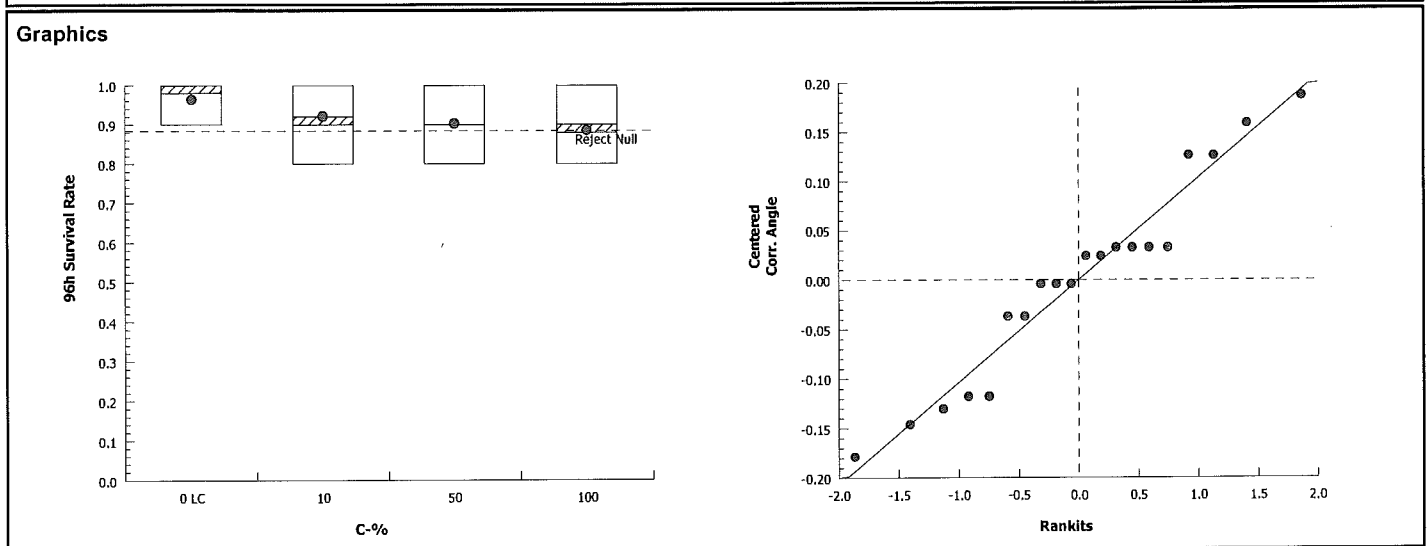
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		10	1.329	2.227	0.157	8	0.2174	CDF	Non-Significant Effect
		50	1.792	2.227	0.157	8	0.1071	CDF	Non-Significant Effect
		100	2.195	2.227	0.157	8	0.0530	CDF	Non-Significant Effect

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.06767512	0.02255837	3	1.821	0.1840	Non-Significant Effect
Error	0.198241	0.01239006	16			
Total	0.2659161		19			

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	1.306	11.34	0.7278	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9481	0.866	0.3398	Normal Distribution

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
10		5	0.92	0.8161	1	0.9	0.8	1	0.03742	9.09%	6.12%
50		5	0.9	0.8122	0.9878	0.9	0.8	1	0.03162	7.86%	8.16%
100		5	0.88	0.7761	0.9839	0.9	0.8	1	0.03742	9.51%	10.2%

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
10		5	1.286	1.126	1.446	1.249	1.107	1.412	0.05765	10.03%	6.78%
50		5	1.253	1.119	1.387	1.249	1.107	1.412	0.04827	8.61%	9.15%
100		5	1.225	1.068	1.382	1.249	1.107	1.412	0.05653	10.32%	11.2%



96-Hour Marine Sediment Bioassay  
Suspended Particulate Phase

Water Quality Measurements  
& Test Organism Survival

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: A. bahia

Sample ID: Basin 7-Comp

Start Date/Time: <sup>(A)</sup> ~~7/12/2016~~ 7/13/16 1345

Test No.: 1607-5039

End Date/Time: <sup>(B)</sup> ~~7/14/2016~~ 7/17/16 1250  
<sup>(C)</sup> ~~7/14/2016~~ 7/17/16 1250

Concentration %	Rep	Number of Live Organisms			Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Percent Survival									
		0*	48	96*	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96										
Lab	A	10	10	10	32.4	33.9	35.5	37.0	38.4	24.1	24.3	25.2	24.6	24.9	6.6	5.9	5.9	5.8	5.3	7.95	7.82	7.88	8.01	7.95	100									
Control #2	B	10	9	9																					90									
	C	10	10	10																					100									
	D	10	10	10																					100									
	E	10	10	10																					100									
Site Water	A	10	10	9	34.1	35.4	37.2	37.7	41.1	24.3	25.1	25.6	24.5	25.3	7.9	5.6	5.9	5.9	5.4	7.97	7.92	7.91	8.10	8.09	90									
Control #2	B	10	10	10																					100									
	C	10	10	9																					90									
	D	10	10	10																					100									
	E	10	10	10																					100									
10	A	10	9	9	32.5	32.9	33.5	33.5	37.7	24.0	25.0	26.0	24.6	25.8	6.4	5.6	5.6	5.9	5.6	7.99	7.94	7.88	8.10	8.09	90									
	B	10	10	10																					100									
	C	10	10	10																					100									
	D	10	9	9																					90									
	E	10	10	10																					100									
50	A	10	9	9	32.9	33.8	35.1	37.2	36.9	24.2	25.3	25.7	24.6	25.6	6.6	6.0	5.8	5.8	5.6	8.05	7.99	7.93	8.10	8.10	90									
	B	10	10	10																					100									
	C	10	10	10																					100									
	D	10	10	10																					100									
	E	10	9	9																					90									
100	A	10	10	9	33.6	33.8	34.0	35.0	40.0	24.4	25.4	26.0	24.9	25.3	6.6	5.5	5.4	5.7	5.6	8.18	8.06	7.98	8.09	8.04	90									
	B	10	10	9																					90									
	C	10	10	10																					100									
	D	10	8	8																					80									
	E	10	10	9																					90									
Tech Initials (counts)		EG MM MR																							Tech Initials (readings)					CM MR MM ME MR				

Animal Source/Date Received: ABS 7/12/16

Age at Initiation: 5 days

Comments: Organisms fed prior to initiation, circle one (y/n) (y)  
 \*Collect NH<sub>3</sub> sub-sample 0275 CH Q18 7/13/16  
Q18 Q18 7/11/16 MM Q18 7/15/16  
 Q21 - test aerated due to dropping D.O. values

Feeding Times (hr):

	0	24	48	72	96
-	0335	0845	0840	0820	
1345	1600	1600	1650	-	

QC Check: KB 7/19/16

Final Review: VS 8/1/16



**CETIS Summary Report**

Report Date: 20 Jul-16 12:57 (p 1 of 1)  
 Test Code: 1607-S039 | 01-5057-8071

**Mysid 96-h Acute Survival Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 18-8409-1889	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b>
<b>Start Date:</b> 13 Jul-16 13:45	<b>Protocol:</b> EPA/821/R-02-012 (2002)	<b>Diluent:</b> Diluted Natural Seawater
<b>Ending Date:</b> 17 Jul-16 12:50	<b>Species:</b> Americamysis bahia	<b>Brine:</b> Not Applicable
<b>Duration:</b> 95h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b> 5 d

<b>Sample ID:</b> 08-1731-5099	<b>Code:</b> 13-3130	<b>Client:</b> Anchor QEA
<b>Sample Date:</b> 13 Jul-16 07:41	<b>Material:</b> Sediment Elutriate	<b>Project:</b> Alamitos Bay
<b>Receive Date:</b> 13 Jul-16 08:41	<b>Source:</b> Anchor QEA	
<b>Sample Age:</b> 6h (11 °C)	<b>Station:</b> Basin-7-Comp	

**Sample Note:** Sediment collection date and time: 6/22/16, 16:15; receipt date and time: 6/23/16, 14:50

**Comparison Summary**

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-4289-5622	96h Survival Rate	100	>100	NA	8.0%	1	Dunnett Multiple Comparison Test

**96h Survival Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0	Site Water Contr	5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	2.04%
10		5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	2.04%
50		5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	2.04%
100		5	0.9	0.8122	0.9878	0.8	1	0.03162	0.07071	7.86%	8.16%

**96h Survival Rate Detail**

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Control	1	0.9	1	1	1
0	Site Water Contr	0.9	1	0.9	1	1
10		0.9	1	1	0.9	1
50		0.9	1	1	1	0.9
100		0.9	0.9	1	0.8	0.9

**CETIS Analytical Report**

Report Date: 20 Jul-16 12:57 (p 1 of 1)  
 Test Code: 1607-S039 | 01-5057-8071

**Mysid 96-h Acute Survival Test** **Nautilus Environmental (CA)**

Analysis ID: 12-4289-5622      Endpoint: 96h Survival Rate      CETIS Version: CETISv1.8.7  
 Analyzed: 20 Jul-16 12:56      Analysis: Parametric-Control vs Treatments      Official Results: Yes

**Sample Note:** Sediment collection date and time: 6/22/16, 16:15; receipt date and time: 6/23/16, 14:50

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	8.0%	100	>100	NA	1

**Dunnett Multiple Comparison Test**

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		10	0.5683	2.227	0.128	8	0.5145	CDF	Non-Significant Effect
		50	0.5683	2.227	0.128	8	0.5145	CDF	Non-Significant Effect
		100	2.2	2.227	0.128	8	0.0526	CDF	Non-Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.04443909	0.01481303	3	1.801	0.1876	Non-Significant Effect
Error	0.1315951	0.008224697	16			
Total	0.1760342		19			

**Distributional Tests**

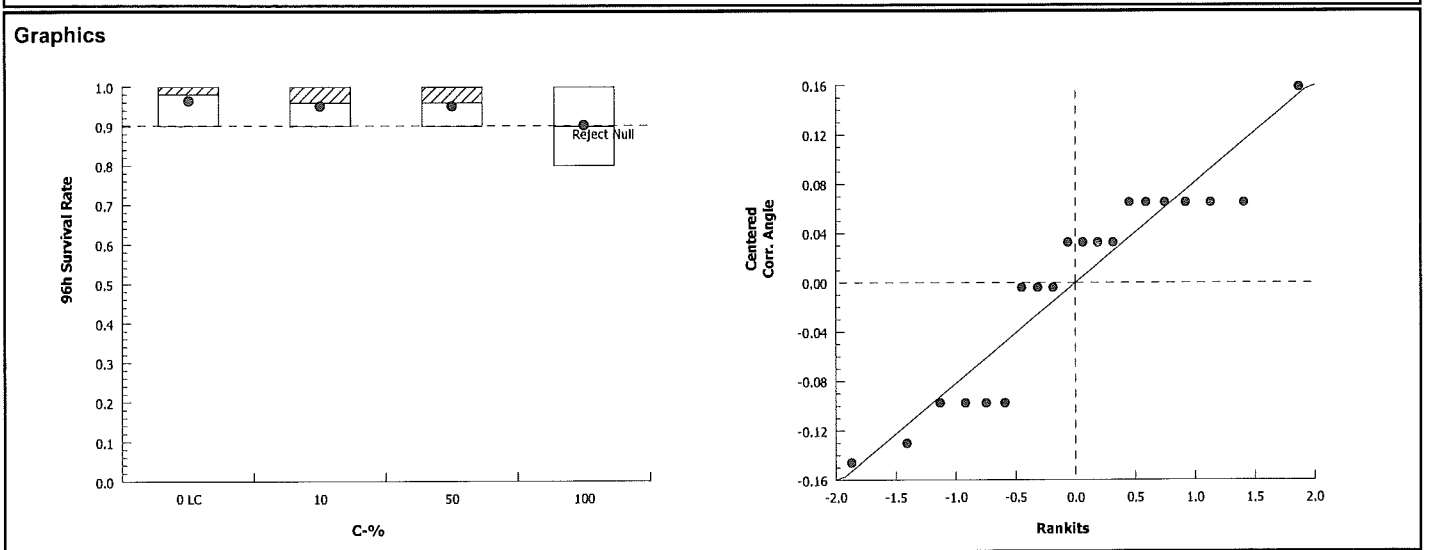
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	0.552	11.34	0.9073	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8957	0.866	0.0343	Normal Distribution

**96h Survival Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
10		5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	2.04%
50		5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	2.04%
100		5	0.9	0.8122	0.9878	0.9	0.8	1	0.03162	7.86%	8.16%

**Angular (Corrected) Transformed Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
10		5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	2.36%
50		5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	2.36%
100		5	1.253	1.119	1.387	1.249	1.107	1.412	0.04827	8.61%	9.15%



*Meridia* SPP 96-hour

96-Hour Marine Sediment Bioassay  
Suspended Particulate Phase

Water Quality Measurements  
& Test Organism Survival

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: M. beryllina

Sample ID: Basin 6-Comp

Start Date/Time: 7/12/2016 7:11:14 1330

Test No.: 1607-5040

End Date/Time: 7/16/2016 7:17:14 1315

Concentration %	Rep	Number of Live Organisms			Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Percent Survival					
		0*	48	96*	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96						
Lab	A	10	10	10	32.4	32.9	33.6	33.6	33.9	24.1	24.6	25.6	25.0	25.0	6.6	5.1	5.9	5.7	5.7	7.95	7.85	7.94	8.08	7.97	100					
Control #1	B	10	10	9																					90					
	C	10	10	10																						100				
	D	10	10	10																						100				
	E	10	9	9																						90				
	Site Water	A	10	8	8	34.1	34.4	35.0	34.9	35.0	24.3	25.5	25.7	25.0	25.0	7.9	5.4	5.9	5.9	5.9	7.97	7.95	8.01	8.10	8.00	80				
Control #1	B	10	10	9																						90				
	C	10	8	8																						80				
	D	10	10	10																						100				
	E	10	9	9																						90				
	10	A	10	9	8	32.6	32.9	33.5	33.9	33.7	24.0	25.6	25.7	24.7	24.9	6.6	5.4	5.9	5.9	5.9	7.97	7.91	8.05	8.12	8.11	80				
Control #1	B	10	10	9																						90				
	C	10	10	10																						100				
	D	10	10	10																						100				
	E	10	9	9																						90				
	50	A	10	8	8	33.3	33.5	34.1	34.0	34.3	24.1	25.8	25.4	24.8	24.8	6.6	5.0	5.9	5.9	6.0	8.03	8.03	8.21	8.31	8.27	80				
Control #1	B	10	10	10																						100				
	C	10	10	9																						90				
	D	10	10	10																						100				
	E	10	9	9																						90				
	100	A	10	8	8	34.2	34.1	34.8	34.7	35.0	24.3	25.9	25.5	25.0	24.9	6.6	4.6	6.0	6.0	5.8	8.04	8.09	8.35	8.45	8.42	80				
Control #1	B	10	9	8																						80				
	C	10	10	10																						100				
	D	10	9	9																						90				
	E	10	8	8																						80				
	Tech Initials (counts)		APJ	EG	MR																				Tech Initials (readings)		CH	MR	MR	MR

Animal Source/Date Received: ABS 1 7/12/14

Age at Initiation: 14d

Comments: Organisms fed prior to initiation, circle one (y) / (n)  
 \*Collect NH<sub>3</sub> sub-sample  
Q21 - Test aerated due to dropping O<sub>2</sub> values

Feeding Times (hr):

	0	24	48	72	96
--	0839	0845	0840	0820	
--	--	--	--	--	

QC Check: KB 7/17/16

Final Review: 13 8/1/16

**CETIS Summary Report**

**Report Date:** 20 Jul-16 12:49 (p 1 of 1)  
**Test Code:** 1607-S040 | 14-6252-5463

Inland Silverside 96-h Acute Survival Test							Nautilus Environmental (CA)				
<b>Batch ID:</b>	11-7464-8272	<b>Test Type:</b>	Survival (96h)			<b>Analyst:</b>					
<b>Start Date:</b>	13 Jul-16 13:30	<b>Protocol:</b>	EPA/821/R-02-012 (2002)			<b>Diluent:</b>	Diluted Natural Seawater				
<b>Ending Date:</b>	17 Jul-16 13:15	<b>Species:</b>	Menidia beryllina			<b>Brine:</b>	Not Applicable				
<b>Duration:</b>	96h	<b>Source:</b>	Aquatic Biosystems, CO			<b>Age:</b>	14 d				
<b>Sample ID:</b>	05-3887-6792	<b>Code:</b>	16-3129			<b>Client:</b>	Anchor QEA				
<b>Sample Date:</b>	13 Jul-16 08:23	<b>Material:</b>	Sediment Elutriate			<b>Project:</b>	Alamitos Bay				
<b>Receive Date:</b>	13 Jul-16 09:23	<b>Source:</b>	Anchor QEA								
<b>Sample Age:</b>	5h (10 °C)	<b>Station:</b>	Basin-6-Comp								
<b>Batch Note:</b> Sediment collection date and time: 6/21/16, 16:35; receipt date and time: 6/23/15, 14:50											
<b>Comparison Summary</b>											
<b>Analysis ID</b>	<b>Endpoint</b>	<b>NOEL</b>	<b>LOEL</b>	<b>TOEL</b>	<b>PMSD</b>	<b>TU</b>	<b>Method</b>				
05-8363-4777	96h Survival Rate	100	>100	NA	11.3%	1	Dunnett Multiple Comparison Test				
<b>Test Acceptability</b>											
<b>Analysis ID</b>	<b>Endpoint</b>	<b>Attribute</b>		<b>Test Stat</b>	<b>TAC Limits</b>		<b>Overlap</b>	<b>Decision</b>			
05-8363-4777	96h Survival Rate	Control Resp		0.96	0.9 - NL		Yes	Passes Acceptability Criteria			
<b>96h Survival Rate Summary</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	Lab Control	5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	0.0%
0	Site Water Contr	5	0.88	0.7761	0.9839	0.8	1	0.03742	0.08367	9.51%	8.33%
10		5	0.92	0.8161	1	0.8	1	0.03742	0.08367	9.09%	4.17%
50		5	0.92	0.8161	1	0.8	1	0.03742	0.08367	9.09%	4.17%
100		5	0.86	0.7489	0.9711	0.8	1	0.04	0.08944	10.4%	10.42%
<b>96h Survival Rate Detail</b>											
<b>C-%</b>	<b>Control Type</b>	<b>Rep 1</b>	<b>Rep 2</b>	<b>Rep 3</b>	<b>Rep 4</b>	<b>Rep 5</b>					
0	Lab Control	1	0.9	1	1	0.9					
0	Site Water Contr	0.8	0.9	0.8	1	0.9					
10		0.8	0.9	1	1	0.9					
50		0.8	1	0.9	1	0.9					
100		0.8	0.8	1	0.9	0.8					

Inland Silverside 96-h Acute Survival Test Nautilus Environmental (CA)

Analysis ID: 05-8363-4777      Endpoint: 96h Survival Rate      CETIS Version: CETISv1.8.7  
 Analyzed: 20 Jul-16 12:49      Analysis: Parametric-Control vs Treatments      Official Results: Yes

Batch Note: Sediment collection date and time: 6/21/16, 16:35; receipt date and time: 6/23/15, 14:50

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.3%	100	>100	NA	1

**Dunnett Multiple Comparison Test**

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		10	0.7905	2.227	0.172	8	0.4174	CDF	Non-Significant Effect
		50	0.7905	2.227	0.172	8	0.4174	CDF	Non-Significant Effect
		100	1.949	2.227	0.172	8	0.0822	CDF	Non-Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.05750178	0.01916726	3	1.289	0.3123	Non-Significant Effect
Error	0.2379885	0.01487428	16			
Total	0.2954902		19			

**Distributional Tests**

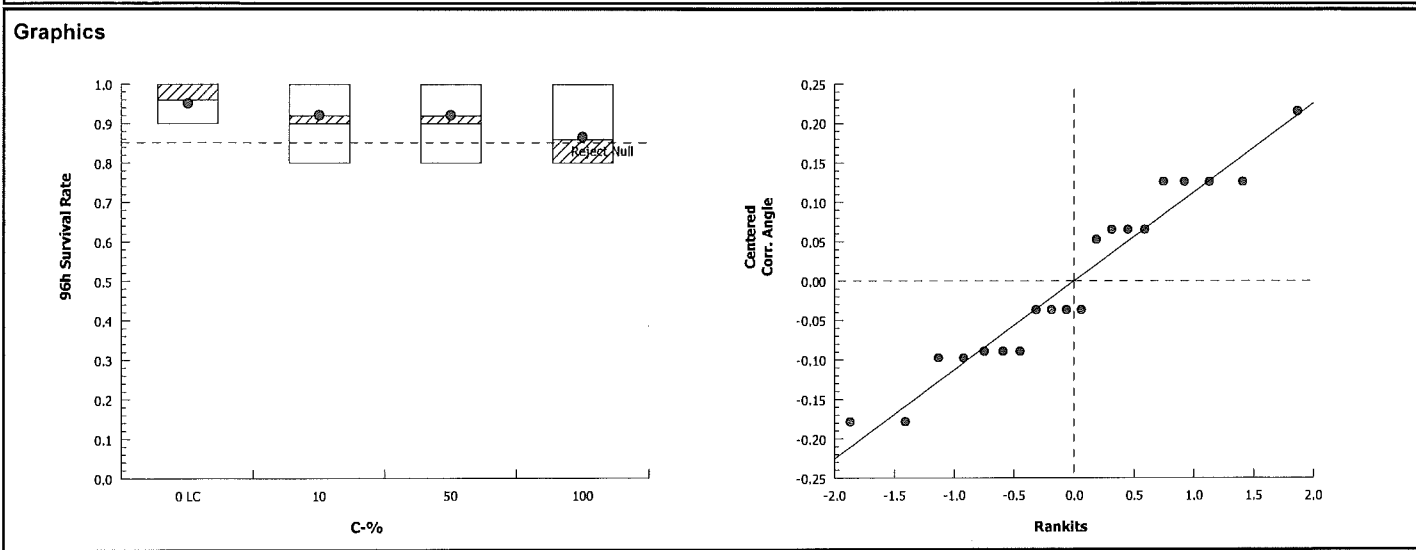
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	0.7086	11.34	0.8712	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9374	0.866	0.2141	Normal Distribution

**96h Survival Rate Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	0.0%
10		5	0.92	0.8161	1	0.9	0.8	1	0.03742	9.09%	4.17%
50		5	0.92	0.8161	1	0.9	0.8	1	0.03742	9.09%	4.17%
100		5	0.86	0.7489	0.9711	0.8	0.8	1	0.04	10.4%	10.42%

**Angular (Corrected) Transformed Summary**

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	0.0%
10		5	1.286	1.126	1.446	1.249	1.107	1.412	0.05765	10.03%	4.53%
50		5	1.286	1.126	1.446	1.249	1.107	1.412	0.05765	10.03%	4.53%
100		5	1.197	1.029	1.364	1.107	1.107	1.412	0.06048	11.3%	11.16%



96-Hour Marine Sediment Bioassay  
Suspended Particulate Phase

Water Quality Measurements  
& Test Organism Survival

Client/Project ID: Anchor QEA/ Alamitos Bay

Test Species: M. beryllina

Sample ID: Basin 7-Comp

Start Date/Time: 7/12/2016 7:13:14 130

Test No.: 1607-5011

End Date/Time: 7/16/2016 7:17:14 1315

Concentration %	Rep	Number of Live Organisms			Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)				pH (units)				Percent Survival				
		0*	48	96*	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48		72	96		
Lab	A	10	10	10	32.4	32.9	33.6	33.6	33.6	24.1	24.4	25.6	25.0	25.0	6.6	5.1	5.9	5.7	5.7	7.95	7.89	7.94	8.08	7.97	100		
Control #2 (#1)	B	10	10	9																					90		
	C	10	10	10																						100	
	D	10	10	10																						100	
	E	10	9	9																						90	
																											90
Site Water	A	10	8	8	34.1	34.4	35.0	34.9	35.0	24.3	25.5	25.7	25.0	25.0	7.9	5.6	5.9	5.9	5.9	7.97	7.95	8.01	8.10	8.04	80		
Control #2 (#1)	B	10	10	9																						90	
	C	10	8	8																						80	
	D	10	10	10																						100	
	E	10	9	9																						90	
																											90
10	A	10	9	9	32.5	32.6	33.2	33.3	33.1	24.0	25.4	25.3	24.7	24.2	6.5	5.4	6.1	5.9	6.2	7.98	7.99	7.88	8.10	8.14	90		
	B	10	9	9																						90	
	C	10	10	10																						100	
	D	10	9	9																						90	
	E	10	10	9																						90	
50	A	10	10	9	33.0	33.1	33.7	33.6	33.6	24.3	25.6	25.7	24.9	24.9	6.7	5.3	6.0	6.1	6.1	8.08	8.01	8.02	8.10	8.12	90		
	B	10	10	10																						100	
	C	10	9	9																						90	
	D	10	10	9																						90	
	E	10	10	10																						100	
100	A	10	9	9	33.6	33.8	34.6	34.5	34.6	24.4	25.5	25.9	24.9	25.0	6.7	5.4	6.0	6.1	6.0	8.18	8.08	8.08	8.17	8.15	90		
	B	10	9	9																						90	
	C	10	10	10																						100	
	D	10	10	9																						90	
	E	10	9	8																						80	
Tech Initials (counts)		MR	MR	MR											Tech Initials (readings)				MR	MR	MR	MR	MR				

Animal Source/Date Received: APCS 7/12/16

Age at Initiation: 14d

Comments: Organisms fed prior to initiation, circle one (y) (n)

Feeding Times (hr):

	0	24	48	72	96
-	MR	MR	MR	MR	MR
-	--	--	--	--	--

\*Collect NH<sub>3</sub> sub-sample  
 @ MR 7/12/16 @ EG 8/8 7/14/16  
 Q21 - Test aerated due to dropping D.O. values

QC Check: VB 7/15/16

Final Review: VS 8/1/16

**CETIS Summary Report**

**Report Date:** 20 Jul-16 12:59 (p 1 of 1)  
**Test Code:** 1607-S041 | 14-9204-7014

Inland Silverside 96-h Acute Survival Test							Nautilus Environmental (CA)					
<b>Batch ID:</b>	14-5144-8625	<b>Test Type:</b>	Survival (96h)				<b>Analyst:</b>					
<b>Start Date:</b>	13 Jul-16 13:30	<b>Protocol:</b>	EPA/821/R-02-012 (2002)				<b>Diluent:</b>	Diluted Natural Seawater				
<b>Ending Date:</b>	17 Jul-16 13:15	<b>Species:</b>	Menidia beryllina				<b>Brine:</b>	Not Applicable				
<b>Duration:</b>	96h	<b>Source:</b>	Aquatic Biosystems, CO				<b>Age:</b>	14 d				
<b>Sample ID:</b>	08-1731-5099	<b>Code:</b>	13-3130				<b>Client:</b>	Anchor QEA				
<b>Sample Date:</b>	13 Jul-16 07:41	<b>Material:</b>	Sediment Elutriate				<b>Project:</b>	Alamitos Bay				
<b>Receive Date:</b>	13 Jul-16 08:41	<b>Source:</b>	Anchor QEA									
<b>Sample Age:</b>	6h (11 °C)	<b>Station:</b>	Basin-7-Comp									
<b>Sample Note:</b> Sediment collection date and time: 6/22/16, 16:15; receipt date and time: 6/23/16, 14:50												
<b>Comparison Summary</b>												
<b>Analysis ID</b>	<b>Endpoint</b>	<b>NOEL</b>	<b>LOEL</b>	<b>TOEL</b>	<b>PMSD</b>	<b>TU</b>	<b>Method</b>					
17-5802-6787	96h Survival Rate	100	>100	NA	8.2%	1	Dunnett Multiple Comparison Test					
<b>Test Acceptability</b>												
<b>Analysis ID</b>	<b>Endpoint</b>	<b>Attribute</b>		<b>Test Stat</b>	<b>TAC Limits</b>		<b>Overlap</b>	<b>Decision</b>				
17-5802-6787	96h Survival Rate	Control Resp		0.96	0.9 - NL		Yes	Passes Acceptability Criteria				
<b>96h Survival Rate Summary</b>												
<b>C-%</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>	
0	Lab Control	5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	0.0%	
0	Site Water Contr	5	0.88	0.7761	0.9839	0.8	1	0.03742	0.08367	9.51%	8.33%	
10		5	0.92	0.8645	0.9755	0.9	1	0.02	0.04472	4.86%	4.17%	
50		5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%	
100		5	0.9	0.8122	0.9878	0.8	1	0.03162	0.07071	7.86%	6.25%	
<b>96h Survival Rate Detail</b>												
<b>C-%</b>	<b>Control Type</b>	<b>Rep 1</b>	<b>Rep 2</b>	<b>Rep 3</b>	<b>Rep 4</b>	<b>Rep 5</b>						
0	Lab Control	1	0.9	1	1	0.9						
0	Site Water Contr	0.8	0.9	0.8	1	0.9						
10		0.9	0.9	1	0.9	0.9						
50		0.9	1	0.9	0.9	1						
100		0.9	0.9	1	0.9	0.8						



Inland Silverside 96-h Acute Survival Test			Nautilus Environmental (CA)		
Analysis ID: 17-5802-6787	Endpoint: 96h Survival Rate	CETIS Version: CETISv1.8.7			
Analyzed: 20 Jul-16 12:59	Analysis: Parametric-Control vs Treatments	Official Results: Yes			

Sample Note: Sediment collection date and time: 6/22/16, 16:15; receipt date and time: 6/23/16, 14:50

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	8.2%	100	>100	NA	1

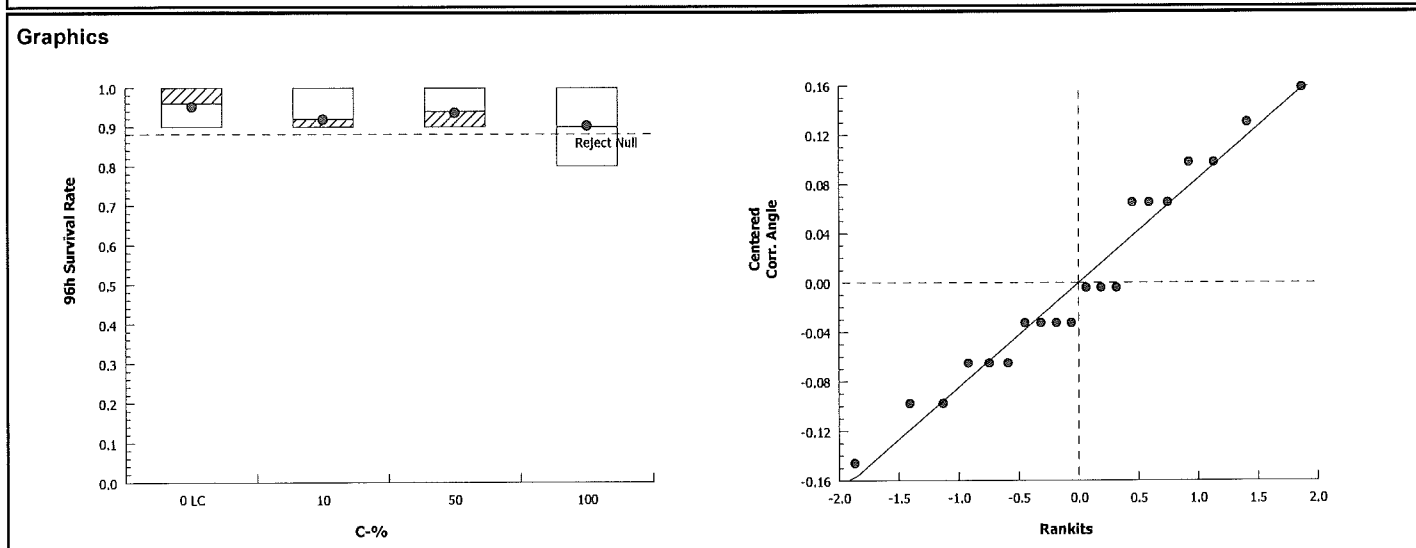
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		10	1.137	2.227	0.128	8	0.2809	CDF	Non-Significant Effect
		50	0.5683	2.227	0.128	8	0.5145	CDF	Non-Significant Effect
		100	1.631	2.227	0.128	8	0.1388	CDF	Non-Significant Effect

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.02456535	0.008188451	3	0.9956	0.4201	Non-Significant Effect
Error	0.1315951	0.008224697	16			
Total	0.1561605		19			

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	0.552	11.34	0.9073	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9556	0.866	0.4601	Normal Distribution

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	0.0%
10		5	0.92	0.8645	0.9755	0.9	0.9	1	0.02	4.86%	4.17%
50		5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%
100		5	0.9	0.8122	0.9878	0.9	0.8	1	0.03162	7.86%	6.25%

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	0.0%
10		5	1.282	1.191	1.372	1.249	1.249	1.412	0.03259	5.69%	4.84%
50		5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.42%
100		5	1.253	1.119	1.387	1.249	1.107	1.412	0.04827	8.61%	6.95%



*Macoma* and *Nereis* BP 28-day

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Water Quality Measurements**

Client: Anchor QEA  
Test Species: M. nasuta and N. virens

Project ID: Alamitos Bay  
Site ID: Lab Control

Start Date/Time: 6/29/2016 1100  
End Date/Time: 7/27/2016 0400

Day	Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Salinity (ppt)					Analyst
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0*	10.0	10.0	10.7	10.0	10.0	8.0	7.9	7.9	7.9	7.9	8.06	8.08	8.08	8.10	8.10	34.0	34.0	34.0	34.0	34.1	ALB
1	15.5	15.5	15.2	14.4	14.4	8.0	8.0	8.0	8.3	8.3	7.90	7.97	7.91	7.99	7.98	34.1	34.1	34.1	34.1	34.1	MM
2	15.3	15.4	15.0	15.2	15.1	8.1	7.9	7.9	8.0	8.0	7.90	7.94	7.91	7.95	7.95	33.5	34.1	34.1	34.0	34.1	MM
3	15.5	15.5	15.4	15.4	15.3	8.0	8.0	7.9	8.0	7.9	7.92	8.00	7.96	8.02	8.01	33.9	34.0	34.0	34.0	34.0	AUB
4	15.7	15.6	15.4	15.5	15.4	7.9	7.8	7.8	7.8	7.9	7.91	7.92	7.93	8.00	8.01	33.7	33.9	34.0	34.0	34.0	MR
5	14.9	15.1	15.3	15.5	15.4	8.2	8.1	8.0	8.0	8.0	7.93	7.96	7.94	8.00	8.00	33.7	34.0	33.9	34.0	34.0	EG
6	15.0	15.2	15.2	15.2	15.2	8.0	8.0	7.9	7.9	8.0	7.96	7.99	7.96	8.02	8.02	33.8	34.0	34.0	34.0	34.0	MR
7*	15.2	15.4	15.2	15.3	15.3	8.1	8.0	8.0	8.0	8.0	7.98	8.02	8.01	8.04	8.01	34.0	34.1	34.0	34.0	34.1	MM
8	15.5	15.6	15.4	15.4	15.6	8.1	8.1	8.1	8.2	8.1	7.99	7.99	7.98	7.99	7.97	33.9	34.1	34.2	34.2	34.2	AG
9	15.7	15.7	15.6	15.6	15.6	8.0	8.0	8.0	8.0	8.0	7.97	8.01	7.99	8.02	7.99	33.9	34.0	34.0	34.1	34.1	AUB
10	16.0	15.7	15.7	15.7	15.8	8.0	8.2	8.2	8.3	8.2	7.93	7.96	7.98	8.00	7.97	34.3	34.3	34.3	34.2	34.2	AD
11	15.0	15.7	15.7	15.6	15.8	7.8	7.7	7.8	7.8	7.7	7.96	7.99	8.00	8.02	7.99	34.3	34.4	34.4	34.4	34.4	MM
12	15.7	15.7	15.8	15.7	15.8	7.8	8.1	8.1	8.1	8.1	7.93	7.94	7.97	8.00	7.97	34.1	34.3	34.3	34.3	34.3	MR
13	15.9	15.7	15.8	15.5	15.4	7.8	7.9	7.8	7.8	7.8	7.93	7.97	7.99	8.01	7.99	34.1	34.3	34.3	34.3	34.3	MR
14*	15.9	15.9	15.8	15.7	16.0	7.7	7.7	7.6	7.8	7.5	7.96	7.99	7.99	8.02	8.00	34.1	34.2	34.3	34.1	34.3	MR
15	15.8	15.7	15.7	15.6	15.8	8.3	8.3	8.3	8.3	8.3	8.00	8.02	8.02	8.04	8.01	34.0	34.0	34.0	34.1	34.1	MM
16	16.2	16.1	16.0	16.0	16.0	7.7	7.8	7.9	7.9	7.9	7.97	8.01	8.00	8.03	7.98	34.2	34.3	34.3	34.3	34.3	NHC
17	16.0	15.6	15.9	15.7	15.6	7.4	7.6	7.5	7.6	7.7	7.92	8.04	8.06	8.06	8.06	34.0	33.9	34.1	34.0	34.0	MR
18	16.6	15.7	16.0	15.7	15.8	7.6	7.7	7.7	7.7	7.7	8.00	8.04	8.05	8.08	8.05	34.1	34.0	34.1	34.1	34.1	NHC
19	16.2	15.8	16.0	15.8	15.9	7.6	7.8	7.7	7.7	7.8	7.90	7.97	7.97	8.00	7.98	34.0	33.8	34.0	34.0	34.0	CH
20	15.6	15.7	15.7	15.7	15.8	7.4	7.5	7.5	7.5	7.5	7.91	7.96	7.97	7.99	7.98	33.6	34.1	34.1	34.1	34.1	MR
21*	16.2	15.9	15.8	15.9	15.8	7.9	7.9	7.9	8.0	7.9	7.94	7.97	7.98	7.99	7.98	34.0	34.0	34.1	34.2	34.1	MM
22	15.7	15.7	15.9	15.7	15.8	7.9	7.9	7.8	7.9	7.8	7.97	8.01	8.01	8.03	8.00	33.8	34.0	34.1	34.1	34.1	NHC
23	15.9	15.9	16.1	15.7	16.9	8.0	7.9	7.9	8.0	7.9	7.91	7.95	7.95	7.97	7.95	33.0	33.6	33.7	33.7	33.7	AUB
24	15.7	15.5	15.4	15.8	15.6	8.0	8.0	8.1	8.0	8.0	7.94	8.01	8.02	8.05	8.03	33.9	34.0	34.0	34.1	34.1	AUB
25	15.8	15.5	15.3	14.8	15.4	7.8	7.8	7.9	7.9	7.8	7.99	8.04	8.05	8.06	8.04	33.8	34.0	34.0	34.0	34.1	AS
26	15.7	15.4	15.3	14.9	15.3	7.7	7.8	7.8	7.8	7.8	7.97	7.99	8.00	8.03	8.00	34.1	34.1	34.2	34.1	34.2	AG
27	16.2	16.0	15.9	15.8	16.0	8.0	8.0	8.1	8.1	8.0	8.01	8.06	8.06	8.08	8.05	34.0	34.0	34.1	34.1	34.1	AUB
28*	15.2	14.9	15.1	14.7	14.4	8.3	8.2	8.1	8.1	8.2	7.96	7.97	7.97	8.01	8.01	33.6	33.6	33.7	33.8	33.7	AG

Comments: \* Collect NH<sub>3</sub> Samples @ALB Q18 1123116 @MM Q18 6-30-16

QC Check: ALB 7/27/16

Final Review: AS 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Water Quality Measurements**

Client: Anchor QEA  
Test Species: M. nasuta and N.virens

Project ID: Alamitos Bay  
Site ID: LA2-REF

Start Date/Time: 6/29/2016 1100  
End Date/Time: 7/27/2016 0900

Day	Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Salinity (ppt)					Analyst
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0*	15.7	16.0	16.0	16.0	16.0	8.0	7.9	8.0	7.9	7.9	8.10	8.10	8.10	8.11	8.10	33.9	34.1	34.0	34.1	34.1	AUB
1	15.2	15.1	15.0	14.9	14.7	8.0	7.9	8.1	8.1	8.1	8.00	7.91	7.99	7.99	7.97	34.0	34.1	34.1	34.1	34.1	MM
2	15.1	14.9	15.1	15.3	15.6	7.9	8.0	7.9	7.9	7.7	7.96	7.96	7.96	7.97	7.94	34.1	34.1	34.1	34.1	34.1	MM
3	15.4	15.2	15.2	15.0	15.7	7.9	8.0	8.0	8.0	7.8	8.04	8.04	8.03	8.04	8.00	34.0	34.0	34.0	34.1	34.1	AUB
4	15.5	15.4	15.3	15.6	15.7	7.7	7.8	7.8	7.7	7.8	8.03	8.03	8.02	8.03	8.04	33.7	34.0	33.9	34.0	34.0	MR
5	15.6	15.6	15.4	15.8	15.9	8.0	8.0	8.0	7.8	7.8	8.01	8.02	8.01	8.02	8.03	33.9	34.0	34.0	34.0	34.0	EG
6	15.6	15.1	15.3	15.2	15.3	7.8	7.9	7.9	7.8	7.9	7.94	8.01	8.01	8.02	8.04	33.9	34.0	34.0	34.0	34.0	MR
7*	15.3	15.2	15.3	15.4	15.3	8.0	8.1	8.0	8.0	8.0	8.04	8.03	8.02	8.03	8.04	34.1	34.1	34.1	34.1	34.1	MM
8	15.4	15.2	15.3	15.4	15.3	8.1	8.1	8.2	8.1	8.1	8.00	7.99	7.98	8.00	8.01	34.2	34.2	34.2	34.2	34.2	AG
9	15.7	15.4	15.4	15.0	15.7	8.0	8.0	8.0	8.0	7.9	8.03	8.02	8.01	8.03	8.03	34.1	34.0	34.1	34.1	34.1	AUB
10	16.0	15.5	15.7	16.1	16.1	8.2	8.2	8.3	8.1	8.2	8.01	8.00	7.99	8.01	8.02	34.3	34.2	34.3	34.4	34.3	AD
11	15.7	15.3	15.9	15.0	15.4	7.6	7.8	7.6	7.4	7.8	8.03	8.01	7.99	8.02	8.03	34.3	34.3	34.3	34.2	34.3	MM
12	15.8	15.6	15.8	15.6	15.3	8.0	8.1	7.9	8.0	8.1	8.03	8.00	7.99	8.01	8.01	34.3	34.2	34.3	34.2	34.3	MR
13	15.8	15.6	16.0	15.8	15.8	7.6	7.7	7.7	7.8	7.8	8.02	8.00	7.99	8.01	8.01	34.2	34.2	34.4	34.3	34.3	MR
14*	16.0	15.9	15.2	15.2	15.5	7.6	7.7	7.8	7.7	7.8	7.97	7.98	7.99	8.01	8.02	34.2	34.3	33.9	34.3	34.2	MR
15	15.7	15.8	15.3	15.5	15.5	8.1	8.2	8.2	8.3	8.3	8.04	8.01	8.01	8.00	8.03	33.9	34.0	34.0	34.0	34.0	MM
16	16.1	16.1	15.8	16.0	16.1	7.9	7.8	7.9	7.8	7.8	7.98	7.99	7.99	7.94	8.02	34.2	34.3	34.2	34.2	34.3	NHE
17	15.8	15.9	16.0	16.0	16.0	7.8	7.7	7.6	7.6	7.6	8.04	8.06	8.05	8.05	8.05	34.0	34.1	34.0	34.1	34.0	MR
18	16.0	16.2	16.1	16.4	16.3	7.7	7.5	7.5	7.4	7.5	8.07	8.04	8.04	8.06	8.08	34.1	34.1	34.0	34.1	34.1	NHE
19Q1	16.1	15.9	15.7	15.8	15.9	7.6	7.8	7.7	7.8	7.7	8.01	7.99	7.98	7.99	7.96	34.1	34.0	34.0	34.0	34.1	CH
20	15.4	15.9	15.7	15.6	15.9	7.7	7.5	7.6	7.5	7.5	8.01	7.94	7.98	7.98	7.95	34.0	34.2	34.0	34.1	34.2	MR
21*	15.8	16.1	15.6	15.9	16.0	8.0	7.8	7.9	7.9	7.8	8.01	7.98	7.99	8.00	7.99	33.9	34.1	34.0	34.1	34.2	MM
22	15.9	15.2	15.6	15.8	16.4	7.8	8.0	7.9	7.8	7.9	8.03	8.03	7.96	8.01	8.03	34.1	34.0	34.1	34.1	34.1	NHE
23	16.2	15.9	15.7	16.0	15.8	7.9	8.0	7.9	7.9	7.9	7.97	7.96	7.94	7.99	7.97	33.8	33.7	33.7	33.8	33.8	AUB
24	14.0	15.0	15.0	14.8	14.8	8.2	8.0	8.0	8.2	8.2	8.07	8.04	8.02	8.06	8.06	34.1	34.2	34.1	34.0	34.1	AUB
25	14.7	15.5	15.3	14.5	14.7	8.0	7.8	7.9	8.1	8.0	8.05	8.04	8.05	8.06	8.06	33.9	34.1	34.1	34.0	34.0	AG
26	14.7	15.4	15.5	14.6	14.7	7.8	7.7	7.8	7.9	7.9	8.03	8.02	8.03	8.03	8.04	34.0	34.1	34.2	34.1	34.2	AG
27	16.0	16.0	16.0	16.3	16.2	8.0	8.0	8.0	7.8	7.9	8.07	8.06	8.08	8.00	8.07	34.0	34.1	34.1	34.1	34.1	AUB
28*	14.7	14.3	15.0	15.3	14.2	8.0	8.1	8.1	8.1	8.1	8.04	8.05	8.04	8.03	8.04	33.9	33.9	34.0	34.0	34.1	AG

Comments: \* Collect NH<sub>3</sub> Samples

QC Check: ALB 712710

Final Review: VS 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Water Quality Measurements**

Client: Anchor QEA  
Test Species: M. nasuta and N. virens

Project ID: Alamitos Bay  
Site ID: Basin 6-Comp

Start Date/Time: 6/29/2016 1100  
End Date/Time: 7/27/2016 0900

Day	Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Salinity (ppt)					Analyst
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0*	16.0	16.0	16.0	16.0	16.0	7.9	7.9	7.8	7.8	7.8	8.10	8.12	8.13	8.13	8.12	33.9	34.0	34.1	34.1	34.1	AUB
1	14.9	15.5	15.5	15.2	15.2	8.0	8.0	7.9	8.0	8.0	8.00	8.05	8.05	8.03	8.03	34.0	34.1	34.1	34.1	34.1	MM
2	15.3	15.7	15.7	15.9	15.7	7.9	7.8	7.8	7.7	7.8	7.97	7.98	7.99	7.97	8.01	34.1	34.1	34.1	34.1	34.1	MM
3	15.3	15.8	15.9	16.2	16.0	7.9	7.8	7.9	7.8	7.8	8.02	8.03	8.06	8.04	8.09	33.9	34.1	34.1	34.1	34.1	AUB
4	15.5	15.4	15.2	15.5	15.6	7.8	7.9	7.9	7.7	7.8	8.02	8.01	8.03	8.02	8.06	33.5	33.9	33.9	33.9	34.0	MR
5	15.8	16.6	16.0	15.6	15.6	7.8	7.7	7.8	7.8	7.8	8.04	8.06	8.03	8.02	8.05	34.0	34.0	33.9	33.9	34.0	EG
6	15.8	15.9	15.8	15.6	15.6	7.8	7.7	7.8	7.8	7.8	8.00	7.99	8.02	8.02	8.05	33.9	34.0	34.0	34.0	34.0	MR
7*	15.5	16.0	16.0	16.0	15.9	7.9	7.8	7.8	7.7	7.8	8.02	8.02	8.04	8.02	8.05	34.0	34.1	34.1	34.1	34.1	MM
8	15.7	15.2	14.4	14.7	14.7	7.8	8.1	8.2	8.1	8.0	8.00	7.99	8.00	8.01	8.01	34.2	34.2	34.1	34.1	34.2	MM
9	15.8	15.8	15.8	15.8	15.7	7.8	7.8	7.8	7.8	7.8	8.01	7.99	8.00	8.00	8.03	34.1	34.1	34.1	34.1	34.1	AUB
10	16.0	16.1	16.3	16.1	16.1	8.2	8.2	8.1	8.1	8.2	8.00	7.97	7.99	7.98	8.01	34.4	34.4	34.5	34.1	34.4	AD
11	15.9	16.1	16.0	15.9	15.2	7.7	7.5	7.6	7.7	7.9	8.02	7.98	8.01	8.00	8.03	34.4	34.4	34.4	34.4	34.2	MM
12	15.9	15.8	15.8	15.4	15.3	7.8	7.7	7.9	8.0	8.1	7.99	7.97	7.98	7.97	7.99	34.2	34.3	34.3	34.3	34.2	MR
13	16.0	16.0	16.0	15.9	15.7	7.5	7.7	7.7	7.8	7.8	8.00	7.97	8.00	7.99	8.01	34.2	34.3	34.3	34.2	34.2	MR
14*	15.9	15.9	16.0	15.8	15.9	7.6	7.6	7.7	7.6	7.6	7.99	7.97	8.01	8.00	8.01	34.1	34.1	34.2	34.2	34.3	MR
15	15.7	16.1	16.0	16.0	15.9	8.1	8.1	8.1	8.1	8.2	8.03	7.99	8.02	8.02	8.03	34.1	34.1	34.1	34.0	34.0	MM
16	15.9	16.0	16.3	16.2	16.1	8.2	7.8	7.8	7.8	7.8	8.03	7.98	8.01	8.01	8.02	34.2	34.2	34.3	34.2	34.2	NHE
17	15.9	15.9	15.9	15.9	15.8	7.7	7.6	7.7	7.7	7.7	8.07	8.04	8.04	8.08	8.04	34.0	34.1	34.0	34.0	34.1	MR
18	16.3	16.4	16.3	15.9	16.0	7.5	7.3	7.5	7.5	7.5	8.06	8.02	8.07	8.06	8.07	34.0	34.1	34.1	33.9	34.0	NHE
19	15.9	16.1	16.0	16.1	16.2	7.5	7.5	7.7	7.6	7.6	8.01	7.97	8.00	7.99	8.00	34.0	34.1	34.2	34.1	34.1	CH
20	15.9	15.5	15.9	15.3	15.0	7.5	7.5	7.4	7.5	7.6	7.97	7.96	7.98	8.00	8.01	33.9	34.0	34.1	33.9	34.0	MR
21*	15.6	15.7	16.1	15.7	15.6	7.9	7.9	7.7	7.8	7.8	8.01	7.99	8.00	8.01	8.01	34.1	34.1	34.1	34.0	34.0	MM
22	15.6	15.8	15.7	15.7	15.6	7.4	7.8	7.9	7.9	8.0	8.04	8.02	8.07	8.03	8.04	34.1	34.1	34.1	34.1	34.0	NHE
23	15.8	16.0	15.6	15.8	15.8	7.6	7.6	7.8	7.8	7.8	7.99	7.94	7.97	7.96	7.98	33.7	33.8	33.7	33.8	33.8	AUB
24	14.8	14.4	15.8	16.0	14.6	8.0	8.2	7.9	8.0	8.1	8.04	8.06	8.02	8.05	8.06	34.1	34.0	34.2	34.1	34.1	AUB
25	14.4	14.3	15.0	14.9	14.6	8.0	8.1	7.9	7.9	7.9	8.06	8.08	8.06	8.07	8.08	33.9	34.0	34.0	34.0	34.0	ACS
26	14.4	14.6	15.0	14.9	14.7	7.9	7.9	7.8	7.8	7.8	8.05	8.04	8.03	8.04	8.04	34.2	34.2	34.2	34.2	34.2	AG
27	15.9	14.3	16.4	16.2	16.0	7.9	7.9	7.9	7.9	7.9	8.07	8.09	8.09	8.07	8.07	34.0	34.1	34.1	34.1	34.1	AUB
28*	15.8	15.7	15.4	15.3	15.4	7.8	7.9	7.9	7.9	7.9	8.02	8.03	8.03	8.04	8.03	34.1	34.0	34.0	34.0	34.1	AG

Comments: \* Collect NH<sub>3</sub> Samples @ A6 & 8 7/17/16 @ G19 NHE 7/15/16 @ A12 @ 18 7/27/16

QC Check: \_\_\_\_\_

Final Review: VS 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Water Quality Measurements**

Client: Anchor QEA  
Test Species: M. nasuta and N. virens

Project ID: Alamitos Bay  
Site ID: Basin 7-Comp

Start Date/Time: 6/29/2016 1100  
End Date/Time: 7/27/2016 0900

Day	Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					Salinity (ppt)					Analyst
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0*	16.0	16.0	16.0	15.0	15.0	7.9	7.9	7.7	7.9	7.8	8.04	8.07	8.08	8.04	8.08	33.8	33.9	34.0	33.9	34.0	AUB
1	15.8	15.6	15.7	15.1	15.5	7.8	7.8	7.9	8.0	7.9	7.93	7.93	7.97	7.97	7.95	33.8	33.9	33.9	33.8	33.9	MM
2	15.5	15.8	15.7	15.2	15.0	7.8	7.7	7.8	8.0	8.0	7.93	7.91	7.96	7.94	7.94	34.2	34.2	34.3	34.0	34.0	MM
3	16.0	16.0	16.2 <sup>18</sup>	15.0	15.0	7.9	7.8	7.8	8.0	8.0	7.97	7.97	8.03	8.01	8.01	33.9	33.9	33.9	33.9	33.9	AUB
4	15.0	15.1	15.1	15.4	15.6	7.9	7.8	7.9	7.8	7.8	8.01	7.99	8.02	8.02	8.02	33.7	33.7	33.9	33.9	33.7	MR
5	15.4	15.6	15.7	15.2	14.6	7.9	7.8	7.8	7.9	7.9	7.96	7.96	7.99	8.02	8.03	33.8	34.0	34.0	33.9	33.9	EG
6	15.6	15.5	15.5	15.2	15.0	7.7	7.8	7.8	7.9	8.0	7.96	7.94	8.01	8.02	8.02	33.9	33.9	34.0	33.9	33.9	MR
7*	15.8	15.8	15.9	15.4	14.7	7.8	7.8	7.8	7.9	8.0	8.00	7.99	8.01	8.00	8.00	34.0	34.0	34.1	33.8	34.0	MM
8	15.0	15.4	15.4	15.4	15.1	8.2	7.9	8.0	8.1	8.2	7.99	7.97	8.00	7.99	8.00	34.1	34.1	34.2	34.3	34.2	AG
9	15.6	15.9	15.8	15.6	15.3	7.9	7.8	7.8	7.9	8.0	7.99	7.97	8.02	8.03	8.03	34.0	34.1	34.1	34.2	34.1	AUB
10	16.1 <sup>18</sup>	15.8	15.8	15.7	15.5	8.0	8.1	8.2	8.4	8.3	7.94	7.95	8.00	8.01	8.02	34.3	34.2	34.2	34.4	34.3	AD
11	15.1	15.6	15.7	15.8	15.7	7.8	7.6	7.7	7.6	7.7	8.00	7.96	8.01	8.03	8.03	34.2	34.3	34.3	34.2	34.4	MM
12	15.5	15.6	15.9	15.8	15.9	7.6	7.8	7.8	8.0	7.9	7.99	7.95	7.97	8.00	8.00	33.9	34.2	34.3	34.3	34.3	MR
13	15.9	16.0	16.0	15.7	15.8	7.7	7.6	7.7	7.8	7.8	7.96	7.94	8.00	8.01	8.02	34.0	34.3	34.3	34.3	34.4	MR
14*	16.0	16.0	15.9	15.6	15.4	7.5	7.6	7.6	7.8	7.8	7.96	7.95	8.00	8.00	8.02	34.2	34.3	34.3	34.3	34.3	MR
15	16.1 <sup>18</sup>	16.1 <sup>18</sup>	16.3 <sup>18</sup>	15.6	15.4	8.1	8.1	8.1	8.2	8.3	7.99	7.98	8.03	8.02	8.05	34.0	34.0	34.1	34.1	34.1	MM
16	16.1 <sup>18</sup>	15.7	15.7	15.8	15.6	7.8	7.9	7.9	7.9	7.9	7.99	8.00	8.01	8.02	8.01	34.1	34.1	34.1	34.0	34.3	NHC
17	16.0	16.0	16.9 <sup>18</sup>	15.9	15.9	7.4	7.4	7.3	7.5	7.6	8.02	8.03	8.06	8.04	8.04	33.9	34.1	34.1	33.9	33.9	MR
18	16.4 <sup>18</sup>	16.4 <sup>18</sup>	16.4 <sup>18</sup>	15.9	15.8	7.3	7.3	7.4	7.6	7.6	8.03	8.01	8.06	8.06	8.09	34.0	34.0	34.0	34.2	34.1	NHC
19	15.8	16.1 <sup>18</sup>	16.1 <sup>18</sup>	16.0	15.9	7.5	7.6	7.5	7.7	7.7	7.97	7.95	7.99	8.00	8.01	33.8	34.1	34.0	34.3	34.1	CH
20	15.8	15.2	15.2	15.2	15.7	7.4	7.5	7.5	7.7	7.6	7.92	7.99	7.99	8.00	8.00	33.6	33.9	34.0	34.1	34.3	MR
21*	16.1 <sup>18</sup>	16.2 <sup>18</sup>	16.3 <sup>18</sup>	15.6	15.8	7.8	7.8	7.6	8.0	7.9	7.98	8.00	7.96	8.01	8.01	34.1	34.1	34.1	34.1	34.2	MM
22	15.5	15.4	16.2 <sup>18</sup>	15.8	15.9	7.9	8.0	7.8	8.1	8.0	8.02	8.05	7.99	8.03	8.04	34.0	34.0	34.1	34.1	34.2	NHC
23	15.8	15.9	15.4	16.3 <sup>18</sup>	16.0	7.7	7.8	7.9	7.8	7.9	7.95	7.98	7.98	7.96	7.99	33.7	33.7	33.7	34.0	34.0	AUB
24	14.6	15.7	15.9	16.0	15.0	8.1	7.9	7.9	7.8	8.0	8.03	8.03	8.03	8.02	8.05	34.0	34.1	34.1	34.3	34.2	AUB
25	14.5	14.7	15.6	14.0	15.3	8.0	7.9	7.8	8.2	7.8	8.06	8.07	8.06	8.07	8.07	33.9	34.0	34.0	33.9	34.2	MS
26	14.6	14.7	15.2	14.7	15.1	7.9	7.8	7.8	8.0	7.9	8.04	8.04	8.04	8.04	8.05	34.2	34.2	34.2	34.1	34.4	AG
27	16.2 <sup>18</sup>	16.5 <sup>18</sup>	16.4 <sup>18</sup>	14.8 <sup>18</sup>	16.2 <sup>18</sup>	7.8	7.8	7.9	7.9	7.9	8.03	8.04	8.05	8.05	8.07	34.0	34.1	34.1	34.2	34.2	AUB
28*	15.1	15.7	15.5	15.4	15.2	7.8	7.8	7.8	7.9	8.0	8.04	8.02	8.04	8.02	8.04	34.0	34.1	34.1	34.1	34.0	AG

Comments: \* Collect NH<sub>3</sub> Samples @ Q18 MR 7/13/16 @ AUB @ 18 7/27/16

QC Check: AUB 7/27/16

Final Review: vs 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Observations**

Client: Anchor QEA

Start Date/Time: 6/29/2016 1100

Project ID: Alamitos Bay

End Date/Time: 7/27/2016 0900

Site ID: Lab Control

Test Species: M. nasuta and N. virens

Day	Rep	Mortalities	Flow Adjustments	Additional Comments	Tech Initials
1	-	-	-	-	EG
2	-	-	-	-	MM
3	-	-	-	-	AUB
4	-	-	-	1 rep - 1 clam on sediment surface	MR/AS
5	-	-	-	-	EG
6	-	-	-	-	MR
7	-	-	-	-	MM
8	E	-	-	1 clam on sed surface	AG
9	-	-	-	-	AUB
10	-	-	-	-	AD
11	-	-	-	-	MM
12	A	-	-	1 clam on sed surface	MR
13	A, E	-	-	1 clam on sed surface	MR
14	A, C	-	-	1 clam on sed surf	MR
15	A	-	-	1 clam on sed surface	MM
16	A, B, C, D, E	-	drip turned up: A, B	1 clam on sed surface, <del>1 clam on sed surface</del>	MR/NHE
17	A, C, D	-	-	1 clam on sed surface	MR
18	A, C, D	-	-	1 clam on sed surface	NHE
19	A, C, D	1 clam in A	drip turned up: A,	1 clam in B, 2 clams on sed surface	CH
20	C	-	-	1 clam on sed surf.	MR
21	A, B, D	-	↑	-	MM
22	B, D, E	-	-	1 clam on sed surface	NHE
23	A, B, C, E	-	drip rate increased	-	AUB
24	D	-	drip rate increased	-	AGB
25	B, D	1 clam in D	-	1 clam on sed surface	AS
26	B	1 clam in B	-	-	AG/MS
27	A-E	-	drip rate increased	-	AUB
28	C	-	-	1 clam on sed surface	AG

QC Check: AUB 7/27/16

Final Review: AS 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Observations**

Client: Anchor QEA

Start Date/Time: 6/29/2016 1100

Project ID: Alamitos Bay

End Date/Time: 7/27/2016 0900

Site ID: LA2-REF

Test Species: M. nasuta and N. virens

Day	Rep	Mortalities	Flow Adjustments	Additional Comments	Tech Initials
1	-	-	-	-	EG
2	-	-	-	-	MM
3	-	-	-	-	AUB
4	-	-	-	-	MR
5	-	-	-	-	EG
6	-	-	-	-	MR
7	(A) → B	(A) × 1	-	-	MM
8	A	-	-	1 clam on sed. surface	AG
9	A	-	-	1 clam on sed surface	AUB
10	DIE	-	↑	-	AD
11	-	-	-	-	MM
12	-	-	-	-	MR
13	-	-	-	-	MR
14	-	-	-	-	MR
15	D	(B) 2 clams	-	-	MM
16	B, E	D, 1 clam 1 clam (C)	turned up: A, B, E	- 1 clam on sed. surface in B	(C) NHE
17	-	-	-	-	MR
18	B, C, D, E	-	turned up: B, C, D, E	-	NHE
19	B, E, A	1 clam in E	flow increased in A	1 clam on sed surface in B and E	CH
20	B	1 clam in B	-	-	EG/MR
21	B, D, E	2 clams in E	↑	-	MM
22	C	1 clam	-	-	NHE/AG
23	A, D, E	-	drip rate increased	-	AUB
24	-	-	-	-	AUB
25	-	-	-	-	ACS
26	-	-	-	-	AG/AC
27	D	1 clam in D	A-E drip rate increased	-	AUB
28	A	1 clam in A	-	-	AG

QC Check: AUB 7/27/16

Final Review: YS 8/1/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

(A) Q18MM 7-6-16 (B) AD Q18 7/14/16 (C) Q18 NHE 7/15/16



**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Observations**

Client: Anchor QEA

Start Date/Time: 6/29/2016 1100

Project ID: Alamitos Bay

End Date/Time: 7/27/2016 0900

Site ID: Basin 6-Comp

Test Species: M. nasuta and N. virens

Day	Rep	Mortalities	Flow Adjustments	Additional Comments	Tech Initials
1	-	-	-	-	EG
2	-	-	-	-	MM
3	B,C,D,E	-	drip rate turned up	-	AUB
4	-	-	-	-	MR
5	-	-	-	-	EG
6	-	-	-	-	MR
7	B,C,D,E	-	drip rate turned up	temp rising	MM/MR
8	-	-	-	-	AG
9	-	-	-	-	AUB
10	B,C,D,E	-	↑	-	AD
11	B,C,D	-	↑	-	MM
12	-	-	-	-	MR
13	-	-	-	-	MR
14	-	-	-	-	MR
15	B	-	↑	-	MM
16	-	-	turned up: C, D, E	-	MR/NHE
17	-	-	-	-	MR
18	A,B,C	-	turned up A, B, C	-	NHE
19	B,D,E	-	flow increased in B,D,E	-	CH
20	B	1 clam in B	-	-	EG/MR
21	C	-	↑	-	MM
22	-	-	-	-	AUB
23	A,B,D,E	-	drip rate increased	-	AUB
24	C	-	drip rate increased	-	AUB
25	-	-	-	-	MS
26	-	-	-	-	AB/MS
27	A-E	-	drip rate increased	-	AUB
28	B	1 clam	-	-	AG

QC Check: AUB 7/27/16

Final Review: MS 8/1/16

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

Ⓢ AUB 018 7/27/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation**

**Observations**

Client: Anchor QEA

Start Date/Time: 6/29/2016 1100

Project ID: Alamitos Bay

End Date/Time: 7/27/2016 0900

Site ID: Basin 7-Comp

Test Species: M. nasuta and N. virens

Day	Rep	Mortalities	Flow Adjustments	Additional Comments	Tech Initials
1	-	-	-	-	EG
2	-	-	-	-	MM
3	A,B,C	- 1 clam rep	drip rate turned up	-	ALB
4	-	-	-	-	MR
5	-	-	-	-	EG
6	-	-	-	-	MR
7	E	1	-	-	MM
8	-	-	-	-	AG
9	B	-	drip rate turned up	-	ALB
10	A	-	↑	-	AD
11	-	-	-	-	MM
12	-	-	-	-	MR
13	-	-	-	-	MR
14	-	-	-	-	MR
15	A,B,C	-	↑	-	MM
16	-	-	hard up A	-	AG/MS
17	C	-	drip turned up	-	MR
18	A,B,C	-	drip turned up A,B,C	-	NHE
19	B,C	-	flow increased in B&C	-	CH
20	-	-	-	-	MR
21	A,B,C	-	↑	-	MM
22	C	-	↑	-	ALB
23	A,D,E	-	drip rate increased	-	ALB
24	B,D	-	drip rate increased	-	ALB
25	-	-	-	-	AS
26	-	-	-	-	AG/MS
27	AE	-	drip rate increased	-	ALB
28	E	1 clam	-	E dead clam found during termination	AG

QC Check: ALB 7/27/16

Final Review: YS 8/1/16

**28-Day Marine Sediment Bioassay  
Bioaccumulation (24-hr depuration water quality)**

**Water Quality Measurements**

**Client:** Anchor QEA  
**Test Species:** M. nasuta and N.virens

**Project ID:** Alamitos Bay

*Depuration*  
**Start Date/Time:** 6/29/2016 7127114 0900  
**End Date/Time:** 7/27/2016 7128114 0900

Site	Temperature (°C)					Dissolved Oxygen (mg/L)					pH (pH units)					Salinity (ppt)					Analyst
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
LC	10.0	14.5	15.3	14.2	14.0	8.3	8.6	8.3	8.4	8.7	7.95	8.03	8.01	8.05	8.04	33.8	33.8	33.9	33.9	33.9	AUB
LA2-REF	15.8	16.0	16.0	16.0	16.0	8.0	8.1	8.1	8.1	8.1	7.95	8.02	8.01	8.01	7.99	34.1	34.0	34.0	34.0	34.0	↓
Basin 6-Comp	16.0	16.0	15.9	15.7	15.5	8.1	8.1	8.2	8.2	8.2	8.01	8.01	8.01	8.01	8.02	34.0	34.1	34.0	34.0	34.0	
Basin 7-Comp	16.0	15.9	16.0	14.8	14.7	8.1	8.2	8.0	8.4	8.4	7.98	8.03	7.97	8.03	8.03	34.1	34.0	34.0	33.9	34.0	

**Comments:** BAUB 8/8 7127114  
Macoma in all replicates spawned except in LCA, B7-D, and B7-E

**QC Check:** AUB 7129114 **Final Review:** NS 8/1/16

# 28-Day Marine Sediment Bioassay Bioaccumulation

# Organism Survival

Client: Anchor QEA  
Project ID: Alamitos Bay

Start Date/Time: 6/29/2016 1100  
End Date/Time: 7/27/2016 0900

Worm Species: Nereis virens Initial Number of 10 worms  
Clam Species: Macoma nasuta Each Species: 25 clams

Time zero organism collected?            Tech Initials YAS

Site	Rep	Number of Surviving Worms	Number of Surviving Clams
Lab Control	A	10	24
	B	10	24
	C	10	26
	D	10	24
	E	10	25
LA2-REF	A	10	Ⓢ 25 24
	B	10	23
	C	10	24
	D	10	21
	E	10	22
Basin 6-Comp	A	10	25
	B	10	Ⓢ 25 23
	C	10	25
	D	10	25
	E	10	15
Basin 7-Comp	A	10	25
	B	10	25
	C	10	23
	D	10	25
	E	10	23
Tech Initials:		APB/EB/ASJ JH	APB/EB/ASJ JH

QC Check: APB 7/27/16

Final Review: BS 8/1/16

## Ammonia Analyses

**Total Ammonia Analysis  
Marine**

**Pore Water**

Client: Anchor QEA  
 Project: Alamitos Bay *CSB vs 7/28/16*  
 Test Type: *Acclimation* Sediment Acclimation Basin 6-Comp

DI Blank: 0.0 Test Start Date: 7/8/2016 Analyst: SG  
 SW Blank: 0.0 Analysis Date: 7/19/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	pH (units)	Salinity (ppt)	NH <sub>3</sub> -N (mg/L)	Ammonia (mg/L)
Blank Spike (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	7.5	9.2
Basin 6-Comp	97	7/7/2016	NA	7.86	33.0 <sup>Ⓞ</sup>	20.8	25.4
<del>Basin 6-Comp</del>	<del>98</del>	<del>7/7/2016</del>	<del>NA</del>				
Basin 6-Comp	99	7/8/2016	0	7.85	31.0	15.7	19.2
Basin 6-Comp	100	7/18/2016	10	7.59	31.7	12.3	15.0
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	7.5	9.2
Sample Duplicate <sup>a</sup>	100	NA	NA	NA	NA	12.7	15.5
Sample Duplicate + Spike <sup>a</sup>		NA	NA	NA	NA	19.2	23.4
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	NA	NA	7.5	9.2

Relative Percent Difference (RPD) =  $\frac{[sample] (mg/L) - [sample duplicate] (mg/L)}{[average ammonia] (mg/L)} \times 100$       Acceptable Range: 0-20%

Percent Recovery =  $\frac{[spiked sample] (mg/L) - [sample] (mg/L)}{nominal [spike] (mg/L)} \times 100$       Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.2	10	NA	92
100	15.0	15.5	23.4	10	3.3	84

Comments: Renewal<sup>SW</sup> sample no longer necessary since NH<sub>3</sub> < 30 mg/L on 7/11/16

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.  
<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.  
<sup>c</sup> Calculation not performed due to one or more values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L      <sup>d</sup> Measured by refractometer      <sup>e</sup> subsample taken prior to any renewals: 7/21/16

QC Check: ALB 7/21/16

Final Review: KB 7/20/16

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
 Project: Alamitos Bay  
 Test Type: Ampelisca 10-day Survival

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 7/8/2016

Analyst: SG  
 Analysis Date: 7/20/2016

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.9	9.6
Lab Control	35	7/8/2016	0	0.9	1.1
LA2-REF	36	7/8/2016	0	0.7	0.9
Basin 6-Comp	37	7/8/2016	0	1.2	1.5
Basin 7-Comp	38	7/8/2016	0	0.3	<0.5
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.9	9.6
Lab Control	39	7/18/2016	10	6.5	7.9
LA2-REF	40	7/18/2016	10	2.0	2.4
Basin 6-Comp	41	7/18/2016	10	3.0	3.7
Basin 7-Comp	42	7/18/2016	10	0.3	<0.5
Sample Duplicate <sup>a</sup>	42	NA	NA	0.2	<0.5
Sample Duplicate + Spike <sup>a</sup>		NA	NA	8.2	10.0
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.9	9.6

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.6	10	NA	96
42	0.5	<0.5	10.0	10	C	C

Comments: Sample setup for acclimation with twice daily renewals on 3/24/14 Q18 SG 7/20/16

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

QC Check: AUD 7/21/16

Final Review:

KB 7/20/16

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
 Project: Alamitos Bay  
 Test Type: Neanthes 10-day Survival

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 7/1/2016

Analyst: SG  
 Analysis Date: 7/19/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.8	9.5
Lab Control	25	7/1/2016	0	0.0	<0.5
LA2-REF	26	7/1/2016	0	0.5	0.6
Basin 6-Comp	27	7/1/2016	0	2.3	2.8
Basin 7-Comp	28	7/1/2016	0	0.6	0.7
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.8	9.5
Lab Control	29	7/1/2016	10	0.3	<0.5
LA2-REF	30	7/1/2016	10	1.5	1.8
Basin 6-Comp	31	7/1/2016	10	4.4	5.4
Basin 7-Comp	32	7/1/2016	10	0.4	<0.5
Sample Duplicate <sup>a</sup>	32	NA	NA	0.2	<0.5
Sample Duplicate + Spike <sup>a</sup>		NA	NA	7.6	9.3
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.8	9.5

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal [spike]} (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.5	10	NA	95
32	<0.5	<0.5	9.3	10	C	C

Comments: Sample setup for acclimation with twice daily renewals on 3/24/14

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

QC Check: AUB 7/21/16

Final Review:

KB 7/20/16



**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
 Project: Alamitos Bay  
 Test Type: Mysid 96-Hr. SET SPP; Samples Basin 6-Comp and Basin 7-Comp

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 7/12/2016

Analyst: SG  
 Analysis Date: 7/19/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.7	9.4
Lab Control #1	43	7/12/2016	0	0.3	20.5
Site Water Control #1	44	7/12/2016	0	0.4	20.5
Basin 6-Comp; 10	45	7/12/2016	0	0.8	1.0
Basin 6-Comp; 50	46	7/12/2016	0	3.9	4.8
Basin 6-Comp; 100	47	7/12/2016	0	7.7	9.4
Basin 7-Comp; 10	48	7/12/2016	0	0.0	<0.5
Basin 7-Comp; 50	49	7/12/2016	0	1.0	1.2
Basin 7-Comp; 100	50	7/12/2016	0	1.3	1.6
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.7	9.4
Lab Control #1	51	7/16/2016	4	0.9	1.1
Site Water Control #1	52	7/16/2016	4	0.5	0.6
Basin 6-Comp; 10	53	7/16/2016	4	1.1	1.3
Basin 6-Comp; 50	54	7/16/2016	4	3.3	4.0
Basin 6-Comp; 100	55	7/16/2016	4	6.4	7.8
Basin 7-Comp; 10	56	7/16/2016	4	0.8	1.0
Basin 7-Comp; 50	57	7/16/2016	4	0.7	0.9
Basin 7-Comp; 100	58	7/16/2016	4	1.4	1.7
Sample Duplicate <sup>a</sup>	58	NA	NA	1.8	2.2
Sample Duplicate + Spike <sup>a</sup>		NA	NA	8.6	10.5
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.7	9.4

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.4	10	NA	94
58	1.7	2.2	10.5	10	25.6 <sup>c</sup>	88

Comments: \_\_\_\_\_

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L <sup>d</sup> RPD above acceptable range, however values close to MDL vs 8/1/16

QC Check: AMP 7/12/16

Final Review: KB 7/20/16

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
 Project: Alamitos Bay  
 Test Type: Menidia 96-Hr. SET SPP; Samples Basin 6-Comp and Basin 7-Comp

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 7/12/2016

Analyst: SG  
 Analysis Date: 7/19/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.6	9.3
Lab Control #1	59	7/12/2016	0	0.0	<0.5
Site Water Control #1	60	7/12/2016	0	0.0	<0.5
Basin 6-Comp; 10	61	7/12/2016	0	0.4	<0.5
Basin 6-Comp; 50	62	7/12/2016	0	3.2	3.9
Basin 6-Comp; 100	63	7/12/2016	0	7.2	8.8
Basin 7-Comp; 10	64	7/12/2016	0	0.1	<0.5
Basin 7-Comp; 50	65	7/12/2016	0	0.7	0.9
Basin 7-Comp; 100	66	7/12/2016	0	0.4	<0.5
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.6	9.3
Lab Control #1	67	7/16/2016	4	0.0	<0.5
Site Water Control #1	68	7/16/2016	4	0.0	<0.5
Basin 6-Comp; 10	69	7/16/2016	4	0.3	<0.5
Basin 6-Comp; 50	70	7/16/2016	4	3.0	3.7
Basin 6-Comp; 100	71	7/16/2016	4	6.2	7.6
Basin 7-Comp; 10	72	7/16/2016	4	0.2	<0.5
Basin 7-Comp; 50	73	7/16/2016	4	0.3	<0.5
Basin 7-Comp; 100	74	7/16/2016	4	1.2	1.5
Sample Duplicate <sup>a</sup>	74	NA	NA	0.9	(A) 1.5 1.1
Sample Duplicate + Spike <sup>a</sup>		NA	NA	8.2	10.0
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	7.6	9.3

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.3	10	NA	93
74	1.5	1.1	10.0	10	30.8	85

Comments: QA 18 SG 7/19/16

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

PPD above acceptable range, however values close to MDL 7/8/16

QC Check: ALB 7/21/16

Final Review:

KB 7/20/16

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
Project: Alamitos Bay  
Test Type: Bivalve 48-Hr. SET SPP; Samples Basin 6-Comp and Basin 7-Comp

DI Blank: 0.0  
SW Blank: 0.0

Test Start Date: 7/7/16

Analyst: SG  
Analysis Date: 7/12/2016

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.0	9.8
Lab Control #1	75	7/7/16	0	0.3	<0.5
Site Water Control #1	76		0	0.3	<0.5
Basin 6-Comp; 1	77		0	1.0	1.2
Basin 6-Comp; 10	78		0	1.2	1.5
Basin 6-Comp; 50	79		0	3.9	4.8
Basin 6-Comp; 100	80		0	7.8	9.5
Basin 7-Comp; 1	81		0	0.4	<0.5
Basin 7-Comp; 10	82		0	0.0	<0.5
Basin 7-Comp; 50	83		0	0.8	1.0
Basin 7-Comp; 100	84		0	1.1	1.3
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.0	9.8
Lab Control #1	85	7/9/16	2	0.3	<0.5
Site Water Control #1	86		2	0.2	<0.5
Basin 6-Comp; 1	87		2	0.5	0.6
Basin 6-Comp; 10	88		2	1.2	1.5
Basin 6-Comp; 50	89		2	4.0	4.9
Basin 6-Comp; 100	90		2	6.8	8.3
Basin 7-Comp; 1	91		2	0.3	<0.5
Basin 7-Comp; 10	92		2	0.5	0.6
Basin 7-Comp; 50	93		2	0.6	0.7
Basin 7-Comp; 100	94		2	1.0	1.2
Sample Duplicate <sup>a</sup>	94	NA	NA	1.0	1.2
Sample Duplicate + Spike <sup>a</sup>		NA	NA	8.9	10.9
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.0	9.8

$$\text{Relative Percent Difference (RPD)} = \frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$$

Acceptable Range: 0-20%

$$\text{Percent Recovery} = \frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.8	10	NA	98
94	1.2	1.2	10.9	10	0.0	97

Comments: \_\_\_\_\_

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

QC Check: KB 7/13/16

Final Review:

KB 7/15/16

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Anchor QEA  
 Project: Alamitos Bay  
 Test Type: Macoma and Nereis 28-day Bioaccumulation

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 6/29/2016

Analyst: SG/AG  
 Analysis Date: 8/1/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
<b>Blank Spike (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.1	9.9
Lab Control	5	6/29/2016	0	0.1	<0.5
LA2-REF	6	6/29/2016	0	0.0	<0.5
Basin 6-Comp	7	6/29/2016	0	0.5	0.6
Basin 7-Comp	8	6/29/2016	0	0.0	<0.5
Lab Control	9	7/6/2016	7	0.5	0.6
LA2-REF	10	7/6/2016	7	0.5	0.6
Basin 6-Comp	11	7/6/2016	7	1.9	2.3
Basin 7-Comp	12	7/6/2016	7	0.5	0.6
Lab Control	13	7/13/2016	14	0.0	<0.5
LA2-REF	14	7/13/2016	14	0.1	<0.5
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.0	9.8
Basin 6-Comp	15	7/13/2016	14	0.4	<0.5
Basin 7-Comp	16	7/13/2016	14	0.0	<0.5
Lab Control	17	7/20/2016	21	0.3	<0.5
LA2-REF	18	7/20/2016	21	0.6	0.7
Basin 6-Comp	19	7/20/2016	21	0.0	<0.5
Basin 7-Comp	20	7/20/2016	21	0.3	<0.5
Lab Control	21	7/27/2016	28	0.0	<0.5
LA2-REF	22	7/27/2016	28	0.0	<0.5
Basin 6-Comp	23	7/27/2016	28	0.0	<0.5
Basin 7-Comp	24	7/27/2016	28	0.0	<0.5
Sample Duplicate <sup>a</sup>	<b>24</b>	NA	NA	0.0	<0.5
Sample Duplicate + Spike <sup>a</sup>		NA	NA	7.9	9.6
<b>Spike Check (10 mg/L NH<sub>3</sub>)</b>		NA	NA	8.0	9.8

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	8.1	10	NA	81.8
<b>24</b>	<0.5	<0.5	9.6	10	<	<

Comments: \_\_\_\_\_

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L 8/1/16

QC Check: EG 8/1/16

Final Review:

8/1/16

**Table D-1. Total Porewater Ammonia Concentrations Associated with Solid-Phase *Ampelisca* Toxicity Tests**

Sample ID	Total Ammonia (mg/L)			
	Pre-test (Check-in)	Acclimation (Test Day -1)	Day 0	Day 10
B6-Comp	30.4	25.4	19.2	15.0

<sup>1</sup> Control material was not evaluated prior to testing.

<sup>2</sup> Material not acclimated prior to testing.

**Table D-2. Total Overlying Ammonia Concentrations Associated with Suspended-Phase Toxicity Tests with Significant Effects**

Sample ID	Total Ammonia (mg/L)	
	<i>Mytilus</i>	
	Day 0	Day 2
B6-Comp	9.5	8.3

Note: Results are presented for each undiluted (i.e. 100% elutriate) elutriate concentration.

**Appendix E**  
**Reference Toxicant Results**

*Ampelisca*



**CETIS Summary Report**

Report Date: 29 Jul-16 14:28 (p 1 of 1)  
 Test Code: 160708abra | 01-5765-3505

Acute Amphipod Survival Test						Nautilus Environmental (CA)					
Batch ID:	06-5884-6824	Test Type:	Survival (96h)	Analyst:							
Start Date:	08 Jul-16 14:05	Protocol:	ASTM E1367-99 (1999)	Diluent:	Diluted Natural Seawater						
Ending Date:	12 Jul-16 12:50	Species:	Ampelisca abdita	Brine:	Not Applicable						
Duration:	95h	Source:	Aquatic Research Organisms, NH	Age:							
Sample ID:	06-7936-0632	Code:	160708abra	Client:	Internal						
Sample Date:	08 Jul-16 14:05	Material:	Cadmium chloride	Project:							
Receive Date:	08 Jul-16 14:05	Source:	Reference Toxicant								
Sample Age:	NA	Station:	Cadium Chloride								
Comparison Summary											
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method				
19-1254-8224	96h Survival Rate	0.25	0.5	0.3536	8.63%		Dunnett Multiple Comparison Test				
Point Estimate Summary											
Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method				
01-7702-6157	96h Survival Rate	EC50	0.8689	0.7319	1.032		Trimmed Spearman-Kärber				
96h Survival Rate Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	0	0	0.0%	0.0%
0.25		4	0.925	0.8454	1	0.9	1	0.025	0.05	5.41%	7.5%
0.5		4	0.775	0.6227	0.9273	0.7	0.9	0.04787	0.09574	12.35%	22.5%
1		4	0.5	0.3701	0.6299	0.4	0.6	0.04082	0.08165	16.33%	50.0%
2		4	0.025	0	0.1046	0	0.1	0.025	0.05	200.0%	97.5%
4		4	0	0	0	0	0	0	0		100.0%
96h Survival Rate Detail											
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
0	Lab Control	1	1	1	1						
0.25		0.9	0.9	1	0.9						
0.5		0.9	0.7	0.7	0.8						
1		0.4	0.5	0.5	0.6						
2		0	0	0.1	0						
4		0	0	0	0						

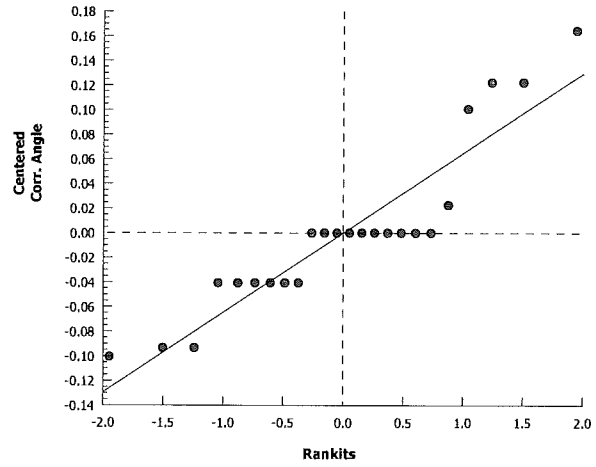
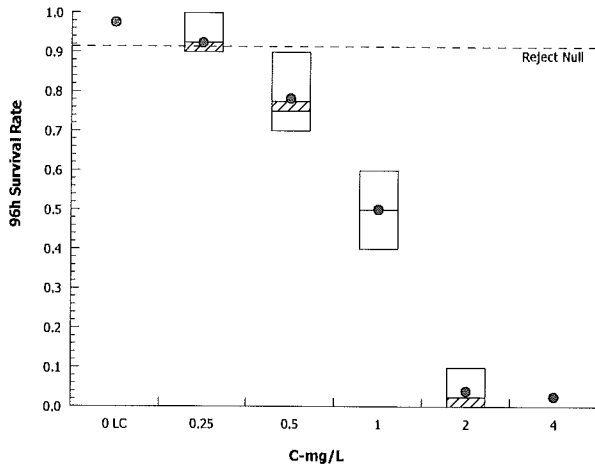
**CETIS Analytical Report**

Report Date: 29 Jul-16 14:28 (p 1 of 2)  
 Test Code: 160708abra | 01-5765-3505

Acute Amphipod Survival Test										Nautilus Environmental (CA)	
Analysis ID: 19-1254-8224		Endpoint: 96h Survival Rate			CETIS Version: CETISv1.8.7						
Analyzed: 29 Jul-16 14:26		Analysis: Parametric-Control vs Treatments			Official Results: Yes						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Angular (Corrected)	NA	C > T	NA	NA	8.63%	0.25	0.5	0.3536			
Dunnett Multiple Comparison Test											
Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)		
Lab Control		0.25	2.065	2.356	0.14	6	0.0836	CDF	Non-Significant Effect		
		0.5*	5.531	2.356	0.14	6	0.0001	CDF	Significant Effect		
		1*	10.59	2.356	0.14	6	<0.0001	CDF	Significant Effect		
		2*	20.48	2.356	0.14	6	<0.0001	CDF	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision( $\alpha$ :5%)			
Between	3.749032		0.937258		4	133.7	<0.0001	Significant Effect			
Error	0.1051257		0.00700838		15						
Total	3.854158				19						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)					
Variances	Mod Levene Equality of Variance		1.023	4.893	0.4270	Equal Variances					
Variances	Levene Equality of Variance		2.28	4.893	0.1088	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.8812	0.866	0.0186	Normal Distribution					
96h Survival Rate Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	1	0	0.0%	0.0%
0.25		4	0.925	0.8454	1	0.9	0.9	1	0.025	5.41%	7.5%
0.5		4	0.775	0.6227	0.9273	0.75	0.7	0.9	0.04787	12.35%	22.5%
1		4	0.5	0.3701	0.6299	0.5	0.4	0.6	0.04082	16.33%	50.0%
2		4	0.025	0	0.1046	0	0	0.1	0.025	200.0%	97.5%
4		4	0	0	0	0	0	0	0		100.0%
Angular (Corrected) Transformed Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	0.0%
0.25		4	1.29	1.16	1.419	1.249	1.249	1.412	0.04074	6.32%	8.66%
0.5		4	1.085	0.8897	1.28	1.049	0.9912	1.249	0.06125	11.29%	23.19%
1		4	0.7854	0.6546	0.9162	0.7854	0.6847	0.8861	0.0411	10.47%	44.38%
2		4	0.1995	0.06986	0.3292	0.1588	0.1588	0.3218	0.04074	40.84%	85.87%
4		4	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	88.76%

Acute Amphipod Survival Test		Nautilus Environmental (CA)	
Analysis ID: 19-1254-8224	Endpoint: 96h Survival Rate	CETIS Version: CETISv1.8.7	
Analyzed: 29 Jul-16 14:26	Analysis: Parametric-Control vs Treatments	Official Results: Yes	

Graphics



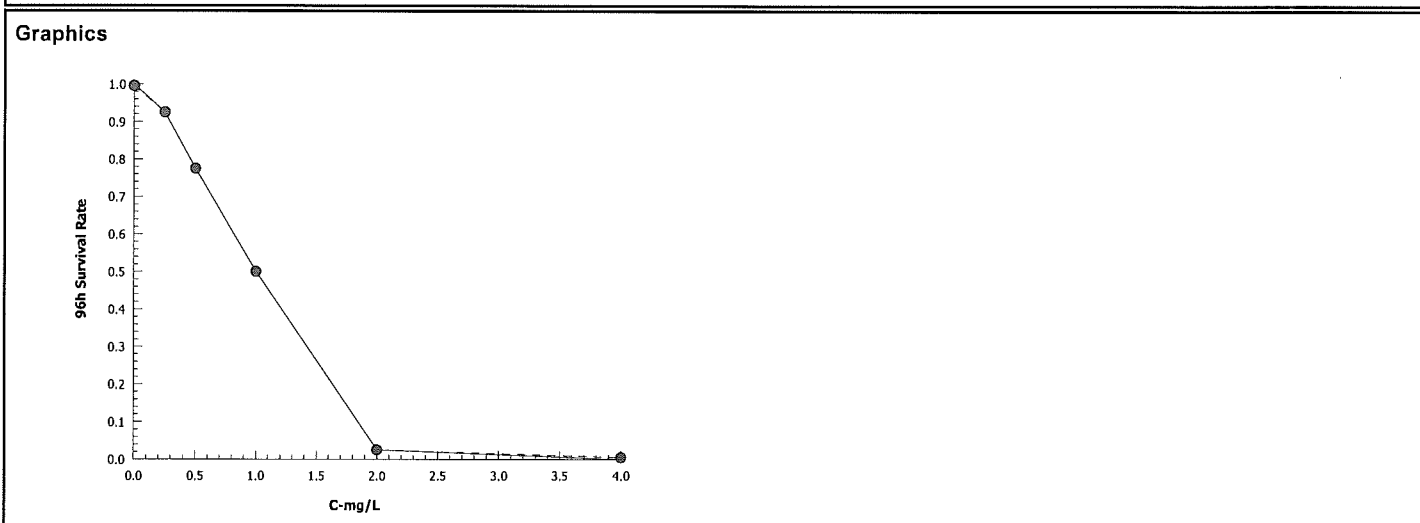
**CETIS Analytical Report**

Report Date: 29 Jul-16 14:28 (p 1 of 1)  
 Test Code: 160708abra | 01-5765-3505

<b>Acute Amphipod Survival Test</b>		<b>Nautilus Environmental (CA)</b>	
<b>Analysis ID:</b> 01-7702-6157	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv1.8.7	
<b>Analyzed:</b> 29 Jul-16 14:26	<b>Analysis:</b> Trimmed Spearman-Kärber	<b>Official Results:</b> Yes	

<b>Trimmed Spearman-Kärber Estimates</b>							
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	7.50%	-0.06104	0.03726	0.8689	0.7319	1.032

<b>96h Survival Rate Summary</b>			<b>Calculated Variate(A/B)</b>									
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Lab Control	4	1	1	1	0	0	0.0%	0.0%	40	40	
0.25		4	0.925	0.9	1	0.025	0.05	5.41%	7.5%	37	40	
0.5		4	0.775	0.7	0.9	0.04787	0.09574	12.35%	22.5%	31	40	
1		4	0.5	0.4	0.6	0.04082	0.08165	16.33%	50.0%	20	40	
2		4	0.025	0	0.1	0.025	0.05	200.0%	97.5%	1	40	
4		4	0	0	0	0	0		100.0%	0	40	



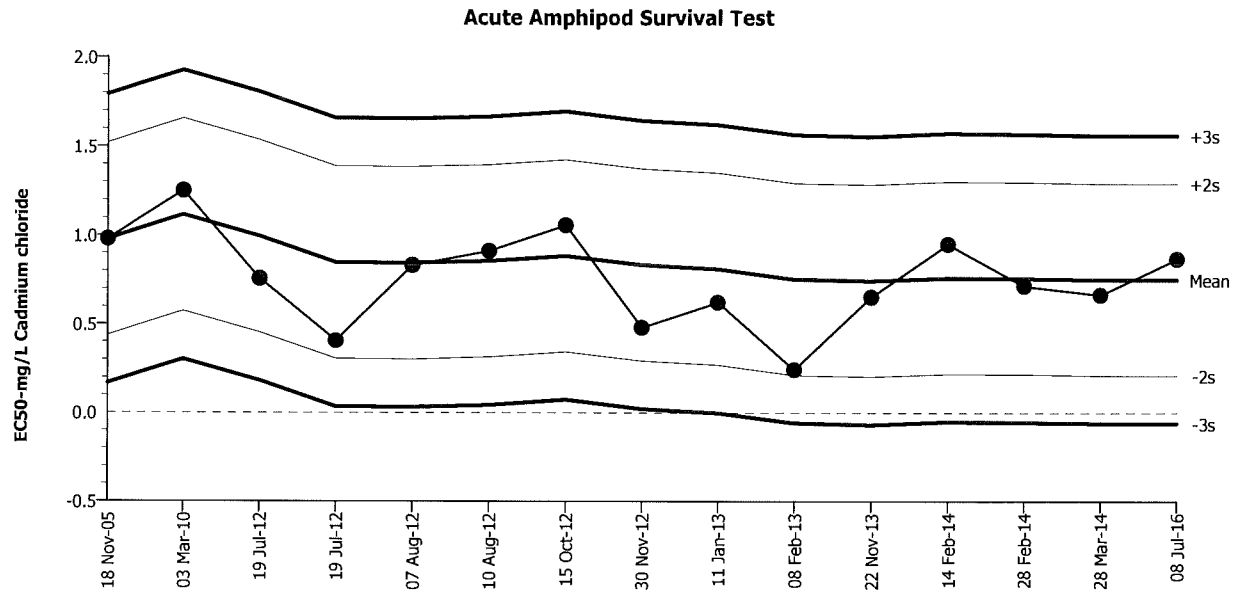
Acute Amphipod Survival Test

Nautilus Environmental (CA)

Test Type: Survival (96h)  
 Protocol: ASTM E1367-99 (1999)

Organism: Ampelisca abdita (Amphipod)  
 Endpoint: 96h Survival Rate

Material: Cadmium chloride  
 Source: Reference Toxicant-REF



Mean: 0.7516      Count: 14      -2s Warning Limit: 0.21      -3s Action Limit: -0.0608  
 Sigma: 0.2708      CV: 36.00%      +2s Warning Limit: 1.293      +3s Action Limit: 1.564

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2005	Nov	18	17:15	0.9791	0.2275	0.8401			05-9726-6707	05-7836-1602
2	2010	Mar	3	15:30	1.25	0.4981	1.839			07-5724-3236	06-4468-4449
3	2012	Jul	19	18:20	0.7558	0.004241	0.01566			12-7643-0557	08-4931-2236
4			19	18:30	0.4051	-0.3465	-1.279			02-8276-4382	00-7398-7319
5		Aug	7	17:00	0.8319	0.08035	0.2967			12-1585-1493	17-3963-0595
6			10	15:45	0.9128	0.1612	0.5954			11-5893-9604	11-2241-5585
7		Oct	15	14:15	1.058	0.3063	1.131			15-8471-0783	06-6319-8135
8		Nov	30	15:15	0.4798	-0.2718	-1.004			20-3386-7863	11-2233-7083
9	2013	Jan	11	15:40	0.6226	-0.129	-0.4764			04-7802-1286	06-7086-8887
10		Feb	8	14:30	0.2438	-0.5078	-1.875			10-0132-0688	11-6648-1752
11		Nov	22	16:00	0.6515	-0.1001	-0.3696			19-3444-6218	07-2363-9639
12	2014	Feb	14	15:10	0.9522	0.2006	0.7406			18-9460-4808	13-4246-9357
13			28	13:00	0.715	-0.03659	-0.1351			12-9234-4868	05-9883-9375
14		Mar	28	16:50	0.6657	-0.08593	-0.3173			01-2364-3505	03-5001-3560
15	2016	Jul	8	14:05	0.8689	0.1173	0.4331			01-5765-3505	01-7702-6157

96-hour Marine Acute Bioassay  
Static Conditions

Water Quality Measurements  
& Test Organism Survival

Client: Internal  
Sample ID: CdCl<sub>2</sub>  
Test No.: 160708abra

Test Species: A. abdita  
Start Date/Time: 7/8/2016 1405  
End Date/Time: 7/12/2016 1250

Tech Initials				
0	24	48	72	96
Counts: <u>AUB</u>	<u>MM</u>	<u>MM</u>	<u>MR</u>	<u>EG</u>
Readings: <u>AUB</u>	<u>AD</u>	<u>MM</u>	<u>MR</u>	<u>MR</u>
Dilutions made by: <u>AUB</u>				
High conc. made (mg/L): <u>4.0</u>				
Vol. Cd stock added (mL): <u>17.2</u>				
Final Volume (mL): <u>4000</u>				

Cd stock concentration (mg/L): 931

Concentration mg/L	Rand #	Number of Live Organisms					Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)					
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
Lab Control	24	10	10	10	10	10	29.4	29.7	29.7	29.4	29.5	20.3	18.6	18.4	19.6	19.8	8.0	7.5	7.1	7.0	6.4	8.05	7.96	7.95	7.99	7.92	
	6	10	10	10	10	10																					
	2	10	10	10	10	10																					
	11	10	10	10	10	10																					
0.25	15	10	10	10	10	9	30.0	30.3	30.2	30.1	30.2	19.7	18.4	18.3	19.1	19.4	8.0	7.5	7.2	7.3	6.5	8.04	7.96	7.95	7.94	7.96	
	8	10	10	10	10	9																					
	9	10	10	10	10	10																					
	21	10	10	10	9	9																					
0.5	14	10	10	10	9	9	30.1	30.4	30.4	30.4	30.4	20.2	18.2	18.2	19.0	19.4	7.0	7.6	7.2	7.1	6.3	8.03	7.97	7.96	7.96	7.98	
	19	10	10	10	9	7																					
	10	10	10	9	9	7																					
	17	10	10	9	9	8																					
1.0	1	10	10	10	9	4	30.1	30.4	30.4	30.5	30.4	20.2	18.3	18.1	18.9	19.3	7.0	7.6	7.2	7.3	6.2	8.03	7.98	7.98	7.98	7.97	
	5	10	10	8	6	5																					
	22	10	10	9	9	5																					
	20	10	10	9	7	6																					
2.0	3	10	9	8	7	0	30.1	30.3	30.3	30.2	30.2	20.2	18.1	18.0	18.6	19.4	7.0	7.6	7.2	7.2	6.3	8.03	7.97	7.98	7.98	7.97	
	12	10	10	10	6	0																					
	4	10	9	7	4	1																					
	13	10	9	8	6	0																					
4.0	18	10	10	7	0	-	30.0	30.3	30.3	30.5	-	20.2	18.3	18.2	18.7	-	7.0	7.6	7.2	7.2	-	8.03	7.98	7.99	7.98	-	
	16	10	10	8	0	-																					
	7	10	8	5	0	-																					
	23	10	9	5	0	-																					

Rand # QC: AUB  
Initial Count QC: AUB ADZKS

Animal Source/Date Received: ARO1710/14      Size at Initiation: 2-4mm

Comments: ⓐ AUB 718/16 ⓑ MR 718/16

QC Check: AUB 712/16      Final Review: KB 720/16

*Neanthes*

**CETIS Summary Report**

Report Date: 05 Jul-16 13:42 (p 1 of 1)  
 Test Code: 160701nara | 06-7168-8696

**Neanthes 96-h Survival Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 16-5007-3479	<b>Test Type:</b> Survival	<b>Analyst:</b>
<b>Start Date:</b> 01 Jul-16 12:25	<b>Protocol:</b> ASTM E1611-00 (2000)	<b>Diluent:</b> Diluted Natural Seawater
<b>Ending Date:</b> 05 Jul-16 10:50	<b>Species:</b> Neanthes arenaceodentata	<b>Brine:</b> Not Applicable
<b>Duration:</b> 94h	<b>Source:</b> Aquatic Tox Support	<b>Age:</b>

<b>Sample ID:</b> 19-5531-8061	<b>Code:</b> 160701nara	<b>Client:</b> Internal
<b>Sample Date:</b> 01 Jul-16 12:25	<b>Material:</b> Cadmium chloride	<b>Project:</b>
<b>Receive Date:</b> 01 Jul-16 12:25	<b>Source:</b> Reference Toxicant	
<b>Sample Age:</b> NA	<b>Station:</b> Cadmium chloride	

**Batch Note:** Emerged 6/8/16

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
17-8820-1882	Survival Rate	5	10	7.071	20.6%		Steel Many-One Rank Sum Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
02-0891-8017	Survival Rate	LC50	9.33	8.016	10.86		Spearman-Kärber

Survival Rate Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	0	0	0.0%	0.0%
2.5		4	1	1	1	1	1	0	0	0.0%	0.0%
5		4	1	1	1	1	1	0	0	0.0%	0.0%
10		4	0.4	0	0.8501	0.2	0.8	0.1414	0.2828	70.71%	60.0%
20		4	0	0	0	0	0	0	0		100.0%
40		4	0	0	0	0	0	0	0		100.0%

Survival Rate Detail					
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Control	1	1	1	1
2.5		1	1	1	1
5		1	1	1	1
10		0.2	0.2	0.8	0.4
20		0	0	0	0
40		0	0	0	0

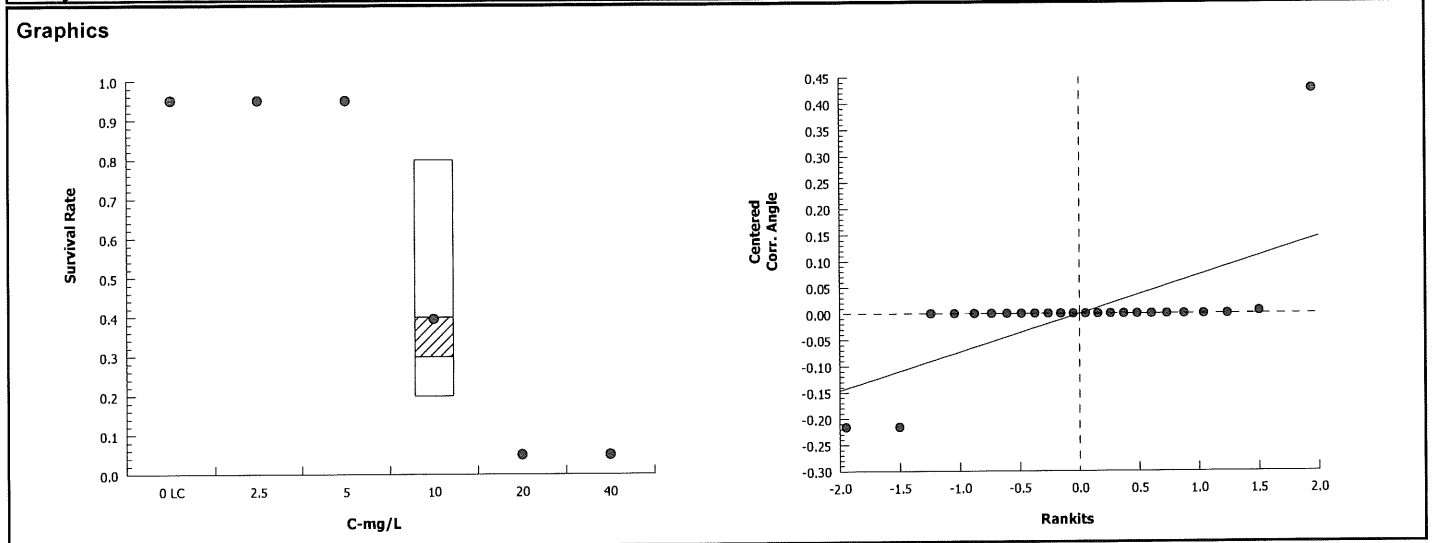


**CETIS Analytical Report**

Report Date: 05 Jul-16 13:42 (p 1 of 2)  
 Test Code: 160701nara | 06-7168-8696

Neanthes 96-h Survival Test										Nautilus Environmental (CA)	
Analysis ID: 17-8820-1882		Endpoint: Survival Rate				CETIS Version: CETISv1.8.7					
Analyzed: 05 Jul-16 13:41		Analysis: Nonparametric-Control vs Treatments				Official Results: Yes					
Batch Note: Emerged 6/8/16											
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Angular (Corrected)	NA	C > T	NA	NA	20.6%	5	10	7.071			
Steel Many-One Rank Sum Test											
Control	vs	C-mg/L	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision( $\alpha$ :5%)		
Lab Control		2.5	18	10	1	6	0.7500	Asymp	Non-Significant Effect		
		5	18	10	1	6	0.7500	Asymp	Non-Significant Effect		
		10*	10	10	0	6	0.0276	Asymp	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision( $\alpha$ :5%)			
Between	1.328639		0.4428798		3	19.25	<0.0001	Significant Effect			
Error	0.2760948		0.0230079		12						
Total	1.604734				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)					
Variances	Mod Levene Equality of Variance		4.189	5.953	0.0303	Equal Variances					
Variances	Levene Equality of Variance		6.283	5.953	0.0083	Unequal Variances					
Distribution	Shapiro-Wilk W Normality		0.5742	0.8408	<0.0001	Non-normal Distribution					
Survival Rate Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	1	0	0.0%	0.0%
2.5		4	1	1	1	1	1	1	0	0.0%	0.0%
5		4	1	1	1	1	1	1	0	0.0%	0.0%
10		4	0.4	0	0.8501	0.3	0.2	0.8	0.1414	70.71%	60.0%
20		4	0	0	0	0	0	0	0	0.0%	100.0%
40		4	0	0	0	0	0	0	0	0.0%	100.0%
Angular (Corrected) Transformed Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
2.5		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
5		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
10		4	0.6798	0.1971	1.163	0.5742	0.4636	1.107	0.1517	44.63%	49.47%
20		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%
40		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%

Neanthes 96-h Survival Test		Nautilus Environmental (CA)	
Analysis ID: 17-8820-1882	Endpoint: Survival Rate	CETIS Version: CETISv1.8.7	
Analyzed: 05 Jul-16 13:41	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes	



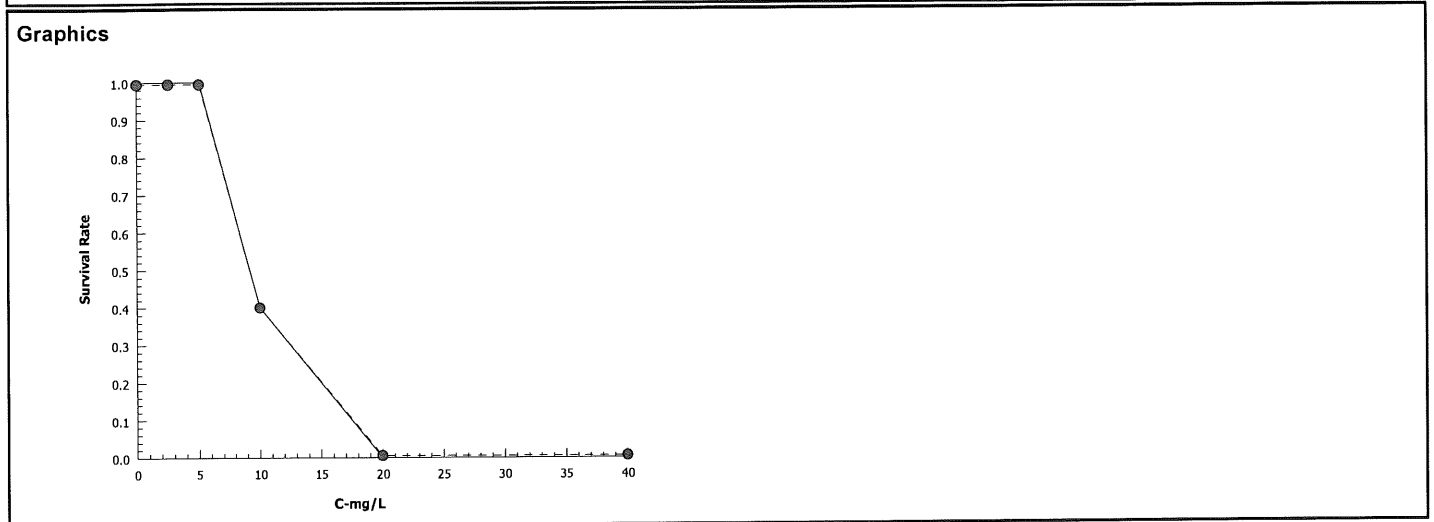
**CETIS Analytical Report**

Report Date: 05 Jul-16 13:42 (p 1 of 1)  
 Test Code: 160701nara | 06-7168-8696

<b>Neantes 96-h Survival Test</b>			<b>Nautilus Environmental (CA)</b>		
<b>Analysis ID:</b> 02-0891-8017	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv1.8.7			
<b>Analyzed:</b> 05 Jul-16 13:42	<b>Analysis:</b> Untrimmed Spearman-Kärber	<b>Official Results:</b> Yes			
<b>Batch Note:</b> Emerged 6/8/16					

<b>Spearman-Kärber Estimates</b>							
Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0	0.00%	0.9699	0.03298	9.33	8.016	10.86

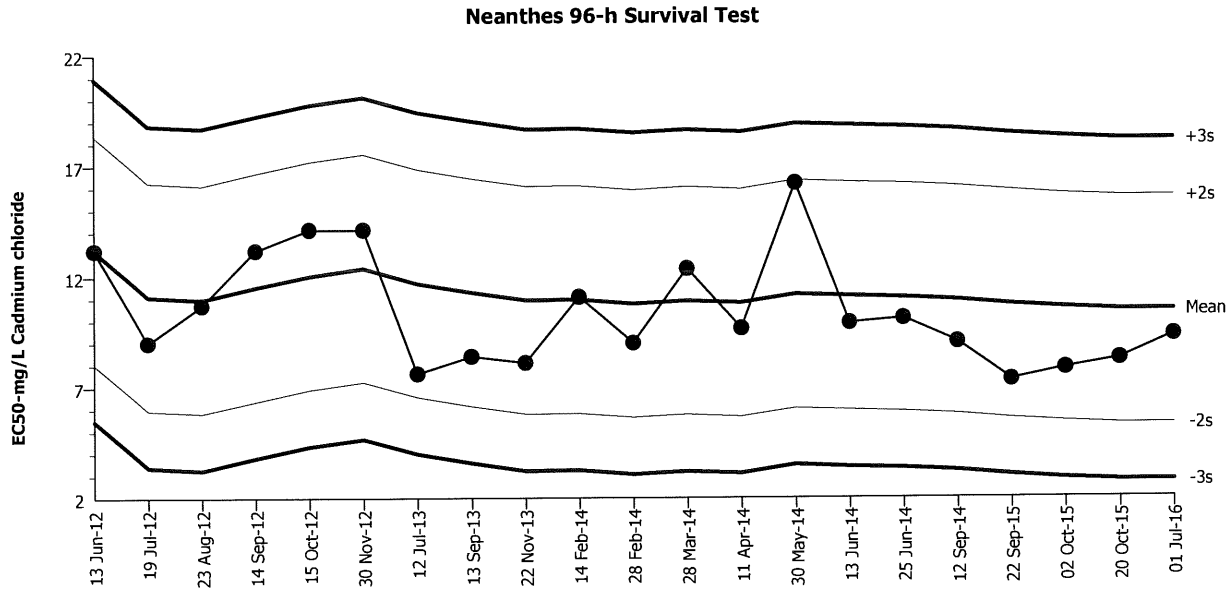
<b>Survival Rate Summary</b>			<b>Calculated Variate(A/B)</b>									
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Lab Control	4	1	1	1	0	0	0.0%	0.0%	20	20	
2.5		4	1	1	1	0	0	0.0%	0.0%	20	20	
5		4	1	1	1	0	0	0.0%	0.0%	20	20	
10		4	0.4	0.2	0.8	0.1414	0.2828	70.71%	60.0%	8	20	
20		4	0	0	0	0	0	100.0%	100.0%	0	20	
40		4	0	0	0	0	0	100.0%	100.0%	0	20	



Neanthes 96-h Survival Test

Nautilus Environmental (CA)

Test Type: Survival Organism: Neanthes arenaceodentata (Polycha Material: Cadmium chloride  
 Protocol: ASTM E1611-00 (2000) Endpoint: Survival Rate Source: Reference Toxicant-REF



Mean: 10.47 Count: 20 -2s Warning Limit: 5.324 -3s Action Limit: 2.749  
 Sigma: 2.575 CV: 24.60% +2s Warning Limit: 15.62 +3s Action Limit: 18.2

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2012	Jun	13	14:45	13.2	2.725	1.058			08-3573-0593	08-2667-0688
2		Jul	19	15:30	9.013	-1.457	-0.566			05-3194-5614	06-9744-1383
3		Aug	23	13:00	10.72	0.2477	0.09621			00-6415-4847	03-7452-2860
4		Sep	14	18:00	13.2	2.725	1.058			01-3108-0767	00-3026-5642
5		Oct	15	14:40	14.14	3.672	1.426			12-2615-0269	05-9401-1565
6		Nov	30	13:50	14.14	3.672	1.426			00-0423-6005	16-0678-5834
7	2013	Jul	12	16:55	7.629	-2.841	-1.103			12-6036-7885	05-4895-6417
8		Sep	13	14:30	8.409	-2.061	-0.8004			11-3632-5354	04-1987-0237
9		Nov	22	15:00	8.123	-2.347	-0.9116			12-6706-9068	00-5220-0833
10	2014	Feb	14	15:10	11.1	0.6257	0.243			01-8407-2291	11-6615-0812
11			28	11:40	9.013	-1.457	-0.566			18-3416-7501	05-9505-9418
12		Mar	28	17:30	12.37	1.903	0.739			11-4554-8066	04-9287-5802
13		Apr	11	13:30	9.659	-0.8106	-0.3148			19-5430-1817	03-4444-9271
14		May	30	11:50	16.25	5.775	2.243	(+)		13-1191-8715	03-5109-4595
15		Jun	13	16:30	9.921	-0.5488	-0.2131			01-2316-9520	05-5854-9451
16			25	13:50	10.12	-0.3498	-0.1358			16-4307-9977	03-7926-5268
17		Sep	12	16:36	9.05	-1.42	-0.5516			21-1201-0133	14-2688-4524
18	2015		22	13:20	7.334	-3.136	-1.218			07-6292-4493	08-7700-7971
19		Oct	2	15:25	7.846	-2.624	-1.019			18-5002-0283	08-3181-1388
20			20	15:50	8.265	-2.205	-0.8565			06-4122-7603	04-4870-4123
21	2016	Jul	1	12:25	9.33	-1.14	-0.4426			06-7168-8696	02-0891-8017

**Marine Acute Bioassay  
Static Conditions**

**Water Quality Measurements  
& Test Organism Survival**

Client: Internal  
 Sample ID: CdCl<sub>2</sub>  
 Test No.: 160701nara

Test Species: N. arenaceodentata  
 Start Date/Time: 7/1/2016 1225  
 End Date/Time: 7/5/2016 1060

Tech Initials				
0	24	48	72	96
EG				CH
EG	ATS		EG	MR
EG				
40				
192				
4000				

Cd stock concentration (mg/L): 931

Concentration mg/L	Rand #	Number of Live Organisms		Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)				
		0	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Lab Control	3	5	5	29.8	29.7	29.8	29.6	29.6	19.8	19.4	19.7	19.5	19.5	7.6	7.0	6.6	7.0	6.6	7.94	7.91	7.85	7.91	7.89
	4	5	5																				
	2	5	5																				
	9	5	5																				
2.5	22	5	5	29.8	29.7	29.9	29.7	29.7	19.9	19.4	19.6	19.5	19.4	7.4	7.0	6.6	7.1	6.6	7.96	7.94	7.89	7.94	7.92
	23	5	5																				
	19	5	5																				
	15	5	5																				
5	1	5	5	29.7	29.4	29.8	29.6	29.6	19.9	19.5	19.7	19.5	19.3	7.5	7.8	6.5	7.0	6.7	7.96	7.91	7.85	7.92	7.94
	18	5	5																				
	24	5	5																				
	16	5	5																				
10	6	5	10	29.9	29.9	30.0	29.5	29.6	19.9	19.3	19.6	19.4	19.4	7.5	7.0	6.8	7.1	6.5	7.95	7.97	7.90	7.95	7.96
	20	5	10																				
	5	5	4																				
	12	5	2																				
20	10	5	0	29.1	29.1	29.8	29.3	29.3	19.8	19.8	19.5	19.4	19.3	7.6	7.0	6.9	7.0	6.5	7.94	7.91	7.89	7.94	7.94
	7	5	0																				
	13	5	0																				
	17	5	0																				
40	8	5	0	28.5	28.5	29.1	28.6	28.5	19.6	19.4	19.6	19.4	19.3	7.6	7.2	6.7	6.8	6.4	7.91	7.91	7.89	7.89	7.91
	11	5	0																				
	14	5	0																				
	21	5	0																				

Rand # QC: EG  
 Initial Count QC'd by: AD  
 Initiated by: EG  
 Animal Source/Date Received: ATS 6/30/16      Age at Initiation: emerged 10/8/14

Comments: ACH Q18 7/5/16

QC Check: AUP 7/5/16      Final Review: HP 7/7/16

*Mytilus*

**CETIS Summary Report**

**Report Date:** 12 Jul-16 11:33 (p 1 of 3)  
**Test Code:** 160622msdvnh | 11-0829-7718

**Bivalve Larval Survival and Development Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 04-3971-4170	<b>Test Type:</b> Development-Survival	<b>Analyst:</b>
<b>Start Date:</b> 22 Jun-16 18:50	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Diluted Natural Seawater
<b>Ending Date:</b> 24 Jun-16 17:20	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 46h	<b>Source:</b> Carlsbad Aquafarms	<b>Age:</b>

<b>Sample ID:</b> 06-1080-8975	<b>Code:</b> 160622msdvnh	<b>Client:</b> Internal
<b>Sample Date:</b> 22 Jun-16	<b>Material:</b> Total Ammonia	<b>Project:</b>
<b>Receive Date:</b> 22 Jun-16	<b>Source:</b> Reference Toxicant	
<b>Sample Age:</b> 19h	<b>Station:</b> Total Ammonia	

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-9217-5996	Combined Development Ra	2	4	2.828	3.91%		Bonferroni Adj t Test
06-1789-0779	Development Rate	2	4	2.828	2.66%		Bonferroni Adj t Test
03-1847-9825	Survival Rate	31.8	>31.8	NA	7.91%		Dunnett Multiple Comparison Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
04-8832-8507	Combined Development Ra	EC25	5.087	4.708	5.385		Linear Interpolation (ICPIN)
		EC50	6.894	6.565	7.229		
14-1667-4622	Development Rate	EC25	5.287	5.098	5.513		Linear Interpolation (ICPIN)
		EC50	7.078	6.805	7.396		
04-1832-0978	Survival Rate	EC25	>31.8	N/A	N/A		Linear Interpolation (ICPIN)
		EC50	>31.8	N/A	N/A		

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision	
06-1789-0779	Development Rate	Control Resp	0.9253	0.9 - NL	Yes	Passes Acceptability Criteria	
14-1667-4622	Development Rate	Control Resp	0.9253	0.9 - NL	Yes	Passes Acceptability Criteria	
03-1847-9825	Survival Rate	Control Resp	0.9862	0.5 - NL	Yes	Passes Acceptability Criteria	
04-1832-0978	Survival Rate	Control Resp	0.9862	0.5 - NL	Yes	Passes Acceptability Criteria	
16-9217-5996	Combined Development Ra	PMSD	0.03914	NL - 0.25	No	Passes Acceptability Criteria	

**CETIS Summary Report**

Report Date: 12 Jul-16 11:33 (p 2 of 3)  
 Test Code: 160622msdvnh | 11-0829-7718

Bivalve Larval Survival and Development Test											Nautilus Environmental (CA)
<b>Combined Development Rate Summary</b>											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9126	0.8845	0.9407	0.8826	0.9346	0.01013	0.02265	2.48%	0.0%
2		4	0.899	0.868	0.9301	0.8704	0.9144	0.009762	0.01952	2.17%	1.49%
4		5	0.8215	0.7759	0.867	0.7652	0.8554	0.0164	0.03668	4.47%	9.99%
7.7		5	0.3545	0.3059	0.4032	0.3077	0.4049	0.01753	0.0392	11.06%	61.15%
14.5		5	0	0	0	0	0	0	0		100.0%
31.8		5	0	0	0	0	0	0	0		100.0%
<b>Development Rate Summary</b>											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9253	0.9057	0.9449	0.9008	0.9421	0.00706	0.01579	1.71%	0.0%
2		4	0.9072	0.893	0.9214	0.8958	0.9144	0.004464	0.008928	0.98%	1.95%
4		5	0.8609	0.8329	0.8889	0.8432	0.8996	0.01008	0.02255	2.62%	6.96%
7.7		5	0.3828	0.3401	0.4254	0.3415	0.4367	0.01535	0.03433	8.97%	58.63%
14.5		5	0	0	0	0	0	0	0		100.0%
31.8		5	0	0	0	0	0	0	0		100.0%
<b>Survival Rate Summary</b>											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9862	0.9701	1	0.9717	1	0.005811	0.01299	1.32%	0.0%
2		5	0.9798	0.9457	1	0.9352	1	0.01228	0.02746	2.8%	0.66%
4		5	0.9547	0.8959	1	0.8907	1	0.02117	0.04734	4.96%	3.2%
7.7		5	0.9271	0.8341	1	0.8219	1	0.03351	0.07493	8.08%	5.99%
14.5		5	0.9166	0.8479	0.9853	0.8623	1	0.02475	0.05533	6.04%	7.06%
31.8		5	0.9522	0.8669	1	0.8421	1	0.03074	0.06873	7.22%	3.45%
<b>Combined Development Rate Detail</b>											
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Lab Control	0.8947	0.9231	0.928	0.8826	0.9346					
2			0.9069	0.9044	0.8704	0.9144					
4		0.847	0.8057	0.834	0.8554	0.7652					
7.7		0.3077	0.4049	0.3401	0.384	0.336					
14.5		0	0	0	0	0					
31.8		0	0	0	0	0					
<b>Development Rate Detail</b>											
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Lab Control	0.9208	0.9421	0.928	0.9008	0.9346					
2			0.9143	0.9044	0.8958	0.9144					
4		0.847	0.8432	0.8996	0.8554	0.8591					
7.7		0.3744	0.4367	0.3415	0.384	0.3773					
14.5		0	0	0	0	0					
31.8		0	0	0	0	0					
<b>Survival Rate Detail</b>											
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Lab Control	0.9717	0.9798	1	0.9798	1					
2		0.9352	0.9919	1	0.9717	1					
4		1	0.9555	0.9271	1	0.8907					
7.7		0.8219	0.9271	0.996	1	0.8907					
14.5		0.9433	1	0.8947	0.8623	0.8826					
31.8		0.9919	1	0.8421	0.9271	1					



**CETIS Summary Report**

Report Date: 12 Jul-16 11:33 (p 3 of 3)  
 Test Code: 160622msdvnh | 11-0829-7718

Bivalve Larval Survival and Development Test							Nautilus Environmental (CA)
<b>Combined Development Rate Binomials</b>							
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	221/247	228/247	232/250	218/247	243/260	
2			224/247	227/251	215/247	235/257	
4		227/268	199/247	206/247	213/249	189/247	
7.7		76/247	100/247	84/247	96/250	83/247	
14.5		0/247	0/254	0/247	0/247	0/247	
31.8		0/247	0/261	0/247	0/247	0/250	
<b>Development Rate Binomials</b>							
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	221/240	228/242	232/250	218/242	243/260	
2			224/245	227/251	215/240	235/257	
4		227/268	199/236	206/229	213/249	189/220	
7.7		76/203	100/229	84/246	96/250	83/220	
14.5		0/233	0/254	0/221	0/213	0/218	
31.8		0/245	0/261	0/208	0/229	0/250	
<b>Survival Rate Binomials</b>							
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	240/247	242/247	247/247	242/247	247/247	
2		231/247	245/247	247/247	240/247	247/247	
4		247/247	236/247	229/247	247/247	220/247	
7.7		203/247	229/247	246/247	247/247	220/247	
14.5		233/247	247/247	221/247	213/247	218/247	
31.8		245/247	247/247	208/247	229/247	247/247	

**CETIS Analytical Report**

Report Date: 12 Jul-16 11:32 (p 1 of 4)  
 Test Code: 160622msdvnh | 11-0829-7718

**Bivalve Larval Survival and Development Test** **Nautilus Environmental (CA)**

Analysis ID: 16-9217-5996      Endpoint: Combined Development Rate      CETIS Version: CETISv1.8.7  
 Analyzed: 12 Jul-16 11:30      Analysis: Parametric-Multiple Comparison      Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	3.91%	2	4	2.828	

**Bonferroni Adj t Test**

Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Control	2		0.8844	2.343	0.064	7	0.5856	CDF	Non-Significant Effect
	4*		5.31	2.343	0.060	8	0.0001	CDF	Significant Effect
	7.7*		24.71	2.343	0.060	8	<0.0001	CDF	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.289283	0.4297611	3	260.2	<0.0001	Significant Effect
Error	0.02477939	0.001651959	15			
Total	1.314063		18			

**Distributional Tests**

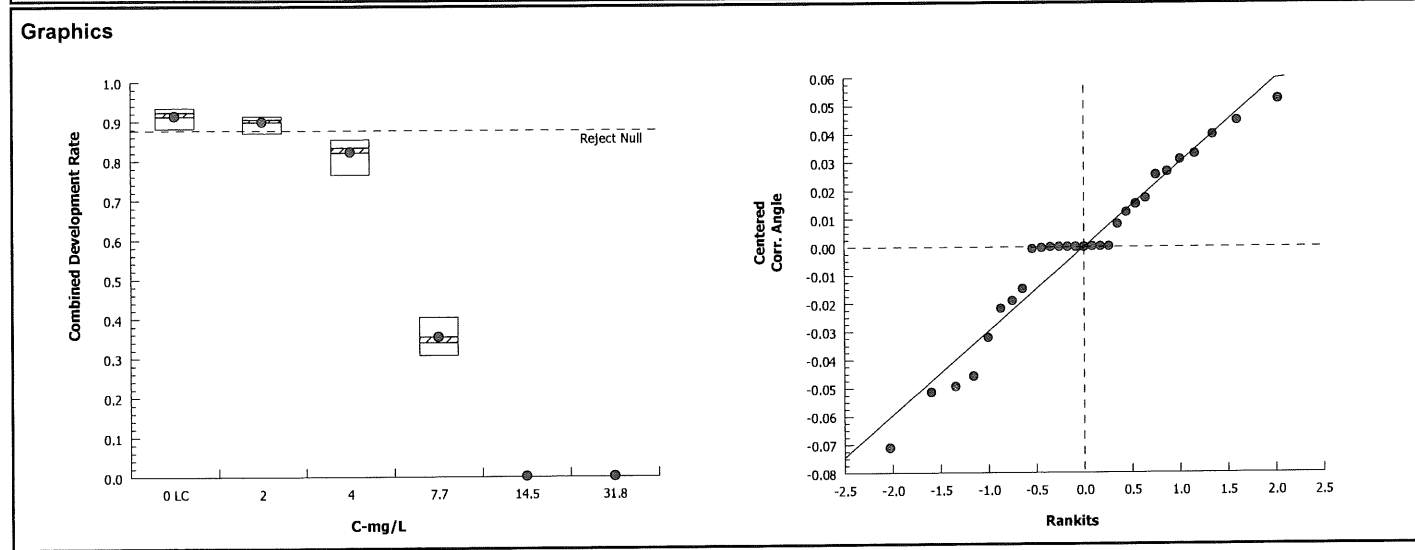
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.4767	11.34	0.9240	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9354	0.8605	0.2178	Normal Distribution

**Combined Development Rate Summary**

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9126	0.8845	0.9407	0.9231	0.8826	0.9346	0.01013	2.48%	0.0%
2		4	0.899	0.868	0.9301	0.9056	0.8704	0.9144	0.009762	2.17%	1.49%
4		5	0.8215	0.7759	0.867	0.834	0.7652	0.8554	0.0164	4.47%	9.99%
7.7		5	0.3545	0.3059	0.4032	0.3401	0.3077	0.4049	0.01753	11.06%	61.15%
14.5		5	0	0	0	0	0	0	0		100.0%
31.8		5	0	0	0	0	0	0	0		100.0%

**Angular (Corrected) Transformed Summary**

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.273	1.223	1.322	1.29	1.221	1.312	0.0177	3.11%	0.0%
2		4	1.248	1.198	1.298	1.259	1.203	1.274	0.01571	2.52%	1.9%
4		5	1.136	1.078	1.194	1.151	1.065	1.181	0.02103	4.14%	10.73%
7.7		5	0.6374	0.5865	0.6883	0.6226	0.588	0.6897	0.01832	6.43%	49.91%
14.5		5	0.03173	0.03149	0.03198	0.03182	0.03138	0.03182	8.83E-05	0.62%	97.51%
31.8		5	0.03161	0.03114	0.03207	0.03182	0.03095	0.03182	0.000168	1.19%	97.52%



# CETIS Analytical Report

Report Date: 12 Jul-16 11:32 (p 2 of 4)  
 Test Code: 160622msdvnh | 11-0829-7718

**Bivalve Larval Survival and Development Test** **Nautilus Environmental (CA)**

Analysis ID: 06-1789-0779      Endpoint: Development Rate      CETIS Version: CETISv1.8.7  
 Analyzed: 12 Jul-16 11:30      Analysis: Parametric-Multiple Comparison      Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	2.66%	2	4	2.828	

**Bonferroni Adj t Test**

Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		2	1.649	2.343	0.048	7	0.1799	CDF	Non-Significant Effect
		4*	5.506	2.343	0.045	8	<0.0001	CDF	Significant Effect
		7.7*	32.78	2.343	0.045	8	<0.0001	CDF	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	1.272374	0.4241247	3	461.9	<0.0001	Significant Effect
Error	0.01377365	0.0009182435	15			
Total	1.286148		18			

**Distributional Tests**

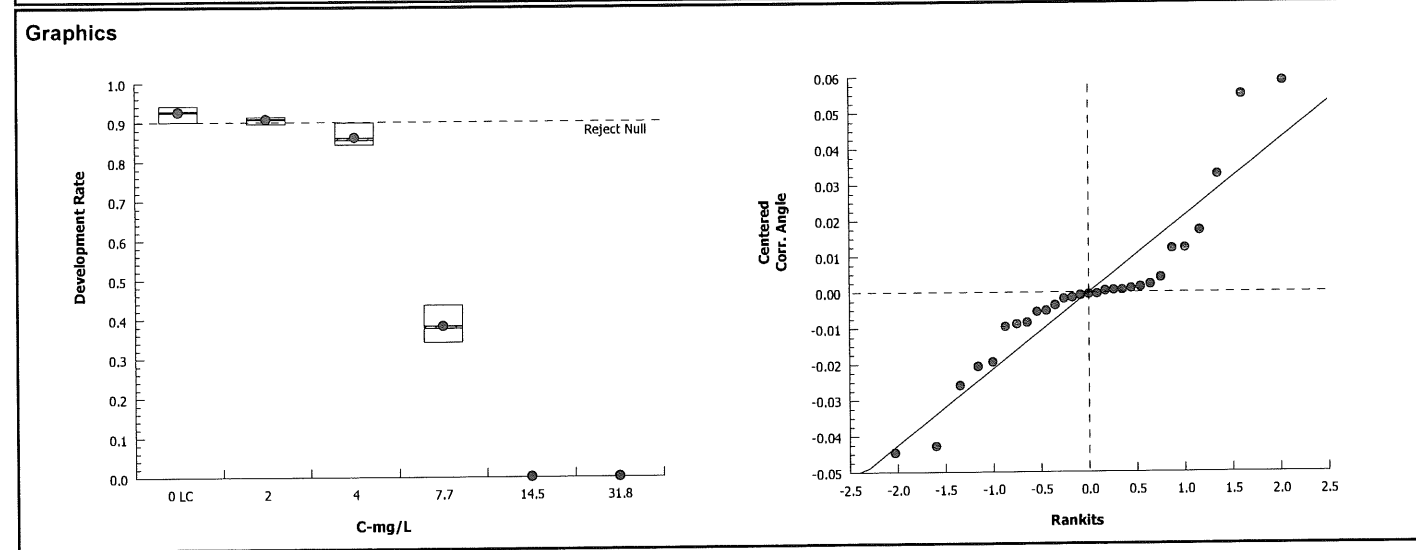
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	1.972	11.34	0.5783	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.943	0.8605	0.2983	Normal Distribution

**Development Rate Summary**

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9253	0.9057	0.9449	0.928	0.9008	0.9421	0.00706	1.71%	0.0%
2		4	0.9072	0.893	0.9214	0.9093	0.8958	0.9144	0.004464	0.98%	1.95%
4		5	0.8609	0.8329	0.8889	0.8554	0.8432	0.8996	0.01008	2.62%	6.96%
7.7		5	0.3828	0.3401	0.4254	0.3773	0.3415	0.4367	0.01535	8.97%	58.63%
14.5		5	0	0	0	0	0	0	0		100.0%
31.8		5	0	0	0	0	0	0	0		100.0%

**Angular (Corrected) Transformed Summary**

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.295	1.258	1.332	1.299	1.25	1.328	0.01317	2.28%	0.0%
2		4	1.262	1.237	1.286	1.265	1.242	1.274	0.007643	1.21%	2.59%
4		5	1.19	1.147	1.232	1.181	1.164	1.248	0.01523	2.86%	8.15%
7.7		5	0.6668	0.6231	0.7106	0.6614	0.6241	0.7219	0.01575	5.28%	48.51%
14.5		5	0.03318	0.03176	0.03461	0.03364	0.03138	0.03427	0.000514	3.47%	97.44%
31.8		5	0.03245	0.03064	0.03426	0.03195	0.03095	0.03468	0.000651	4.49%	97.49%



**CETIS Analytical Report**

Report Date: 12 Jul-16 11:33 (p 3 of 4)  
 Test Code: 160622msdvnh | 11-0829-7718

Bivalve Larval Survival and Development Test										Nautilus Environmental (CA)	
Analysis ID: 03-1847-9825		Endpoint: Survival Rate			CETIS Version: CETISv1.8.7						
Analyzed: 12 Jul-16 11:30		Analysis: Parametric-Control vs Treatments			Official Results: Yes						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Angular (Corrected)	NA	C > T	NA	NA	7.91%	31.8	>31.8	NA			

Dunnett Multiple Comparison Test									
Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Lab Control		2	0.1433	2.362	0.204	8	0.7875	CDF	Non-Significant Effect
		4	0.8524	2.362	0.204	8	0.4869	CDF	Non-Significant Effect
		7.7	1.442	2.362	0.204	8	0.2432	CDF	Non-Significant Effect
		14.5	1.884	2.362	0.204	8	0.1217	CDF	Non-Significant Effect
		31.8	0.7347	2.362	0.204	8	0.5411	CDF	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.09915099	0.0198302	5	1.062	0.4054	Non-Significant Effect
Error	0.4480115	0.01866714	24			
Total	0.5471625		29			

Distributional Tests					
Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	4.051	15.09	0.5421	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9698	0.9031	0.5338	Normal Distribution

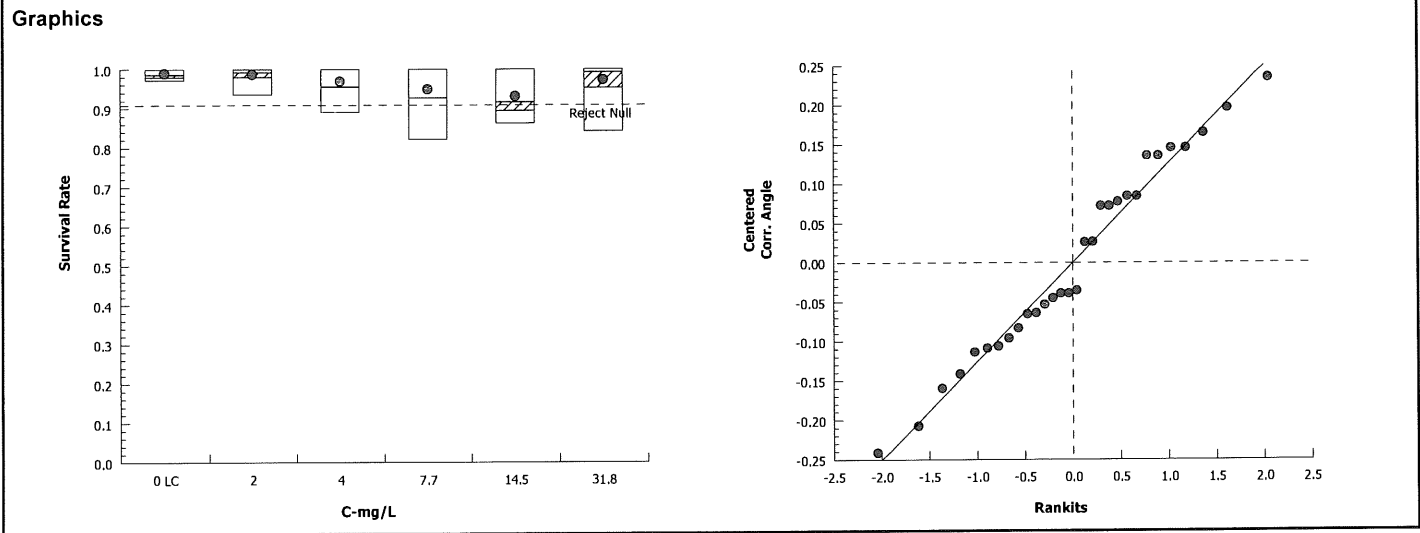
  

Survival Rate Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9862	0.9701	1	0.9798	0.9717	1	0.005811	1.32%	0.0%
2		5	0.9798	0.9457	1	0.9919	0.9352	1	0.01228	2.8%	0.66%
4		5	0.9547	0.8959	1	0.9555	0.8907	1	0.02117	4.96%	3.2%
7.7		5	0.9271	0.8341	1	0.9271	0.8219	1	0.03351	8.08%	5.99%
14.5		5	0.9166	0.8479	0.9853	0.8947	0.8623	1	0.02475	6.04%	7.06%
31.8		5	0.9522	0.8669	1	0.9919	0.8421	1	0.03074	7.22%	3.45%

Angular (Corrected) Transformed Summary											
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.467	1.385	1.55	1.428	1.402	1.539	0.02972	4.53%	0.0%
2		5	1.455	1.334	1.575	1.481	1.313	1.539	0.04339	6.67%	0.84%
4		5	1.393	1.22	1.567	1.358	1.234	1.539	0.06257	10.04%	5.02%
7.7		5	1.342	1.125	1.56	1.297	1.135	1.539	0.07828	13.04%	8.5%
14.5		5	1.304	1.129	1.48	1.24	1.191	1.539	0.06312	10.82%	11.1%
31.8		5	1.404	1.196	1.612	1.481	1.162	1.539	0.07489	11.93%	4.33%

<b>Bivalve Larval Survival and Development Test</b>		<b>Nautilus Environmental (CA)</b>
<b>Analysis ID:</b> 03-1847-9825	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 12 Jul-16 11:30	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Official Results:</b> Yes



**CETIS Analytical Report**

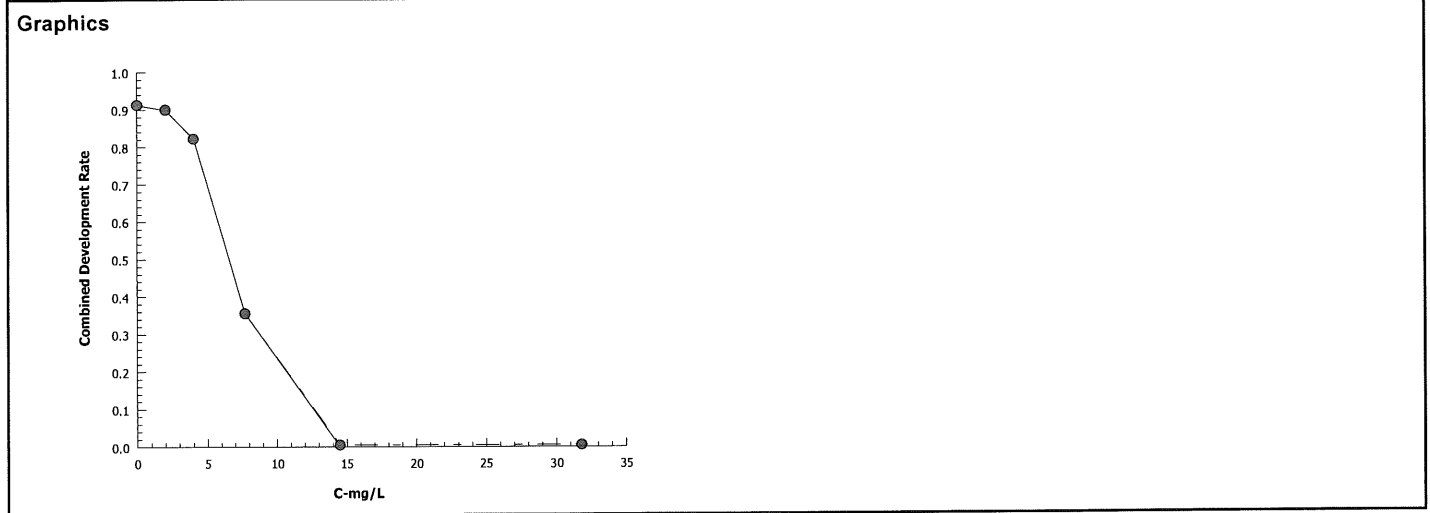
Report Date: 12 Jul-16 11:33 (p 1 of 3)  
 Test Code: 160622msdvn | 11-0829-7718

<b>Bivalve Larval Survival and Development Test</b>			<b>Nautilus Environmental (CA)</b>
<b>Analysis ID:</b> 04-8832-8507	<b>Endpoint:</b> Combined Development Rate	<b>CETIS Version:</b> CETISv1.8.7	
<b>Analyzed:</b> 12 Jul-16 11:32	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Official Results:</b> Yes	

<b>Linear Interpolation Options</b>					
<b>X Transform</b>	<b>Y Transform</b>	<b>Seed</b>	<b>Resamples</b>	<b>Exp 95% CL</b>	<b>Method</b>
Linear	Linear	1207485	1000	Yes	Two-Point Interpolation

<b>Point Estimates</b>			
<b>Level</b>	<b>mg/L</b>	<b>95% LCL</b>	<b>95% UCL</b>
EC25	5.087	4.708	5.385
EC50	6.894	6.565	7.229

<b>Combined Development Rate Summary</b>			<b>Calculated Variate(A/B)</b>								
<b>C-mg/L</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>	<b>A</b>	<b>B</b>
0	Lab Control	5	0.9126	0.8826	0.9346	0.01013	0.02265	2.48%	0.0%	1142	1251
2		4	0.899	0.8704	0.9144	0.009762	0.01952	2.17%	1.49%	901	1002
4		5	0.8215	0.7652	0.8554	0.0164	0.03668	4.47%	9.99%	1034	1258
7.7		5	0.3545	0.3077	0.4049	0.01753	0.0392	11.06%	61.15%	439	1238
14.5		5	0	0	0	0	0		100.0%	0	1242
31.8		5	0	0	0	0	0		100.0%	0	1252



**CETIS Analytical Report**

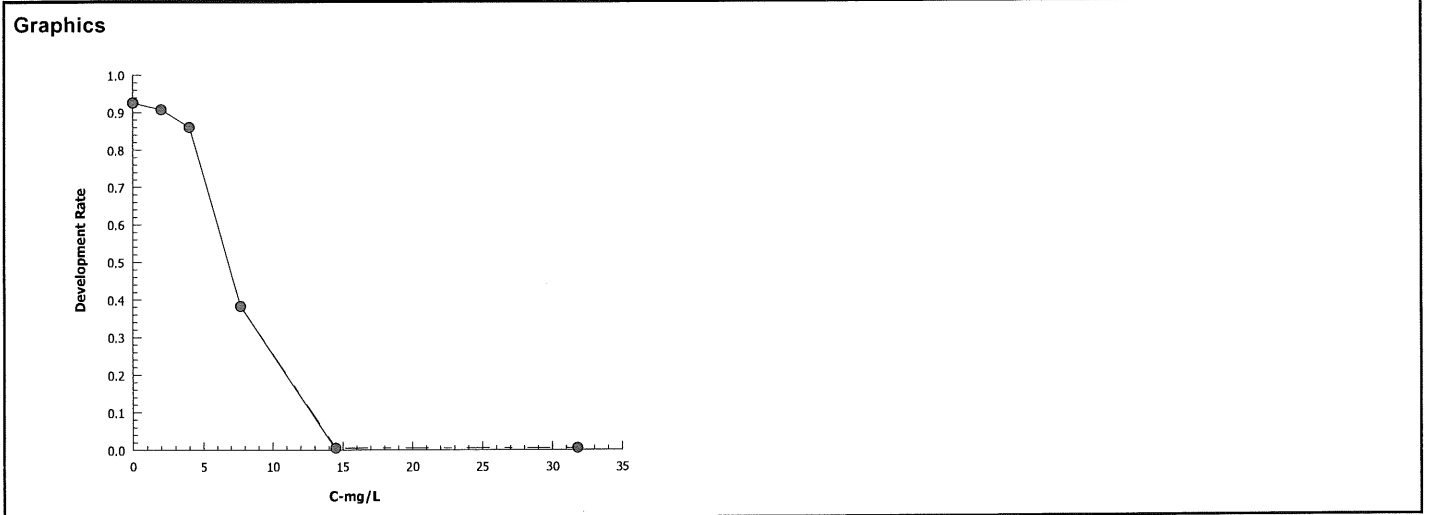
Report Date: 12 Jul-16 11:33 (p 2 of 3)  
 Test Code: 160622msdvnh | 11-0829-7718

<b>Bivalve Larval Survival and Development Test</b>			<b>Nautilus Environmental (CA)</b>		
Analysis ID: 14-1667-4622	Endpoint: Development Rate	CETIS Version: CETISv1.8.7			
Analyzed: 12 Jul-16 11:32	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	492349	1000	Yes	Two-Point Interpolation

Point Estimates			
Level	mg/L	95% LCL	95% UCL
EC25	5.287	5.098	5.513
EC50	7.078	6.805	7.396

Development Rate Summary			Calculated Variate(A/B)								
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Lab Control	5	0.9253	0.9008	0.9421	0.00706	0.01579	1.71%	0.0%	1142	1234
2		4	0.9072	0.8958	0.9144	0.004464	0.008929	0.98%	1.95%	901	993
4		5	0.8609	0.8432	0.8996	0.01008	0.02255	2.62%	6.96%	1034	1202
7.7		5	0.3828	0.3415	0.4367	0.01535	0.03433	8.97%	58.63%	439	1148
14.5		5	0	0	0	0	0		100.0%	0	1139
31.8		5	0	0	0	0	0		100.0%	0	1193



**CETIS Analytical Report**

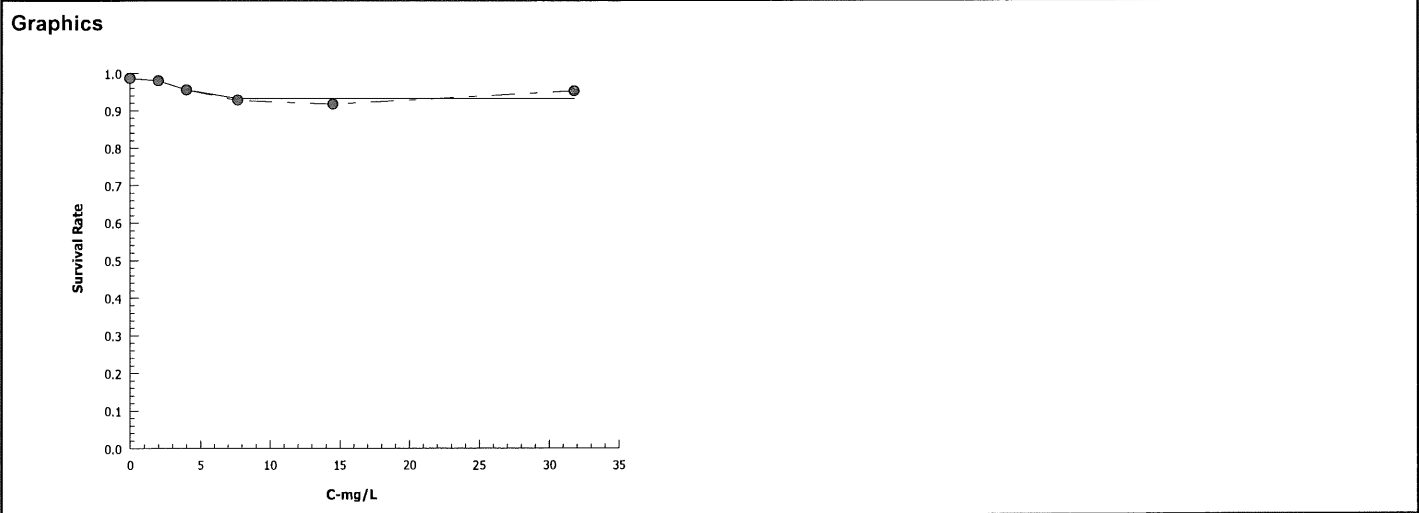
Report Date: 12 Jul-16 11:33 (p 3 of 3)  
 Test Code: 160622msdvnh | 11-0829-7718

<b>Bivalve Larval Survival and Development Test</b>			<b>Nautilus Environmental (CA)</b>		
Analysis ID: 04-1832-0978	Endpoint: Survival Rate	CETIS Version: CETISv1.8.7			
Analyzed: 12 Jul-16 11:31	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	198512	1000	Yes	Two-Point Interpolation

Point Estimates			
Level	mg/L	95% LCL	95% UCL
EC25	>31.8	N/A	N/A
EC50	>31.8	N/A	N/A

Survival Rate Summary			Calculated Variate(A/B)								
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Lab Control	5	0.9862	0.9717	1	0.005811	0.01299	1.32%	0.0%	1218	1235
2		5	0.9798	0.9352	1	0.01228	0.02746	2.8%	0.66%	1210	1235
4		5	0.9547	0.8907	1	0.02117	0.04734	4.96%	3.2%	1179	1235
7.7		5	0.9271	0.8219	1	0.03351	0.07493	8.08%	5.99%	1145	1235
14.5		5	0.9166	0.8623	1	0.02475	0.05533	6.04%	7.06%	1132	1235
31.8		5	0.9522	0.8421	1	0.03074	0.06873	7.22%	3.45%	1176	1235





Bivalve Larval Survival and Development Test

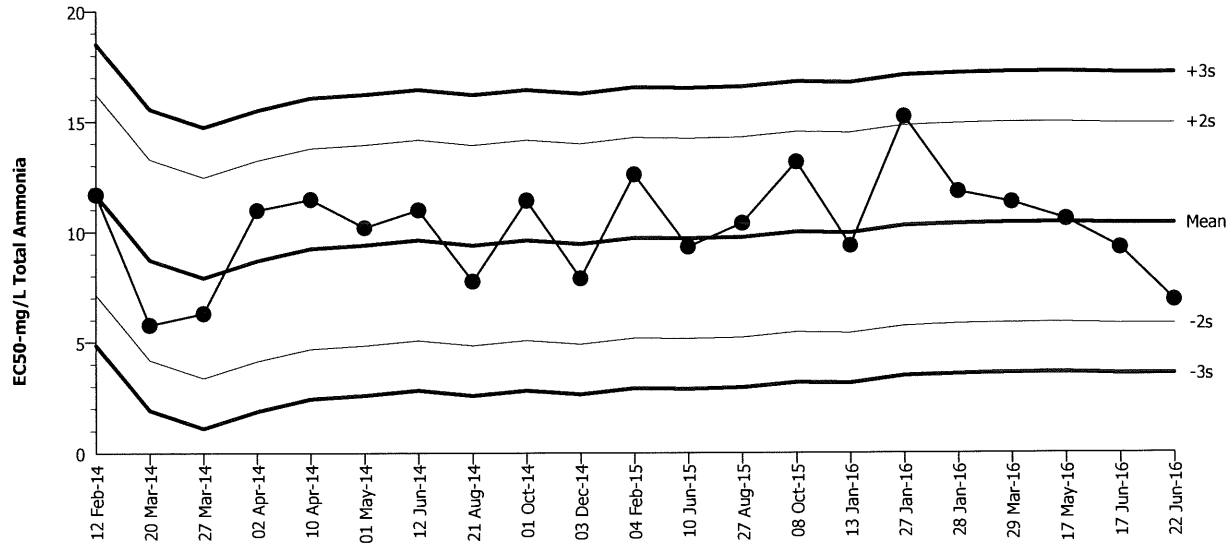
Nautilus Environmental (CA)

Test Type: Development-Survival  
 Protocol: EPA/600/R-95/136 (1995)

Organism: Mytilus galloprovincialis (Bay Mussel)  
 Endpoint: Combined Development Rate

Material: Total Ammonia  
 Source: Reference Toxicant-REF

Bivalve Larval Survival and Development Test



Mean: 10.38      Count: 20      -2s Warning Limit: 5.832      -3s Action Limit: 3.56  
 Sigma: 2.272      CV: 21.90%      +2s Warning Limit: 14.92      +3s Action Limit: 17.19

Quality Control Data

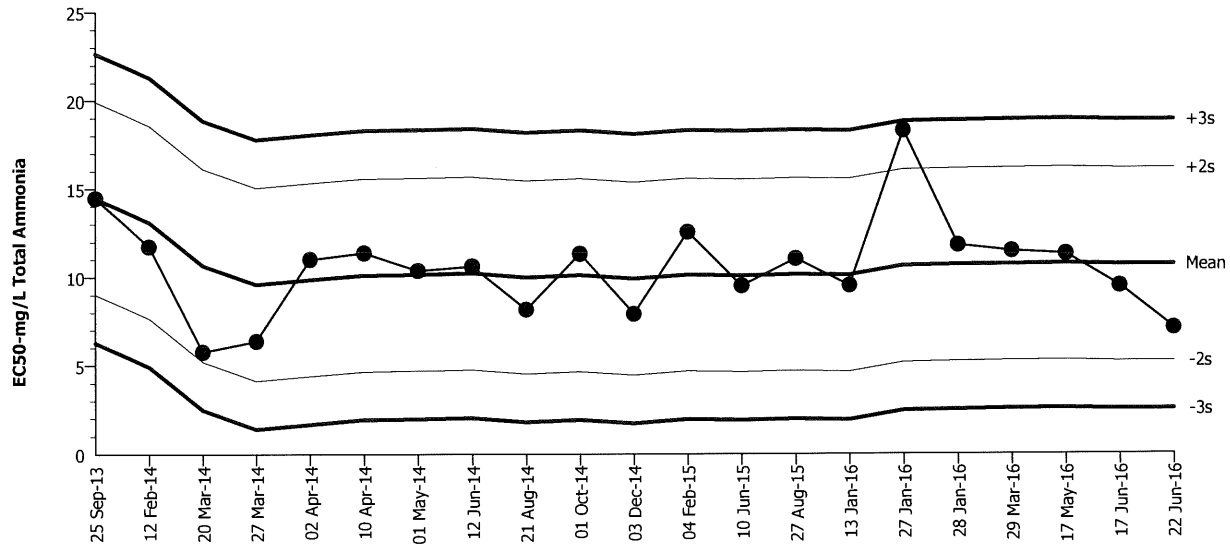
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2014	Feb	12	15:30	11.69	1.31	0.5765			06-4375-2746	13-8434-6720
2		Mar	20	19:00	5.775	-4.605	-2.027	(-)		17-0399-3203	19-2302-4816
3			27	16:30	6.301	-4.079	-1.795			09-5988-1108	07-7107-3665
4		Apr	2	12:30	10.98	0.5965	0.2626			05-8309-8344	00-9286-0800
5			10	15:00	11.47	1.094	0.4816			02-1963-3264	10-4298-7569
6		May	1	16:05	10.19	-0.1866	-0.08212			07-8459-4075	20-5545-0542
7		Jun	12	20:10	10.99	0.6122	0.2694			17-2308-5151	05-2135-1819
8		Aug	21	16:00	7.754	-2.626	-1.156			16-4722-5583	05-0233-3296
9		Oct	1	16:30	11.42	1.044	0.4594			09-0965-5024	08-3471-0515
10		Dec	3	16:00	7.887	-2.493	-1.097			15-0713-0527	15-7906-1595
11	2015	Feb	4	15:28	12.6	2.22	0.9771			03-8210-1951	06-6223-4162
12		Jun	10	12:20	9.319	-1.061	-0.467			17-1616-9284	13-3619-7413
13		Aug	27	15:20	10.39	0.00843	0.00371			10-1088-5720	18-8082-1309
14		Oct	8	15:00	13.16	2.78	1.224			08-2144-0907	18-3142-1745
15	2016	Jan	13	16:45	9.367	-1.013	-0.4459			16-1872-3066	15-2094-6122
16			27	19:00	15.21	4.829	2.125	(+)		20-6363-9766	20-9983-9864
17			28	16:15	11.82	1.439	0.6336			09-4667-0996	17-4707-8506
18		Mar	29	16:50	11.34	0.958	0.4217			10-4357-0783	08-2963-9914
19		May	17	16:25	10.58	0.1969	0.08667			03-9747-3260	14-8810-8473
20		Jun	17	18:15	9.279	-1.101	-0.4845			20-1939-1176	18-9823-5838
21			22	18:50	6.894	-3.486	-1.534			11-0829-7718	04-8832-8507

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Test Type: Development-Survival      Organism: Mytilus galloprovincialis (Bay Mussel)      Material: Total Ammonia  
 Protocol: EPA/600/R-95/136 (1995)      Endpoint: Development Rate      Source: Reference Toxicant-REF

Bivalve Larval Survival and Development Test



Mean: 10.7      Count: 20      -2s Warning Limit: 5.245      -3s Action Limit: 2.518  
 Sigma: 2.727      CV: 25.50%      +2s Warning Limit: 16.15      +3s Action Limit: 18.88

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2013	Sep	25	14:30	14.47	3.768	1.382			17-1825-1135	02-9058-4878
2	2014	Feb	12	15:30	11.72	1.022	0.3748			06-4375-2746	18-8904-9256
3		Mar	20	19:00	5.762	-4.938	-1.811			17-0399-3203	04-9302-5556
4			27	16:30	6.364	-4.336	-1.59			09-5988-1108	15-8372-8702
5		Apr	2	12:30	11	0.3011	0.1104			05-8309-8344	16-2694-3083
6			10	15:00	11.37	0.6707	0.2459			02-1963-3264	00-9110-4259
7		May	1	16:05	10.36	-0.3392	-0.1244			07-8459-4075	21-1818-8038
8		Jun	12	20:10	10.6	-0.09723	-0.03565			17-2308-5151	19-9173-6940
9		Aug	21	16:00	8.159	-2.541	-0.932			16-4722-5583	07-3417-8399
10		Oct	1	16:30	11.32	0.6198	0.2273			09-0965-5024	08-1505-2880
11		Dec	3	16:00	7.908	-2.792	-1.024			15-0713-0527	07-5824-9044
12	2015	Feb	4	15:28	12.56	1.862	0.6826			03-8210-1951	16-8878-3258
13		Jun	10	12:20	9.501	-1.199	-0.4395			17-1616-9284	16-0036-7110
14		Aug	27	15:20	11.03	0.3296	0.1208			10-1088-5720	11-8647-9603
15	2016	Jan	13	16:45	9.514	-1.186	-0.4351			16-1872-3066	06-1342-8554
16			27	19:00	18.28	7.58	2.78	(+)		20-6363-9766	20-1848-6869
17			28	16:15	11.79	1.094	0.4011			09-4667-0996	08-6717-0821
18		Mar	29	16:50	11.46	0.7627	0.2797			10-4357-0783	10-5662-2561
19		May	17	16:25	11.31	0.6112	0.2241			03-9747-3260	12-9787-0109
20		Jun	17	18:15	9.483	-1.217	-0.4464			20-1939-1176	03-8605-9749
21			22	18:50	7.078	-3.622	-1.328			11-0829-7718	14-1667-4622

**CETIS Test Data Worksheet**

Report Date: 22 Jun-16 07:52 (p 1 of 1)

Test Code: 11-0829-7718/160622msdvnh

**Bivalve Larval Survival and Development Test**

**Nautilus Environmental (CA)**

Start Date: 22 Jun-16

Species: Mytilus galloprovincialis

Sample Code: 160622msdvnh

End Date: 24 Jun-16

Protocol: EPA/600/R-95/136 (1995)

Sample Source: Reference Toxicant

Sample Date: 22 Jun-16

Material: Total Ammonia

Sample Station: Total Ammonia

C-mg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
			1			254 <sup>229</sup>	206	AB 7/11/16
			2			233	0	
			3			261	0	
			4			229 <sup>238</sup>	124 <sup>100</sup>	
			5			260	243	
			6			208	0	
			7			245	0	
			8			257	235	
			9			250	232	
			10			246	84	
			11			254	0	
			12			250	0	AB 7/12/16
			13			229	0	
			14			220	83	
			15			221	0	
			16			240	215	
			17			242	228	
			18			268	227	
			19			251	227	
			20			236	199	
			21			250	96	
			22			218	0	
			23			242	218	
			24			249	213	
			25			213	0	
			26			245 <sup>235</sup>	224	
			27			205 <sup>226</sup>	76	
			28			220	189	
			29			240	221	
			30			231	201	

ⓐ AB Q18 7/11/16

ⓑ AB Q18 7/12/16

**CETIS Test Data Worksheet**

Report Date: 22 Jun-16 07:52 (p 1 of 1)  
 Test Code: 11-0829-7718/160622msdvnh

**Bivalve Larval Survival and Development Test**

**Nautilus Environmental (CA)**

Start Date: 22 Jun-16      Species: Mytilus galloprovincialis      Sample Code: 160622msdvnh  
 End Date: 24 Jun-16      Protocol: EPA/600/R-95/136 (1995)      Sample Source: Reference Toxicant  
 Sample Date: 22 Jun-16      Material: Total Ammonia      Sample Station: Total Ammonia

C-mg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	LC	1	29					
0	LC	2	17					
0	LC	3	9					
0	LC	4	23					
0	LC	5	5					
2		1	30					
2		2	26					
2		3	19					
2		4	16					
2		5	8					
4		1	18					
4		2	20					
4		3	1					
4		4	24					
4		5	28					
8		1	27					
8		2	4					
8		3	10					
8		4	21					
8		5	14					
16		1	2			219	0	KS
16		2	11					
16		3	15					
16		4	25					
16		5	22					
32		1	7			247	0	YS 6/24
32		2	3					
32		3	6					
32		4	13					
32		5	12					

⊛ Nominal values

**Total Ammonia Analysis  
Marine**

**Overlying Water**

Client: Internal  
 Project: Reference Toxicant Test  
 Test Type: Ms-dev NH3 Reftox

DI Blank: 0.0  
 SW Blank: 0.0

Test Start Date: 6/22/2016

Analyst: SG  
 Analysis Date: 6/28/16

N x 1.22

Sample ID	Nautilus ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)
Blank Spike (10 mg/L NH <sub>3</sub> )		NA	NA	8.0	9.8
Lab Control	1	6/22/2016	0	0.0	20.5
2	2	6/22/2016	0	1.6	1.9 2.0 (B)
4	3	6/22/2016	0	3.3	4.0
8	4	6/22/2016	0	6.3	7.7
16	5	6/22/2016	0	11.9	14.5
32	6	6/22/2016	0	26.1	31.8
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	8.0	9.8
Sample Duplicate <sup>a</sup>	32	NA	NA	25.8	31.5
Sample Duplicate + Spike <sup>a</sup>		NA	NA	32.0	39.0
Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	8.0	9.8

Relative Percent Difference (RPD) =  $\frac{[\text{sample}] (\text{mg/L}) - [\text{sample duplicate}] (\text{mg/L})}{[\text{average ammonia}] (\text{mg/L})} \times 100$

Acceptable Range: 0-20%

Percent Recovery =  $\frac{[\text{spiked sample}] (\text{mg/L}) - [\text{sample}] (\text{mg/L})}{\text{nominal} [\text{spike}] (\text{mg/L})} \times 100$

Acceptable Range: 80-120%<sup>b</sup>

QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	9.8	10	NA	98
32	31.8	31.5	39.0	10	0.9	70 72

Comments: QA18 SG 6/28/16 (B) QA18 7/12/16 KS

Notes: <sup>a</sup> Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit (MDL) = 0.5 mg/L

QC Check: KS 7/12/16

Final Review: AC 7/14/16

# Marine Chronic Bioassay

# Water Quality Measurements

Client: Internal  
 Sample ID: Ammonia  
 Test No.: 160622msdvNH3

Test Species: M. galloprovincialis  
 Start Date/Time: 6/22/2016 1850  
 End Date/Time: 6/24/2016 1720

Concentration (mg/L)	Salinity (ppt)			Temperature (°C)			Dissolved Oxygen (mg/L)			pH (pH units)		
	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	31.5	31.7	31.5	15.7	14.9	14.9	8.1	8.2	8.2	8.01	7.96	7.93
2	31.6	31.9	31.7	15.5	14.7	14.7	8.1	8.3	8.3	8.00	7.96	7.93
4	31.6	32.0	31.8	15.5	14.7	14.6	8.1	8.3	8.3	7.99	7.96	7.93
8	31.5	31.9	31.7	15.5	14.8	14.9	8.1	8.3	8.3	7.99	7.96	7.93
16	31.4	31.7	31.6	15.7	14.9	14.7	8.0	8.2	8.3	7.97	7.95	7.92
32	31.1	31.4	31.2	15.5	14.8	14.7	8.0	8.3	8.3	7.93	7.93	7.91

Technician Initials: \_\_\_\_\_ WQ Readings: 

0	24	48
EG	AUD	EG
YS		
YS		

  
 Dilutions made by: YS  
 Collect NH<sub>3</sub> Subsample: YS

High conc. made (mg/L):	32
Vol. Ammonia stock added (mL):	13.1
Final Volume (mL):	500
Ammonia stock concentration (mg/L):	1220

Comments: 0 hrs: Nominal values  
 24 hrs: \_\_\_\_\_  
 48 hrs: \_\_\_\_\_

QC Check: YS 7/12/16 Final Review: AC 7/14/16

Marine Chronic Bioassay

Larval Development Worksheet

Client: Internal  
 Test No.: 160622 msdvnk  
 Test Species: Mytilus galloprovincialis  
 Animal Source: Carlsbad Aquaculture  
 Date Received: 6/16/16  
 Test Chambers: 30ml glass vial  
 Sample Volume: 10 mL

Start Date/Time: 6/22/16 1850  
 End Date/Time: 6/24/16 1720  
 Technician Initials: g

Spawn Information

First Gamete Release Time: 1520

Sex	Number Spawning
Male	5
Female	1

Gamete Selection

Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape, etc.)
Male	1, 2, 3	High density, high motility
Female 1	1	Good density, uniform size, shape, color
Female 2		
Female 3		

Embryo Stock Selection

Stock Number	% of embryos at 2-cell division stage
Female 1	96
Female 2	-
Female 3	-

Egg Fertilization Time: 1640

Stock(s) chosen for testing: 1

Embryo Inoculum Preparation

Target count on Sedgwick-Rafter slide for desired density is 6 embryos

Number Counted: 6      7  
8      7  
7      8  
4      4  
4      8

Mean: 6.3

Mean <sup>(A)</sup> 315 6.3 x 50 = 315 embryos/ml

Initial Density: 315 = 1.05 (dilution factor)

Desired Final Density: 300  
 (to inoculate with 0.5 ml)

Prepare the embryo inoculum according to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (1 part) and 125 ml of dilution water (1.25 parts).

Time Zero Control Counts

Rand. No.	No. Dividing	Total	% Dividing	Mean % Dividing
T01	240	250	96.0	96.4
T02	255	265	96.2	
T03	252	261	96.6	
T04	257	263	97.7	
T05	232	243	95.5	

48-h QC: 193/205 94.1%  
95.1% <sup>(B)</sup>

Comments: (A) 2/8 vs 6/22/16      (B) vs 7/12/16  
 $\bar{x} = 247$

QC Check: vs 7/12/16

Final Review: AC 7/14/16

*Americamysis*



# CETIS Summary Report

Report Date: 19 Jul-16 15:54 (p 1 of 1)  
 Test Code: 160713myra | 16-2246-8234

**Mysid 96-h Acute Survival Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 02-9812-3161	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b>
<b>Start Date:</b> 13 Jul-16 14:25	<b>Protocol:</b> EPA/821/R-02-012 (2002)	<b>Diluent:</b> Diluted Natural Seawater
<b>Ending Date:</b> 17 Jul-16 13:05	<b>Species:</b> Americamysis bahia	<b>Brine:</b> Not Applicable
<b>Duration:</b> 95h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b> 5 d

<b>Sample ID:</b> 12-2604-1519	<b>Code:</b> 160713myra	<b>Client:</b> Internal
<b>Sample Date:</b> 13 Jul-16	<b>Material:</b> Copper chloride	<b>Project:</b>
<b>Receive Date:</b> 13 Jul-16	<b>Source:</b> Reference Toxicant	
<b>Sample Age:</b> 14h	<b>Station:</b> Copper Chloride	

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-1880-8175	48h Survival Rate	100	200	141.4	20.9%		Steel Many-One Rank Sum Test
09-9489-2817	96h Survival Rate	100	200	141.4	21.5%		Dunnett Multiple Comparison Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
04-8051-3005	48h Survival Rate	EC50	186.6	155.7	223.6		Spearman-Kärber
20-3995-4909	96h Survival Rate	EC50	157.8	133.6	186.3		Spearman-Kärber

48h Survival Rate Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	0	0	0.0%	0.0%
50		4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.9	0.7163	1	0.8	1	0.05774	0.1155	12.83%	10.0%
200		4	0.5	0.08915	0.9109	0.2	0.8	0.1291	0.2582	51.64%	50.0%
400		4	0	0	0	0	0	0	0		100.0%
800		4	0	0	0	0	0	0	0		100.0%

96h Survival Rate Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	4	0.95	0.7909	1	0.8	1	0.05	0.1	10.53%	0.0%
50		4	0.95	0.7909	1	0.8	1	0.05	0.1	10.53%	0.0%
100		4	0.85	0.6909	1	0.8	1	0.05	0.1	11.76%	10.53%
200		4	0.25	0	0.5547	0	0.4	0.09574	0.1915	76.59%	73.68%
400		4	0	0	0	0	0	0	0		100.0%
800		4	0	0	0	0	0	0	0		100.0%

48h Survival Rate Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Lab Control	1	1	1	1	
50		1	1	1	1	
100		0.8	0.8	1	1	
200		0.2	0.6	0.4	0.8	
400		0	0	0	0	
800		0	0	0	0	

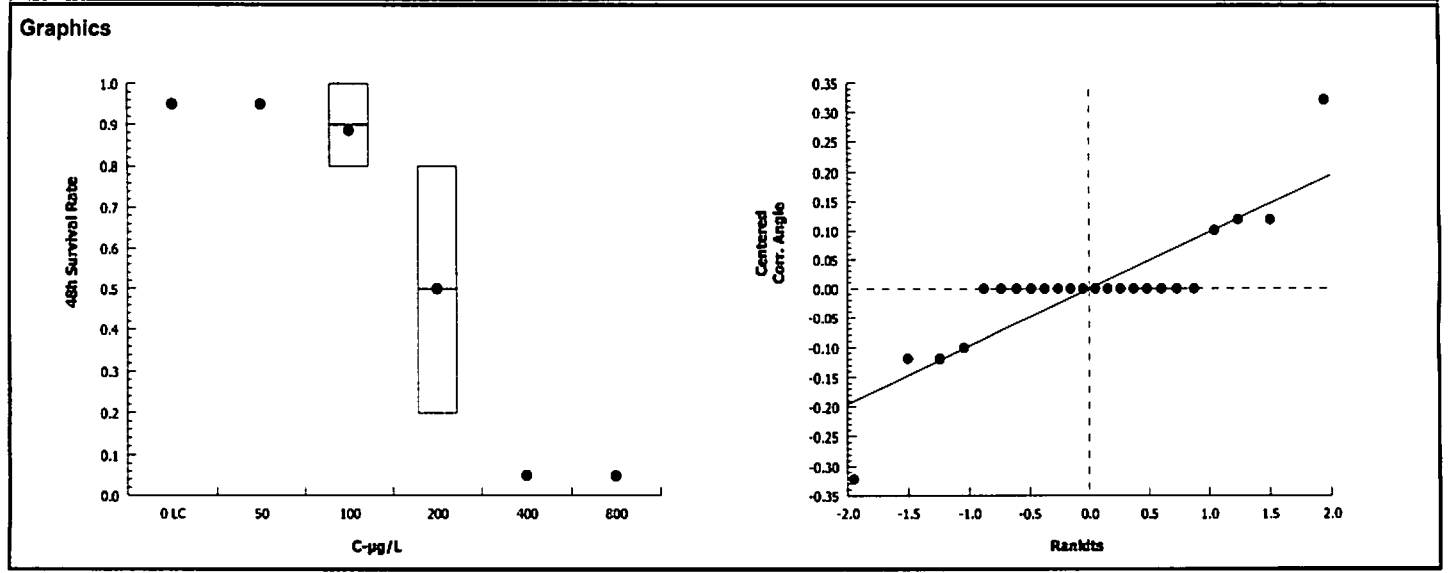
96h Survival Rate Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Lab Control	1	1	0.8	1	
50		1	0.8	1	1	
100		0.8	0.8	0.8	1	
200		0	0.4	0.4	0.2	
400		0	0	0	0	
800		0	0	0	0	

**CETIS Analytical Report**

Report Date: 19 Jul-16 15:54 (p 1 of 3)  
 Test Code: 160713myra | 16-2246-8234

Mysid 96-h Acute Survival Test										Nautilus Environmental (CA)	
Analysis ID: 02-1880-8175		Endpoint: 48h Survival Rate			CETIS Version: CETISv1.8.7						
Analyzed: 19 Jul-16 15:54		Analysis: Nonparametric-Control vs Treatments			Official Results: Yes						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Angular (Corrected)	NA	C > T	NA	NA	20.9%	100	200	141.4			
Steel Many-One Rank Sum Test											
Control	vs C-µg/L	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)			
Lab Control	50	18	10	1	6	0.7500	Asymp	Non-Significant Effect			
	100	14	10	1	6	0.2626	Asymp	Non-Significant Effect			
	200*	10	10	0	6	0.0276	Asymp	Significant Effect			
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.8496161	0.2832054	3	11.97	0.0006	Significant Effect					
Error	0.2840272	0.02366894	12								
Total	1.133643		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Mod Levene Equality of Variance	10.32	5.953	0.0012	Unequal Variances						
Variances	Levene Equality of Variance	10.32	5.953	0.0012	Unequal Variances						
Distribution	Shapiro-Wilk W Normality	0.8898	0.8408	0.0552	Normal Distribution						
48h Survival Rate Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	1	0	0.0%	0.0%
50		4	1	1	1	1	1	1	0	0.0%	0.0%
100		4	0.9	0.7163	1	0.9	0.8	1	0.05774	12.83%	10.0%
200		4	0.5	0.08915	0.9109	0.5	0.2	0.8	0.1291	51.64%	50.0%
400		4	0	0	0	0	0	0	0	100.0%	100.0%
800		4	0	0	0	0	0	0	0	100.0%	100.0%
Angular (Corrected) Transformed Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
50		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
100		4	1.226	1.007	1.445	1.226	1.107	1.345	0.06874	11.21%	8.85%
200		4	0.7854	0.3474	1.223	0.7854	0.4636	1.107	0.1376	35.05%	41.62%
400		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%
800		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%

Mysid 96-h Acute Survival Test		Nautilus Environmental (CA)	
Analysis ID: 02-1880-8175	Endpoint: 48h Survival Rate	CETIS Version: CETISv1.8.7	
Analyzed: 19 Jul-16 15:54	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes	



**CETIS Analytical Report**

Report Date: 19 Jul-16 15:54 (p 3 of 3)  
 Test Code: 160713myra | 16-2246-8234

<b>Mysid 96-h Acute Survival Test</b>				<b>Nautilus Environmental (CA)</b>					
Analysis ID:	09-9489-2817	Endpoint:	96h Survival Rate	CETIS Version:	CETISv1.8.7				
Analyzed:	19 Jul-16 15:53	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes				

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	21.5%	100	200	141.4	

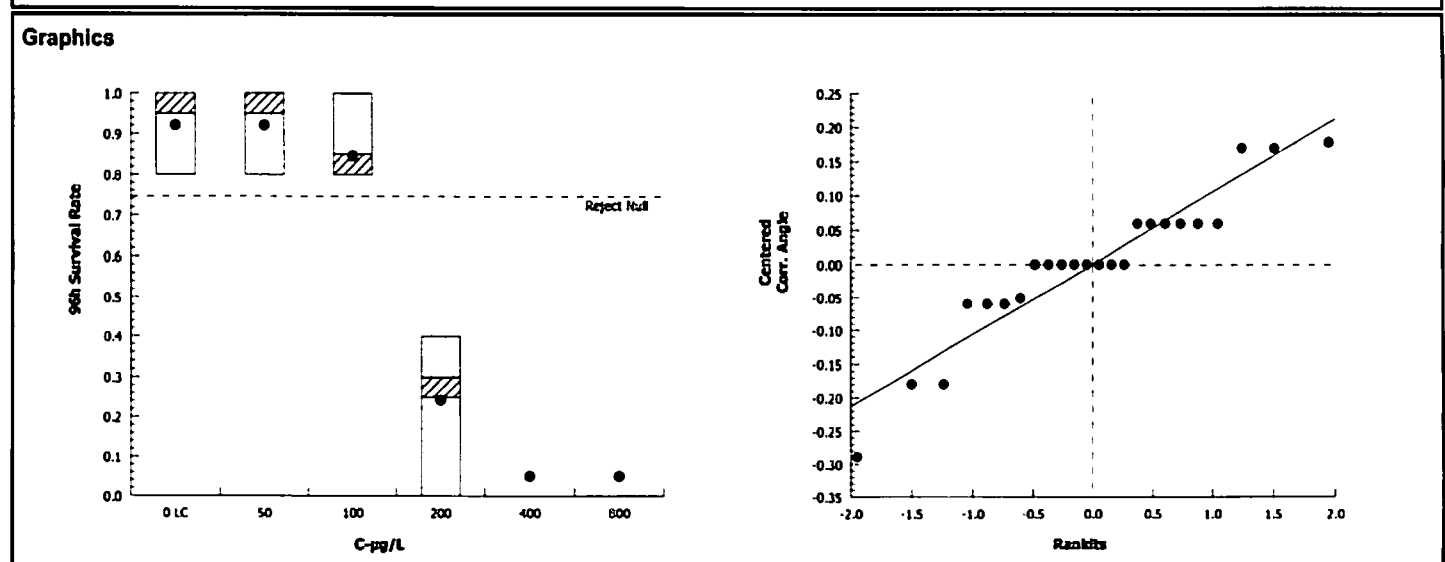
<b>Dunnett Multiple Comparison Test</b>									
Control	vs	C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Control		50	0	2.287	0.243	6	0.7500	CDF	Non-Significant Effect
		100	1.119	2.287	0.243	6	0.2907	CDF	Non-Significant Effect
		200*	7.248	2.287	0.243	6	<0.0001	CDF	Significant Effect

<b>ANOVA Table</b>						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.642689	0.5475631	3	24.19	<0.0001	Significant Effect
Error	0.271641	0.02263675	12			
Total	1.91433		15			

<b>Distributional Tests</b>						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance	1.717	11.34	0.6331	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9127	0.8408	0.1284	Normal Distribution	

<b>96h Survival Rate Summary</b>											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	0.95	0.7909	1	1	0.8	1	0.05	10.53%	0.0%
50		4	0.95	0.7909	1	1	0.8	1	0.05	10.53%	0.0%
100		4	0.85	0.6909	1	0.8	0.8	1	0.05	11.76%	10.53%
200		4	0.25	0	0.5547	0.3	0	0.4	0.09574	76.59%	73.68%
400		4	0	0	0	0	0	0	0	100.0%	100.0%
800		4	0	0	0	0	0	0	0	100.0%	100.0%

<b>Angular (Corrected) Transformed Summary</b>											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1.286	1.096	1.475	1.345	1.107	1.345	0.05953	9.26%	0.0%
50		4	1.286	1.096	1.475	1.345	1.107	1.345	0.05953	9.26%	0.0%
100		4	1.167	0.9772	1.356	1.107	1.107	1.345	0.05953	10.21%	9.26%
200		4	0.5146	0.166	0.8633	0.5742	0.2255	0.6847	0.1096	42.58%	59.97%
400		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	82.46%
800		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	82.46%



# CETIS Analytical Report

Report Date: 19 Jul-16 15:54 (p 1 of 2)

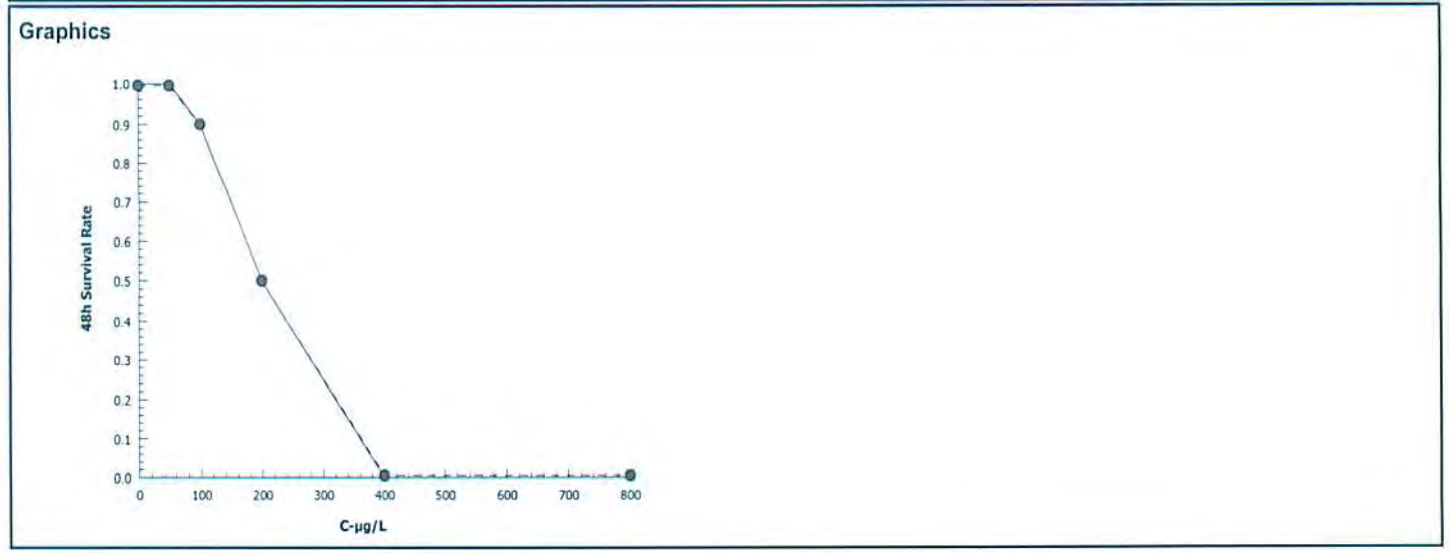
Test Code: 160713myra | 16-2246-8234

Mysid 96-h Acute Survival Test		Nautilus Environmental (CA)
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Analysis ID: 04-8051-3005	Endpoint: 48h Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 19 Jul-16 15:54	Analysis: Untrimmed Spearman-Kärber	Official Results: Yes

Spearman-Kärber Estimates							
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	0.00%	2.271	0.03925	186.6	155.7	223.6

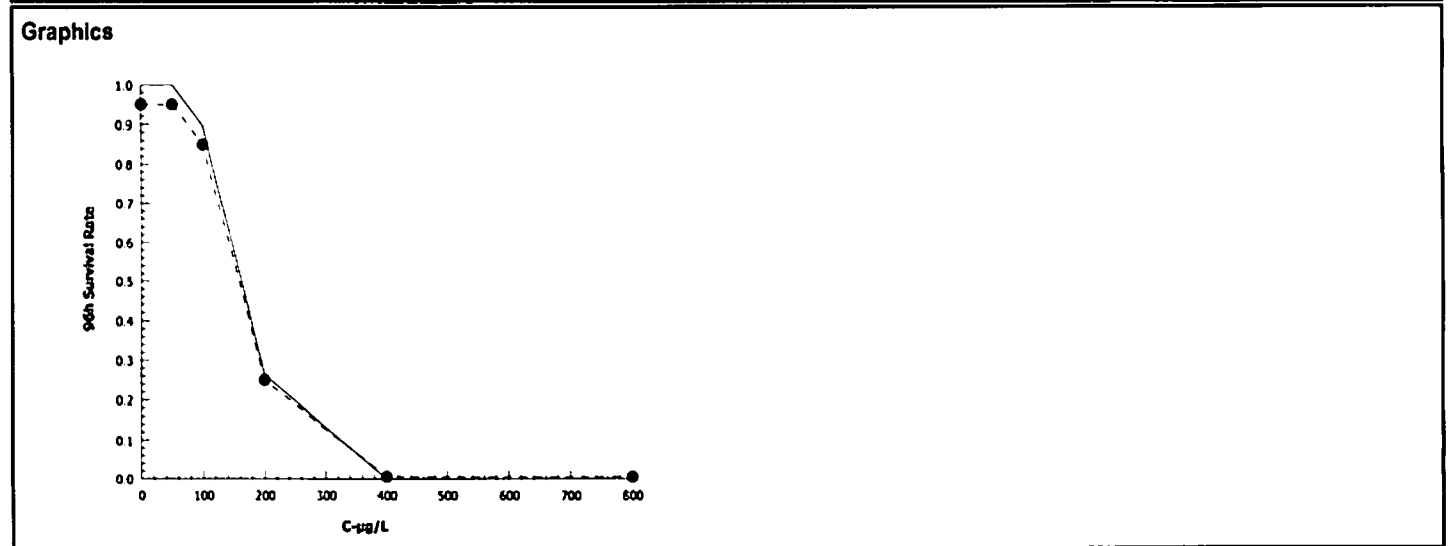
48h Survival Rate Summary			Calculated Variate(A/B)								
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Lab Control	4	1	1	1	0	0	0.0%	0.0%	20	20
50		4	1	1	1	0	0	0.0%	0.0%	20	20
100		4	0.9	0.8	1	0.05774	0.1155	12.83%	10.0%	18	20
200		4	0.5	0.2	0.8	0.1291	0.2582	51.64%	50.0%	10	20
400		4	0	0	0	0	0		100.0%	0	20
800		4	0	0	0	0	0		100.0%	0	20



# CETIS Analytical Report

Report Date: 19 Jul-16 15:54 (p 2 of 2)  
 Test Code: 160713myra | 16-2246-8234

<b>Mysid 96-h Acute Survival Test</b>						<b>Nautilus Environmental (CA)</b>					
Analysis ID: 20-3995-4909		Endpoint: 96h Survival Rate		CETIS Version: CETISv1.8.7							
Analyzed: 19 Jul-16 15:53		Analysis: Untrimmed Spearman-Kärber		Official Results: Yes							
<b>Spearman-Kärber Estimates</b>											
<b>Threshold Option</b>	<b>Threshold</b>	<b>Trim</b>	<b>Mu</b>	<b>Sigma</b>	<b>EC50</b>	<b>95% LCL</b>	<b>95% UCL</b>				
Control Threshold	0.05	0.00%	2.198	0.03613	157.8	133.6	186.3				
<b>96h Survival Rate Summary</b>				<b>Calculated Variate(A/B)</b>							
<b>C-µg/L</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>	<b>A</b>	<b>B</b>
0	Lab Control	4	0.95	0.8	1	0.05	0.1	10.53%	0.0%	19	20
50		4	0.95	0.8	1	0.05	0.1	10.53%	0.0%	19	20
100		4	0.85	0.8	1	0.05	0.1	11.76%	10.53%	17	20
200		4	0.25	0	0.4	0.09574	0.1915	76.59%	73.68%	5	20
400		4	0	0	0	0	0		100.0%	0	20
800		4	0	0	0	0	0		100.0%	0	20



Mysid 96-h Acute Survival Test

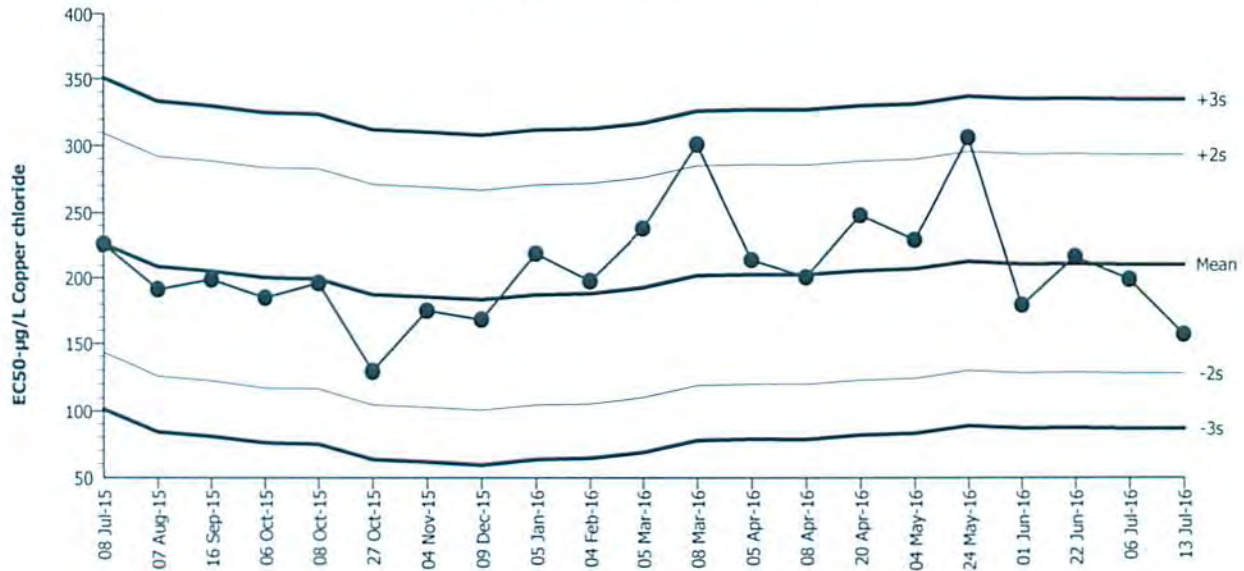
Nautilus Environmental (CA)

Test Type: Survival (96h)  
 Protocol: EPA/821/R-02-012 (2002)

Organism: Americamysis bahia (Opossum Shri  
 Endpoint: 96h Survival Rate

Material: Copper chloride  
 Source: Reference Toxicant-REF

Mysid 96-h Acute Survival Test



Mean: 211.3      Count: 20      -2s Warning Limit: 128.2      -3s Action Limit: 86.68  
 Sigma: 41.55      CV: 19.70%      +2s Warning Limit: 294.4      +3s Action Limit: 336

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2015	Jul	8	14:45	226.1	14.79	0.3561			15-0938-7634	13-6256-9520
2		Aug	7	15:15	191.3	-19.99	-0.4812			20-4530-5926	14-0006-1409
3		Sep	16	15:00	198.7	-12.56	-0.3022			13-2711-6014	01-0106-9769
4		Oct	6	15:50	185.2	-26.13	-0.6288			15-5284-5851	02-3644-1874
5			8	15:10	196.4	-14.92	-0.359			10-2665-8450	11-8063-3804
6			27	15:20	129.4	-81.9	-1.971			13-5814-0942	03-7844-8234
7		Nov	4	15:45	175.2	-36.1	-0.8688			15-6303-6774	19-0012-4209
8		Dec	9	15:35	168.6	-42.72	-1.028			16-5546-5344	06-3428-4935
9	2016	Jan	5	15:45	219.1	7.798	0.1877			12-2145-3922	00-3380-5784
10		Feb	4	16:25	198	-13.35	-0.3213			09-7837-0292	06-2258-6295
11		Mar	5	14:25	238.4	27.1	0.6523			11-9727-3252	13-7277-3605
12			8	15:00	301.6	90.29	2.173	(+)		19-2850-2886	07-0546-4843
13		Apr	5	15:30	214.4	3.055	0.07352			02-9193-9475	02-3814-6582
14			8	15:15	201.2	-10.12	-0.2436			16-4665-6226	04-1138-5177
15			20	13:00	248.8	37.47	0.9018			04-6794-6246	12-0428-6695
16		May	4	12:45	229.7	18.44	0.4438			04-3269-1743	06-8033-9840
17			24	14:40	307.1	95.79	2.305	(+)		14-9563-6562	16-2550-1780
18		Jun	1	15:10	180.3	-31.05	-0.7473			10-3358-4625	18-6665-9130
19			22	16:35	217.3	5.988	0.1441			12-8032-7390	16-3653-0641
20		Jul	6	14:20	200	-11.3	-0.272			02-5478-5781	03-8150-9374
21			13	14:25	157.8	-53.52	-1.288			16-2246-8234	20-3995-4909

Mysid 96-h Acute Survival Test

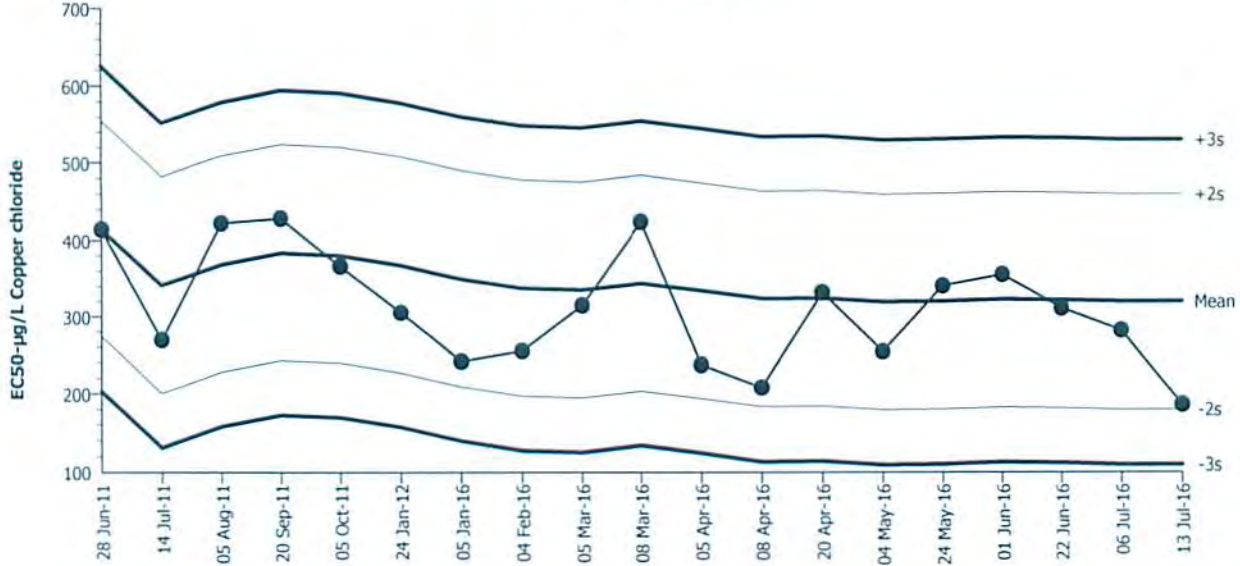
Nautilus Environmental (CA)

Test Type: Survival (96h)  
 Protocol: EPA/821/R-02-012 (2002)

Organism: Americamysis bahia (Opossum Shri  
 Endpoint: 48h Survival Rate

Material: Copper chloride  
 Source: Reference Toxicant-REF

Mysid 96-h Acute Survival Test



Mean: 320.6      Count: 18      -2s Warning Limit: 179.9      -3s Action Limit: 109.6  
 Sigma: 70.33      CV: 21.90%      +2s Warning Limit: 461.3      +3s Action Limit: 531.6

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2011	Jun	28	15:35	414.1	93.51	1.33			18-9318-8955	15-8027-4413
2		Jul	14	15:50	269.4	-51.21	-0.7281			20-1310-9249	00-4112-4069
3		Aug	5	16:30	422.5	101.9	1.449			06-0923-1324	14-1237-9475
4		Sep	20	15:15	428.7	108.1	1.537			17-4490-0096	06-3036-4053
5		Oct	5	15:15	366.8	46.2	0.6569			15-6152-8673	09-1963-4636
6	2012	Jan	24	15:15	305.5	-15.11	-0.2149			05-5789-3842	11-1836-9550
7	2016	Feb	5	15:45	242.1	-78.46	-1.116			12-2145-3922	01-7957-1222
8		Mar	4	16:25	255.6	-64.95	-0.9235			09-7837-0292	11-2617-8408
9		Apr	5	14:25	315.3	-5.264	-0.07485			11-9727-3252	05-1560-5237
10		May	8	15:00	424.5	103.9	1.477			19-2850-2886	09-9141-7536
11		Jun	5	15:30	237.8	-82.76	-1.177			02-9193-9475	16-3002-2278
12		Jul	8	15:15	208.4	-112.2	-1.595			16-4665-6226	05-2955-3403
13		Aug	20	13:00	332.5	11.9	0.1691			04-6794-6246	09-3203-9299
14		Sep	4	12:45	254.9	-65.69	-0.934			04-3269-1743	00-5276-8073
15		Oct	24	14:40	341.3	20.73	0.2948			14-9563-6562	17-5195-7217
16		Nov	1	15:10	356.4	35.76	0.5085			10-3358-4625	16-0561-3288
17		Dec	22	16:35	312.2	-8.424	-0.1198			12-8032-7390	02-8455-0211
18		Jan	6	14:20	282.8	-37.76	-0.5369			02-5478-5781	14-6784-3950
19		Feb	13	14:25	186.6	-134	-1.905			16-2246-8234	04-8051-3005



**Marine Acute Bioassay  
Static-Renewal Conditions**

**Water Quality Measurements  
& Test Organism Survival**

Client: Internal  
Sample ID: CuCl<sub>2</sub>  
Test No.: 160713myra

Test Species: A. bahia  
Start Date/Time: 7/13/2016 1425  
End Date/Time: 7/17/2016 1305

Tech Initials				
0	24	48	72	96
Counts:	EM	MM	MM	MM
Readings:	MR	MR	NHC	MR
Dilutions made by:	MM		MM	
High conc. made (µg/L):	800	-	800	-
Vol. Cu stock added (mL):	16.3	-	16.3	-
Final Volume (mL):	2000	-	2000	-

Cu stock concentration (µg/L): 98,300

Concentration (µg/L)	Rand #	Number of Live Organisms					Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Lab Control	8	5	5	5	5	5	30.2	30.5	29.9	30.1	29.8	24.1	24.4	24.4	24.6	24.6	6.5	6.0	6.1	5.1	5.0	7.95	7.87	7.97	7.80	7.78
	7	5	5	5	5	5			29.2					25.4					5.0					7.75		
	15	5	5	5	5	4																				
	4	5	5	5	5	5																				
50	11	5	5	5	5	5	30.2	30.3	29.0	30.1	29.0	24.0	24.8	24.4	24.7	24.6	6.6	5.9	6.5	5.0	5.0	7.97	7.92	7.97	7.85	7.71
	12	5	5	5	5	4			29.3					25.4					4.7					7.75		
	2	5	5	5	5	5																				
	21	5	5	5	5	5																				
100	10	5	4	4	4	4	30.1	30.2	29.9	30.0	29.8	24.1	25.2	24.4	24.7	24.6	6.6	5.6	6.5	5.3	5.2	7.97	7.94	7.97	7.88	7.75
	13	5	5	4	4	4			29.3					25.6					4.8					7.80		
	1	5	5	5	5	4																				
	23	5	5	5	5	5																				
200	20	5	3	1	0	-	30.1	30.1	29.9	30.0	29.9	24.7	25.0	24.4	24.7	24.7	6.7	5.6	6.5	5.4	5.3	7.96	7.93	7.97	7.97	7.78
	14	5	4	3	3	2			29.2					25.5					5.1					7.85		
	6	5	2	2	2	2																				
	22	5	5	4	2	1																				
400	3	5	2	0	-	-	29.9	30.0	29.8			24.0	25.1	24.4			6.7	5.7	6.5			7.93	7.93	7.96		
	19	5	2	0	-	-			29.1					25.6					5.2					7.80		
	16	5	1	0	-	-																				
	9	5	1	0	-	-																				
800	5	5	1	0	-	-	29.8	29.8	29.7			24.1	25.1	24.4			6.7	5.8	6.6			7.88	7.91	7.94		
	24	5	0	-	-	-			29.3					25.5					5.4					7.87		
	18	5	2	0	-	-																				
	17	5	1	0	-	-																				

Rand # QC: MM  
Initial Counts QC'd by: AWP  
Initiated by: MM

Animal Source/Date Received: ABS / 7/12/14 Age at Initiation: 5 days

Animal Acclimation Qualifiers (circle all that apply): Q22 (Q23) Q24 (none)  
CH Q18 7/13/16

Comments: i = initial reading in fresh test solution, f = final reading in test chamber prior to renewal  
Organisms fed prior to initiation, circle one (y) / n

Feeding Times					
0	24	48	72	96	
AM:	-	0855	0410	0847	0820
PM:	1545	1600	1650	1620	-

QC Check: KB7/19/16

Final Review: SW 7/21/16

*Meridia*

**CETIS Summary Report**

Report Date: 19 Jul-16 16:08 (p 1 of 1)  
 Test Code: 160713mbra | 13-7856-4259

**Inland Silverside 96-h Acute Survival Test** **Nautilus Environmental (CA)**

<b>Batch ID:</b> 00-2636-4394	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b>
<b>Start Date:</b> 13 Jul-16 14:00	<b>Protocol:</b> EPA/821/R-02-012 (2002)	<b>Diluent:</b> Natural Seawater
<b>Ending Date:</b> 17 Jul-16 13:10	<b>Species:</b> Menidia beryllina	<b>Brine:</b> Not Applicable
<b>Duration:</b> 95h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b> 14 d

<b>Sample ID:</b> 10-6441-9083	<b>Code:</b> 160713mbra	<b>Client:</b> Internal
<b>Sample Date:</b> 13 Jul-16	<b>Material:</b> Copper chloride	<b>Project:</b>
<b>Receive Date:</b> 13 Jul-16	<b>Source:</b> Reference Toxicant	
<b>Sample Age:</b> 14h	<b>Station:</b> Copper Chloride	

**Comparison Summary**

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-9087-9542	96h Survival Rate	50	100	70.71	10.4%		Dunnett Multiple Comparison Test

**Point Estimate Summary**

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
06-7825-8215	96h Survival Rate	EC50	100	85.64	116.8		Spearman-Kärber

**Test Acceptability**

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-9087-9542	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria
06-7825-8215	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

**96h Survival Rate Summary**

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	0	0	0.0%	0.0%
50		4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.5	0.3163	0.6837	0.4	0.6	0.05774	0.1155	23.09%	50.0%
200		4	0	0	0	0	0	0	0		100.0%
400		4	0	0	0	0	0	0	0		100.0%
800		4	0	0	0	0	0	0	0		100.0%

**96h Survival Rate Detail**

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Control	1	1	1	1
50		1	1	1	1
100		0.4	0.6	0.6	0.4
200		0	0	0	0
400		0	0	0	0
800		0	0	0	0

**CETIS Analytical Report**

Report Date: 19 Jul-16 16:08 (p 1 of 1)  
 Test Code: 160713mbra | 13-7856-4259

**Inland Silverside 96-h Acute Survival Test** **Nautilus Environmental (CA)**

Analysis ID: 02-9087-9542      Endpoint: 96h Survival Rate      CETIS Version: CETISv1.8.7  
 Analyzed: 19 Jul-16 16:07      Analysis: Parametric-Control vs Treatments      Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	10.4%	50	100	70.71	

**Dunnett Multiple Comparison Test**

Control	vs C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Control	50	0	2.18	0.104	6	0.6667	CDF	Non-Significant Effect
	100*	11.8	2.18	0.104	6	<0.0001	CDF	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.8359225	0.4179613	2	92.78	<0.0001	Significant Effect
Error	0.04054501	0.004505001	9			
Total	0.8764675		11			

**Distributional Tests**

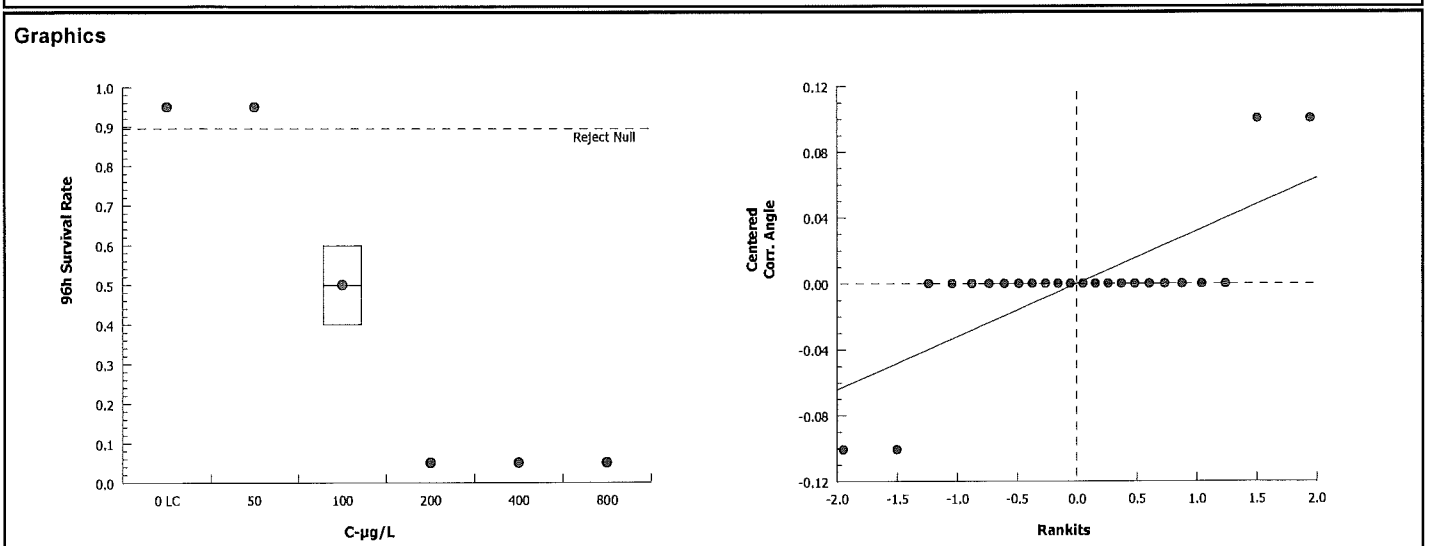
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Distribution	Shapiro-Wilk W Normality	0.7744	0.8025	0.0049	Non-normal Distribution

**96h Survival Rate Summary**

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1	1	1	1	1	1	0	0.0%	0.0%
50		4	1	1	1	1	1	1	0	0.0%	0.0%
100		4	0.5	0.3163	0.6837	0.5	0.4	0.6	0.05774	23.09%	50.0%
200		4	0	0	0	0	0	0	0	0.0%	100.0%
400		4	0	0	0	0	0	0	0	0.0%	100.0%
800		4	0	0	0	0	0	0	0	0.0%	100.0%

**Angular (Corrected) Transformed Summary**

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
50		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
100		4	0.7854	0.6004	0.9704	0.7854	0.6847	0.8861	0.05813	14.8%	41.62%
200		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%
400		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%
800		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.0%	83.24%



**CETIS Analytical Report**

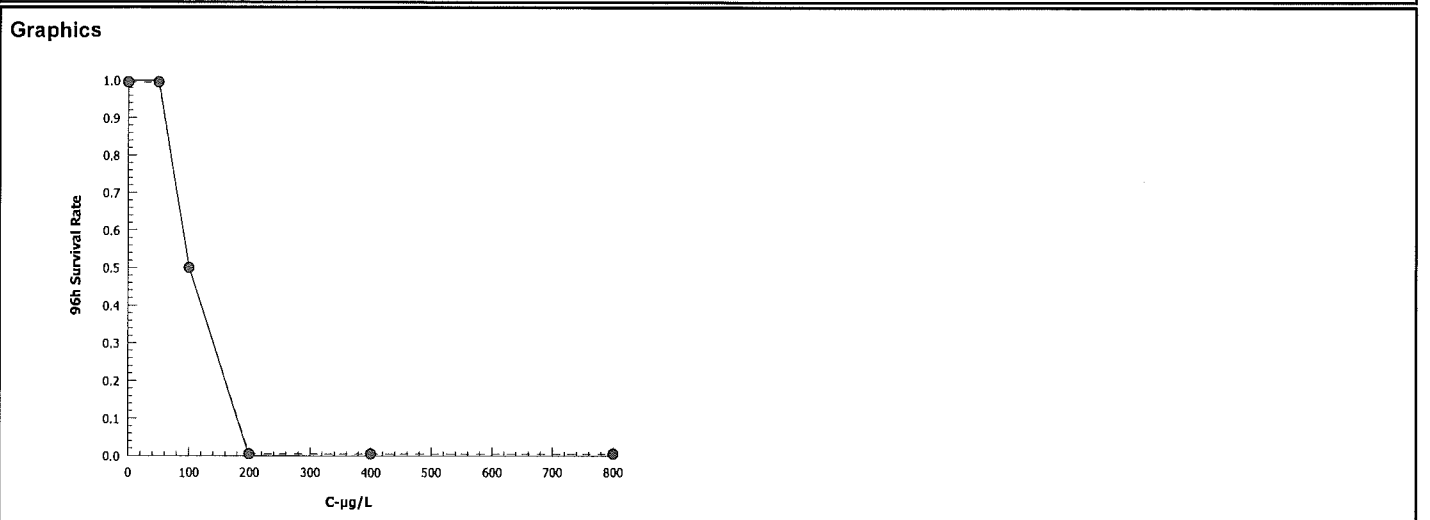
Report Date: 19 Jul-16 16:08 (p 1 of 1)

Test Code: 160713mbra | 13-7856-4259

<b>Inland Silverside 96-h Acute Survival Test</b>			<b>Nautilus Environmental (CA)</b>		
<b>Analysis ID:</b> 06-7825-8215	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv1.8.7			
<b>Analyzed:</b> 19 Jul-16 16:08	<b>Analysis:</b> Untrimmed Spearman-Kärber	<b>Official Results:</b> Yes			

<b>Spearman-Kärber Estimates</b>							
Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	0.00%	2	0.03366	100	85.64	116.8

<b>96h Survival Rate Summary</b>			<b>Calculated Variate(A/B)</b>								
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Lab Control	4	1	1	1	0	0	0.0%	0.0%	20	20
50		4	1	1	1	0	0	0.0%	0.0%	20	20
100		4	0.5	0.4	0.6	0.05774	0.1155	23.09%	50.0%	10	20
200		4	0	0	0	0	0		100.0%	0	20
400		4	0	0	0	0	0		100.0%	0	20
800		4	0	0	0	0	0		100.0%	0	20



Inland Silverside 96-h Acute Survival Test

Nautilus Environmental (CA)

Test Type: Survival (96h)

Organism: Menidia beryllina (Inland Silverside)

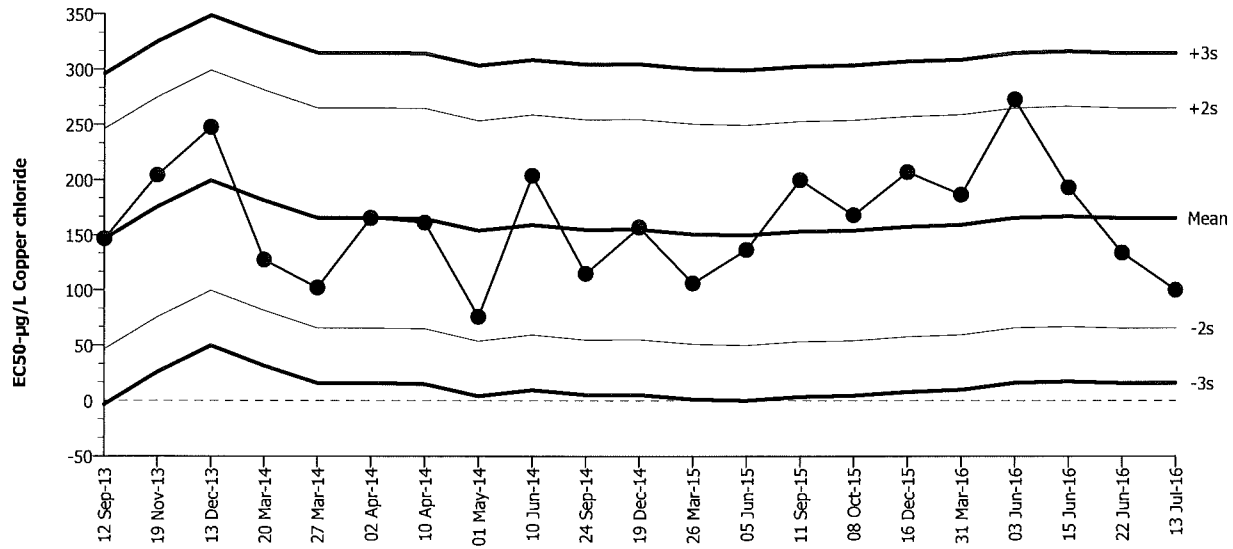
Material: Copper chloride

Protocol: EPA/821/R-02-012 (2002)

Endpoint: 96h Survival Rate

Source: Reference Toxicant-REF

Inland Silverside 96-h Acute Survival Test



Mean: 165.5      Count: 20      -2s Warning Limit: 65.78      -3s Action Limit: 15.9  
 Sigma: 49.88      CV: 30.10%      +2s Warning Limit: 265.3      +3s Action Limit: 315.2

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2013	Sep	12	12:05	146.4	-19.09	-0.3827			11-2460-6656	18-9831-9609
2		Nov	19	17:35	204.2	38.72	0.7762			17-0691-1585	07-2813-7384
3		Dec	13	13:15	247.5	81.95	1.643			06-1876-0551	15-9340-9516
4	2014	Mar	20	17:20	127.5	-38.04	-0.7627			07-1152-5311	18-5471-6745
5			27	16:00	102.1	-63.38	-1.271			01-8629-6890	19-9114-6244
6		Apr	2	16:30	165.5	-0.0477	-0.00096			06-0859-2043	09-0036-6231
7			10	17:00	161.2	-4.262	-0.08545			16-4148-1380	20-6104-3261
8		May	1	16:25	75.79	-89.71	-1.799			16-7687-7663	01-8059-2422
9		Jun	10	16:45	203.7	38.18	0.7655			20-4391-7846	05-2383-7964
10		Sep	24	13:45	115	-50.52	-1.013			14-2850-1227	18-5707-0987
11		Dec	19	14:55	156.9	-8.583	-0.1721			21-2463-0738	07-9851-3660
12	2015	Mar	26	11:20	106.1	-59.38	-1.191			05-6795-5971	06-7854-3185
13		Jun	5	17:15	136.6	-28.9	-0.5793			01-8428-3250	14-4523-5923
14		Sep	11	15:20	200	34.5	0.6917			07-7617-2561	15-1101-9458
15		Oct	8	14:50	168.2	2.679	0.05371			14-3788-0896	13-0205-0736
16		Dec	16	14:40	207.1	41.55	0.8331			01-2995-6999	07-8650-3881
17	2016	Mar	31	13:15	186.6	21.11	0.4231			04-9176-6960	04-6273-7211
18		Jun	3	13:05	273.2	107.7	2.159	(+)		05-6152-2576	20-6579-6743
19			15	12:00	193.2	27.69	0.5551			10-9271-9699	01-6859-0922
20			22	16:45	134.1	-31.37	-0.6289			07-0637-4050	08-9968-9939
21		Jul	13	14:00	100	-65.5	-1.313			13-7856-4259	06-7825-8215

**Marine Acute Bioassay**  
**Static-Renewal Conditions**

**Water Quality Measurements**  
**& Test Organism Survival**

Client: Internal  
 Sample ID: CuCl<sub>2</sub>  
 Test No.: 160713mbra

Test Species: M. beryllina  
 Start Date/Time: 7/13/2016 1400  
 End Date/Time: 7/17/2016 1310

Tech Initials					
0	24	48	72	96	
Counts:	MM	MM	MM	MM	MM
Readings:	MM	MM	MM	MM	MM
Dilutions made by:	MM		MM		
High conc. made (µg/L):	800	--	100	--	--
Vol. Cu stock added (mL):	10.3	--	1.8	0.25	--
Final Volume (mL):	2000	--	2000	--	--

Cu stock concentration (µg/L): 98,300

Concentration (µg/L)	Rand #	Number of Live Organisms					Salinity (ppt)					Temperature (°C)					Dissolved Oxygen (mg/L)					pH (units)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Lab Control	19	5	5	5	5	5	30.2	30.2	30.0	30.1	30.0	24.4	24.5	24.2	24.5	24.6	6.0	5.6	6.6	5.1	5.4	7.87	7.77	7.96	7.83	7.87
	14	5	5	5	5	5			30.4					25.5					5.0					7.76		
	6	5	5	5	5	5																				
	24	5	5	5	6	5																				
50	11	5	5	5	5	5	30.2	30.1	30.0	30.0	29.9	24.4	25.2	24.3	24.2	24.6	6.1	5.4	6.6	5.0	5.3	7.88	7.81	7.97	7.88	7.82
	20	5	5	5	5	5			30.2					25.9					6.6					7.94		
	1	5	5	5	5	5																				
	7	5	5	5	5	5																				
100	5	5	2	2	2	2	30.1	30.1	29.9	30.1	29.9	24.2	24.9	24.3	24.3	24.7	6.1	5.2	6.6	5.4	5.6	7.87	7.85	7.98	7.98	7.93
	9	5	3	3	3	3			30.1					25.8					6.6					7.98		
	18	5	3	3	3	3																				
	2	5	2	2	2	2																				
200	21	5	0				30.1	30.2				24.4	25.0				6.1	5.4				7.88	7.85			
	4	5	0																							
	17	5	0																							
	22	5	0																							
400	10	5	0				30.0	30.0				24.4	25.2				6.2	5.5				7.86	7.87			
	23	5	0																							
	12	5	0																							
	8	5	0																							
800	16	5	0				29.7	29.9				24.6	24.9				6.1	6.0				7.87	7.86			
	13	5	0																							
	3	5	0																							
	15	5	0																							

Rand # QC: MM  
 Initial Counts QC'd by: CH  
 Initiated by: CH

Animal Source/Date Received: ABS/7/12/16 Age at Initiation: 14 d  
 Animal Acclimation Qualifiers (circle all that apply): Q22 / Q23 / Q24 / (none)

Feeding Times					
0	24	48	72	96	
AM:					
PM:					

Comments: i = initial reading in fresh test solution, f = final reading in test chamber prior to renewal

Organisms fed prior to initiation, circle one (y/n) (y)  
 QC Check: KB 7/19/16  
 Final Review: KTP 8/1/16  
 Note: Q20: 2.0mL of stock should have been added; tech error. However, E650 within two standard deviations of the historical mean and test therefore considered valid.

**Appendix F**  
**Laboratory Qualifier Codes**



### Glossary of Qualifier Codes:

- Q1 - Temperatures out of recommended range; corrective action taken and recorded in Test Temperature Correction Log
- Q2 - Temperatures out of recommended range; no action taken, test terminated same day
- Q3 - Sample aerated prior to initiation or renewal due to dissolved oxygen (D.O.) levels below 6.0 mg/L
- Q4 - Test aerated; D.O. levels dropped below 4.0 mg/L
- Q5 - Test initiated with aeration due to an anticipated drop in D.O.
- Q6 - Airline obstructed or fell out of replicate and replaced; drop in D.O. occurred
- Q7 - Salinity out of recommended range
- Q8 - Spilled test chamber/ Unable to recover test organism(s)
- Q9 - Inadequate sample volume remaining, 50% renewal performed
- Q10 - Inadequate sample volume remaining, no renewal performed
- Q11 - Sample out of holding time; refer to QA section of report
- Q12 - Replicate(s) not initiated; excluded from data analysis
- Q13 - Survival counts not recorded due to poor visibility or heavy debris
- Q14 - D.O. percent saturation was checked and was  $\leq 110\%$
- Q15 - Did not meet minimum test acceptability criteria. Refer to QA section of report.
- Q16 - Percent minimum significant difference (PMSD) was below the lower bound limit for acceptability. This indicates that statistics may be over-sensitive in detecting a difference from the control due to low variability in the data set.
- Q17 - Percent minimum significant difference (PMSD) was above the upper bound limit for acceptability. This indicates that statistics may be under-sensitive in detecting a difference from the control due to high variability in the data set.
- Q18 - Incorrect Entry
- Q19 - Illegible Entry
- Q20 - Miscalculation
- Q21 - Other (provide reason in comments section)
- Q22 - Greater than 10% mortality observed upon receipt and/or in holding prior to test initiation. Organisms acclimated to test conditions at Nautilus and ultimately deemed fit to use for testing.
- Q23 - Test organisms received at a temperature greater than 3°C outside the recommended test temperature range. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate tests upon the day of arrival. Organisms were acclimated to the appropriate test conditions upon receipt and prior to test initiation.
- Q24 - Test organisms received at salinity greater than 3 ppt outside of the recommended test salinity range. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate tests upon the day of arrival. Organisms were acclimated to the appropriate test conditions upon receipt and prior to test initiation.

# APPENDIX D

## STFATE MODELING

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Alami tos Basin 6 and 7

←☒

MODEL: SHORT-TERM FATE OF DREDGED MATERIAL FROM SPLIT HULL BARGE OR HOPPER DREDGE  
(PC Version 5.01 MAY, 1993)  
(Extended Memory Modification: December, 1997)  
This Version Supports Grid Sizes up to 96 x 96 Points

TITLE: Alami tos Basin 6 and 7

FILE: TmpFile .DUE

AREA: THE PROJECT AREA IS DESCRIBED BY A 36 X 36 GRID.

THERE ARE 36 GRID POINTS (NMAX) IN THE Z-DIRECTION (FROM LEFT TO RIGHT)  
AND 36 GRID POINTS (MMAX) IN THE X-DIRECTION (FROM TOP TO BOTTOM).

SITE: THE DISPOSAL SITE IS REPRESENTED AS A RECTANGLE ON THE SITE GRID.

THE TOPMOST BOUNDARY IS LOCATED AT POINT # 6 (MDS1) FROM THE TOP OF THE GRID.

THE BOTTOMMOST BOUNDARY IS LOCATED AT POINT #21 (MDS2) FROM THE TOP OF THE GRID.

THE LEFTMOST BOUNDARY IS LOCATED AT POINT # 6 (NDS1) FROM THE LEFT OF THE GRID.

THE RIGHTMOST BOUNDARY IS LOCATED AT POINT #21 (NDS2) FROM THE LEFT OF THE GRID.

EXECUTION PARAMETERS:

MODEL COEFFICIENTS SPECIFIED IN INPUT DATA (KEY1 = 1).

PERFORM COMPLETE ANALYSIS INCLUDING DESCENT, COLLAPSE, AND TRANSPORT-DIFFUSION (KEY2 = 0).

PERFORM TIER III OCEAN DUMPING INITIAL MIXING EVALUATION  
TO COMPARE WITH TOXICITY CRITERIA (KEY3 = 3).

PRINTING OF CONVECTIVE DESCENT RESULTS REQUESTED (IPCN = 1).

PRINTING OF CONVECTIVE DESCENT RESULTS REQUESTED (IPCN = 1).

PRINTING OF DYNAMIC COLLAPSE RESULTS REQUESTED (IPCL = 1).

QUARTERLY PRINTING OF LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED (IPLT = 0).

LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED AT THE FOLLOWING 3 DEPTH(S):

- 0.00 FT
- 500.00 FT
- 1000.00 FT

♀  
 GRID: NUMBER OF LONG TERM GRID POINTS IN Z-DIRECTION (NMAX) = 36  
 NUMBER OF LONG TERM GRID POINTS IN X-DIRECTION (MMAX) = 36  
 GRID SPACING IN Z-DIRECTION (DZ) = 400.00000 FT  
 GRID SPACING IN X-DIRECTION (DX) = 400.00000 FT

♀  
 DEPTH GRID, FEET:

M	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17														
1	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
2	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
3	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
4	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
5	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
6	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
7	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
8	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
9	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
10	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
11	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
12	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														
13	260.	280.	300.	320.	340.	360.	410.	460.	510.	560.	610.	660.	710.	760.		
810.	860.	910.														





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1665.	1715.	1765.												
24	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
25	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
26	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
27	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
28	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
29	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
30	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
31	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
32	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
33	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
34	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
35	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												
36	960.	1010.	1060.	1115.	1165.	1215.	1265.	1315.	1365.	1415.	1465.	1515.	1565.	1615.
1665.	1715.	1765.												

♀

M N	=35	36
1	1815.	1865.
2	1815.	1865.
3	1815.	1865.
4	1815.	1865.
5	1815.	1865.
6	1815.	1865.
7	1815.	1865.
8	1815.	1865.
9	1815.	1865.
10	1815.	1865.
11	1815.	1865.
12	1815.	1865.
13	1815.	1865.
14	1815.	1865.
15	1815.	1865.
16	1815.	1865.
17	1815.	1865.

18 1815. 1865.  
 19 1815. 1865.  
 20 1815. 1865.  
 21 1815. 1865.  
 22 1815. 1865.  
 23 1815. 1865.  
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 26 1815. 1865.  
 27 1815. 1865.  
 28 1815. 1865.  
 29 1815. 1865.  
 30 1815. 1865.  
 31 1815. 1865.  
 32 1815. 1865.  
 33 1815. 1865.  
 34 1815. 1865.  
 35 1815. 1865.  
 36 1815. 1865.

♀  
 CODED GRID:

RANGE OF N IS 1 TO 36

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X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X
X O O O O O O O O O O O O O O O O O O O O O O O O O O O O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W B B B B B B B B B B B B B B W W W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B W W W W W W W W W W W W W W B W W W W W W W W W O X
X O W W W B B B B B B B B B B B B B B W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
    
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X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O W W W W W W W W W W W W W W W W W W W W W W W W W W W W W W O X
X O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O X
X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X

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LEGEND FOR CODED GRID:    W = WATER POINT  
                               L = LAND POINT  
                               O = OPEN BOUNDARY  
                               B = DI SPOSAL SITE BOUNDARY  
                               D = DUMP LOCATION  
                               X = DUMMY POINT

NUMBER OF GRID POINTS WITHIN ESTUARY = 1024

♀  
 DI SPOSAL LOCATION:

THE DUMP LOCATION IS 5000. FT (XBARGE) OR ABOUT GRID POINT #14 FROM THE TOP OF THE GRID  
 AND 5000. FT (ZBARGE) OR ABOUT GRID POINT #14 FROM THE LEFT EDGE OF THE GRID.

THE BOTTOM SLOPE IN THE X-DIRECTION AT THE DUMP SITE (SLOPEX, POSITIVE IF DEPTH INCREASES  
 FROM TOP OF GRID TO BOTTOM OF GRID) IS 0.00 DEGREES.

THE BOTTOM SLOPE IN THE Z-DIRECTION AT THE DUMP SITE (SLOPEZ, POSITIVE IF DEPTH INCREASES  
 FROM LEFT SIDE OF GRID TO RIGHT SIDE OF GRID) IS 0.00 DEGREES.

THE DI SPOSAL LOCATION IS NOT AT A HOLE OR DEPRESSION. (DHOLE = 0.0)

AMBIENT DENSITY PROFILE:

DEPTH (FT)	DENSITY (G/CC)
0.0000E+00	1.0248
500.0	1.0262
1115.	1.0273
1865.	1.0280

COMPUTED DEPTH:

THE DEPTH AT THE DUMP LOCATION WAS INTERPOLATED TO BE 685.0 FT.

♀  
VELOCITY DISTRIBUTION:

VERTICALLY AVERAGED X-DIRECTION (VAX = 0.500 FPS) AND  
Z-DIRECTION (VAZ = 0.500 FPS) VELOCITIES CONSTRUCTED AT EACH GRID POINT  
FROM A SINGLE OBSERVATION AT A DEPTH (D) OF 700. FT.

VELOCITY GRID: X-DIRECTION, FPS

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17														
1	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
2	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
3	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
4	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
5	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
6	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
7	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
8	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
9	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
10	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
11	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
12	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
13	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
14	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
15	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
16	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													

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17	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
18	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
19	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
20	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
21	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
22	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
23	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
24	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
25	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
26	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
27	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
28	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
29	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
30	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
31	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
32	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
33	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
34	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
35	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
36	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												

♀	M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	33	34														
1	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		
0.210	0.204	0.198														
2	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		
0.210	0.204	0.198														
3	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		



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0. 210	0. 204	0. 198												
28	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
29	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
30	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
31	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
32	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
33	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
34	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
35	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												
36	0. 365	0. 347	0. 330	0. 314	0. 300	0. 288	0. 277	0. 266	0. 256	0. 247	0. 239	0. 231	0. 224	0. 217
0. 210	0. 204	0. 198												

♀

M	N=	35	36
1	0. 193	0. 188	
2	0. 193	0. 188	
3	0. 193	0. 188	
4	0. 193	0. 188	
5	0. 193	0. 188	
6	0. 193	0. 188	
7	0. 193	0. 188	
8	0. 193	0. 188	
9	0. 193	0. 188	
10	0. 193	0. 188	
11	0. 193	0. 188	
12	0. 193	0. 188	
13	0. 193	0. 188	
14	0. 193	0. 188	
15	0. 193	0. 188	
16	0. 193	0. 188	
17	0. 193	0. 188	
18	0. 193	0. 188	
19	0. 193	0. 188	
20	0. 193	0. 188	
21	0. 193	0. 188	
22	0. 193	0. 188	
23	0. 193	0. 188	
24	0. 193	0. 188	
25	0. 193	0. 188	
26	0. 193	0. 188	
27	0. 193	0. 188	

28 0.193 0.188  
 29 0.193 0.188  
 30 0.193 0.188  
 31 0.193 0.188  
 32 0.193 0.188  
 33 0.193 0.188  
 34 0.193 0.188  
 35 0.193 0.188  
 36 0.193 0.188

♀

VELOCITY GRID: Z-DIRECTION, FPS

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17														
1	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
2	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
3	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
4	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
5	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
6	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
7	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
8	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
9	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
10	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
11	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
12	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
13	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
14	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
15	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
16	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	
0.432	0.407	0.385													
17	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461	

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0.432	0.407	0.385												
18	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
19	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
20	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
21	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
22	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
23	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
24	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
25	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
26	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
27	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
28	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
29	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
30	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
31	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
32	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
33	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
34	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
35	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												
36	1.346	1.250	1.167	1.094	1.029	0.972	0.854	0.761	0.686	0.625	0.574	0.530	0.493	0.461
0.432	0.407	0.385												

♀	M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	33		34													
1	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		
0.210	0.204	0.198														
2	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		
0.210	0.204	0.198														
3	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217		
0.210	0.204	0.198														





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28	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
29	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
30	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
31	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
32	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
33	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
34	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
35	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												
36	0.365	0.347	0.330	0.314	0.300	0.288	0.277	0.266	0.256	0.247	0.239	0.231	0.224	0.217
0.210	0.204	0.198												

♀

M	N=	35	36
1	0.193	0.188	
2	0.193	0.188	
3	0.193	0.188	
4	0.193	0.188	
5	0.193	0.188	
6	0.193	0.188	
7	0.193	0.188	
8	0.193	0.188	
9	0.193	0.188	
10	0.193	0.188	
11	0.193	0.188	
12	0.193	0.188	
13	0.193	0.188	
14	0.193	0.188	
15	0.193	0.188	
16	0.193	0.188	
17	0.193	0.188	
18	0.193	0.188	
19	0.193	0.188	
20	0.193	0.188	
21	0.193	0.188	
22	0.193	0.188	
23	0.193	0.188	
24	0.193	0.188	
25	0.193	0.188	
26	0.193	0.188	
27	0.193	0.188	
28	0.193	0.188	

29 0.193 0.188  
 30 0.193 0.188  
 31 0.193 0.188  
 32 0.193 0.188  
 33 0.193 0.188  
 34 0.193 0.188  
 35 0.193 0.188  
 36 0.193 0.188

♀

BOTTOM SHEAR STRESS, LBS/SQ FT:

M	N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16															
	17															
1		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000		0.0000	0.0000	0.0000												
2		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
3		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
4		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
5		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
6		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
7		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
8		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
9		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
10		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
11		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
12		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
13		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
14		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
15		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
16		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
17		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	
0.0009		0.0008	0.0007													
18		0.0000	0.0097	0.0082	0.0071	0.0062	0.0054	0.0047	0.0036	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	





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35 0.0006 0.0006 0.0005 0.0005 0.0004 0.0004 0.0003 0.0003 0.0003 0.0003 0.0002 0.0002 0.0002 0.0002  
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36 0.0006 0.0006 0.0005 0.0005 0.0004 0.0004 0.0003 0.0003 0.0003 0.0003 0.0002 0.0002 0.0002 0.0002  
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♀  
 TIME PARAMETERS:

DURATION OF THE DISPOSAL, TREL = 30.00 SECONDS  
 DURATION OF THE SIMULATION, TSTOP = 14400.00 SECONDS  
 LONG-TERM TIME STEP USED IN THE SIMULATION, DTL = 900.00 SECONDS

BARGE DESCRIPTION:

LENGTH OF BARGE, BARGL = 0.18E+03 FT  
 WIDTH OF BARGE, BARGW = 50. FT  
 DRAFT OF LOADED BARGE, DREL1 = 14.0 FT  
 DRAFT OF UNLOADED BARGE, DREL2 = 5.00 FT

♀  
 MODEL COEFFICIENTS READ FROM INPUT:

TURBULENT THERMAL ENTRAINMENT ALPHA0 = 0.2350  
 SETTLING COEFFICIENT BETA = 0.0000  
 APPARENT MASS COEFFICIENT CM = 1.0000  
 DRAG COEFFICIENT FOR A SPHERE CD = 0.5000  
 RATIO--CLOUD/AMBIENT DENSITY GRADIENTS GAMA = 0.2500  
 FORM DRAG FOR COLLAPSING CLOUD CDRAG = 1.0000  
 SKIN FRICTION FOR COLLAPSING CLOUD CFRI C = 0.0100  
 DRAG FOR AN ELLIPSOIDAL WEDGE CD3 = 0.1000

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DRAG FOR A PLATE CD4 = 1.0000  
 ENTRAINMENT IN COLLAPSE ALPHAC = 0.1000  
 FRICTION BETWEEN CLOUD AND BOTTOM FRICTN = 0.0100  
 4/3 LAW HORIZ. DIFF. DISSIPATION FACTOR ALAMDA = 0.0010  
 UNSTRATIFIED WATER VERT. DIFF. COEF. AKYO = 0.0250  
 STRIPPING COEF. OF FINES DURING CONVERTIVE DESCENT= 0.0030

♀ MATERIAL DESCRIPTION: 3 SOLIDS FRACTIONS

L A Y E R 1

DESCRIPTION	SPEC. GRAV. OR DENSITY (GM/CC)	VOLUMETRIC CONCENTRATION (VOL/VOL)	FALL VELOCITY (FPS)	DEPOSITIONAL VOID RATIO	CHARACTER
Fine_San	2.700	0.1300E-01	0.02000	0.7000	NONCOHESIVE
CRITICAL SHEAR STRESS FOR DEPOSITION = 0.1500E-01 LBS/SQ. FT. SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.					
Silt	2.650	0.4740	0.01000	4.500	NONCOHESIVE
CRITICAL SHEAR STRESS FOR DEPOSITION = 0.8500E-02 LBS/SQ. FT. SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.					
Clay	2.650	0.1210	0.00200	7.500	NONCOHESIVE
CRITICAL SHEAR STRESS FOR DEPOSITION = 0.3800E-02 LBS/SQ. FT. SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.					

TOXICITY ANALYSIS DATA:

CONCENTRATIONS OF FLUID IN TERMS OF PERCENT OF THE DREDGED MATERIAL FOLLOWING INITIAL MIXING ARE COMPUTED FOR WATER QUALITY EVALUATIONS.

THE INITIAL CONCENTRATION OF FLUID IS 100. PERCENT AND ITS BACKGROUND CONCENTRATION IS 0.000E+00 PERCENT.

THE DILUTION REQUIRED TO MEET TOXICITY CRITERIA IS 0.744000 PERCENT. (TYPICALLY, 1 PERCENT OF THE LC50)

DESCRIPTION	SPEC. GRAV. OR DENSITY (GM/CC)	VOLUMETRIC CONCENTRATION (VOL/VOL)
FLUID	1.000	0.3920

‡ DISCHARGE PARAMETERS:

VOLUME OF LAYER 1 = 2000. CU YD

INITIAL RADIUS OF CLOUD, RB = 29.54236 FT

INITIAL DEPTH OF CLOUD CENTROID, DREL = 22.05 FT

INITIAL CLOUD VELOCITIES...

X-DIRECTION (FROM TOP TO BOTTOM OF GRID), CU(1) = 0.0000E+00 FPS

Y-DIRECTION (FROM SURFACE TO BOTTOM), CV(1) = 0.2016 FPS

Z-DIRECTION (FROM LEFT TO RIGHT OF GRID), CW(1) = 0.0000E+00 FPS

BULK PARAMETERS:

BULK DENSITY, R00 = 2.003850 G/CC

AGGREGATE OR BULK VOIDS RATIO, BVOID = 5.016

‡ CONVECTIVE DESCENT PHASE:

IN TRIAL #1 THE DESCENT PHASE TIME STEP (DT) WAS 0.17693687E-01 SECONDS.

THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1200.

THE BOTTOM WAS NOT ENCOUNTERED DURING CONVECTIVE DESCENT.

THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.

IN TRIAL #2 THE DESCENT PHASE TIME STEP (DT) WAS 0.53081062E-01 SECONDS.

THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1200.

THE BOTTOM WAS NOT ENCOUNTERED DURING CONVECTIVE DESCENT.

THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.



IN TRIAL #3 THE DESCENT PHASE TIME STEP (DT) WAS 0.15924318 SECONDS.

THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 407.

THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.

THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.

IN TRIAL #4 THE DESCENT PHASE TIME STEP (DT) WAS 0.16202994 SECONDS.

THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 400.

THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.

THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.

♀  
CONVECTIVE DESCENT RESULTS:

TIME VOL. FROM	PLUME CENTROID (DISTANCE FROM BARGE)			PLUME VELOCITY			DIFFERENCE OF PLUME & WATER DENSITIES		TRACER VOLUM. CONC.	VOLUME OF SOLID FRACTIONS	SOLIDS CONC. BY FRACTION	
	DISPOSAL (SEC) (VOL/VOL)	X-DIR (FT)	DEPTH (FT)	Z-DIR (FT)	X-DIR (FPS)	DOWN (FPS)	Z-DIR (FPS)	(G/CC)	RADIUS (FT)	(VOL/VOL)	(CU FT)	FRACTION
30.00 0.1300E-01	0.00	22.05	0.00	0.00	0.202	0.00	0.9790E+00	29.54	0.3920E+00	0.7020E+03		
0.4740E+00										0.2560E+05		
0.1210E+00										0.6534E+04		
30.97 0.1124E-01	0.01	28.20	0.01	0.05	14.008	0.05	0.8465E+00	30.99	0.3396E+00	0.7007E+03		
0.4099E+00										0.2555E+05		
0.1046E+00										0.6522E+04		
31.94 0.7838E-02	0.10	45.24	0.10	0.16	20.969	0.16	0.5901E+00	34.89	0.2379E+00	0.6974E+03		
0.2858E+00										0.2543E+05		
0.7295E-01										0.6491E+04		

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32. 92 0. 5279E-02	0. 30	66. 39	0. 30	0. 26 22. 132	0. 26	0. 3974E+00	39. 74	0. 1611E+00	0. 6938E+03
0. 1925E+00									0. 2530E+05
0. 4913E-01									0. 6458E+04
33. 89 0. 3716E-02	0. 58	87. 56	0. 58	0. 33 21. 084	0. 33	0. 2797E+00	44. 60	0. 1139E+00	0. 6906E+03
0. 1355E+00									0. 2518E+05
0. 3459E-01									0. 6428E+04
34. 86 0. 2759E-02	0. 92	107. 46	0. 92	0. 38 19. 588	0. 38	0. 2076E+00	49. 20	0. 8489E-01	0. 6880E+03
0. 1006E+00									0. 2508E+05
0. 2568E-01									0. 6403E+04
35. 83 0. 2142E-02	1. 30	125. 91	1. 30	0. 41 18. 172	0. 41	0. 1611E+00	53. 47	0. 6613E-01	0. 6857E+03
0. 7811E-01									0. 2500E+05
0. 1994E-01									0. 6383E+04
36. 81 0. 1722E-02	1. 71	143. 07	1. 71	0. 43 16. 945	0. 43	0. 1295E+00	57. 44	0. 5332E-01	0. 6838E+03
0. 6280E-01									0. 2493E+05
0. 1603E-01									0. 6365E+04
37. 78 0. 1423E-02	2. 14	159. 10	2. 14	0. 45 15. 902	0. 45	0. 1069E+00	61. 17	0. 4416E-01	0. 6821E+03
0. 5188E-01									0. 2487E+05
0. 1324E-01									0. 6349E+04
38. 75 0. 1201E-02	2. 58	174. 19	2. 58	0. 46 15. 013	0. 46	0. 9022E-01	64. 68	0. 3735E-01	0. 6807E+03
0. 4379E-01									0. 2482E+05
0. 1118E-01									0. 6335E+04
39. 72 0. 1031E-02	3. 02	188. 47	3. 02	0. 47 14. 250	0. 47	0. 7744E-01	68. 01	0. 3214E-01	0. 6793E+03
0. 3760E-01									0. 2477E+05
0. 9599E-02									0. 6323E+04

40. 69 0. 8982E-03	3. 48	202. 05	3. 48	0. 47	13. 587	0. 47	0. 6740E-01	71. 17	0. 2804E-01	0. 6781E+03
0. 3275E-01										0. 2473E+05
0. 8360E-02										0. 6312E+04
41. 67 0. 7915E-03	3. 94	215. 02	3. 94	0. 48	13. 007	0. 48	0. 5936E-01	74. 20	0. 2474E-01	0. 6771E+03
0. 2886E-01										0. 2469E+05
0. 7367E-02										0. 6302E+04
42. 64 0. 7044E-03	4. 41	227. 45	4. 41	0. 48	12. 493	0. 48	0. 5279E-01	77. 10	0. 2205E-01	0. 6761E+03
0. 2568E-01										0. 2465E+05
0. 6556E-02										0. 6292E+04
43. 61 0. 6322E-03	4. 88	239. 40	4. 88	0. 49	12. 034	0. 49	0. 4735E-01	79. 89	0. 1982E-01	0. 6751E+03
0. 2305E-01										0. 2462E+05
0. 5884E-02										0. 6284E+04
44. 58 0. 5716E-03	5. 36	250. 93	5. 36	0. 49	11. 621	0. 49	0. 4278E-01	82. 58	0. 1795E-01	0. 6743E+03
0. 2084E-01										0. 2458E+05
0. 5320E-02										0. 6276E+04
45. 55 0. 5202E-03	5. 83	262. 08	5. 83	0. 49	11. 248	0. 49	0. 3890E-01	85. 19	0. 1635E-01	0. 6735E+03
0. 1897E-01										0. 2456E+05
0. 4841E-02										0. 6268E+04
46. 53 0. 4760E-03	6. 31	272. 87	6. 31	0. 49	10. 908	0. 49	0. 3557E-01	87. 71	0. 1498E-01	0. 6727E+03
0. 1736E-01										0. 2453E+05
0. 4430E-02										0. 6261E+04
47. 50 0. 4378E-03	6. 79	283. 35	6. 79	0. 50	10. 596	0. 50	0. 3268E-01	90. 16	0. 1379E-01	0. 6720E+03
0. 1596E-01										0. 2450E+05
0. 4075E-02										0. 6255E+04

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48. 47 0. 4044E-03	7. 27	293. 53	7. 27	0. 50	10. 309	0. 50	0. 3016E-01	92. 54	0. 1275E-01	0. 6713E+03
0. 1475E-01										0. 2448E+05
0. 3764E-02										0. 6248E+04
49. 44 0. 3751E-03	7. 76	303. 44	7. 76	0. 50	10. 044	0. 50	0. 2795E-01	94. 86	0. 1184E-01	0. 6707E+03
0. 1368E-01										0. 2445E+05
0. 3492E-02										0. 6242E+04
50. 42 0. 3492E-03	8. 24	313. 11	8. 24	0. 50	9. 798	0. 50	0. 2599E-01	97. 12	0. 1103E-01	0. 6701E+03
0. 1273E-01										0. 2443E+05
0. 3250E-02										0. 6237E+04
51. 39 0. 3262E-03	8. 73	322. 54	8. 73	0. 50	9. 569	0. 50	0. 2425E-01	99. 33	0. 1031E-01	0. 6695E+03
0. 1189E-01										0. 2441E+05
0. 3036E-02										0. 6231E+04
52. 36 0. 3055E-03	9. 21	331. 75	9. 21	0. 50	9. 355	0. 50	0. 2269E-01	101. 49	0. 9669E-02	0. 6689E+03
0. 1114E-01										0. 2439E+05
0. 2844E-02										0. 6226E+04
53. 33 0. 2870E-03	9. 70	340. 77	9. 70	0. 50	9. 154	0. 50	0. 2129E-01	103. 60	0. 9090E-02	0. 6684E+03
0. 1047E-01										0. 2437E+05
0. 2671E-02										0. 6221E+04
54. 30 0. 2703E-03	10. 19	349. 59	10. 19	0. 50	8. 965	0. 50	0. 2003E-01	105. 66	0. 8567E-02	0. 6679E+03
0. 9856E-02										0. 2435E+05
0. 2516E-02										0. 6216E+04
55. 28 0. 2552E-03	10. 68	358. 23	10. 68	0. 50	8. 788	0. 50	0. 1888E-01	107. 69	0. 8093E-02	0. 6674E+03
0. 9303E-02										0. 2433E+05
0. 2375E-02										0. 6212E+04

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56.25 0.2414E-03	11.17	366.71	11.17	0.50	8.620	0.50	0.1784E-01	109.67	0.7661E-02	0.6669E+03
0.8801E-02										0.2432E+05
0.2247E-02										0.6208E+04
57.22 0.2288E-03	11.66	375.02	11.66	0.50	8.461	0.50	0.1689E-01	111.62	0.7267E-02	0.6665E+03
0.8343E-02										0.2430E+05
0.2130E-02										0.6203E+04
58.19 0.2173E-03	12.15	383.19	12.15	0.50	8.310	0.50	0.1601E-01	113.54	0.6906E-02	0.6660E+03
0.7923E-02										0.2428E+05
0.2023E-02										0.6199E+04
59.17 0.2067E-03	12.64	391.20	12.64	0.50	8.166	0.50	0.1521E-01	115.41	0.6574E-02	0.6656E+03
0.7537E-02										0.2427E+05
0.1924E-02										0.6195E+04
60.14 0.1970E-03	13.13	399.09	13.13	0.50	8.030	0.50	0.1447E-01	117.26	0.6268E-02	0.6652E+03
0.7182E-02										0.2425E+05
0.1833E-02										0.6192E+04
61.11 0.1880E-03	13.62	406.84	13.62	0.51	7.900	0.51	0.1379E-01	119.08	0.5986E-02	0.6648E+03
0.6854E-02										0.2424E+05
0.1750E-02										0.6188E+04
62.08 0.1797E-03	14.11	414.47	14.11	0.51	7.775	0.51	0.1316E-01	120.87	0.5724E-02	0.6644E+03
0.6551E-02										0.2423E+05
0.1672E-02										0.6184E+04
63.05 0.1719E-03	14.60	421.98	14.60	0.51	7.656	0.51	0.1257E-01	122.63	0.5481E-02	0.6641E+03
0.6269E-02										0.2421E+05
0.1600E-02										0.6181E+04

Al ami t\_6v2. txt

64.03	15.09	429.38	15.09	0.51	7.542	0.51	0.1203E-01	124.36	0.5255E-02	0.6637E+03
0.1648E-03										0.2420E+05
0.6008E-02										0.6178E+04
0.1534E-02										
65.00	15.58	436.67	15.58	0.51	7.433	0.51	0.1152E-01	126.07	0.5044E-02	0.6634E+03
0.1581E-03										0.2419E+05
0.5764E-02										0.6174E+04
0.1471E-02										
65.97	16.08	443.85	16.08	0.51	7.328	0.51	0.1104E-01	127.75	0.4847E-02	0.6630E+03
0.1518E-03										0.2417E+05
0.5536E-02										0.6171E+04
0.1413E-02										
66.94	16.57	450.93	16.57	0.51	7.227	0.51	0.1060E-01	129.42	0.4663E-02	0.6627E+03
0.1460E-03										0.2416E+05
0.5323E-02										0.6168E+04
0.1359E-02										
67.91	17.06	457.92	17.06	0.51	7.130	0.51	0.1018E-01	131.05	0.4490E-02	0.6624E+03
0.1405E-03										0.2415E+05
0.5123E-02										0.6165E+04
0.1308E-02										
68.89	17.55	464.81	17.55	0.51	7.036	0.51	0.9790E-02	132.67	0.4328E-02	0.6621E+03
0.1354E-03										0.2414E+05
0.4936E-02										0.6162E+04
0.1260E-02										
69.86	18.05	471.61	18.05	0.51	6.946	0.51	0.9422E-02	134.27	0.4176E-02	0.6618E+03
0.1305E-03										0.2413E+05
0.4760E-02										0.6159E+04
0.1215E-02										
70.83	18.54	478.33	18.54	0.51	6.858	0.51	0.9075E-02	135.84	0.4032E-02	0.6615E+03
0.1260E-03										0.2412E+05
0.4594E-02										0.6157E+04
0.1173E-02										

Al ami t\_6v2. txt

71.80	19.03	484.96	19.03	0.51	6.774	0.51	0.8748E-02	137.40	0.3897E-02	0.6612E+03
0.1217E-03										0.2411E+05
0.4438E-02										0.6154E+04
0.1133E-02										
72.78	19.53	491.52	19.53	0.51	6.693	0.51	0.8439E-02	138.93	0.3769E-02	0.6609E+03
0.1177E-03										0.2410E+05
0.4290E-02										0.6151E+04
0.1095E-02										
73.75	20.02	497.99	20.02	0.51	6.614	0.51	0.8147E-02	140.45	0.3648E-02	0.6606E+03
0.1138E-03										0.2409E+05
0.4151E-02										0.6149E+04
0.1060E-02										
74.72	20.51	504.39	20.51	0.51	6.537	0.51	0.7874E-02	141.95	0.3533E-02	0.6603E+03
0.1102E-03										0.2408E+05
0.4019E-02										0.6146E+04
0.1026E-02										
75.69	21.01	510.72	21.01	0.51	6.463	0.51	0.7618E-02	143.44	0.3425E-02	0.6601E+03
0.1068E-03										0.2407E+05
0.3894E-02										0.6144E+04
0.9940E-03										
76.66	21.50	516.97	21.50	0.51	6.392	0.51	0.7375E-02	144.90	0.3322E-02	0.6598E+03
0.1035E-03										0.2406E+05
0.3775E-02										0.6141E+04
0.9638E-03										
77.64	21.99	523.16	21.99	0.51	6.323	0.51	0.7144E-02	146.35	0.3224E-02	0.6596E+03
0.1005E-03										0.2405E+05
0.3663E-02										0.6139E+04
0.9350E-03										
78.61	22.49	529.27	22.49	0.51	6.255	0.51	0.6924E-02	147.79	0.3131E-02	0.6593E+03
0.9752E-04										0.2404E+05
0.3556E-02										0.6137E+04
0.9077E-03										

Al ami t\_6v2. txt

79.58 0.9473E-04	22.98	535.33	22.98	0.51	6.190	0.51	0.6715E-02	149.21	0.3042E-02	0.6591E+03
0.3454E-02										0.2403E+05
0.8817E-03										0.6135E+04
80.55 0.9207E-04	23.47	541.32	23.47	0.51	6.127	0.51	0.6515E-02	150.62	0.2958E-02	0.6588E+03
0.3357E-02										0.2402E+05
0.8569E-03										0.6132E+04
81.53 0.8953E-04	23.97	547.25	23.97	0.51	6.065	0.51	0.6325E-02	152.01	0.2878E-02	0.6586E+03
0.3264E-02										0.2401E+05
0.8333E-03										0.6130E+04
82.50 0.8711E-04	24.46	553.13	24.46	0.51	6.006	0.51	0.6143E-02	153.39	0.2801E-02	0.6584E+03
0.3176E-02										0.2401E+05
0.8108E-03										0.6128E+04
83.47 0.8480E-04	24.96	558.94	24.96	0.51	5.947	0.51	0.5970E-02	154.75	0.2727E-02	0.6582E+03
0.3092E-02										0.2400E+05
0.7893E-03										0.6126E+04
84.44 0.8259E-04	25.45	564.70	25.45	0.51	5.891	0.51	0.5804E-02	156.10	0.2657E-02	0.6579E+03
0.3011E-02										0.2399E+05
0.7687E-03										0.6124E+04
85.41 0.8047E-04	25.94	570.40	25.94	0.51	5.835	0.51	0.5645E-02	157.44	0.2590E-02	0.6577E+03
0.2934E-02										0.2398E+05
0.7490E-03										0.6122E+04
86.39 0.7845E-04	26.44	576.05	26.44	0.51	5.782	0.51	0.5493E-02	158.77	0.2525E-02	0.6575E+03
0.2860E-02										0.2397E+05
0.7301E-03										0.6120E+04



Al ami t\_6v2. txt

87.36 0.7651E-04	26.93	581.65	26.93	0.51	5.729	0.51	0.5347E-02	160.08	0.2464E-02	0.6573E+03
0.2790E-02										0.2397E+05
0.7121E-03										0.6118E+04
88.33 0.7465E-04	27.43	587.20	27.43	0.51	5.678	0.51	0.5207E-02	161.38	0.2405E-02	0.6571E+03
0.2722E-02										0.2396E+05
0.6948E-03										0.6116E+04
89.30 0.7286E-04	27.92	592.70	27.92	0.51	5.628	0.51	0.5073E-02	162.67	0.2348E-02	0.6569E+03
0.2657E-02										0.2395E+05
0.6782E-03										0.6114E+04
90.28 0.7115E-04	28.41	598.15	28.41	0.51	5.579	0.51	0.4943E-02	163.95	0.2293E-02	0.6567E+03
0.2594E-02										0.2394E+05
0.6622E-03										0.6112E+04
91.25 0.6950E-04	28.91	603.56	28.91	0.51	5.532	0.51	0.4819E-02	165.22	0.2241E-02	0.6565E+03
0.2534E-02										0.2394E+05
0.6469E-03										0.6111E+04
92.22 0.6792E-04	29.40	608.92	29.40	0.51	5.485	0.51	0.4700E-02	166.48	0.2191E-02	0.6563E+03
0.2476E-02										0.2393E+05
0.6321E-03										0.6109E+04
93.19 0.6639E-04	29.90	614.23	29.90	0.51	5.439	0.51	0.4585E-02	167.73	0.2142E-02	0.6561E+03
0.2421E-02										0.2392E+05
0.6180E-03										0.6107E+04
94.16 0.6493E-04	30.39	619.50	30.39	0.51	5.395	0.51	0.4474E-02	168.96	0.2095E-02	0.6559E+03
0.2367E-02										0.2392E+05
0.6043E-03										0.6105E+04

♀  
CLOUD COLLAPSE PHASE:

IN TRIAL #1 THE COLLAPSE PHASE TIME STEP (DT) WAS 0.16202994 SECONDS.  
THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE  
WAS 1199.  
THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS 400.  
THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.  
THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.

♀  
COLLAPSE PHASE RESULTS:

TIME VOLUME OF FROM SOLID DISPOSAL FRACTIONS (SEC) (CU FT)	CLOUD CENTROID SOLIDS VOL. (DI STANCE FROM BARGE) CONC. BY X-DIR DEPTH FRACTION (FT) (FT) (VOL/VOL)			VELOCITY OF CLOUD CENTROID X-DIR DOWN Z-DIR (FPS) (FPS) (FPS)			DI FFERENCE OF CLOUD & WATER DENSITI ES (G/CC)		ELLI PSOIDAL CLOUD AXI S LENGTHS MI NOR MAJOR (FT) (FT)		TRACER VOLUMETRI C CONC. (VOL/VOL)
	94.65 0.6559E+03	30.64 0.6422E-04	622.12	30.64	0.51	5.37	0.51	0.4421E-02	169.58	339.16	339.16
0.2391E+05	0.2341E-02										
0.6104E+04 96.76 0.6539E+03	0.5977E-03 31.70 0.6266E-04	628.56	31.70	0.51	3.16	0.51	0.4346E-02	150.50	363.90	363.90	0.2028E-02
0.2384E+05	0.2285E-02										
0.6087E+04 98.86 0.6520E+03	0.5833E-03 32.77 0.6113E-04	634.64	32.77	0.51	2.66	0.51	0.4273E-02	134.29	389.46	389.46	0.1985E-02
0.2377E+05	0.2229E-02										
0.6069E+04 100.97 0.6502E+03	0.5690E-03 33.83 0.5964E-04	639.75	33.83	0.51	2.23	0.51	0.4202E-02	120.67	415.38	415.38	0.1942E-02
0.2371E+05	0.2175E-02										
0.6052E+04 103.08 0.6485E+03	0.5552E-03 34.89 0.5820E-04	644.04	34.89	0.51	1.88	0.51	0.4134E-02	109.22	441.40	441.40	0.1900E-02

Al ami t\_6v2. txt

0. 2365E+05	0. 2122E-02										
0. 6036E+04	0. 5417E-03										
105. 18	35. 96	647. 66	35. 96	0. 51	1. 59	0. 51	0. 4069E-02	99. 56	467. 41	467. 41	0. 1859E-02
0. 6470E+03	0. 5681E-04										
0. 2359E+05	0. 2071E-02										
0. 6022E+04	0. 5288E-03										
107. 29	37. 02	650. 74	37. 02	0. 50	1. 36	0. 50	0. 4006E-02	91. 35	493. 32	493. 32	0. 1819E-02
0. 6456E+03	0. 5546E-04										
0. 2354E+05	0. 2022E-02										
0. 6009E+04	0. 5162E-03										
109. 40	38. 09	653. 38	38. 09	0. 50	1. 17	0. 50	0. 3945E-02	84. 31	519. 12	519. 12	0. 1779E-02
0. 6442E+03	0. 5415E-04										
0. 2349E+05	0. 1974E-02										
0. 5996E+04	0. 5040E-03										
111. 50	39. 15	655. 66	39. 15	0. 50	1. 01	0. 50	0. 3886E-02	78. 24	544. 76	544. 76	0. 1741E-02
0. 6430E+03	0. 5289E-04										
0. 2344E+05	0. 1928E-02										
0. 5985E+04	0. 4922E-03										
113. 61	40. 21	657. 64	40. 21	0. 50	0. 88	0. 50	0. 3830E-02	72. 97	570. 24	570. 24	0. 1704E-02
0. 6418E+03	0. 5166E-04										
0. 2340E+05	0. 1884E-02										
0. 5974E+04	0. 4808E-03										
115. 71	41. 27	659. 36	41. 27	0. 50	0. 77	0. 50	0. 3775E-02	68. 36	595. 53	595. 53	0. 1667E-02
0. 6408E+03	0. 5047E-04										
0. 2336E+05	0. 1840E-02										
0. 5964E+04	0. 4698E-03										
117. 82	42. 32	660. 88	42. 32	0. 50	0. 68	0. 50	0. 3723E-02	64. 31	620. 61	620. 61	0. 1632E-02
0. 6398E+03	0. 4933E-04										
0. 2333E+05	0. 1799E-02										
0. 5955E+04	0. 4591E-03										
119. 93	43. 37	662. 23	43. 37	0. 50	0. 60	0. 50	0. 3673E-02	60. 73	645. 44	645. 44	0. 1598E-02
0. 6388E+03	0. 4822E-04										

Al ami t\_6v2. txt

0. 2329E+05	0. 1758E-02										
0. 5946E+04	0. 4488E-03										
122. 03	44. 43	663. 42	44. 43	0. 50	0. 54	0. 50	0. 3625E-02	57. 55	669. 99	669. 99	0. 1565E-02
0. 6379E+03	0. 4716E-04										
0. 2326E+05	0. 1719E-02										
0. 5938E+04	0. 4389E-03										
124. 14	45. 47	664. 48	45. 47	0. 50	0. 48	0. 50	0. 3578E-02	54. 72	694. 23	694. 23	0. 1533E-02
0. 6371E+03	0. 4614E-04										
0. 2323E+05	0. 1682E-02										
0. 5930E+04	0. 4294E-03										
126. 25	46. 52	665. 43	46. 52	0. 50	0. 43	0. 50	0. 3534E-02	52. 19	718. 10	718. 10	0. 1502E-02
0. 6363E+03	0. 4516E-04										
0. 2320E+05	0. 1647E-02										
0. 5923E+04	0. 4203E-03										
128. 35	47. 56	666. 28	47. 56	0. 49	0. 38	0. 49	0. 3492E-02	49. 92	741. 56	741. 56	0. 1473E-02
0. 6356E+03	0. 4422E-04										
0. 2318E+05	0. 1612E-02										
0. 5916E+04	0. 4116E-03										
130. 46	48. 61	667. 05	48. 61	0. 49	0. 35	0. 49	0. 3452E-02	47. 87	764. 57	764. 57	0. 1445E-02
0. 6349E+03	0. 4333E-04										
0. 2315E+05	0. 1580E-02										
0. 5910E+04	0. 4033E-03										
132. 57	49. 65	667. 74	49. 65	0. 49	0. 31	0. 49	0. 3414E-02	46. 03	787. 10	787. 10	0. 1418E-02
0. 6343E+03	0. 4248E-04										
0. 2313E+05	0. 1549E-02										
0. 5904E+04	0. 3954E-03										
134. 67	50. 68	668. 37	50. 68	0. 49	0. 28	0. 49	0. 3378E-02	44. 36	809. 09	809. 09	0. 1392E-02
0. 6337E+03	0. 4168E-04										
0. 2310E+05	0. 1520E-02										
0. 5898E+04	0. 3879E-03										
136. 78	51. 72	668. 93	51. 72	0. 49	0. 26	0. 49	0. 3344E-02	42. 85	830. 51	830. 51	0. 1368E-02
0. 6331E+03	0. 4091E-04										

Al ami t\_6v2. txt

0. 2308E+05	0. 1492E-02										
0. 5893E+04	0. 3808E-03										
138. 89	52. 75	669. 45	52. 75	0. 49	0. 23	0. 49	0. 3312E-02	41. 48	851. 34	851. 34	0. 1345E-02
0. 6326E+03	0. 4019E-04										
0. 2306E+05	0. 1465E-02										
0. 5888E+04	0. 3741E-03										
140. 99	53. 78	669. 91	53. 78	0. 49	0. 21	0. 49	0. 3281E-02	40. 23	871. 55	871. 55	0. 1323E-02
0. 6321E+03	0. 3951E-04										
0. 2305E+05	0. 1440E-02										
0. 5883E+04	0. 3677E-03										
143. 10	54. 80	670. 34	54. 80	0. 49	0. 19	0. 49	0. 3253E-02	39. 09	891. 13	891. 13	0. 1302E-02
0. 6316E+03	0. 3886E-04										
0. 2303E+05	0. 1417E-02										
0. 5879E+04	0. 3617E-03										
145. 20	55. 83	670. 73	55. 83	0. 49	0. 18	0. 49	0. 3225E-02	38. 05	910. 06	910. 06	0. 1283E-02
0. 6312E+03	0. 3825E-04										
0. 2301E+05	0. 1395E-02										
0. 5875E+04	0. 3560E-03										
147. 31	56. 85	671. 09	56. 85	0. 48	0. 16	0. 48	0. 3200E-02	37. 10	928. 35	928. 35	0. 1264E-02
0. 6308E+03	0. 3768E-04										
0. 2300E+05	0. 1374E-02										
0. 5871E+04	0. 3507E-03										
149. 42	57. 87	671. 42	57. 87	0. 48	0. 15	0. 48	0. 3176E-02	36. 22	946. 00	946. 00	0. 1247E-02
0. 6304E+03	0. 3714E-04										
0. 2298E+05	0. 1354E-02										
0. 5867E+04	0. 3457E-03										
151. 52	58. 89	671. 72	58. 89	0. 48	0. 14	0. 48	0. 3153E-02	35. 42	963. 01	963. 01	0. 1231E-02
0. 6300E+03	0. 3663E-04										
0. 2297E+05	0. 1336E-02										
0. 5864E+04	0. 3409E-03										
153. 63	59. 90	671. 99	59. 90	0. 48	0. 13	0. 48	0. 3132E-02	34. 68	979. 39	979. 39	0. 1215E-02
0. 6297E+03	0. 3615E-04										

Al ami t\_6v2. txt

0. 2296E+05	0. 1318E-02										
0. 5861E+04	0. 3365E-03										
155. 74	60. 92	672. 25	60. 92	0. 48	0. 12	0. 48	0. 3112E-02	34. 00	995. 16	995. 16	0. 1201E-02
0. 6294E+03	0. 3570E-04										
0. 2295E+05	0. 1302E-02										
0. 5858E+04	0. 3322E-03										
157. 84	61. 93	672. 49	61. 93	0. 48	0. 11	0. 48	0. 3093E-02	33. 37	1010. 34	1010. 34	0. 1187E-02
0. 6291E+03	0. 3527E-04										
0. 2294E+05	0. 1286E-02										
0. 5855E+04	0. 3283E-03										
159. 95	62. 94	672. 71	62. 94	0. 48	0. 10	0. 48	0. 3076E-02	32. 79	1024. 96	1024. 96	0. 1174E-02
0. 6288E+03	0. 3487E-04										
0. 2293E+05	0. 1271E-02										
0. 5852E+04	0. 3245E-03										
162. 06	63. 94	672. 91	63. 94	0. 48	0. 09	0. 48	0. 3059E-02	32. 24	1039. 03	1039. 03	0. 1161E-02
0. 6285E+03	0. 3449E-04										
0. 2292E+05	0. 1257E-02										
0. 5850E+04	0. 3210E-03										
164. 16	64. 95	673. 10	64. 95	0. 48	0. 09	0. 48	0. 3043E-02	31. 74	1052. 57	1052. 57	0. 1150E-02
0. 6283E+03	0. 3413E-04										
0. 2291E+05	0. 1244E-02										
0. 5848E+04	0. 3176E-03										
166. 27	65. 95	673. 28	65. 95	0. 47	0. 08	0. 47	0. 3028E-02	31. 26	1065. 61	1065. 61	0. 1139E-02
0. 6280E+03	0. 3378E-04										
0. 2290E+05	0. 1232E-02										
0. 5845E+04	0. 3145E-03										
168. 38	66. 95	673. 44	66. 95	0. 47	0. 08	0. 47	0. 3014E-02	30. 82	1078. 18	1078. 18	0. 1128E-02
0. 6278E+03	0. 3346E-04										
0. 2289E+05	0. 1220E-02										
0. 5843E+04	0. 3114E-03										
170. 48	67. 95	673. 60	67. 95	0. 47	0. 07	0. 47	0. 3000E-02	30. 41	1090. 31	1090. 31	0. 1118E-02
0. 6276E+03	0. 3315E-04										

Al ami t\_6v2. txt

0. 2288E+05	0. 1209E-02										
0. 5841E+04	0. 3086E-03										
172. 59	68. 94	673. 74	68. 94	0. 47	0. 07	0. 47	0. 2987E-02	30. 02	1102. 00	1102. 00	0. 1109E-02
0. 6274E+03	0. 3286E-04										
0. 2287E+05	0. 1198E-02										
0. 5839E+04	0. 3059E-03										
174. 69	69. 93	673. 88	69. 93	0. 47	0. 06	0. 47	0. 2975E-02	29. 66	1113. 29	1113. 29	0. 1100E-02
0. 6272E+03	0. 3259E-04										
0. 2287E+05	0. 1188E-02										
0. 5837E+04	0. 3033E-03										
176. 80	70. 92	674. 01	70. 92	0. 47	0. 06	0. 47	0. 2963E-02	29. 31	1124. 20	1124. 20	0. 1091E-02
0. 6270E+03	0. 3232E-04										
0. 2286E+05	0. 1179E-02										
0. 5836E+04	0. 3008E-03										
178. 91	71. 91	674. 13	71. 91	0. 47	0. 06	0. 47	0. 2952E-02	28. 99	1134. 75	1134. 75	0. 1083E-02
0. 6268E+03	0. 3207E-04										
0. 2285E+05	0. 1169E-02										
0. 5834E+04	0. 2985E-03										
181. 01	72. 90	674. 24	72. 90	0. 47	0. 05	0. 47	0. 2942E-02	28. 68	1144. 96	1144. 96	0. 1075E-02
0. 6266E+03	0. 3183E-04										
0. 2285E+05	0. 1161E-02										
0. 5832E+04	0. 2963E-03										
183. 12	73. 88	674. 35	73. 88	0. 47	0. 05	0. 47	0. 2932E-02	28. 39	1154. 85	1154. 85	0. 1068E-02
0. 6265E+03	0. 3160E-04										
0. 2284E+05	0. 1152E-02										
0. 5831E+04	0. 2941E-03										
185. 23	74. 86	674. 46	74. 86	0. 47	0. 05	0. 47	0. 2922E-02	28. 11	1164. 44	1164. 44	0. 1061E-02
0. 6263E+03	0. 3138E-04										
0. 2284E+05	0. 1144E-02										
0. 5829E+04	0. 2921E-03										
187. 33	75. 84	674. 56	75. 84	0. 46	0. 05	0. 46	0. 2913E-02	27. 85	1173. 75	1173. 75	0. 1054E-02
0. 6262E+03	0. 3117E-04										

Al ami t\_6v2. txt

0. 2283E+05	0. 1136E-02										
0. 5828E+04	0. 2901E-03										
189. 44	76. 82	674. 65	76. 82	0. 46	0. 04	0. 46	0. 2904E-02	27. 60	1182. 79	1182. 79	0. 1047E-02
0. 6260E+03	0. 3097E-04										
0. 2283E+05	0. 1129E-02										
0. 5827E+04	0. 2882E-03										
191. 55	77. 79	674. 74	77. 79	0. 46	0. 04	0. 46	0. 2895E-02	27. 36	1191. 58	1191. 58	0. 1041E-02
0. 6259E+03	0. 3077E-04										
0. 2282E+05	0. 1122E-02										
0. 5825E+04	0. 2864E-03										
193. 65	78. 76	674. 83	78. 76	0. 46	0. 04	0. 46	0. 2887E-02	27. 13	1200. 13	1200. 13	0. 1035E-02
0. 6257E+03	0. 3058E-04										
0. 2282E+05	0. 1115E-02										
0. 5824E+04	0. 2847E-03										
195. 76	79. 73	674. 91	79. 73	0. 46	0. 04	0. 46	0. 2879E-02	26. 91	1208. 46	1208. 46	0. 1029E-02
0. 6256E+03	0. 3040E-04										
0. 2281E+05	0. 1109E-02										
0. 5823E+04	0. 2830E-03										
197. 87	80. 70	674. 99	80. 70	0. 46	0. 04	0. 46	0. 2872E-02	26. 70	1216. 57	1216. 57	0. 1023E-02
0. 6255E+03	0. 3023E-04										
0. 2281E+05	0. 1102E-02										
0. 5822E+04	0. 2814E-03										
199. 97	81. 67	675. 06	81. 67	0. 46	0. 04	0. 46	0. 2864E-02	26. 50	1224. 49	1224. 49	0. 1018E-02
0. 6254E+03	0. 3006E-04										
0. 2280E+05	0. 1096E-02										
0. 5821E+04	0. 2798E-03										
202. 08	82. 63	675. 14	82. 63	0. 46	0. 03	0. 46	0. 2857E-02	26. 31	1232. 22	1232. 22	0. 1012E-02
0. 6252E+03	0. 2990E-04										
0. 2280E+05	0. 1090E-02										
0. 5820E+04	0. 2783E-03										
204. 18	83. 59	675. 21	83. 59	0. 46	0. 03	0. 46	0. 2850E-02	26. 12	1239. 77	1239. 77	0. 1007E-02
0. 6251E+03	0. 2974E-04										



Al ami t\_6v2. txt

0. 2279E+05	0. 1084E-02										
0. 5818E+04	0. 2768E-03										
206. 29	84. 55	675. 27	84. 55	0. 45	0. 03	0. 45	0. 2843E-02	25. 94	1247. 15	1247. 15	0. 1002E-02
0. 6250E+03	0. 2959E-04										
0. 2279E+05	0. 1079E-02										
0. 5817E+04	0. 2754E-03										
208. 40	85. 50	675. 34	85. 50	0. 45	0. 03	0. 45	0. 2837E-02	25. 77	1254. 37	1254. 37	0. 9972E-03
0. 6249E+03	0. 2944E-04										
0. 2278E+05	0. 1073E-02										
0. 5816E+04	0. 2740E-03										
210. 50	86. 46	675. 40	86. 46	0. 45	0. 03	0. 45	0. 2831E-02	25. 60	1261. 44	1261. 44	0. 9925E-03
0. 6248E+03	0. 2929E-04										
0. 2278E+05	0. 1068E-02										
0. 5815E+04	0. 2727E-03										
212. 61	87. 41	675. 46	87. 41	0. 45	0. 03	0. 45	0. 2825E-02	25. 44	1268. 37	1268. 37	0. 9879E-03
0. 6247E+03	0. 2916E-04										
0. 2278E+05	0. 1063E-02										
0. 5815E+04	0. 2714E-03										
214. 72	88. 36	675. 52	88. 36	0. 45	0. 03	0. 45	0. 2819E-02	25. 28	1275. 16	1275. 16	0. 9835E-03
0. 6246E+03	0. 2902E-04										
0. 2277E+05	0. 1058E-02										
0. 5814E+04	0. 2701E-03										
216. 82	89. 31	675. 58	89. 31	0. 45	0. 03	0. 45	0. 2813E-02	25. 13	1281. 83	1281. 83	0. 9792E-03
0. 6245E+03	0. 2889E-04										
0. 2277E+05	0. 1053E-02										
0. 5813E+04	0. 2689E-03										
218. 93	90. 25	675. 63	90. 25	0. 45	0. 03	0. 45	0. 2807E-02	24. 98	1288. 37	1288. 37	0. 9750E-03
0. 6244E+03	0. 2876E-04										
0. 2277E+05	0. 1049E-02										
0. 5812E+04	0. 2677E-03										
221. 04	91. 19	675. 69	91. 19	0. 45	0. 03	0. 45	0. 2802E-02	24. 84	1294. 79	1294. 79	0. 9709E-03
0. 6243E+03	0. 2863E-04										

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0. 2276E+05 0. 1044E-02

0. 5811E+04 0. 2665E-03  
 223. 14 92. 13 675. 74 92. 13 0. 45 0. 02 0. 45 0. 2796E-02 24. 70 1301. 11 1301. 11 0. 9668E-03  
 0. 6242E+03 0. 2851E-04

0. 2276E+05 0. 1040E-02

0. 5810E+04 0. 2654E-03

STEP	TIME WHEN CLOUD CREATED	FROM DISPOSAL PREVIOUS CLOUD WAS CREATED	TIME STEP WHEN X-LOCATION CLOUD CREATED	CLOUD CENTROID Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME THIS WAS
120	49.28	1	5008.	5008.	167.5	10.98	279.8	31.23	0.0000E+00	
239	68.56	120	5017.	5017.	234.2	290.7	160.7	8.601	0.0000E+00	
358	87.85	239	5027.	5027.	284.9	451.4	121.9	4.963	0.0000E+00	
477	107.1	400	5037.	5037.	435.4	573.4	77.64	11.53	0.0000E+00	
596	126.4	477	5047.	5047.	638.0	650.9	39.93	9.397	0.0000E+00	
715	145.7	596	5056.	5056.	810.3	677.8	14.18	5.186	0.0000E+00	
834	165.0	715	5065.	5065.	937.3	686.9	6.271	2.931	0.0000E+00	
	184.3		5074.	5074.	1028.	691.0	3.313	1.784	0.0000E+00	

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953	834								
1072	NEW CLOUD CREATED, NTCLD(K) (K = 1) = 9	203.5	5083.	5083.	1097.	693.3	2.063	1.216	0.0000E+00
	953								
1191	NEW CLOUD CREATED, NTCLD(K) (K = 1) = 10	222.8	5092.	5092.	1152.	695.0	1.455	0.9144	0.0000E+00
	1072								
1199	NEW CLOUD CREATED, NTCLD(K) (K = 1) = 11	224.1	5093.	5093.	1156.	663.4	24.64	624.2	0.0000E+00
	1191								

NOTE -- When all solid material has settled from a cloud, the cloud is erased and the remaining clouds for this solids type are renumbered.

♀

STEP	TIME FROM WHEN CLOUD CREATED	TIME STEP DISPOSAL PREVIOUS CLOUD WAS CREATED	CLOUD CENTROID X-LOCATION Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME THIS WAS
120	NEW CLOUD CREATED, NTCLD(K) (K = 2) = 1	49.28	5008.	5008.	167.5	10.98	279.8	1139.	0.0000E+00
	1								
239	NEW CLOUD CREATED, NTCLD(K) (K = 2) = 2	68.56	5017.	5017.	234.2	290.7	160.7	313.6	0.0000E+00
	120								
358	NEW CLOUD CREATED, NTCLD(K) (K = 2) = 3	87.85	5027.	5027.	284.9	451.4	121.9	181.0	0.0000E+00
	239								
477	NEW CLOUD CREATED, NTCLD(K) (K = 2) = 4	107.1	5037.	5037.	435.4	573.4	77.64	420.4	0.0000E+00
	400								
596	NEW CLOUD CREATED, NTCLD(K) (K = 2) = 5	126.4	5047.	5047.	638.0	650.9	39.93	342.6	0.0000E+00
	477								

715	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 6	810.3	677.8	14.18	189.1	0.0000E+00
	145.7	5056.	5056.					
	596							
834	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 7	937.3	686.9	6.271	106.9	0.0000E+00
	165.0	5065.	5065.					
	715							
953	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 8	1028.	691.0	3.313	65.05	0.0000E+00
	184.3	5074.	5074.					
	834							
1072	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 9	1097.	693.3	2.063	44.33	0.0000E+00
	203.5	5083.	5083.					
	953							
1191	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 10	1152.	695.0	1.455	33.34	0.0000E+00
	222.8	5092.	5092.					
	1072							
1199	NEW CLOUD CREATED,	NTCLD(K) (K =	2) = 11	1156.	663.4	24.64	0.2276E+05	0.0000E+00
	224.1	5093.	5093.					
	1191							

NOTE -- When all solid material has settled from a cloud, the cloud is erased and the remaining clouds for this solids type are renumbered.

STEP	TIME FROM WHEN CLOUD CREATED	TIME FROM DI SPOSAL (SEC)	CLOUD CENTROID X-LOCATION (FT)	Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME THIS WAS
120	NEW CLOUD CREATED,	NTCLD(K) (K =	3) = 1	167.5	10.98	279.8	290.7	0.0000E+00		
	49.28	5008.	5008.							
	1									
239	NEW CLOUD CREATED,	NTCLD(K) (K =	3) = 2	234.2	290.7	160.7	80.05	0.0000E+00		
	68.56	5017.	5017.							
	120									
	NEW CLOUD CREATED,	NTCLD(K) (K =	3) = 3	284.9	451.4	121.9	46.20	0.0000E+00		
	87.85	5027.	5027.							

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358	239									
477	400	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 4	107.1	5037.	5037.	435.4	573.4	77.64	107.3	0.0000E+00
596	477	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 5	126.4	5047.	5047.	638.0	650.9	39.93	87.47	0.0000E+00
715	596	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 6	145.7	5056.	5056.	810.3	677.8	14.18	48.26	0.0000E+00
834	715	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 7	165.0	5065.	5065.	937.3	686.9	6.271	27.28	0.0000E+00
953	834	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 8	184.3	5074.	5074.	1028.	691.0	3.313	16.61	0.0000E+00
1072	953	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 9	203.5	5083.	5083.	1097.	693.3	2.063	11.32	0.0000E+00
1191	1072	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 10	222.8	5092.	5092.	1152.	695.0	1.455	8.511	0.0000E+00
1199	1191	NEW CLOUD CREATED, NTCLD(K) (K = 3) = 11	224.1	5093.	5093.	1156.	663.4	24.64	5810.	0.0000E+00

NOTE -- When all solid material has settled from a cloud, the cloud is erased and the remaining clouds for this solids type are renumbered.

♀	TIME FROM	CLOUD CENTROID	CLOUD X-Z	DEPTH OF	CLOUD VERT.	T O T A L	ENTRAINED	TIME
STEP WHEN	TIME STEP WHEN	Z-LOCATION	DIAMETER	TOP OF CLOUD	THICKNESS	M A S S	MASS	THIS
CLOUD	DI S P O S A L	X-LOCATI ON	PREVIOUS CLOUD	(FT)	(FT)	(CU FT)	(CU FT)	W A S
CREATED	(SEC)	(FT)	(FT)	(FT)	(FT)	(CU FT)	(CU FT)	W A S
	W A S	CREATED						

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NEW CLOUD CREATED, NTCLD(K) (K =	4) =	1						
224.1	5093.	5093.	1156.	663.4	24.64	0.2117E+05	0.0000E+00	
1199	1							

NOTE -- When all solid material has settled from a cloud, the cloud is erased and the remaining clouds for this solids type are renumbered.

♀  
LONG TERM DIFFUSION RESULTS:

BEGIN LONG TERM SIMULATION OF FATE OF Fine\_San

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 900.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 1800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 2700.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 3600.00 SEC.

Alami t\_6v2. txt

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

MAX CONC IS 0.00000001 OUTPUT SUPPRESSED AT 0.00 FT

MAX CONC IS 0.00000007 OUTPUT SUPPRESSED AT 500.00 FT

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR Fine\_San

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DI STANCE FROM TOP OF GRID	LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCI TY (FPS)
1 0.20000E-01	6635.	6635.	31.23	0.0000E+00	510.3	79.35	285.0	
2 0.20000E-01	6635.	6635.	8.601	0.0000E+00	604.5	358.7	166.0	
3 0.20000E-01	6635.	6635.	4.963	0.0000E+00	671.9	519.1	127.2	
4 0.20000E-01	6634.	6634.	11.53	0.0000E+00	866.6	640.6	82.90	
5 0.20000E-01	6634.	6634.	9.397	0.0000E+00	1115.	717.7	45.18	
6 0.20000E-01	6634.	6634.	5.186	0.0000E+00	1319.	744.3	19.43	
7 0.20000E-01	6634.	6634.	2.931	0.0000E+00	1465.	753.0	11.51	
8 0.20000E-01	6633.	6633.	1.784	0.0000E+00	1567.	756.7	8.540	
9 0.20000E-01	6632.	6632.	1.216	0.0000E+00	1642.	758.7	7.279	
10 0.20000E-01	6632.	6632.	0.9144	0.0000E+00	1703.	760.0	6.650	
11 0.20000E-01	6631.	6631.	624.2	0.0000E+00	1706.	728.4	29.82	

SUMMARY OF Fine\_San DI STRI BUTI ONS AFTER 4500.00 SEC.

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TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 5400.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 6300.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 7200.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

MAX CONCENTRATION IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT

CONCENTRATIONS ABOVE BACKGROUND OF Fine\_San (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

500.00 FT BELOW THE WATER SURFACE

... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0







33 0 0 00000  
 34 0 0 00000  
 35 0000000000000000

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀  
 SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR Fine\_San

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1 0.200000E-01	7960.	7960.	31.23	0.0000E+00	975.0	148.7	290.4	
2 0.200000E-01	7960.	7960.	8.601	0.0000E+00	1092.	428.0	171.3	
3 0.200000E-01	7960.	7960.	4.963	0.0000E+00	1174.	588.4	132.5	
4 0.200000E-01	7960.	7960.	11.53	0.0000E+00	1408.	709.9	88.27	
5 0.200000E-01	7959.	7959.	9.397	0.0000E+00	1698.	787.0	50.55	
6 0.200000E-01	7959.	7959.	5.186	0.0000E+00	1932.	813.6	24.79	
7 0.200000E-01	7959.	7959.	2.931	0.0000E+00	2098.	822.3	16.87	
8 0.200000E-01	7958.	7958.	1.784	0.0000E+00	2213.	826.0	13.91	
9 0.200000E-01	7958.	7958.	1.216	0.0000E+00	2298.	828.0	12.65	
10 0.200000E-01	7957.	7957.	0.9144	0.0000E+00	2366.	829.3	12.02	
11 0.200000E-01	7957.	7957.	624.2	0.0000E+00	2370.	797.7	35.19	

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 8100.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 9000.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 9900.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 10800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT

MAX CONC IS 0.00000003 OUTPUT SUPPRESSED AT 500.00 FT

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR Fine\_San

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM		MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
	TOP OF GRID	LEFT OF GRID						
1 0.200000E-01	9094.	9094.	31.23	0.0000E+00	1535.	218.0	295.8	
2 0.200000E-01	9094.	9094.	8.601	0.0000E+00	1671.	497.3	176.7	
3	9094.	9094.	4.963	0.0000E+00	1767.	657.7	137.9	

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0. 200000E-01								
4	9094.	9094.	11. 53	0. 0000E+00	2033.	779. 2	93. 63	
0. 200000E-01								
5	9094.	9094.	9. 397	0. 0000E+00	2360.	856. 4	55. 91	
0. 200000E-01								
6	9093.	9093.	5. 186	0. 0000E+00	2621.	882. 9	30. 16	
0. 200000E-01								
7	9093.	9093.	2. 931	0. 0000E+00	2804.	891. 6	22. 24	
0. 200000E-01								
8	9093.	9093.	1. 784	0. 0000E+00	2931.	895. 3	19. 27	
0. 200000E-01								
9	9092.	9092.	1. 216	0. 0000E+00	3025.	897. 3	18. 01	
0. 200000E-01								
10	9092.	9092.	0. 9144	0. 0000E+00	3099.	898. 6	17. 38	
0. 200000E-01								
11	9092.	9092.	624. 2	0. 0000E+00	3104.	867. 0	40. 56	
0. 200000E-01								

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 11700.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 12600.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 13500.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Fine\_San DISTRIBUTIONS AFTER 14400.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 702.00  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT

MAX CONC IS 0.00000005 OUTPUT SUPPRESSED AT 500.00 FT

MAX CONC IS 0.00000001 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 14400.00 SECONDS ELAPSED TIME FOR Fine\_San

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DISTANCE FROM		DISPOSAL	MASS	DIAMETER	TOP OF CLOUD	THICKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1 0.200000E-01	0.1010E+05	0.1010E+05	31.23	0.0000E+00	2177.	287.3	301.1	
2 0.200000E-01	0.1010E+05	0.1010E+05	8.601	0.0000E+00	2330.	566.7	182.1	
3 0.200000E-01	0.1010E+05	0.1010E+05	4.963	0.0000E+00	2437.	727.0	143.3	
4 0.200000E-01	0.1010E+05	0.1010E+05	11.53	0.0000E+00	2733.	848.5	99.00	
5 0.200000E-01	0.1010E+05	0.1010E+05	9.397	0.0000E+00	3094.	925.7	61.28	
6 0.200000E-01	0.1010E+05	0.1010E+05	5.186	0.0000E+00	3378.	952.2	35.53	
7 0.200000E-01	0.1010E+05	0.1010E+05	2.931	0.0000E+00	3578.	960.9	27.61	
8 0.200000E-01	0.1010E+05	0.1010E+05	1.784	0.0000E+00	3716.	964.6	24.64	
9 0.200000E-01	0.1010E+05	0.1010E+05	1.216	0.0000E+00	3817.	966.6	23.38	
10 0.200000E-01	0.1010E+05	0.1010E+05	0.9144	0.0000E+00	3897.	967.9	22.75	
11 0.200000E-01	0.1010E+05	0.1010E+05	624.2	0.0000E+00	3902.	936.3	45.92	

♀ BEGIN LONG TERM SIMULATION OF FATE OF Silt



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0	0	0	0																								
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	0	0	0	0	0	0	0	0	0	0	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	+	.63	1.2	+	0	0	0	0	0	0	0	0	0	0
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	+	1.2	2.4	+	0	0	0	0	0	0	0	0	0	0
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	.	0	0	0	0	0	0	0	0	0	0
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0















Alami t\_6v2. txt

FALL CLOUD #	DI STANCE FROM TOP OF GRID	DI STANCE FROM LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCITY (FPS)
1 0. 100000E-01	6635.	6635.	1139.	0. 0000E+00	510. 3	43. 85	328. 5	
2 0. 100000E-01	6635.	6635.	313. 6	0. 0000E+00	604. 5	323. 4	166. 0	
3 0. 100000E-01	6635.	6635.	181. 0	0. 0000E+00	671. 9	483. 9	127. 2	
4 0. 100000E-01	6634.	6634.	420. 4	0. 0000E+00	866. 6	605. 7	82. 90	
5 0. 100000E-01	6634.	6634.	342. 6	0. 0000E+00	1115.	683. 0	45. 18	
6 0. 100000E-01	6634.	6634.	189. 1	0. 0000E+00	1319.	709. 7	19. 43	
7 0. 100000E-01	6634.	6634.	106. 9	0. 0000E+00	1465.	718. 6	11. 51	
8 0. 100000E-01	6633.	6633.	65. 05	0. 0000E+00	1567.	722. 5	8. 540	
9 0. 100000E-01	6632.	6632.	44. 33	0. 0000E+00	1642.	724. 7	7. 279	
10 0. 100000E-01	6632.	6632.	33. 34	0. 0000E+00	1703.	726. 2	6. 650	
11 0. 100000E-01	6631.	6631.	0. 2245E+05	0. 0000E+00	1706.	694. 6	194. 3	

SUMMARY OF Si I t DI STRI BUTIONS AFTER 4500. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Si I t DI STRI BUTIONS AFTER 5400. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Silt DISTRIBUTIONS AFTER 6300.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308.89

SUMMARY OF Silt DISTRIBUTIONS AFTER 7200.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308.89

♀ CONCENTRATIONS ABOVE BACKGROUND OF Silt (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

0.00 FT BELOW THE WATER SURFACE

... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





M N=	32	33	34	35
2	000000000000000000			
3	0	0	00000	
4	0	0	00000	
5	0	0	00000	
6	0	0	00000	
7	0	0	00000	
8	0	0	00000	
9	0	0	00000	
10	0	0	00000	
11	0	0	00000	
12	0	0	00000	
13	0	0	00000	
14	0	0	00000	
15	0	0	00000	
16	0	0	00000	
17	0	0	00000	
18	0	0	00000	
19	0	0	00000	
20	0	0	00000	
21	0	0	00000	
22	0	0	00000	
23	0	0	00000	
24	0	0	00000	
25	0	0	00000	
26	0	0	00000	
27	0	0	00000	
28	0	0	00000	
29	0	0	00000	
30	0	0	00000	
31	0	0	00000	
32	0	0	00000	
33	0	0	00000	
34	0	0	00000	
35	000000000000000000			

♀ CONCENTRATIONS ABOVE BACKGROUND OF Si l t (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

500.00 FT BELOW THE WATER SURFACE

... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .00001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																							





```

30 0 0 00000
31 0 0 00000
32 0 0 00000
33 0 0 00000
34 0 0 00000
35 0000000000000000

```

‡ CONCENTRATIONS ABOVE BACKGROUND OF Silt (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

1000.00 FT BELOW THE WATER SURFACE  
... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
.000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Al ami t\_6v2. txt

10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
11	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	0	0	0	0	0	0
0	0	0	0																					
12	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.	.	0	0	0	0
0	0	0	0																					
13	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0
0	0	0	0																					
14	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+
0	0	0	0																					
15	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+
0	0	0	0																					
16	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+
0	0	0	0																					
17	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01
0	0	0	0																					
18	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02
0	0	0	0																					
19	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.21	1.5	5.4	10	9.4	4.7	1.2	.16	.01
0	0	0	0																					
20	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.03	.29	1.1	2.3	2.3	1.2	.32	.04	+
0	0	0	0																					
21	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.03	.14	.29	.30	.16	.04	+	+	.
0	0	0	0																					
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.01	+	+	.	0
0	0	0	0																					
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0
0	0	0	0																					
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0
0	0	0	0																					
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
31	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
32	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					
33	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																					



```

34 0000  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0
35
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000

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♀

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M N= 32  33  34  35
 2 0000000000000000000
 3  0  0  00000
 4  0  0  00000
 5  0  0  00000
 6  0  0  00000
 7  0  0  00000
 8  0  0  00000
 9  0  0  00000
10  0  0  00000
11  0  0  00000
12  0  0  00000
13  0  0  00000
14  0  0  00000
15  0  0  00000
16  0  0  00000
17  0  0  00000
18  0  0  00000
19  0  0  00000
20  0  0  00000
21  0  0  00000
22  0  0  00000
23  0  0  00000
24  0  0  00000
25  0  0  00000
26  0  0  00000
27  0  0  00000
28  0  0  00000
29  0  0  00000
30  0  0  00000
31  0  0  00000
32  0  0  00000
33  0  0  00000
34  0  0  00000
35 0000000000000000000

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♀

SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR Si I t

FALL

LOCATION OF CLOUD CENTROID	MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
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CLOUD #	DI STANCE FROM TOP OF GRID	DI STANCE FROM LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCI TY (FPS)
1 0. 100000E-01	7960.	7960.	1139.	0. 0000E+00	975. 0	77. 16	333. 8	
2 0. 100000E-01	7960.	7960.	313. 6	0. 0000E+00	1092.	356. 7	171. 3	
3 0. 100000E-01	7960.	7960.	181. 0	0. 0000E+00	1174.	517. 2	132. 5	
4 0. 100000E-01	7960.	7960.	420. 4	0. 0000E+00	1408.	639. 0	88. 27	
5 0. 100000E-01	7959.	7959.	342. 6	0. 0000E+00	1698.	716. 3	50. 55	
6 0. 100000E-01	7959.	7959.	189. 1	0. 0000E+00	1932.	743. 1	24. 79	
7 0. 100000E-01	7959.	7959.	106. 9	0. 0000E+00	2098.	751. 9	16. 87	
8 0. 100000E-01	7958.	7958.	65. 05	0. 0000E+00	2213.	755. 8	13. 91	
9 0. 100000E-01	7958.	7958.	44. 33	0. 0000E+00	2298.	758. 0	12. 65	
10 0. 100000E-01	7957.	7957.	33. 34	0. 0000E+00	2366.	759. 5	12. 02	
11 0. 100000E-01	7957.	7957.	0. 2245E+05	0. 0000E+00	2370.	727. 9	199. 7	

SUMMARY OF Si I t DI STRI BUTI ONS AFTER 8100. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
TOTAL MATERIAL SETTLED TO BOTTOM (CUFT) = 308. 89

SUMMARY OF Si I t DI STRI BUTI ONS AFTER 9000. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Silt DISTRIBUTIONS AFTER 9900.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308.89

SUMMARY OF Silt DISTRIBUTIONS AFTER 10800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308.89

MAX CONC IS 0.00000004 OUTPUT SUPPRESSED AT 0.00 FT

♀

CONCENTRATIONS ABOVE BACKGROUND OF Silt (MG/L) IN THE CLOUD 10800.00 SECONDS AFTER DUMP

500.00 FT BELOW THE WATER SURFACE

... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Al ami t\_6v2. txt

0	0	0	0																				
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																				
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	+	+	+	+
+	+	0	0																				
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	.01	.01	.02	.02	.02
+	+	0	0																				+
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.02	.04	.06	.08	.09	.07
.01	+	0	0																				.05
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.06	.12	.19	.25	.27	.23
.04	.01	0	0																				.15
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.15	.30	.48	.62	.65	.55
.09	.03	0	0																				.38
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.30	.59	.94	1.2	1.2	1.0
.19	.07	0	0																				.75
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.48	.94	1.5	1.9	2.0	1.7
.30	.11	0	0																				1.2
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.62	1.2	1.9	2.5	2.6	2.2
.39	.14	0	0																				1.5
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.65	1.2	2.0	2.6	2.7	2.3
.41	.15	0	0																				1.6
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.55	1.0	1.7	2.2	2.3	2.0
.35	.13	0	0																				1.3
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.38	.75	1.2	1.5	1.6	1.3
.24	.09	0	0																				.95
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.21	.42	.67	.87	.91	.77
																							.53
																							.30



29 0 0 00000  
 30 0 0 00000  
 31 0 0 00000  
 32 0 0 00000  
 33 0 0 00000  
 34 0 0 00000  
 35 0000000000000000

♀  
 BOTTOM ACCUMULATION OF Silt (CU FT/GRID SQUARE) , 10800.00 SECONDS AFTER DUMP  
 ... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
 .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	+	.	.	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+	.	0	0	0	0
15	0000	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+	.	.	0	0	0
16	0000	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+	+	.	0	0	0
17	0000	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01	+	.	0	0	0
18	0000	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02	+	.	0	0	0





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12 0 0 00000
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26 0 0 00000
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29 0 0 00000
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34 0 0 00000
35 0000000000000000

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♀  
SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR Si It

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
	DI STANCE FROM TOP OF GRID	LEFT OF GRID						
1 0.100000E-01	9094.	9094.	1139.	0.0000E+00	1535.	110.5	339.2	
2 0.100000E-01	9094.	9094.	313.6	0.0000E+00	1671.	390.0	176.7	
3 0.100000E-01	9094.	9094.	181.0	0.0000E+00	1767.	550.6	137.9	
4 0.100000E-01	9094.	9094.	420.4	0.0000E+00	2033.	672.3	93.63	
5 0.100000E-01	9094.	9094.	342.6	0.0000E+00	2360.	749.6	55.91	
6 0.100000E-01	9093.	9093.	189.1	0.0000E+00	2621.	776.4	30.16	
7 0.100000E-01	9093.	9093.	106.9	0.0000E+00	2804.	785.3	22.24	

Alami t\_6v2. txt

0. 100000E-01							
8	9093.	9093.	65. 05	0. 0000E+00	2931.	789. 2	19. 27
0. 100000E-01							
9	9092.	9092.	44. 33	0. 0000E+00	3025.	791. 3	18. 01
0. 100000E-01							
10	9092.	9092.	33. 34	0. 0000E+00	3099.	792. 8	17. 38
0. 100000E-01							
11	9092.	9092.	0. 2245E+05	0. 0000E+00	3104.	761. 2	205. 1
0. 100000E-01							

SUMMARY OF Silt DISTRIBUTIONS AFTER 11700. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Silt DISTRIBUTIONS AFTER 12600. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Silt DISTRIBUTIONS AFTER 13500. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

SUMMARY OF Silt DISTRIBUTIONS AFTER 14400. 00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 25287.  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 308. 89

MAX CONCS 0. 00000001 OUTPUT SUPPRESSED AT 0. 00 FT

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Alami t\_6v2. txt  
 CONCENTRATIONS ABOVE BACKGROUND OF Silt (MG/L) IN THE CLOUD 14400.00 SECONDS AFTER DUMP

500.00 FT BELOW THE WATER SURFACE  
 ... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
 .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+	+	+	+																							



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18 0 0 00000
19 0 0 00000
20 . 0 00000
21 . 0 00000
22 + 0 00000
23 + 0 00000
24 + 0 00000
25 + 0 00000
26 + 0 00000
27 + 0 00000
28 + 0 00000
29 + 0 00000
30 + 0 00000
31 . 0 00000
32 . 0 00000
33 0 0 00000
34 0 0 00000
35 0000000000000000

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CONCENTRATIONS ABOVE BACKGROUND OF Si I t (MG/L) IN THE CLOUD 14400.00 SECONDS AFTER DUMP

1000.00 FT BELOW THE WATER SURFACE  
... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
.000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0







Al ami t\_6v2. txt

4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.	.	0	0	0	0	0	
12	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.	.	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.	.	0	0	0	0	0	
13	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0	0	
14	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+	.	
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+	.	
15	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+	.	
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+	.	
16	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+	+	.
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+	+	.
17	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01	+	.
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01	+	.
18	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02	+	.
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02	+	.
19	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.21	1.5	5.4	10	9.4	4.7	1.2	.16	.01	+	.
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.21	1.5	5.4	10	9.4	4.7	1.2	.16	.01	+	.
20	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.03	.29	1.1	2.3	2.3	1.2	.32	.04	+	.	.
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.03	.29	1.1	2.3	2.3	1.2	.32	.04	+	.	.
21	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.03	.14	.29	.30	.16	.04	+	+	.	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.03	.14	.29	.30	.16	.04	+	+	.	0	0
22	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.01	+	+	.	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.01	+	+	.	0	0	0	0
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Al ami t\_6v2. txt

3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	+	.	.	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	+	.	.	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.06	.08	.04	.01	+	+	.	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.05	.35	.95	1.1	.68	.21	.03	+	+	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.02	.35	2.1	5.9	7.4	4.5	1.5	.29	.03	+	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.95	5.9	17	22	15	5.4	1.1	.14	+	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01	+
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.08	1.1	7.4	22	32	24	10	2.3	.29	.01	+
18	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02	+
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.04	.68	4.5	15	24	20	9.4	2.3	.30	.02	+
19	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.21	1.5	5.4	10	9.4	4.7	1.2	.16	.01	+
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.21	1.5	5.4	10	9.4	4.7	1.2	.16	.01	+
20	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.03	.29	1.1	2.3	2.3	1.2	.32	.04	+	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.03	.29	1.1	2.3	2.3	1.2	.32	.04	+	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.03	.14	.29	.30	.16	.04	+	+	.	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.03	.14	.29	.30	.16	.04	+	+	.	0
22	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.01	+	+	.	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.01	+	+	.	0	0	0
23	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0	0
24	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	.	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	.	0	0	0	0	0
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Alami t\_6v2. txt

```

28 0 0 00000
29 0 0 00000
30 0 0 00000
31 0 0 00000
32 0 0 00000
33 0 0 00000
34 0 0 00000
35 0000000000000000

```

♀

THICKNESS (FT) OF Silt ACCUMULATED ON BOTTOM, 14400.00 SECONDS AFTER DUMP  
... MULTIPLY DISPLAYED VALUES BY 0.1000E-02 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
.000001)

M N= 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

	28	29	30	31	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	2																										
29	0	0																									
30	0	0	0																								
31	0	0	0	0																							
32	0	0	0	0	0																						
33	0	0	0	0	0	0																					
34	0	0	0	0	0	0	0																				
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



11 0 0 00000  
12 0 0 00000  
13 0 0 00000  
14 0 0 00000  
15 0 0 00000  
16 0 0 00000  
17 0 0 00000  
18 0 0 00000  
19 0 0 00000  
20 0 0 00000  
21 0 0 00000  
22 0 0 00000  
23 0 0 00000  
24 0 0 00000  
25 0 0 00000  
26 0 0 00000  
27 0 0 00000  
28 0 0 00000  
29 0 0 00000  
30 0 0 00000  
31 0 0 00000  
32 0 0 00000  
33 0 0 00000  
34 0 0 00000  
35 00000000000000000

±

BEGIN LONG TERM SIMULATION OF FATE OF Clay

SUMMARY OF Clay DISTRIBUTIONS AFTER 900.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 1800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00













31 0 0 00000  
 32 0 0 00000  
 33 0 0 00000  
 34 0 0 00000  
 35 0000000000000000

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR Clay

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM DISPOSAL	ENTRAINED MASS	CLOUD X-Z DIAMETER	DEPTH OF TOP OF CLOUD	CLOUD VERT. THICKNESS	SOLIDS VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
0.200000E-02 1	6635.	6635.	290.7	0.0000E+00	510.3	15.44	285.0	
0.200000E-02 2	6635.	6635.	80.05	0.0000E+00	604.5	295.2	166.0	
0.200000E-02 3	6635.	6635.	46.20	0.0000E+00	671.9	455.8	127.2	
0.200000E-02 4	6634.	6634.	107.3	0.0000E+00	866.6	577.7	82.90	
0.200000E-02 5	6634.	6634.	87.47	0.0000E+00	1115.	655.2	45.18	
0.200000E-02 6	6634.	6634.	48.26	0.0000E+00	1319.	682.1	19.43	
0.200000E-02 7	6634.	6634.	27.28	0.0000E+00	1465.	691.1	11.51	
0.200000E-02 8	6633.	6633.	16.61	0.0000E+00	1567.	695.2	8.540	
0.200000E-02 9	6632.	6632.	11.32	0.0000E+00	1642.	697.5	7.279	
0.200000E-02 10	6632.	6632.	8.511	0.0000E+00	1703.	699.2	6.650	
0.200000E-02 11	6631.	6631.	5810.	0.0000E+00	1706.	667.6	117.1	

SUMMARY OF Clay DISTRIBUTIONS AFTER 4500.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0

Alami t\_6v2. txt  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 5400.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 6300.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 7200.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

♀ CONCENTRATIONS ABOVE BACKGROUND OF Clay (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

0.00 FT BELOW THE WATER SURFACE  
... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
.000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Al ami t\_6v2. txt

0	0	0	0																							
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	.	.	0	0	0	0	
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.01	.02	+	+	.	0	0	0
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.01	.24	.56	.15	+	.	0	0	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	.02	.56	1.3	.36	.01	.	0	0	0
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.15	.36	.10	+	.	0	0	0
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.01	+	+	0	0	0	0
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	0	0	0	0	0
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





CONCENTRATIONS ABOVE BACKGROUND OF Clay (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

500.00 FT BELOW THE WATER SURFACE  
 ... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
 .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	0	0	0	0	0
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.	0	0
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.06	.11	.04	+	+	0	0
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.06	.49	.89	.37	.03	+	.	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	.11	.89	1.6	.66	.06	+	.	0



```

18 0 0 00000
19 0 0 00000
20 0 0 00000
21 0 0 00000
22 0 0 00000
23 0 0 00000
24 0 0 00000
25 0 0 00000
26 0 0 00000
27 0 0 00000
28 0 0 00000
29 0 0 00000
30 0 0 00000
31 0 0 00000
32 0 0 00000
33 0 0 00000
34 0 0 00000
35 0000000000000000

```

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR Clay

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DISTANCE FROM		DISPOSAL	MASS	DIAMETER	TOP OF CLOUD	THICKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1 0.200000E-02	7960.	7960.	290.7	0.0000E+00	975.0	19.96	290.4	
2 0.200000E-02	7960.	7960.	80.05	0.0000E+00	1092.	299.7	171.3	
3 0.200000E-02	7960.	7960.	46.20	0.0000E+00	1174.	460.4	132.5	
4 0.200000E-02	7960.	7960.	107.3	0.0000E+00	1408.	582.2	88.27	
5 0.200000E-02	7959.	7959.	87.47	0.0000E+00	1698.	659.7	50.55	
6 0.200000E-02	7959.	7959.	48.26	0.0000E+00	1932.	686.6	24.79	
7 0.200000E-02	7959.	7959.	27.28	0.0000E+00	2098.	695.7	16.87	
8 0.200000E-02	7958.	7958.	16.61	0.0000E+00	2213.	699.7	13.91	
9 0.200000E-02	7958.	7958.	11.32	0.0000E+00	2298.	702.1	12.65	

Alami t\_6v2. txt

0. 200000E-02							
10	7957.	7957.	8. 511	0. 0000E+00	2366.	703. 7	12. 02
0. 200000E-02							
11	7957.	7957.	5810.	0. 0000E+00	2370.	672. 1	122. 5
0. 200000E-02							

SUMMARY OF Clay DISTRIBUTIONS AFTER 8100.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 9000.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 9900.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 10800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
 TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

♀ CONCENTRATIONS ABOVE BACKGROUND OF Clay (MG/L) IN THE CLOUD 10800.00 SECONDS AFTER DUMP

0.00 FT BELOW THE WATER SURFACE  
 ... MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
 .000001)  
 M N= 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27











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5 0 0 00000
6 0 0 00000
7 0 0 00000
8 0 0 00000
9 0 0 00000
10 0 0 00000
11 0 0 00000
12 0 0 00000
13 0 0 00000
14 0 0 00000
15 0 0 00000
16 0 0 00000
17 0 0 00000
18 0 0 00000
19 0 0 00000
20 0 0 00000
21 0 0 00000
22 0 0 00000
23 0 0 00000
24 0 0 00000
25 0 0 00000
26 0 0 00000
27 0 0 00000
28 0 0 00000
29 0 0 00000
30 0 0 00000
31 0 0 00000
32 0 0 00000
33 0 0 00000
34 0 0 00000
35 000000000000000000

```

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR Clay

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1 0.200000E-02	9094.	9094.	290.7	0.0000E+00	1535.	24.48	295.8	
2 0.200000E-02	9094.	9094.	80.05	0.0000E+00	1671.	304.2	176.7	

Al ami t_6v2. txt								
3	9094.	9094.	46. 20	0. 0000E+00	1767.	464. 9	137. 9	
0. 200000E-02								
4	9094.	9094.	107. 3	0. 0000E+00	2033.	586. 7	93. 63	
0. 200000E-02								
5	9094.	9094.	87. 47	0. 0000E+00	2360.	664. 3	55. 91	
0. 200000E-02								
6	9093.	9093.	48. 26	0. 0000E+00	2621.	691. 1	30. 16	
0. 200000E-02								
7	9093.	9093.	27. 28	0. 0000E+00	2804.	700. 2	22. 24	
0. 200000E-02								
8	9093.	9093.	16. 61	0. 0000E+00	2931.	704. 2	19. 27	
0. 200000E-02								
9	9092.	9092.	11. 32	0. 0000E+00	3025.	706. 6	18. 01	
0. 200000E-02								
10	9092.	9092.	8. 511	0. 0000E+00	3099.	708. 2	17. 38	
0. 200000E-02								
11	9092.	9092.	5810.	0. 0000E+00	3104.	676. 6	127. 8	
0. 200000E-02								

SUMMARY OF Clay DISTRIBUTIONS AFTER 11700.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 12600.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF Clay DISTRIBUTIONS AFTER 13500.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 6534.0  
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00





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9      0      0      00000
10     0      0      00000
11     0      0      00000
12     0      0      00000
13     0      0      00000
14     0      0      00000
15     0      0      00000
16     0      0      00000
17     0      0      00000
18     0      0      00000
19     0      0      00000
20     .      0      00000
21     .      0      00000
22     .      0      00000
23     +      0      00000
24     +      0      00000
25     +      0      00000
26     +      0      00000
27     +      0      00000
28     +      0      00000
29     +      0      00000
30     .      0      00000
31     .      0      00000
32     .      0      00000
33     0      0      00000
34     0      0      00000
35 000000000000000000

```

MAX CONC IS 0.0000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ SMALL CLOUDS AT 14400.00 SECONDS ELAPSED TIME FOR Clay

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DI STANCE FROM TOP OF GRID	LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCITI Y (FPS)
1 0.200000E-02	0.1010E+05	0.1010E+05	290.7	0.0000E+00	2177.	28.99	301.1	
2 0.200000E-02	0.1010E+05	0.1010E+05	80.05	0.0000E+00	2330.	308.7	182.1	
3 0.200000E-02	0.1010E+05	0.1010E+05	46.20	0.0000E+00	2437.	469.4	143.3	
4 0.200000E-02	0.1010E+05	0.1010E+05	107.3	0.0000E+00	2733.	591.3	99.00	

				Alami t_6v2. txt			
5	0. 1010E+05	0. 1010E+05	87. 47	0. 0000E+00	3094.	668. 8	61. 28
0. 200000E-02							
6	0. 1010E+05	0. 1010E+05	48. 26	0. 0000E+00	3378.	695. 7	35. 53
0. 200000E-02							
7	0. 1010E+05	0. 1010E+05	27. 28	0. 0000E+00	3578.	704. 7	27. 61
0. 200000E-02							
8	0. 1010E+05	0. 1010E+05	16. 61	0. 0000E+00	3716.	708. 8	24. 64
0. 200000E-02							
9	0. 1010E+05	0. 1010E+05	11. 32	0. 0000E+00	3817.	711. 1	23. 38
0. 200000E-02							
10	0. 1010E+05	0. 1010E+05	8. 511	0. 0000E+00	3897.	712. 8	22. 75
0. 200000E-02							
11	0. 1010E+05	0. 1010E+05	5810.	0. 0000E+00	3902.	681. 2	133. 2
0. 200000E-02							

♀  
BEGIN LONG TERM SIMULATION OF FATE OF FLUID

SUMMARY OF FLUID DISTRIBUTIONS AFTER 900.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 900.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD	LOCATION OF CLOUD CENTROID		MASS FROM DISPOSAL	ENTRAINED MASS	CLOUD X-Z DIAMETER	DEPTH OF TOP OF CLOUD	CLOUD VERT. THICKNESS	SOLIDS VELOCITY
#	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	5433.	5433.	0. 2117E+05	0. 0000E+00	1260.	662. 9	25. 80	
0. 000000E+00								

SUMMARY OF FLUID DISTRIBUTIONS AFTER 1800.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 1800.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD	LOCATION OF CLOUD CENTROID		MASS FROM DISPOSAL	ENTRAINED MASS	CLOUD X-Z DIAMETER	DEPTH OF TOP OF CLOUD	CLOUD VERT. THICKNESS	SOLIDS VELOCITY
#	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)

#	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1 0.000000E+00	5859.	5859.	0.2117E+05	0.0000E+00	1404.	662.2	27.14	

SUMMARY OF FLUID DISTRIBUTIONS AFTER 2700.00 SEC  
 TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.  
 ♀ SMALL CLOUDS AT 2700.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1 0.000000E+00	6257.	6257.	0.2117E+05	0.0000E+00	1553.	661.5	28.48	

SUMMARY OF FLUID DISTRIBUTIONS AFTER 3600.00 SEC  
 TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.  
 MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT  
 MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 500.00 FT  
 MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀ CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 3600.00 SECONDS AFTER DUMP  
 THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME  
 ... MULTIPLY DISPLAYED VALUES BY 0.1000E-03 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)  
 M N= 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27  
 28 29 30 31  
 2







26 0 0 00000  
 27 0 0 00000  
 28 0 0 00000  
 29 0 0 00000  
 30 0 0 00000  
 31 0 0 00000  
 32 0 0 00000  
 33 0 0 00000  
 34 0 0 00000  
 35 0000000000000000

♀  
 SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1	6631.	6631.	0.2117E+05	0.0000E+00	1706.	660.8	29.82	

0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 4500.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
 SMALL CLOUDS AT 4500.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1	6986.	6986.	0.2117E+05	0.0000E+00	1865.	660.2	31.17	

0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 5400.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 5400.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID		MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1	7324.	7324.	0.2117E+05	0.0000E+00	2029.	659.5	32.51	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 6300.00 SEC  
TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 6300.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID		MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1	7647.	7647.	0.2117E+05	0.0000E+00	2197.	658.8	33.85	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 7200.00 SEC  
TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT  
MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 500.00 FT  
MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀  
CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

... MULTIPLY DISPLAYED VALUES BY 0.1000E-03 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31																							
2																										
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	+	+	+	+	+	+	+	+	.	0
15	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	+	+	+	+	+	+	+	+	+	+	0
16	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	.01	.02	.04	.04	.03	.02	+	+	.	0
17	0000	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.01	.05	.11	.19	.22	.18	.10	.04	.01	.	0
18	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	.01	.05	.17	.40	.66	.76	.61	.34	.13	.03	.	0
19	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	.02	.11	.40	.94	1.5	1.7	1.4	.81	.31	.08	.	0
20	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	.04	.19	.66	1.5	2.5	2.9	2.3	1.3	.52	.14	.	0
21	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	.04	.22	.76	1.7	2.9	3.4	2.7	1.5	.60	.16	.	0
22	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	.03	.18	.61	1.4	2.3	2.7	2.2	1.2	.48	.13	.	0



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19 0 0 00000
20 0 0 00000
21 0 0 00000
22 0 0 00000
23 0 0 00000
24 0 0 00000
25 0 0 00000
26 0 0 00000
27 0 0 00000
28 0 0 00000
29 0 0 00000
30 0 0 00000
31 0 0 00000
32 0 0 00000
33 0 0 00000
34 0 0 00000
35 0000000000000000

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♀  
SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DI STANCE FROM		DI SPOSAL	MASS	DI AMETER	TOP OF CLOUD	THI CKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	7957.	7957.	0. 2117E+05	0. 0000E+00	2370.	658. 2	35. 19	

0. 000000E+00

SUMMARY OF FLUID DI STRIBUTIONS AFTER 8100.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DI SPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 8100.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DI STANCE FROM		DI SPOSAL	MASS	DI AMETER	TOP OF CLOUD	THI CKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	8256.	8256.	0. 2117E+05	0. 0000E+00	2547.	657. 5	36. 53	

0. 000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 9000.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀ SMALL CLOUDS AT 9000.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DISTANCE FROM		DISPOSAL	MASS	DIAMETER	TOP OF CLOUD	THICKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	8544.	8544.	0. 2117E+05	0. 0000E+00	2728.	656. 8	37. 87	

0. 000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 9900.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀ SMALL CLOUDS AT 9900.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM	ENTRAINED	CLOUD X-Z	DEPTH OF	CLOUD VERT.	SOLIDS
	DISTANCE FROM		DISPOSAL	MASS	DIAMETER	TOP OF CLOUD	THICKNESS	VELOCITY
	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	8822.	8822.	0. 2117E+05	0. 0000E+00	2914.	656. 1	39. 22	

0. 000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 10800.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

MAX CONCLIS 0. 00000000 OUTPUT SUPPRESSED AT 0. 00 FT



MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 500.00 FT

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

♀  
CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD  
10800.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

... MULTIPLY DISPLAYED VALUES BY 0.1000E-03 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT.  
.000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
28	29	30	31																								
2																											
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	.01	.01	.01	.01	+	+
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	+	+	.01	.02	.04	.05	.05	.04	.03	.01	



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♀  
SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	LOCATION OF CLOUD CENTROID		MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS VELOCITY (FPS)
1	9092.	9092.	0.2117E+05	0.0000E+00	3104.	655.5	40.56	
0.000000E+00								

SUMMARY OF FLUID DISTRIBUTIONS AFTER 11700.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

♀  
SMALL CLOUDS AT 11700.00 SECONDS ELAPSED TIME FOR FLUID

LOCATION OF CLOUD CENTROID	MASS FROM DISPOSAL	ENTRAINED MASS	CLOUD X-Z DIAMETER	DEPTH OF TOP OF CLOUD	CLOUD VERT. THICKNESS	SOLIDS VELOCITY
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FALL CLOUD #	DI STANCE FROM TOP OF GRID	DI STANCE FROM LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCITY (FPS)
1 0.000000E+00	9354.	9354.	0.2117E+05	0.0000E+00	3297.	654.8	41.90	

SUMMARY OF FLUID DI STRI BUTI ONS AFTER 12600.00 SEC  
 TOTAL FLUID FRACTI ON VOLUME FROM DI SPOSAL (CU FT) = 21168.  
 ♀ SMALL CLOUDS AT 12600.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	DI STANCE FROM TOP OF GRID	DI STANCE FROM LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCITY (FPS)
1 0.000000E+00	9609.	9609.	0.2117E+05	0.0000E+00	3495.	654.1	43.24	

SUMMARY OF FLUID DI STRI BUTI ONS AFTER 13500.00 SEC  
 TOTAL FLUID FRACTI ON VOLUME FROM DI SPOSAL (CU FT) = 21168.  
 ♀ SMALL CLOUDS AT 13500.00 SECONDS ELAPSED TIME FOR FLUID

FALL CLOUD #	DI STANCE FROM TOP OF GRID	DI STANCE FROM LEFT OF GRID	DI SPOSAL (CU FT)	MASS (CU FT)	DI AMETER (FT)	TOP OF CLOUD (FT)	THI CKNESS (FT)	VELOCITY (FPS)
1 0.000000E+00	9858.	9858.	0.2117E+05	0.0000E+00	3697.	653.5	44.58	

SUMMARY OF FLUID DISTRIBUTIONS AFTER 14400.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 21168.

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 0.00 FT

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 500.00 FT

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 1000.00 FT

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 14400.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N= 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31
2

Table with 28 columns (M N= 2 to 27) and 15 rows (3 to 15). All values are 0.0000.





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5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	+	+	+	.	.	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	+	.	.	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	.01	.02	+	+	.	.	.	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	.27	.30	.09	.01	+	+	.	.	.	.
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.27	.30	.09	.01	+	+	.	.	.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.27	.30	.09	.01	+	+	.	.	.
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	1.0	1.1	.37	.12	.02	+	+	+	.	.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	1.1	.37	.12	.02	+	+	+	.	.
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	1.1	1.3	.95	.40	.14	.03	.01	+	+	+
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	1.3	.95	.40	.14	.03	.01	+	+	+
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.37	.95	1.1	.78	.38	.16	.05	.01	+
.	.	0	.	.	.	.	.	.	.	.	.	.	.	0	.37	.95	1.1	.78	.38	.16	.05	.01	+
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.12	.40	.78	.88	.65	.34	.16	.06	.02
+	+	+	.	.	.	.	.	.	.	.	.	.	.	0	.12	.40	.78	.88	.65	.34	.16	.06	.02
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.02	.14	.38	.65	.68	.53	.29	.16
+	+	+	+	.	.	.	.	.	.	.	.	.	.	0	.02	.14	.38	.65	.68	.53	.29	.16	.07
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	.03	.16	.34	.53	.52	.43	.27	.15
+	+	+	+	.	.	.	.	.	.	.	.	.	.	0	+	.03	.16	.34	.53	.52	.43	.27	.15
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	.01	.05	.16	.29	.43	.41	.35	.23
+	+	+	+	.	.	.	.	.	.	.	.	.	.	0	+	.01	.05	.16	.29	.43	.41	.35	.23
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	.01	.06	.16	.27	.35	.34	.27
.01	+	+	+	.	.	.	.	.	.	.	.	.	.	0	+	+	.01	.06	.16	.27	.35	.34	.27
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.02	.07	.15	.23	.27	.27
.02	.01	.01	+	.	.	.	.	.	.	.	.	.	.	0	.	+	+	.02	.07	.15	.23	.27	.27
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	.01	.03	.08	.14	.20	.22
.04	.02	.01	.01	.	.	.	.	.	.	.	.	.	.	0	.	+	+	.01	.03	.08	.14	.20	.22
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.04	.07	.12	.16
.06	.04	.02	.01	.	.	.	.	.	.	.	.	.	.	0	.	+	+	+	.01	.04	.07	.12	.16
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	.02	.04	.07	.11
.07	.05	.03	.01	.	.	.	.	.	.	.	.	.	.	0	.	.	+	+	+	.02	.04	.07	.11
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.02	.04	.07	.09
.07	.05	.03	.02	.	.	.	.	.	.	.	.	.	.	0	.	+	+	+	.01	.02	.04	.07	.09
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	.01	.02	.04	.06
.07	.05	.03	.02	.	.	.	.	.	.	.	.	.	.	0	.	+	+	+	+	.01	.02	.04	.06
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	.01	.02	.04
.06	.04	.03	.01	.	.	.	.	.	.	.	.	.	.	0	.	.	+	+	+	+	.01	.02	.04











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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	.	.	0	0	0	0	0	0	0	0
12	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	0	0	0	0	0
13	0000	0	0	0	0	0	0	0	0	0	0	.	+	+	+	+	+	+	.	.	0	0	0
14	0000	0	0	0	0	0	0	0	0	0	.	+	+	.01	.03	.04	.02	+	+	+	.	0	0
15	0000	0	0	0	0	0	0	0	0	0	.	+	.01	.08	.22	.28	.17	.05	.01	+	.	0	0
16	0000	0	0	0	0	0	0	0	0	0	.	.	+	.03	.22	.62	.82	.55	.20	.04	+	+	0
17	0000	0	0	0	0	0	0	0	0	0	.	.	+	.04	.28	.82	1.1	.88	.37	.08	.01	+	0
18	0000	0	0	0	0	0	0	0	0	0	.	+	.02	.17	.55	.88	.76	.35	.08	.01	+	.	0
19	0000	0	0	0	0	0	0	0	0	0	.	+	+	.05	.20	.37	.35	.17	.04	+	+	.	0
20	0000	0	0	0	0	0	0	0	0	0	.	.	+	.01	.04	.08	.08	.04	.01	+	+	.	0
21	0000	0	0	0	0	0	0	0	0	0	.	+	+	+	.01	.01	+	+	+	.	0	0	
22	0000	0	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	.	0	0	0	
23	0000	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	0	0	0	0	0
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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♀ INITIAL MIXING COMPUTATIONS RESULTS FOR Fine\_San:

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	0.0	0.153E-01	6800.	6800.	0.000E+00
2.00	0.0	0.528E-03	8000.	8000.	0.528E-03
3.00	0.0	0.351E-05	9200.	9200.	0.351E-05
4.00	0.0	0.165E-07	10000.	10000.	0.165E-07
1.00	500.0	0.190E+00	6800.	6800.	0.000E+00
2.00	500.0	0.356E+00	8000.	8000.	0.356E+00
3.00	500.0	0.919E-01	9200.	9200.	0.919E-01
4.00	500.0	0.131E+00	10000.	10000.	0.131E+00
1.00	1000.0	0.504E-35	6800.	7600.	0.000E+00
2.00	1000.0	0.273E-20	8000.	8000.	0.273E-20
3.00	1000.0	0.253E-12	9200.	9200.	0.253E-12
4.00	1000.0	0.170E-01	10000.	10000.	0.170E-01

♀ INITIAL MIXING COMPUTATIONS RESULTS FOR Silt :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	0.0	0.244E+01	6800.	6800.	0.000E+00
2.00	0.0	0.826E+00	8000.	8000.	0.826E+00
3.00	0.0	0.971E-01	9200.	9200.	0.971E-01
4.00	0.0	0.137E-01	10000.	10000.	0.137E-01

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1.00	500.0	0.547E+01	6800.	6800.	0.000E+00
2.00	500.0	0.578E+01	8000.	8000.	0.578E+01
3.00	500.0	0.493E+01	9200.	9200.	0.493E+01
4.00	500.0	0.308E+01	10000.	10000.	0.308E+01

1.00	1000.0	0.427E-02	6800.	7600.	0.000E+00
2.00	1000.0	0.439E+00	8000.	8000.	0.439E+00
3.00	1000.0	0.277E+01	9200.	9200.	0.277E+01
4.00	1000.0	0.957E+01	10000.	10000.	0.957E+01

♀  
INITIAL MIXING COMPUTATIONS RESULTS FOR Clay :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	0.0	0.152E+01	6800.	6800.	0.000E+00
2.00	0.0	0.131E+01	8000.	8000.	0.131E+01
3.00	0.0	0.439E+00	9200.	9200.	0.439E+00
4.00	0.0	0.195E+00	10000.	10000.	0.195E+00
1.00	500.0	0.269E+01	6800.	6800.	0.000E+00
2.00	500.0	0.162E+01	8000.	8000.	0.162E+01
3.00	500.0	0.604E+00	9200.	9200.	0.604E+00
4.00	500.0	0.292E+00	10000.	10000.	0.292E+00
1.00	1000.0	0.181E-17	6800.	7600.	0.000E+00
2.00	1000.0	0.243E-14	8000.	8000.	0.243E-14
3.00	1000.0	0.193E-12	9200.	9200.	0.193E-12
4.00	1000.0	0.839E-11	10000.	10000.	0.839E-11

♀



## INITIAL MIXING COMPUTATIONS RESULTS FOR FLUID :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (PERCENT)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (PERCENT)
0.25	0.0	0.299E-38	3200.	3200.	0.000E+00
0.50	0.0	0.229E-38	3600.	3600.	0.000E+00
0.75	0.0	0.179E-38	4000.	4000.	0.000E+00
1.00	0.0	0.141E-38	4400.	4400.	0.000E+00
1.25	0.0	0.113E-38	4400.	4400.	0.113E-38
1.50	0.0	0.917E-39	4800.	4800.	0.917E-39
1.75	0.0	0.751E-39	5200.	5200.	0.751E-39
2.00	0.0	0.621E-39	5200.	5200.	0.621E-39
2.25	0.0	0.518E-39	5600.	5600.	0.518E-39
2.50	0.0	0.435E-39	5600.	5600.	0.435E-39
2.75	0.0	0.369E-39	5600.	5600.	0.369E-39
3.00	0.0	0.314E-39	6000.	6000.	0.314E-39
3.25	0.0	0.269E-39	6000.	6000.	0.269E-39
3.50	0.0	0.232E-39	6400.	6400.	0.232E-39
3.75	0.0	0.201E-39	6400.	6400.	0.201E-39
4.00	0.0	0.175E-39	6400.	6400.	0.175E-39
0.25	500.0	0.299E-38	3200.	3600.	0.000E+00
0.50	500.0	0.229E-38	3600.	3600.	0.000E+00
0.75	500.0	0.179E-38	4000.	4000.	0.000E+00
1.00	500.0	0.141E-38	4400.	4400.	0.000E+00
1.25	500.0	0.113E-38	4400.	4400.	0.113E-38
1.50	500.0	0.917E-39	4800.	4800.	0.917E-39
1.75	500.0	0.751E-39	5200.	5200.	0.751E-39
2.00	500.0	0.621E-39	5200.	5200.	0.621E-39
2.25	500.0	0.518E-39	5600.	5600.	0.518E-39
2.50	500.0	0.435E-39	5600.	5600.	0.435E-39
2.75	500.0	0.369E-39	5600.	5600.	0.369E-39
3.00	500.0	0.314E-39	6000.	6000.	0.314E-39
3.25	500.0	0.269E-39	6000.	6000.	0.269E-39
3.50	500.0	0.232E-39	6400.	6400.	0.232E-39
3.75	500.0	0.201E-39	6400.	6400.	0.201E-39
4.00	500.0	0.175E-39	6400.	6400.	0.175E-39
0.25	1000.0	0.000E+00	0.	0.	0.000E+00

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0. 50	1000. 0	0. 000E+00	0.	0.	0. 000E+00
0. 75	1000. 0	0. 000E+00	0.	0.	0. 000E+00
1. 00	1000. 0	0. 141E-38	4400.	7600.	0. 000E+00
1. 25	1000. 0	0. 113E-38	4400.	7600.	0. 113E-38
1. 50	1000. 0	0. 917E-39	4800.	7600.	0. 917E-39
1. 75	1000. 0	0. 751E-39	5200.	7600.	0. 751E-39
2. 00	1000. 0	0. 621E-39	5200.	7600.	0. 621E-39
2. 25	1000. 0	0. 518E-39	5600.	7600.	0. 518E-39
2. 50	1000. 0	0. 435E-39	5600.	7600.	0. 435E-39
2. 75	1000. 0	0. 369E-39	5600.	7600.	0. 369E-39
3. 00	1000. 0	0. 314E-39	6000.	7600.	0. 314E-39
3. 25	1000. 0	0. 269E-39	6000.	7600.	0. 269E-39
3. 50	1000. 0	0. 232E-39	6400.	7600.	0. 232E-39
3. 75	1000. 0	0. 201E-39	6400.	7600.	0. 201E-39
4. 00	1000. 0	0. 175E-39	6400.	7600.	0. 175E-39

0. 25	675. 8	0. 132E+00	5600.	5600.	0. 000E+00
0. 50	675. 8	0. 111E+00	6000.	6000.	0. 000E+00
0. 75	675. 8	0. 885E-01	6400.	6400.	0. 000E+00
1. 00	675. 8	0. 688E-01	6800.	6800.	0. 000E+00
1. 25	675. 8	0. 550E-01	6800.	6800.	0. 914E-02
1. 50	675. 8	0. 482E-01	7200.	7200.	0. 245E-01
1. 75	675. 8	0. 411E-01	7600.	7600.	0. 351E-01
2. 00	675. 8	0. 340E-01	8000.	8000.	0. 340E-01
2. 25	675. 8	0. 274E-01	8400.	8400.	0. 274E-01
2. 50	675. 8	0. 231E-01	8400.	8400.	0. 231E-01
2. 75	675. 8	0. 203E-01	8800.	8800.	0. 203E-01
3. 00	675. 8	0. 170E-01	9200.	9200.	0. 170E-01
3. 25	675. 8	0. 144E-01	9200.	9200.	0. 144E-01
3. 50	675. 8	0. 128E-01	9600.	9600.	0. 128E-01
3. 75	675. 8	0. 109E-01	10000.	10000.	0. 109E-01
4. 00	675. 8	0. 958E-02	10000.	10000.	0. 958E-02

RESULT: THE TOXICITY CRITERIA FOR THE DISPOSAL SITE WAS NOT VIOLATED.

\*\*\* RUN COMPLETED \*\*\*

♀

APPENDIX E  
STATISTICAL ANALYSES OF TISSUE  
CONCENTRATIONS

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**Distributions ANALYTE=PCB018**

**RESULT\_LIPID\_NORM**

LogNormal(3.53758,1.2754)

**Quantiles**

100.0%	maximum	252
99.5%		252
97.5%		252
90.0%		232.2288
75.0%	quartile	186.364
50.0%	median	15.2143
25.0%	quartile	14.2
10.0%		10.51868
2.5%		10.1429
0.5%		10.1429
0.0%	minimum	10.1429

**Summary Statistics**

Mean	78.731867
Std Dev	95.705968
Std Err Mean	24.711175
Upper 95% Mean	131.73207
Lower 95% Mean	25.731668
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.5375837	2.8485389	4.2266285
Shape	$\sigma$	1.2754003	0.926329	1.9143443

-2log(Likelihood) = 155.993467999223

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.379456	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB028**

**RESULT\_LIPID\_NORM**

LogNormal(3.70345,1.51688)

**Quantiles**

100.0%	maximum	332
99.5%		332
97.5%		332
90.0%		257.2442
75.0%	quartile	190.476
50.0%	median	69.2308
25.0%	quartile	7.5
10.0%		5.920052
2.5%		5.07692
0.5%		5.07692
0.0%	minimum	5.07692

**Summary Statistics**

Mean	96.011875
Std Dev	101.9913
Std Err Mean	26.334041
Upper 95% Mean	152.49278
Lower 95% Mean	39.530976
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.7034475	2.8839415	4.5229536
Shape	$\sigma$	1.51688	1.1017167	2.2767994

-2log(Likelihood) = 166.171248297491

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.259315	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB037**

**RESULT\_LIPID\_NORM**

LogNormal(2.51396,0.1633)

**Quantiles**

100.0%	maximum	14.4
99.5%		14.4
97.5%		14.4
90.0%		14.4
75.0%	quartile	14.34285
50.0%	median	12.8571
25.0%	quartile	10.508235
10.0%		9.23077
2.5%		9.23077
0.5%		9.23077
0.0%	minimum	9.23077

**Summary Statistics**

Mean	12.511854
Std Dev	2.1285929
Std Err Mean	0.9519357
Upper 95% Mean	15.154851
Lower 95% Mean	9.8688568
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.5139626	2.3383782	2.6895469
Shape	$\sigma$	0.1633021	0.0976484	0.3558232

-2log(Likelihood) = 21.2074777155503

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213197	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB044**

**RESULT\_LIPID\_NORM**

LogNormal(2.86114,0.14723)

**Quantiles**

100.0%	maximum	20.7143
99.5%		20.7143
97.5%		20.7143
90.0%		20.70687
75.0%	quartile	20.51715
50.0%	median	17.75885
25.0%	quartile	16.109025
10.0%		13.29972
2.5%		13.2308
0.5%		13.2308
0.0%	minimum	13.2308

**Summary Statistics**

Mean	17.66592
Std Dev	2.6166379
Std Err Mean	0.8274536
Upper 95% Mean	19.53775
Lower 95% Mean	15.79409
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.8611433	2.7603856	2.961901
Shape	$\sigma$	0.1472273	0.1004251	0.2458571

-2log(Likelihood) = 47.2860898315203

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.199570	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB049**

**RESULT\_LIPID\_NORM**

LogNormal(4.15312,0.85727)

**Quantiles**

100.0%	maximum	308
99.5%		308
97.5%		308
90.0%		218.6546
75.0%	quartile	144.444
50.0%	median	64
25.0%	quartile	26.1905
10.0%		19.7335
2.5%		16.9231
0.5%		16.9231
0.0%	minimum	16.9231

**Summary Statistics**

Mean	90.377027
Std Dev	79.334153
Std Err Mean	20.48399
Upper 95% Mean	134.31082
Lower 95% Mean	46.443237
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.1531208	3.6899724	4.6162692
Shape	$\sigma$	0.8572732	0.6226414	1.2867459

-2log(Likelihood) = 162.541821396309

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.180941	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB052**

**RESULT\_LIPID\_NORM**

LogNormal(4.25917,1.27769)

**Quantiles**

100.0%	maximum	356
99.5%		356
97.5%		356
90.0%		293.5112
75.0%	quartile	227.273
50.0%	median	121.429
25.0%	quartile	14.7619
10.0%		11.122544
2.5%		9.53846
0.5%		9.53846
0.0%	minimum	9.53846

**Summary Statistics**

Mean	128.196
Std Dev	109.64078
Std Err Mean	28.309127
Upper 95% Mean	188.91304
Lower 95% Mean	67.478966
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.2591737	3.5688945	4.9494529
Shape	$\sigma$	1.2776851	0.9279884	1.9177737

-2log(Likelihood) = 177.694864053675

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.222157	0.0470*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB066**

**RESULT\_LIPID\_NORM**

LogNormal(4.42271,1.04091)

**Quantiles**

100.0%	maximum	344
99.5%		344
97.5%		344
90.0%		271.2362
75.0%	quartile	204.762
50.0%	median	121.429
25.0%	quartile	23.8095
10.0%		17.93958
2.5%		15.3846
0.5%		15.3846
0.0%	minimum	15.3846

**Summary Statistics**

Mean	127.23298
Std Dev	98.319116
Std Err Mean	25.385887
Upper 95% Mean	181.68029
Lower 95% Mean	72.785669
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.4227088	3.8603486	4.985069
Shape	$\sigma$	1.040911	0.7560183	1.5623817

-2log(Likelihood) = 176.452309017375

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.217434	0.0548

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB070**

**RESULT\_LIPID\_NORM**

LogNormal(4.14015,1.19199)

**Quantiles**

100.0%	maximum	272
99.5%		272
97.5%		272
90.0%		217.6886
75.0%	quartile	161.905
50.0%	median	107.143
25.0%	quartile	14.0476
10.0%		10.584348
2.5%		9.07692
0.5%		9.07692
0.0%	minimum	9.07692

**Summary Statistics**

Mean	104.12211
Std Dev	79.4664
Std Err Mean	20.518136
Upper 95% Mean	148.12914
Lower 95% Mean	60.115089
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.140152	3.4961707	4.7841333
Shape	$\sigma$	1.1919892	0.8657471	1.7891464

-2log(Likelihood) = 172.041422280919

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.305699	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB074**

**RESULT\_LIPID\_NORM**

LogNormal(3.96032,0.82551)

**Quantiles**

100.0%	maximum	156
99.5%		156
97.5%		156
90.0%		137.9556
75.0%	quartile	103.571
50.0%	median	80
25.0%	quartile	20.4762
10.0%		15.42806
2.5%		13.2308
0.5%		13.2308
0.0%	minimum	13.2308

**Summary Statistics**

Mean	69.802467
Std Dev	46.285646
Std Err Mean	11.950902
Upper 95% Mean	95.434603
Lower 95% Mean	44.170331
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.9603245	3.514339	4.40631
Shape	$\sigma$	0.8255052	0.5995681	1.2390629

-2log(Likelihood) = 155.625099335069

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.228602	0.0404*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB077**

**RESULT\_LIPID\_NORM**

LogNormal(2.75127,0.14717)

**Quantiles**

100.0%	maximum	18.5714
99.5%		18.5714
97.5%		18.5714
90.0%		18.56226
75.0%	quartile	18.369975
50.0%	median	15.9217
25.0%	quartile	14.4426
10.0%		11.90958
2.5%		11.8462
0.5%		11.8462
0.0%	minimum	11.8462

**Summary Statistics**

Mean	15.82761
Std Dev	2.3428346
Std Err Mean	0.7408694
Upper 95% Mean	17.503573
Lower 95% Mean	14.151647
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.7512719	2.6505538	2.85199
Shape	$\sigma$	0.1471695	0.1003856	0.2457605

-2log(Likelihood) = 45.0808009455023

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.201302	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB081**

**RESULT\_LIPID\_NORM**

LogNormal(3.20711,0.1633)

**Quantiles**

100.0%	maximum	28.8
99.5%		28.8
97.5%		28.8
90.0%		28.8
75.0%	quartile	28.6857
50.0%	median	25.7143
25.0%	quartile	21.01645
10.0%		18.4615
2.5%		18.4615
0.5%		18.4615
0.0%	minimum	18.4615

**Summary Statistics**

Mean	25.02372
Std Dev	4.2572053
Std Err Mean	1.9038801
Upper 95% Mean	30.309739
Lower 95% Mean	19.737701
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.2071101	3.0315247	3.3826955
Shape	$\sigma$	0.1633031	0.0976489	0.3558253

-2log(Likelihood) = 28.1390119670867

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213195	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB087**

**RESULT\_LIPID\_NORM**

LogNormal(3.68124,0.54143)

**Quantiles**

100.0%	maximum	92.3077
99.5%		92.3077
97.5%		92.3077
90.0%		88.74124
75.0%	quartile	60.7143
50.0%	median	41.9355
25.0%	quartile	25
10.0%		19.7335
2.5%		16.9231
0.5%		16.9231
0.0%	minimum	16.9231

**Summary Statistics**

Mean	45.890827
Std Dev	25.403768
Std Err Mean	6.5592248
Upper 95% Mean	59.958965
Lower 95% Mean	31.822689
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.6812381	3.3887241	3.9737521
Shape	$\sigma$	0.5414342	0.3932461	0.8126793

-2log(Likelihood) = 134.599285674477

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.241038	0.0277*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB099**

**RESULT\_LIPID\_NORM**

LogNormal(4.04096,0.96701)

**Quantiles**

100.0%	maximum	168
99.5%		168
97.5%		168
90.0%		150.2772
75.0%	quartile	128.571
50.0%	median	88
25.0%	quartile	14.2857
10.0%		11.8154
2.5%		11.5385
0.5%		11.5385
0.0%	minimum	11.5385

**Summary Statistics**

Mean	80.592333
Std Dev	52.538694
Std Err Mean	13.565433
Upper 95% Mean	109.68729
Lower 95% Mean	51.497374
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.0409612	3.5185283	4.5633941
Shape	$\sigma$	0.9670069	0.7023414	1.4514534

-2log(Likelihood) = 162.79050043561

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.266973	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB101**

**RESULT\_LIPID\_NORM**

LogNormal(4.58279,0.89424)

**Quantiles**

100.0%	maximum	284
99.5%		284
97.5%		284
90.0%		254.369
75.0%	quartile	177.273
50.0%	median	161.29
25.0%	quartile	42.8571
10.0%		21.31864
2.5%		18.6538
0.5%		18.6538
0.0%	minimum	18.6538

**Summary Statistics**

Mean	132.36835
Std Dev	82.974684
Std Err Mean	21.423971
Upper 95% Mean	178.3182
Lower 95% Mean	86.418505
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.5827907	4.0996687	5.0659128
Shape	$\sigma$	0.8942438	0.6494933	1.3422379

-2log(Likelihood) = 176.69857259686

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.267417	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB105**

**RESULT\_LIPID\_NORM**

LogNormal(3.19188,0.94154)

**Quantiles**

100.0%	maximum	126.923
99.5%		126.923
97.5%		126.923
90.0%		110.7692
75.0%	quartile	62.963
50.0%	median	12.96
25.0%	quartile	11.5714
10.0%		9.687336
2.5%		8.30769
0.5%		8.30769
0.0%	minimum	8.30769

**Summary Statistics**

Mean	38.467613
Std Dev	38.416143
Std Err Mean	9.9190053
Upper 95% Mean	59.741763
Lower 95% Mean	17.193462
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.1918815	2.6832058	3.7005572
Shape	$\sigma$	0.9415428	0.6838468	1.4132325

-2log(Likelihood) = 136.517537062116

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.344765	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB110**

**RESULT\_LIPID\_NORM**

LogNormal(4.38478,1.13522)

**Quantiles**

100.0%	maximum	240
99.5%		240
97.5%		240
90.0%		225.231
75.0%	quartile	166.667
50.0%	median	150
25.0%	quartile	42.8571
10.0%		9.89012
2.5%		8.65385
0.5%		8.65385
0.0%	minimum	8.65385

**Summary Statistics**

Mean	121.43484
Std Dev	76.350903
Std Err Mean	19.713718
Upper 95% Mean	163.71656
Lower 95% Mean	79.153123
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.3847824	3.7714697	4.9980951
Shape	$\sigma$	1.1352225	0.8245172	1.703941

-2log(Likelihood) = 177.916488868845

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.364457	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB114**

**RESULT\_LIPID\_NORM**

LogNormal(2.78756,0.1499)

**Quantiles**

100.0%	maximum	19.5238
99.5%		19.5238
97.5%		19.5238
90.0%		19.47352
75.0%	quartile	17.5714
50.0%	median	16.7727
25.0%	quartile	15.871
10.0%		12.16262
2.5%		11.7143
0.5%		11.7143
0.0%	minimum	11.7143

**Summary Statistics**

Mean	16.41672
Std Dev	2.3847967
Std Err Mean	0.6157519
Upper 95% Mean	17.737376
Lower 95% Mean	15.096064
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.7875648	2.7065784	2.8685513
Shape	$\sigma$	0.1499033	0.1088754	0.2250011

-2log(Likelihood) = 69.2621538864958

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.238841	0.0300*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB118**

**RESULT\_LIPID\_NORM**

LogNormal(4.42925,1.0087)

**Quantiles**

100.0%	maximum	256
99.5%		256
97.5%		256
90.0%		238.5538
75.0%	quartile	166.667
50.0%	median	150
25.0%	quartile	20
10.0%		16.3446
2.5%		15.9615
0.5%		15.9615
0.0%	minimum	15.9615

**Summary Statistics**

Mean	121.41434
Std Dev	79.237261
Std Err Mean	20.458973
Upper 95% Mean	165.29447
Lower 95% Mean	77.534208
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.4292452	3.8842857	4.9742048
Shape	$\sigma$	1.008703	0.7326255	1.5140383

-2log(Likelihood) = 175.705473725086

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.350782	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB119**

**RESULT\_LIPID\_NORM**

LogNormal(2.96291,0.1633)

**Quantiles**

100.0%	maximum	22.56
99.5%		22.56
97.5%		22.56
90.0%		22.56
75.0%	quartile	22.4705
50.0%	median	20.1429
25.0%	quartile	16.4629
10.0%		14.4615
2.5%		14.4615
0.5%		14.4615
0.0%	minimum	14.4615

**Summary Statistics**

Mean	19.60194
Std Dev	3.3348268
Std Err Mean	1.4913799
Upper 95% Mean	23.742674
Lower 95% Mean	15.461206
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.9629144	2.7873282	3.1385005
Shape	$\sigma$	0.1633038	0.0976494	0.3558269

-2log(Likelihood) = 25.69709895381

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213197	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB123**

**RESULT\_LIPID\_NORM**

LogNormal(3.02479,0.1633)

**Quantiles**

100.0%	maximum	24
99.5%		24
97.5%		24
90.0%		24
75.0%	quartile	23.90475
50.0%	median	21.4286
25.0%	quartile	17.51375
10.0%		15.3846
2.5%		15.3846
0.5%		15.3846
0.0%	minimum	15.3846

**Summary Statistics**

Mean	20.85312
Std Dev	3.5476597
Std Err Mean	1.5865616
Upper 95% Mean	25.258121
Lower 95% Mean	16.448119
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.0247896	2.8492048	3.2003744
Shape	$\sigma$	0.1633025	0.0976486	0.3558242

-2log(Likelihood) = 26.3157735795347

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213194	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB126**

**RESULT\_LIPID\_NORM**

LogNormal(2.76277,0.14989)

**Quantiles**

100.0%	maximum	19.0476
99.5%		19.0476
97.5%		19.0476
90.0%		18.99504
75.0%	quartile	17.1429
50.0%	median	16.3636
25.0%	quartile	15.4839
10.0%		11.86372
2.5%		11.4286
0.5%		11.4286
0.0%	minimum	11.4286

**Summary Statistics**

Mean	16.014627
Std Dev	2.3259731
Std Err Mean	0.6005637
Upper 95% Mean	17.302708
Lower 95% Mean	14.726546
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.76277	2.6817933	2.8437466
Shape	$\sigma$	0.1498852	0.1088623	0.2249739

-2log(Likelihood) = 68.5146804494261

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.239102	0.0297*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB128**

**RESULT\_LIPID\_NORM**

LogNormal(3.02479,0.1633)

**Quantiles**

100.0%	maximum	24
99.5%		24
97.5%		24
90.0%		24
75.0%	quartile	23.90475
50.0%	median	21.4286
25.0%	quartile	17.51375
10.0%		15.3846
2.5%		15.3846
0.5%		15.3846
0.0%	minimum	15.3846

**Summary Statistics**

Mean	20.85312
Std Dev	3.5476597
Std Err Mean	1.5865616
Upper 95% Mean	25.258121
Lower 95% Mean	16.448119
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.0247896	2.8492048	3.2003744
Shape	$\sigma$	0.1633025	0.0976486	0.3558242

-2log(Likelihood) = 26.3157735795347

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213194	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB138/158**

**RESULT\_LIPID\_NORM**

LogNormal(4.43986,0.93394)

**Quantiles**

100.0%	maximum	220
99.5%		220
97.5%		220
90.0%		210.3076
75.0%	quartile	161.905
50.0%	median	140.741
25.0%	quartile	22.381
10.0%		17.44504
2.5%		16.7857
0.5%		16.7857
0.0%	minimum	16.7857

**Summary Statistics**

Mean	116.71741
Std Dev	71.360665
Std Err Mean	18.425244
Upper 95% Mean	156.23563
Lower 95% Mean	77.199194
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.4398583	3.935288	4.9444286
Shape	$\sigma$	0.9339438	0.6783275	1.4018265

-2log(Likelihood) = 173.713732813862

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.305700	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB149**

**RESULT\_LIPID\_NORM**

LogNormal(4.09518,0.79922)

**Quantiles**

100.0%	maximum	142.308
99.5%		142.308
97.5%		142.308
90.0%		140.9232
75.0%	quartile	104
50.0%	median	90.9091
25.0%	quartile	23.0952
10.0%		17.4014
2.5%		14.9231
0.5%		14.9231
0.0%	minimum	14.9231

**Summary Statistics**

Mean	77.453653
Std Dev	45.518422
Std Err Mean	11.752806
Upper 95% Mean	102.66092
Lower 95% Mean	52.246392
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.095183	3.6633988	4.5269673
Shape	$\sigma$	0.7992191	0.5804764	1.1996081

-2log(Likelihood) = 158.700041841915

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.315386	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB151**

**RESULT\_LIPID\_NORM**

LogNormal(2.82245,0.42148)

**Quantiles**

100.0%	maximum	46.1538
99.5%		46.1538
97.5%		46.1538
90.0%		40.68372
75.0%	quartile	16.08
50.0%	median	15.2273
25.0%	quartile	13.1607
10.0%		11.30166
2.5%		10.3077
0.5%		10.3077
0.0%	minimum	10.3077

**Summary Statistics**

Mean	18.678953
Std Dev	10.456088
Std Err Mean	2.6997504
Upper 95% Mean	24.469342
Lower 95% Mean	12.888565
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.8224536	2.5947461	3.0501611
Shape	$\sigma$	0.4214794	0.3061224	0.6326302

-2log(Likelihood) = 101.322233362313

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.342398	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB156**

**RESULT\_LIPID\_NORM**

LogNormal(2.45276,0.147)

**Quantiles**

100.0%	maximum	13.8095
99.5%		13.8095
97.5%		13.8095
90.0%		13.79655
75.0%	quartile	13.59855
50.0%	median	11.8392
25.0%	quartile	10.7173
10.0%		8.820307
2.5%		8.76923
0.5%		8.76923
0.0%	minimum	8.76923

**Summary Statistics**

Mean	11.742503
Std Dev	1.7347175
Std Err Mean	0.5485658
Upper 95% Mean	12.983445
Lower 95% Mean	10.501561
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.4527609	2.3521574	2.5533644
Shape	$\sigma$	0.147002	0.1002714	0.2454808

-2log(Likelihood) = 39.0878100176812

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.200194	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB157**

**RESULT\_LIPID\_NORM**

LogNormal(2.37086,0.1633)

**Quantiles**

100.0%	maximum	12.48
99.5%		12.48
97.5%		12.48
90.0%		12.48
75.0%	quartile	12.4305
50.0%	median	11.1429
25.0%	quartile	9.10715
10.0%		8
2.5%		8
0.5%		8
0.0%	minimum	8

**Summary Statistics**

Mean	10.84364
Std Dev	1.8447943
Std Err Mean	0.8250171
Upper 95% Mean	13.134255
Lower 95% Mean	8.5530254
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.3708646	2.1952791	2.5464501
Shape	$\sigma$	0.1633032	0.097649	0.3558256

-2log(Likelihood) = 19.7765653000128

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213199	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB167**

**RESULT\_LIPID\_NORM**

LogNormal(2.52002,0.14704)

**Quantiles**

100.0%	maximum	14.7619
99.5%		14.7619
97.5%		14.7619
90.0%		14.74971
75.0%	quartile	14.55285
50.0%	median	12.6557
25.0%	quartile	11.466575
10.0%		9.438158
2.5%		9.38462
0.5%		9.38462
0.0%	minimum	9.38462

**Summary Statistics**

Mean	12.559522
Std Dev	1.8563012
Std Err Mean	0.587014
Upper 95% Mean	13.88744
Lower 95% Mean	11.231604
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.5200179	2.4193875	2.6206483
Shape	$\sigma$	0.1470413	0.1002982	0.2455465

-2log(Likelihood) = 40.4382992218015

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.201705	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB168**

**RESULT\_LIPID\_NORM**

LogNormal(2.28253,0.1469)

**Quantiles**

100.0%	maximum	11.6667
99.5%		11.6667
97.5%		11.6667
90.0%		11.65203
75.0%	quartile	11.45145
50.0%	median	10.00209
25.0%	quartile	9.0314275
10.0%		7.430158
2.5%		7.38462
0.5%		7.38462
0.0%	minimum	7.38462

**Summary Statistics**

Mean	9.904224
Std Dev	1.4613036
Std Err Mean	0.4621048
Upper 95% Mean	10.949578
Lower 95% Mean	8.8588704
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.2825256	2.18199	2.3830612
Shape	$\sigma$	0.1469028	0.1002037	0.2453151

-2log(Likelihood) = 35.6696020394163

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.195893	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB169**

**RESULT\_LIPID\_NORM**

LogNormal(2.4903,0.14967)

**Quantiles**

100.0%	maximum	14.5238
99.5%		14.5238
97.5%		14.5238
90.0%		14.44952
75.0%	quartile	13.0714
50.0%	median	12.4773
25.0%	quartile	11.7857
10.0%		9.024178
2.5%		8.71429
0.5%		8.71429
0.0%	minimum	8.71429

**Summary Statistics**

Mean	12.194637
Std Dev	1.7673148
Std Err Mean	0.4563187
Upper 95% Mean	13.173344
Lower 95% Mean	11.215931
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.4902999	2.4094421	2.5711576
Shape	$\sigma$	0.1496651	0.1087024	0.2246436

-2log(Likelihood) = 60.2964939849598

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.237845	0.0310*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB170**

**RESULT\_LIPID\_NORM**

LogNormal(2.56275,0.1633)

**Quantiles**

100.0%	maximum	15.12
99.5%		15.12
97.5%		15.12
90.0%		15.12
75.0%	quartile	15.06
50.0%	median	13.5
25.0%	quartile	11.033655
10.0%		9.69231
2.5%		9.69231
0.5%		9.69231
0.0%	minimum	9.69231

**Summary Statistics**

Mean	13.137462
Std Dev	2.2350257
Std Err Mean	0.9995339
Upper 95% Mean	15.912613
Lower 95% Mean	10.362311
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.5627539	2.3871693	2.7383384
Shape	$\sigma$	0.1633023	0.0976485	0.3558237

-2log(Likelihood) = 21.6954039759898

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213197	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB177**

**RESULT\_LIPID\_NORM**

LogNormal(2.84699,0.14995)

**Quantiles**

100.0%	maximum	20.7143
99.5%		20.7143
97.5%		20.7143
90.0%		20.66972
75.0%	quartile	18.6429
50.0%	median	17.7955
25.0%	quartile	16.8387
10.0%		12.90992
2.5%		12.4286
0.5%		12.4286
0.0%	minimum	12.4286

**Summary Statistics**

Mean	17.422
Std Dev	2.5318637
Std Err Mean	0.6537244
Upper 95% Mean	18.824099
Lower 95% Mean	16.019901
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.8469915	2.7659825	2.9280004
Shape	$\sigma$	0.1499451	0.1089058	0.2250638

-2log(Likelihood) = 71.0533103009083

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.238226	0.0306*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB180**

**RESULT\_LIPID\_NORM**

LogNormal(2.15729,0.1633)

**Quantiles**

100.0%	maximum	10.08
99.5%		10.08
97.5%		10.08
90.0%		10.08
75.0%	quartile	10.04
50.0%	median	9
25.0%	quartile	7.35577
10.0%		6.46154
2.5%		6.46154
0.5%		6.46154
0.0%	minimum	6.46154

**Summary Statistics**

Mean	8.758308
Std Dev	1.4900171
Std Err Mean	0.6663559
Upper 95% Mean	10.608409
Lower 95% Mean	6.9082074
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.1572888	1.9817042	2.3328733
Shape	$\sigma$	0.1633023	0.0976485	0.3558237

-2log(Likelihood) = 17.6407528949081

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213197	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB183**

**RESULT\_LIPID\_NORM**

LogNormal(3.1201,0.1633)

**Quantiles**

100.0%	maximum	26.4
99.5%		26.4
97.5%		26.4
90.0%		26.4
75.0%	quartile	26.29525
50.0%	median	23.5714
25.0%	quartile	19.2651
10.0%		16.9231
2.5%		16.9231
0.5%		16.9231
0.0%	minimum	16.9231

**Summary Statistics**

Mean	22.93842
Std Dev	3.9024259
Std Err Mean	1.7452179
Upper 95% Mean	27.783922
Lower 95% Mean	18.092918
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.1200993	2.9445149	3.2956836
Shape	$\sigma$	0.1633021	0.0976484	0.3558233

-2log(Likelihood) = 27.2688467273007

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213199	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB187**

**RESULT\_LIPID\_NORM**

LogNormal(3.15265,0.46288)

**Quantiles**

100.0%	maximum	53.8462
99.5%		53.8462
97.5%		53.8462
90.0%		53.68132
75.0%	quartile	40
50.0%	median	19.7619
25.0%	quartile	16.3036
10.0%		14.10768
2.5%		12.7692
0.5%		12.7692
0.0%	minimum	12.7692

**Summary Statistics**

Mean	26.289827
Std Dev	14.241982
Std Err Mean	3.6772639
Upper 95% Mean	34.176773
Lower 95% Mean	18.40288
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.152646	2.9025699	3.4027222
Shape	$\sigma$	0.4628831	0.3361941	0.6947761

-2log(Likelihood) = 114.039116406677

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.299359	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB189**

**RESULT\_LIPID\_NORM**

LogNormal(2.4903,0.14967)

**Quantiles**

100.0%	maximum	14.5238
99.5%		14.5238
97.5%		14.5238
90.0%		14.44952
75.0%	quartile	13.0714
50.0%	median	12.4773
25.0%	quartile	11.7857
10.0%		9.024178
2.5%		8.71429
0.5%		8.71429
0.0%	minimum	8.71429

**Summary Statistics**

Mean	12.194637
Std Dev	1.7673148
Std Err Mean	0.4563187
Upper 95% Mean	13.173344
Lower 95% Mean	11.215931
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.4902999	2.4094421	2.5711576
Shape	$\sigma$	0.1496651	0.1087024	0.2246436

-2log(Likelihood) = 60.2964939849598

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.237845	0.0310*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB194**

**RESULT\_LIPID\_NORM**

LogNormal(3.1201,0.1633)

**Quantiles**

100.0%	maximum	26.4
99.5%		26.4
97.5%		26.4
90.0%		26.4
75.0%	quartile	26.29525
50.0%	median	23.5714
25.0%	quartile	19.2651
10.0%		16.9231
2.5%		16.9231
0.5%		16.9231
0.0%	minimum	16.9231

**Summary Statistics**

Mean	22.93842
Std Dev	3.9024259
Std Err Mean	1.7452179
Upper 95% Mean	27.783922
Lower 95% Mean	18.092918
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.1200993	2.9445149	3.2956836
Shape	$\sigma$	0.1633021	0.0976484	0.3558233

-2log(Likelihood) = 27.2688467273007

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213199	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB201**

**RESULT\_LIPID\_NORM**

LogNormal(2.97054,0.14728)

**Quantiles**

100.0%	maximum	23.0952
99.5%		23.0952
97.5%		23.0952
90.0%		23.08968
75.0%	quartile	22.902825
50.0%	median	19.8001
25.0%	quartile	17.96065
10.0%		14.84428
2.5%		14.7692
0.5%		14.7692
0.0%	minimum	14.7692

**Summary Statistics**

Mean	19.70844
Std Dev	2.9209023
Std Err Mean	0.9236704
Upper 95% Mean	21.797928
Lower 95% Mean	17.618952
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.9705436	2.8697492	3.0713381
Shape	$\sigma$	0.147281	0.1004617	0.2459467

-2log(Likelihood) = 49.4813859393371

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.198042	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB206**

**RESULT\_LIPID\_NORM**

LogNormal(3.66664,0.1633)

**Quantiles**

100.0%	maximum	45.6
99.5%		45.6
97.5%		45.6
90.0%		45.6
75.0%	quartile	45.41905
50.0%	median	40.7143
25.0%	quartile	33.2761
10.0%		29.2308
2.5%		29.2308
0.5%		29.2308
0.0%	minimum	29.2308

**Summary Statistics**

Mean	39.62092
Std Dev	6.7405485
Std Err Mean	3.0144649
Upper 95% Mean	47.990416
Lower 95% Mean	31.251424
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.6666433	3.491059	3.8422277
Shape	$\sigma$	0.1633021	0.0976484	0.3558233

-2log(Likelihood) = 32.7342855423946

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.213197	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB132/153**

**RESULT\_LIPID\_NORM**

LogNormal(4.87022,0.68411)

**Quantiles**

100.0%	maximum	296
99.5%		296
97.5%		296
90.0%		273.02
75.0%	quartile	204.8
50.0%	median	172
25.0%	quartile	85.7
10.0%		37.38
2.5%		32.7
0.5%		32.7
0.0%	minimum	32.7

**Summary Statistics**

Mean	156.73333
Std Dev	80.110546
Std Err Mean	20.684454
Upper 95% Mean	201.09707
Lower 95% Mean	112.36959
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.870215	4.500618	5.2398121
Shape	$\sigma$	0.6841126	0.496874	1.0268361

-2log(Likelihood) = 177.285622682013

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.254030	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=Total PCB Congeners (ND = 0)**

**RESULT\_LIPID\_NORM**

LogNormal(6.72777,1.38713)

**Quantiles**

100.0%	maximum	3748
99.5%		3748
97.5%		3748
90.0%		2979.22
75.0%	quartile	2377.3
50.0%	median	1685.7
25.0%	quartile	241.4
10.0%		79.1
2.5%		69.2
0.5%		69.2
0.0%	minimum	69.2

**Summary Statistics**

Mean	1530.2133
Std Dev	1145.507
Std Err Mean	295.76864
Upper 95% Mean	2164.574
Lower 95% Mean	895.8527
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	6.7277659	5.978357	7.4771747
Shape	$\sigma$	1.3871322	1.0074804	2.0820512

-2log(Likelihood) = 254.218286315496

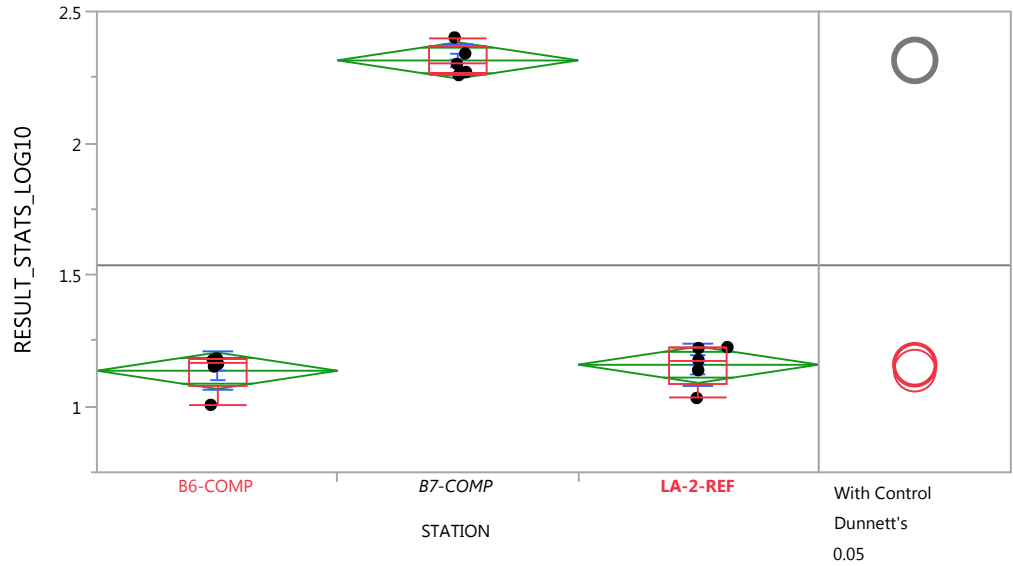
**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.289131	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.00616	1.00616	1.079225	1.16205	1.17945	1.18225	1.18225
B7-COMP	2.25883	2.25883	2.264595	2.30103	2.37097	2.4014	2.4014
LA-2-REF	1.03218	1.03218	1.08524	1.17609	1.22358	1.22531	1.22531

Oneway Anova

Summary of Fit

Rsquare	0.986918
Adj Rsquare	0.984738
Root Mean Square Error	0.07083
Mean of Response	1.536353
Observations (or Sum Wgts)	15

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	4.5418630	2.27093	452.6541	<.0001*
Error	12	0.0602031	0.00502		
C. Total	14	4.6020661			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.13588	0.03168	1.0669	1.2049
B7-COMP	5	2.31443	0.03168	2.2454	2.3834
LA-2-REF	5	1.15875	0.03168	1.0897	1.2278

Std Error uses a pooled estimate of error variance

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.13588	0.073474	0.03286	1.0446	1.2271
B7-COMP	5	2.31443	0.058006	0.02594	2.2424	2.3865
LA-2-REF	5	1.15875	0.079295	0.03546	1.0603	1.2572

Means Comparisons

Comparisons with a control using Dunnett's Method

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.044	<.0001*
LA-2-REF	-0.11	1.0000
B6-COMP	-0.09	0.8314

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	25.000	40.000	5.0000	-1.776
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	30.000	40.000	6.0000	-1.164

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.5000	2	0.0087*

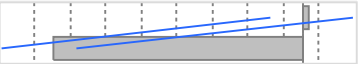
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

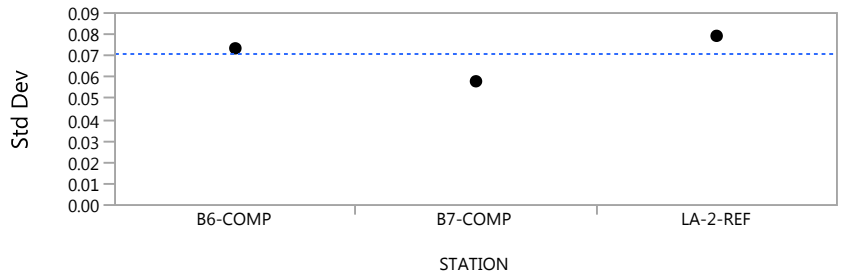
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	0.80000	1.914854	0.41779	0.8810	0.02602	-0.15007	0.21915	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.13206	-1.36922	-1.03352	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0734742	0.0518880	0.0400900
B7-COMP	5	0.0580056	0.0452304	0.0425500
LA-2-REF	5	0.0792948	0.0588048	0.0553360

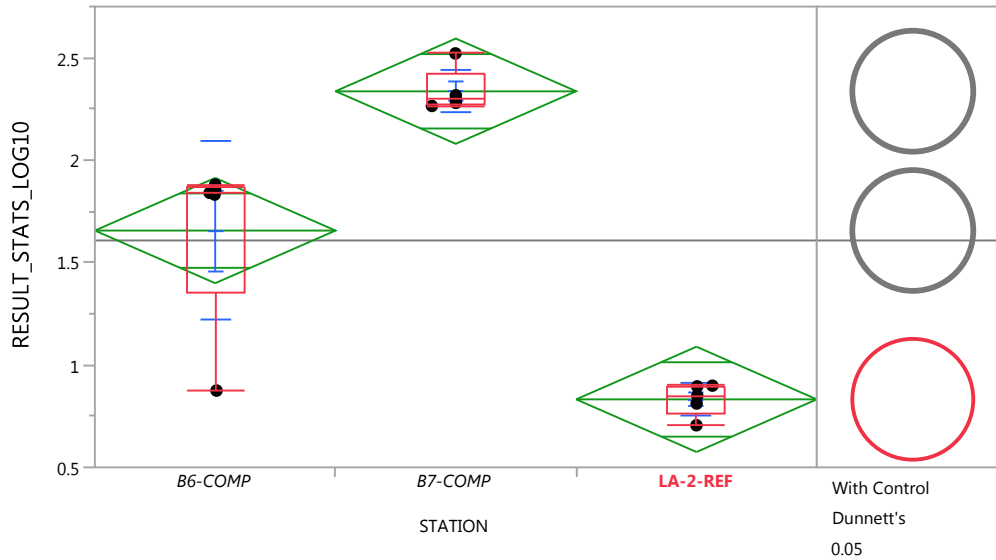
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.1590	2	12	0.8548
Brown-Forsythe	0.1195	2	12	0.8884
Levene	0.1438	2	12	0.8675
Bartlett	0.1808	2	.	0.8346

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.875061	0.875061	1.353331	1.8403	1.86734	1.88081	1.88081
B7-COMP	2.26451	2.26451	2.272175	2.30103	2.41898	2.52114	2.52114
LA-2-REF	0.705601	0.705601	0.75866	0.849507	0.896995	0.898725	0.898725

**Oneway Anova**

**Summary of Fit**

Rsquare	0.871939
Adj Rsquare	0.850596
Root Mean Square Error	0.263571
Mean of Response	1.608387
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	5.6760733	2.83804	40.8528	<.0001*
Error	12	0.8336383	0.06947		
C. Total	14	6.5097116			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.65633	0.11787	1.3995	1.9132
B7-COMP	5	2.33667	0.11787	2.0798	2.5935
LA-2-REF	5	0.83216	0.11787	0.5753	1.0890

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.65633	0.437138	0.19549	1.1135	2.1991
B7-COMP	5	2.33667	0.105036	0.04697	2.2062	2.4671
LA-2-REF	5	0.83216	0.079292	0.03546	0.7337	0.9306

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.087	<.0001*
B6-COMP	0.407	0.0006*
LA-2-REF	-0.42	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	38.000	40.000	7.6000	-0.184
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	17.000	40.000	3.4000	-2.756

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.5800	2	0.0031*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

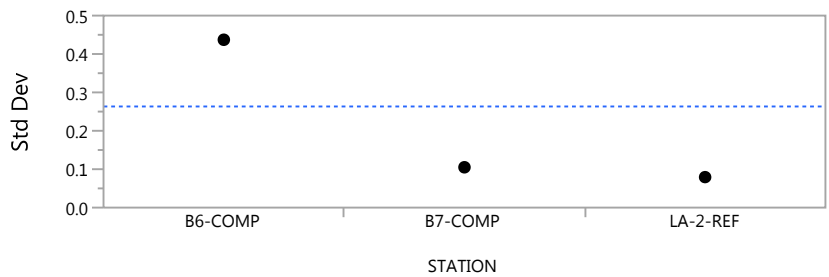
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.98209	-1.17521	0.02366	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.46731	-1.81554	-1.36579	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.4371382	0.3125069	0.2056038
B7-COMP	5	0.1050359	0.0737888	0.0587220
LA-2-REF	5	0.0792923	0.0588027	0.0553340



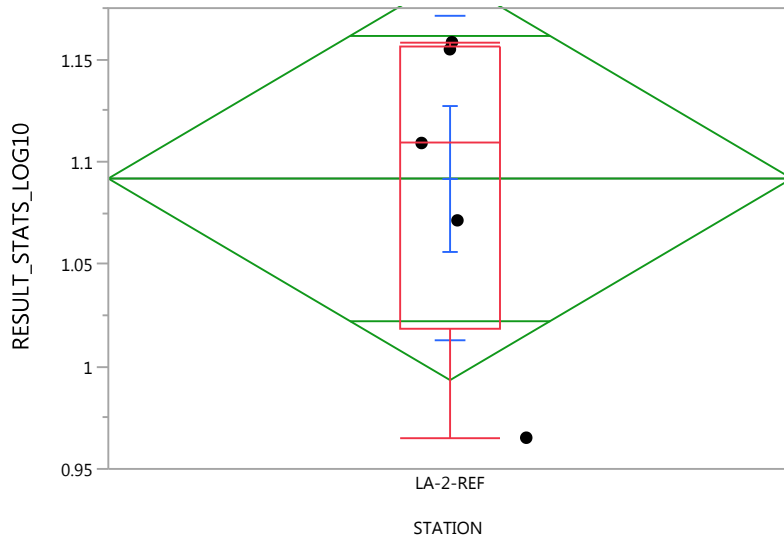
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.1914	2	12	0.3373
Brown-Forsythe	0.5760	2	12	0.5770
Levene	4.0415	2	12	0.0455*
Bartlett	5.8150	2	.	0.0030*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB037**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.965238	0.965238	1.018299	1.10914	1.15663	1.15836	1.15836

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.0918
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.0000000	.	.	.
Error	4	0.02514825	0.006287		
C. Total	4	0.02514825			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.09180	0.03546	0.99335	1.1903

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.09180	0.079291	0.03546	0.99335	1.1903

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB037**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

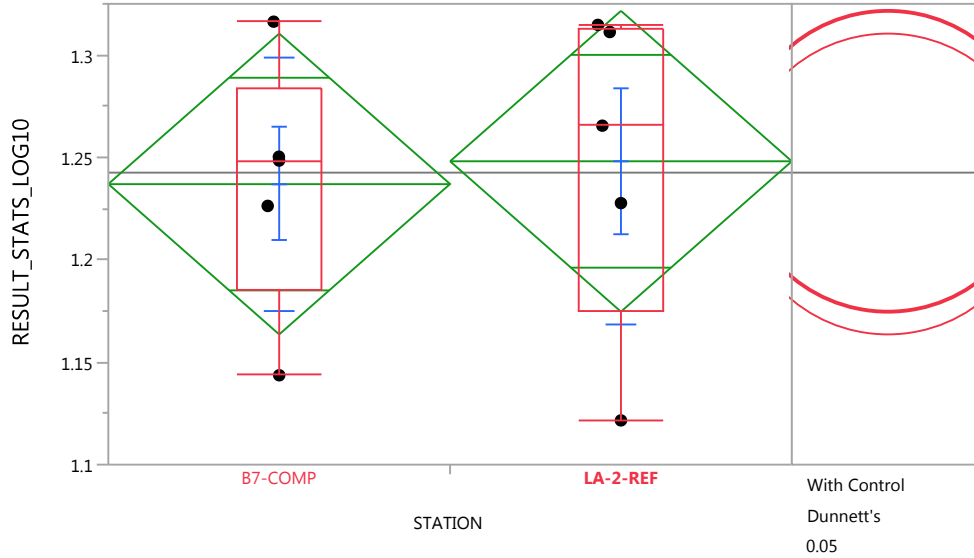
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	1.14364	1.14364	1.184975	1.24852	1.28329	1.31627	1.31627
LA-2-REF	1.12159	1.12159	1.174645	1.26549	1.31298	1.31471	1.31471

**Oneway Anova**

**Summary of Fit**

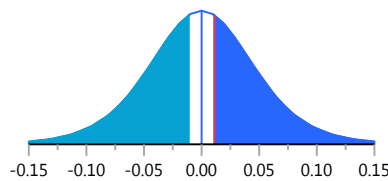
Rsquare	0.007586
Adj Rsquare	-0.11647
Root Mean Square Error	0.071215
Mean of Response	1.242579
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.01114	t Ratio	0.247291
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11500	Prob >  t	0.8109
Lower CL Dif	-0.09272	Prob > t	0.4055
Confidence	0.95	Prob < t	0.5945



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**

**Oneway Anova**

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00031014	0.000310	0.0612	0.8109
Error	8	0.04057212	0.005072		
C. Total	9	0.04088226			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	1.23701	0.03185	1.1636	1.3105
LA-2-REF	5	1.24815	0.03185	1.1747	1.3216

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

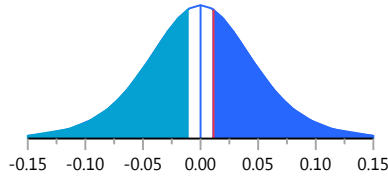
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	1.23701	0.062097	0.02777	1.1599	1.3141
LA-2-REF	5	1.24815	0.079291	0.03546	1.1497	1.3466

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.01114	t Ratio	0.247291
Std Err Dif	0.04504	DF	7.565406
Upper CL Dif	0.11605	Prob >  t	0.8113
Lower CL Dif	-0.09377	Prob > t	0.4056
Confidence	0.95	Prob < t	0.5944



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.09	0.8109

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	26.000	27.500	5.20000	-0.209
LA-2-REF	5	29.000	27.500	5.80000	0.209

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
29	0.20889	0.8345

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0982	1	0.7540

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**

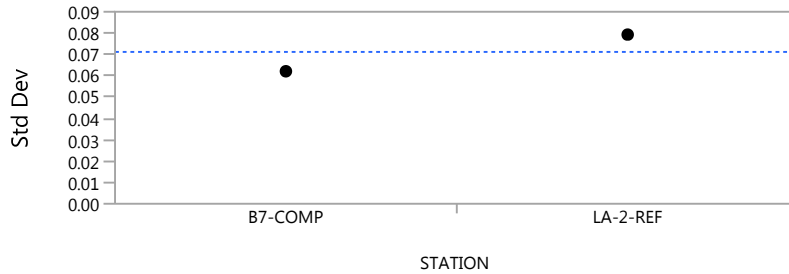
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.4000000	1.914854	0.2088932	0.8345	0.0151800	-0.128720	0.1676100

**Tests that the Variances are Equal**

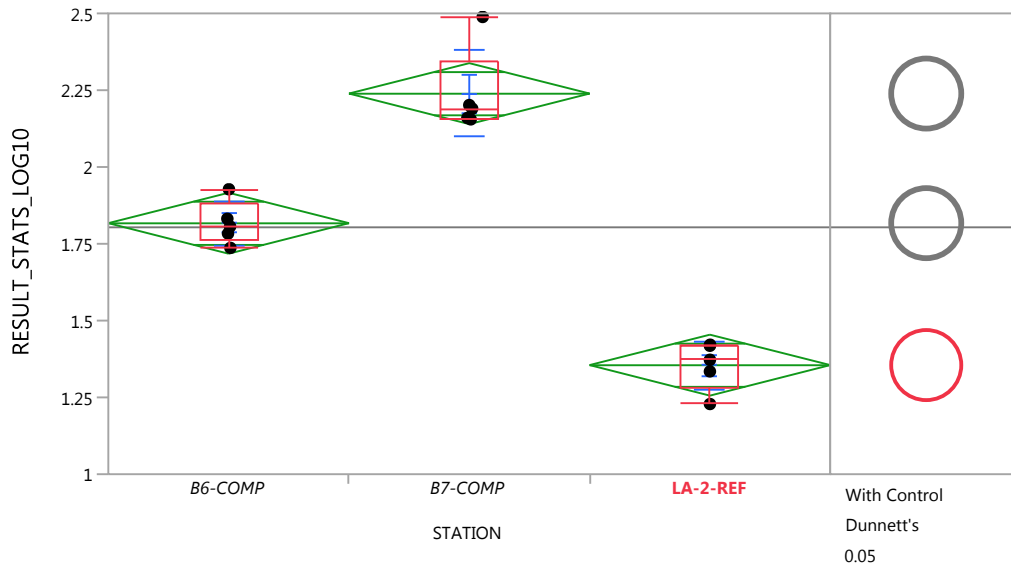


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792908	0.0588024	0.0553340

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.2378	1	8	0.6389
Brown-Forsythe	0.2602	1	8	0.6238
Levene	0.4035	1	8	0.5430
Bartlett	0.2103	1	.	0.6465
F Test 2-sided	1.6305	4	4	0.6474

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.73676	1.73676	1.760025	1.80618	1.879525	1.92745	1.92745
B7-COMP	2.1549	2.1549	2.1573	2.18988	2.3451	2.48855	2.48855
LA-2-REF	1.22848	1.22848	1.28154	1.37239	1.41987	1.4216	1.4216

**Oneway Anova**

**Summary of Fit**

Rsquare	0.940027
Adj Rsquare	0.930031
Root Mean Square Error	0.101938
Mean of Response	1.803678
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.9545138	0.977257	94.0449	<.0001*
Error	12	0.1246966	0.010391		
C. Total	14	2.0792104			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.81706	0.04559	1.7177	1.9164
B7-COMP	5	2.23894	0.04559	2.1396	2.3383
LA-2-REF	5	1.35504	0.04559	1.2557	1.4544

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.81706	0.070895	0.03171	1.7290	1.9051
B7-COMP	5	2.23894	0.140929	0.06303	2.0639	2.4139
LA-2-REF	5	1.35504	0.079291	0.03546	1.2566	1.4535

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.723	<.0001*
B6-COMP	0.301	<.0001*
LA-2-REF	-0.16	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5000	2	0.0019*

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

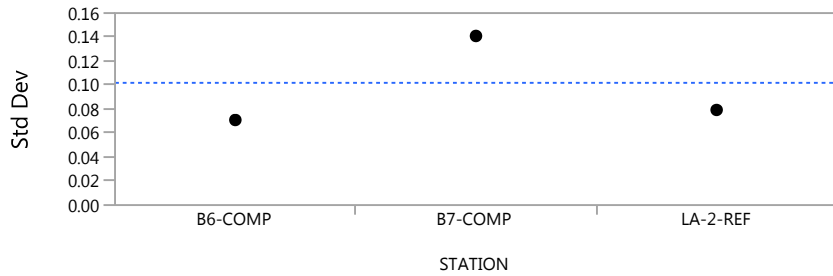
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

		q*	Alpha					
		2.21213	0.05					
		Score Mean			Hodges-			
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.448690	-0.69897	-0.315160
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.825100	-1.26007	-0.733300

**Tests that the Variances are Equal**

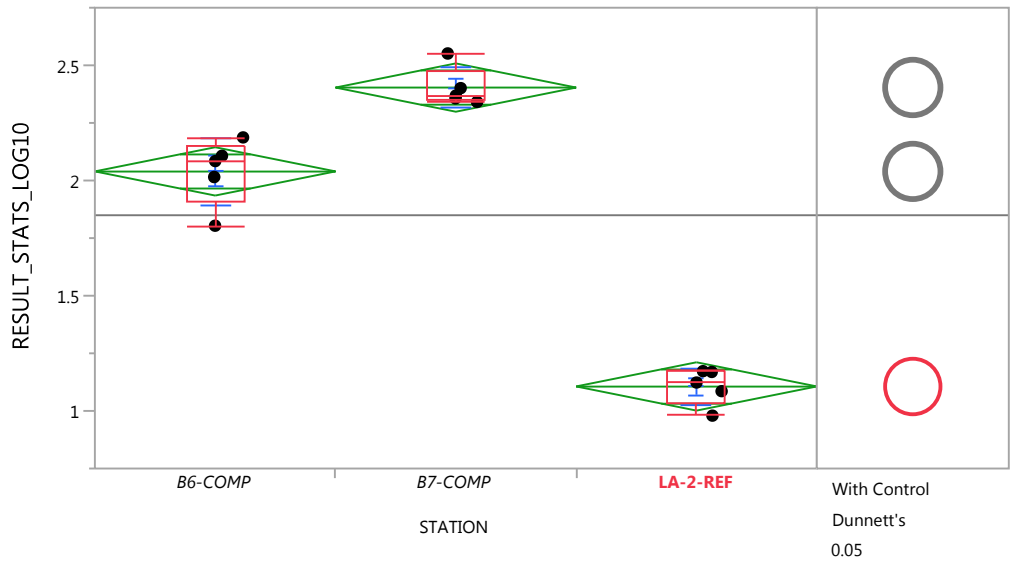


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0708947	0.0499752	0.0478000
B7-COMP	5	0.1409293	0.0998456	0.0751200
LA-2-REF	5	0.0792908	0.0588016	0.0553320

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.6376	2	12	0.5455
Brown-Forsythe	0.1424	2	12	0.8687
Levene	0.9428	2	12	0.4166
Bartlett	1.0459	2	.	0.3514

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.80371	1.80371	1.909475	2.08432	2.14715	2.18709	2.18709
B7-COMP	2.34115	2.34115	2.34885	2.36798	2.4763	2.55145	2.55145
LA-2-REF	0.979478	0.979478	1.032539	1.12338	1.17087	1.1726	1.1726

**Oneway Anova**

**Summary of Fit**

Rsquare	0.969913
Adj Rsquare	0.964899
Root Mean Square Error	0.10761
Mean of Response	1.849737
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	4.4796370	2.23982	193.4239	<.0001*
Error	12	0.1389581	0.01158		
C. Total	14	4.6185951			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.03951	0.04812	1.9347	2.1444
B7-COMP	5	2.40366	0.04812	2.2988	2.5085
LA-2-REF	5	1.10604	0.04812	1.0012	1.2109

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.03951	0.145398	0.06502	1.8590	2.2200
B7-COMP	5	2.40366	0.085510	0.03824	2.2975	2.5098
LA-2-REF	5	1.10604	0.079291	0.03546	1.0076	1.2045

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.127	<.0001*
B6-COMP	0.763	<.0001*
LA-2-REF	-0.17	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5000	2	0.0019*

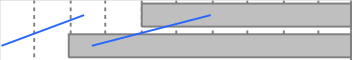
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

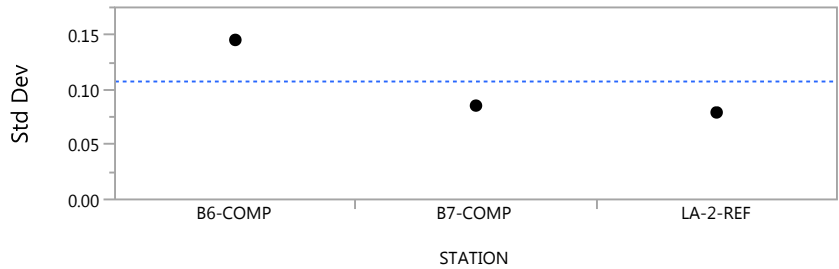
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.93807	-1.20761	-0.63111
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.27095	-1.57197	-1.16855



**Tests that the Variances are Equal**



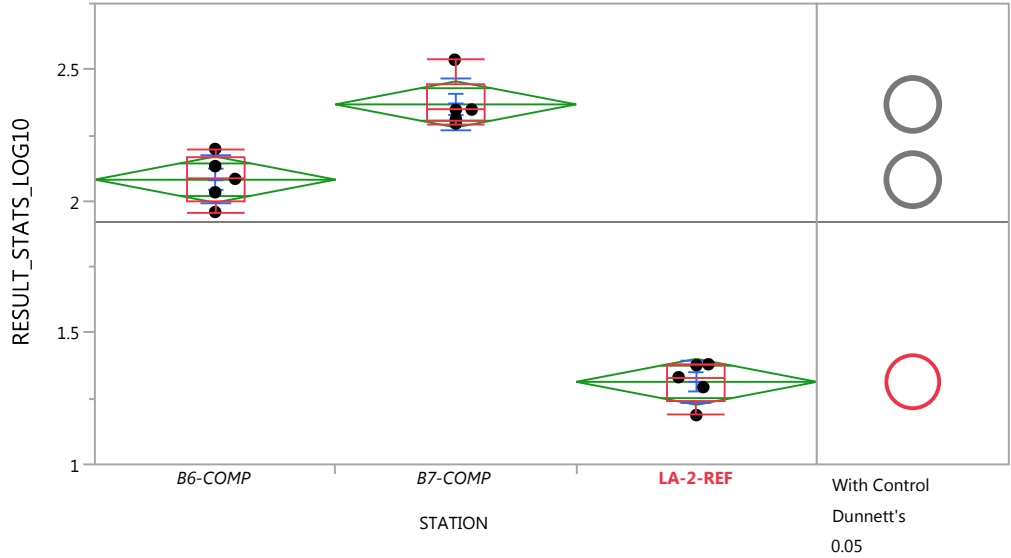
Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1453975	0.1040312	0.0950700
B7-COMP	5	0.0855104	0.0591176	0.0509800
LA-2-REF	5	0.0792910	0.0588005	0.0553324

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.7313	2	12	0.5016
Brown-Forsythe	0.4249	2	12	0.6633
Levene	0.8113	2	12	0.4672
Bartlett	0.8435	2	.	0.4302

Warning: Small sample sizes. Use Caution.



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.95861	1.95861	1.996015	2.08432	2.16522	2.19781	2.19781
B7-COMP	2.29397	2.29397	2.30261	2.34679	2.442165	2.53656	2.53656
LA-2-REF	1.18709	1.18709	1.240145	1.33099	1.37848	1.38021	1.38021

**Oneway Anova**

**Summary of Fit**

Rsquare	0.96846
Adj Rsquare	0.963204
Root Mean Square Error	0.08976
Mean of Response	1.920758
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	2.9687305	1.48437	184.2371	<.0001*
Error	12	0.0966819	0.00806		
C. Total	14	3.0654123			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.08136	0.04014	1.9939	2.1688
B7-COMP	5	2.36727	0.04014	2.2798	2.4547
LA-2-REF	5	1.31365	0.04014	1.2262	1.4011

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.08136	0.091602	0.04097	1.9676	2.1951
B7-COMP	5	2.36727	0.097429	0.04357	2.2463	2.4882
LA-2-REF	5	1.31365	0.079291	0.03546	1.2152	1.4121

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.912	<.0001*
B6-COMP	0.626	<.0001*
LA-2-REF	-0.14	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5000	2	0.0019*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

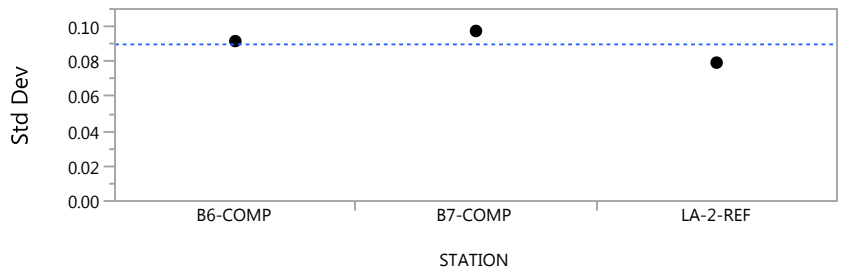
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.75588	-1.01072	-0.578400	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.01678	-1.34947	-0.913760	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0916021	0.0682744	0.0676820
B7-COMP	5	0.0974294	0.0677168	0.0558220
LA-2-REF	5	0.0792908	0.0588024	0.0553340

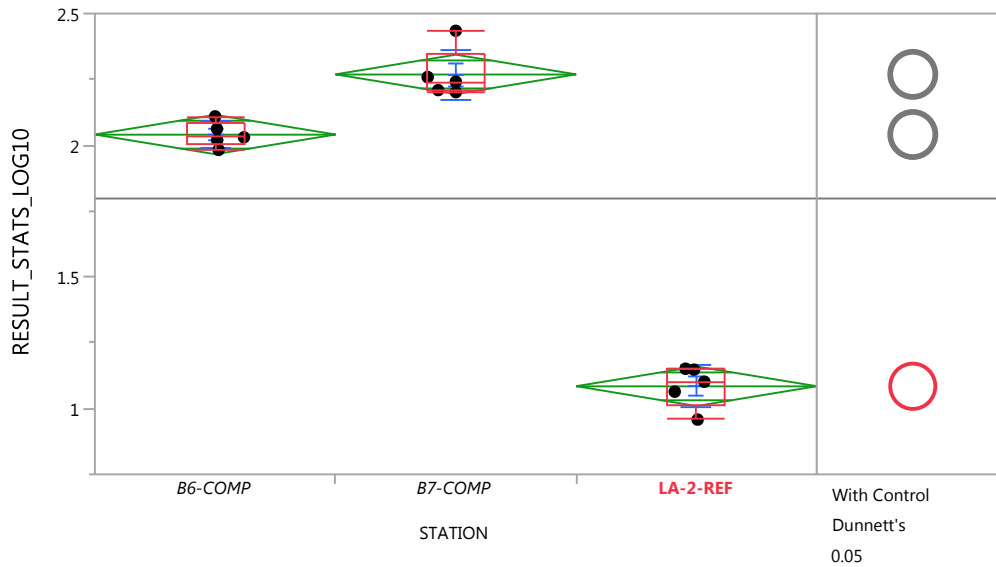
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.0800	2	12	0.9236
Brown-Forsythe	0.0630	2	12	0.9392
Levene	0.0511	2	12	0.9504
Bartlett	0.0781	2	.	0.9248

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.98227	1.98227	2.00079	2.02996	2.085645	2.10914	2.10914
B7-COMP	2.20165	2.20165	2.205455	2.24103	2.3467	2.43457	2.43457
LA-2-REF	0.957939	0.957939	1.011	1.10185	1.14933	1.15106	1.15106

**Oneway Anova**

**Summary of Fit**

Rsquare	0.982416
Adj Rsquare	0.979486
Root Mean Square Error	0.076748
Mean of Response	1.798045
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	3.9491150	1.97456	335.2229	<.0001*
Error	12	0.0706834	0.00589		
C. Total	14	4.0197984			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.04057	0.03432	1.9658	2.1153
B7-COMP	5	2.26907	0.03432	2.1943	2.3439
LA-2-REF	5	1.08450	0.03432	1.0097	1.1593

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.04057	0.047778	0.02137	1.9812	2.0999
B7-COMP	5	2.26907	0.095399	0.04266	2.1506	2.3875
LA-2-REF	5	1.08450	0.079291	0.03546	0.9860	1.1830

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.063	<.0001*
B6-COMP	0.835	<.0001*
LA-2-REF	-0.12	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5000	2	0.0019*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

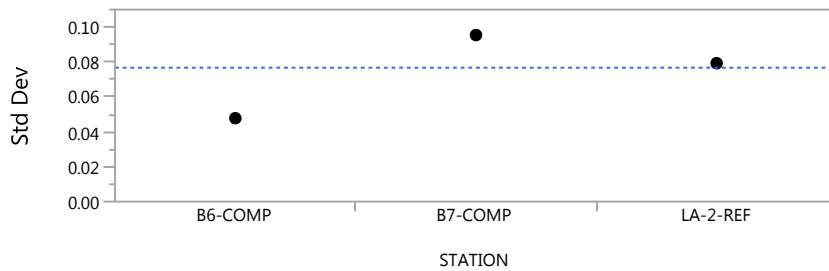
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.95525	-1.15120	-0.83121
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.14520	-1.47663	-1.05059

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0477781	0.0360632	0.0339420
B7-COMP	5	0.0953992	0.0662008	0.0564980
LA-2-REF	5	0.0792912	0.0588018	0.0553322

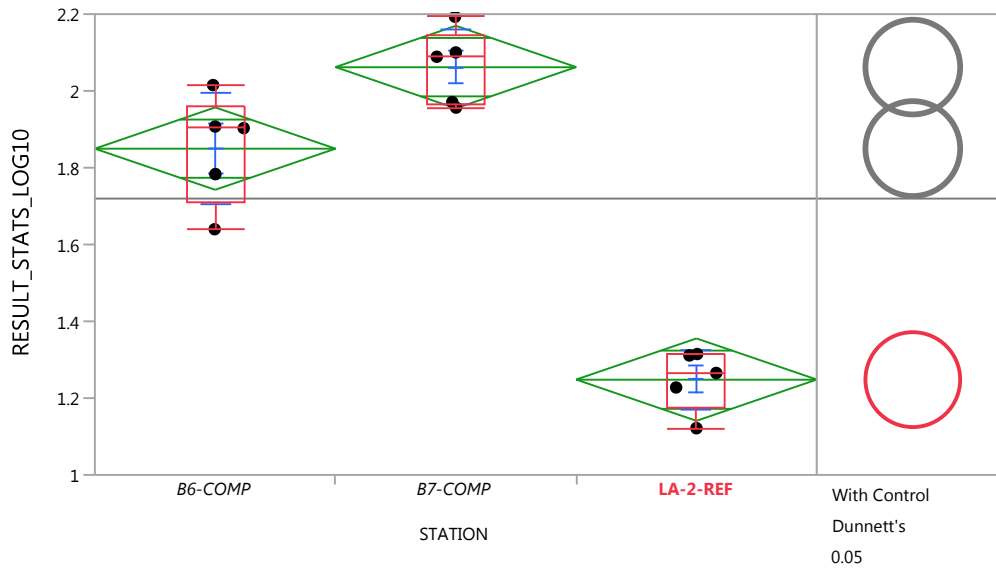
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.4715	2	12	0.6352
Brown-Forsythe	0.2440	2	12	0.7873
Levene	0.5925	2	12	0.5683
Bartlett	0.8058	2	.	0.4467

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.63985	1.63985	1.71157	1.90309	1.961245	2.01524	2.01524
B7-COMP	1.95653	1.95653	1.963785	2.08894	2.14662	2.19312	2.19312
LA-2-REF	1.12159	1.12159	1.174645	1.26549	1.31298	1.31471	1.31471

**Oneway Anova**

**Summary of Fit**

Rsquare	0.924309
Adj Rsquare	0.911693
Root Mean Square Error	0.110276
Mean of Response	1.719947
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.7820380	0.891019	73.2694	<.0001*
Error	12	0.1459304	0.012161		
C. Total	14	1.9279685			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.84974	0.04932	1.7423	1.9572
B7-COMP	5	2.06195	0.04932	1.9545	2.1694
LA-2-REF	5	1.24815	0.04932	1.1407	1.3556

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.84974	0.143190	0.06404	1.6720	2.0275
B7-COMP	5	2.06195	0.098449	0.04403	1.9397	2.1842
LA-2-REF	5	1.24815	0.079291	0.03546	1.1497	1.3466

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.639	<.0001*
B6-COMP	0.427	<.0001*
LA-2-REF	-0.17	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	42.000	40.000	8.4000	0.184
B7-COMP	5	63.000	40.000	12.6000	2.756
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.5800	2	0.0031*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

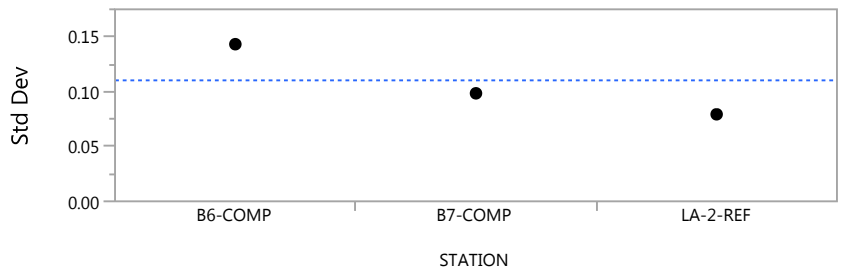
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.596000	-0.89365	-0.325140
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.823450	-1.07153	-0.641820

**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**

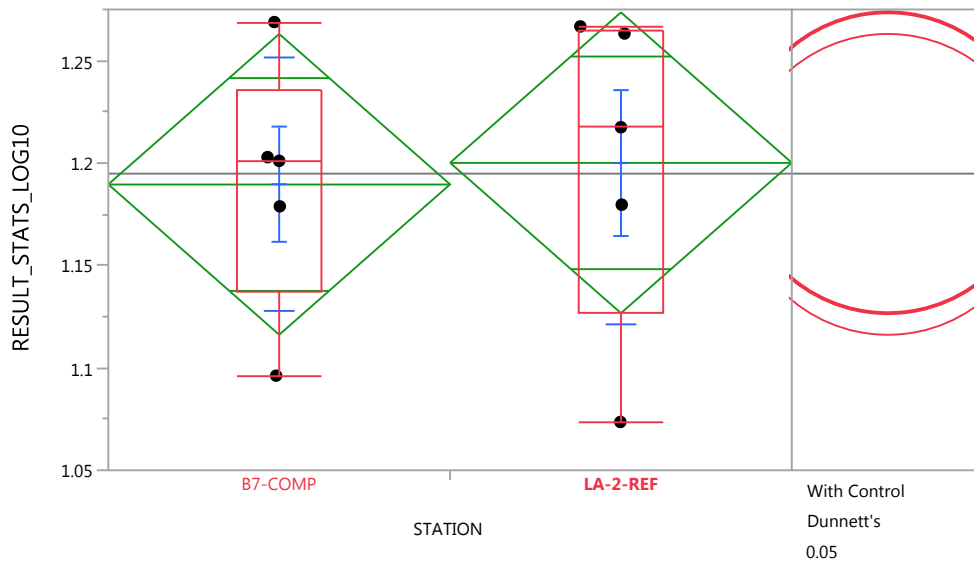
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1431898	0.1105392	0.0998700
B7-COMP	5	0.0984492	0.0785320	0.0731340
LA-2-REF	5	0.0792908	0.0588024	0.0553340

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.8933	2	12	0.4349
Brown-Forsythe	0.4109	2	12	0.6721
Levene	1.1142	2	12	0.3599
Bartlett	0.6557	2	.	0.5191

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	1.09621	1.09621	1.137545	1.20109	1.235865	1.26885	1.26885
LA-2-REF	1.07358	1.07358	1.12664	1.21748	1.26497	1.2667	1.2667

**Oneway Anova**

**Summary of Fit**

Rsquare	0.006822
Adj Rsquare	-0.11733
Root Mean Square Error	0.071216
Mean of Response	1.194861
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

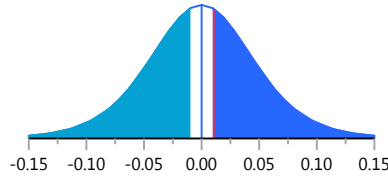
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**

**Oneway Anova**

**t Test**

Assuming equal variances

Difference	0.01056	t Ratio	0.23441
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11442	Prob >  t	0.8206
Lower CL Dif	-0.09331	Prob > t	0.4103
Confidence	0.95	Prob < t	0.5897



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00027868	0.000279	0.0549	0.8206
Error	8	0.04057330	0.005072		
C. Total	9	0.04085197			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	1.18958	0.03185	1.1161	1.2630
LA-2-REF	5	1.20014	0.03185	1.1267	1.2736

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

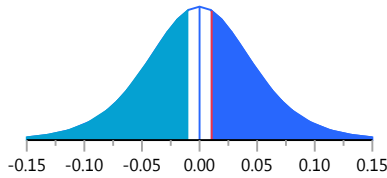
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	1.18958	0.062100	0.02777	1.1125	1.2667
LA-2-REF	5	1.20014	0.079290	0.03546	1.1017	1.2986

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.01056	t Ratio	0.23441
Std Err Dif	0.04504	DF	7.565598
Upper CL Dif	0.11547	Prob >  t	0.8209
Lower CL Dif	-0.09435	Prob > t	0.4104
Confidence	0.95	Prob < t	0.5896



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.09	0.8206

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	26.000	27.500	5.20000	-0.209
LA-2-REF	5	29.000	27.500	5.80000	0.209



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
29	0.20889	0.8345

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0982	1	0.7540

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

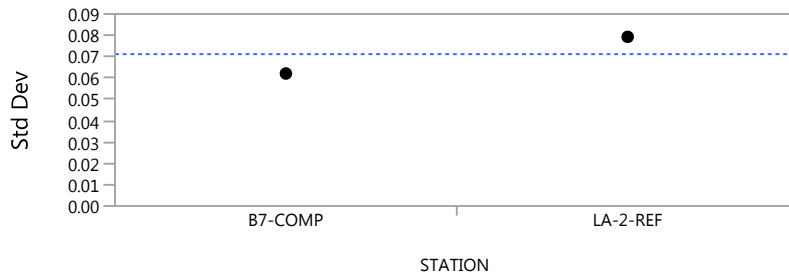
Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean	Difference	Std Err Dif	Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.4000000	1.914854	0.2088932	0.8345	0.0146000	-0.129300	0.1670300	

**Tests that the Variances are Equal**

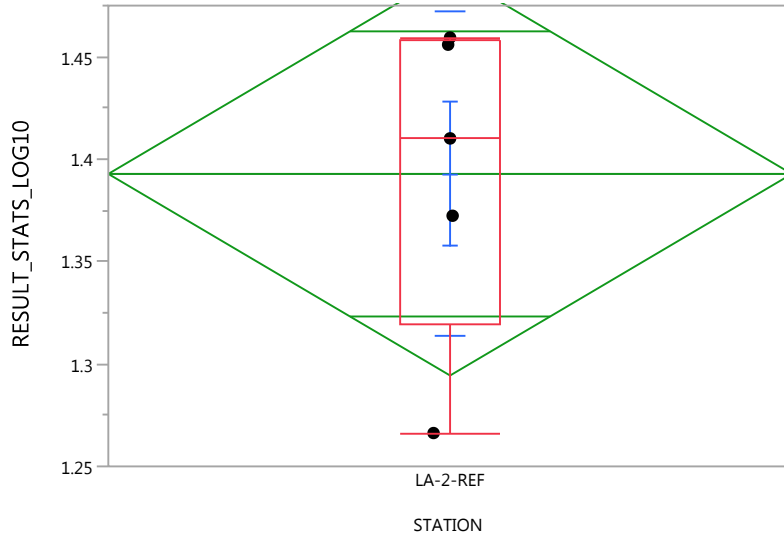


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B7-COMP	5	0.0620998	0.0416296	0.0393280
LA-2-REF	5	0.0792902	0.0588000	0.0553320

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[.5]	0.2376	1	8	0.6390
Brown-Forsythe	0.2601	1	8	0.6238
Levene	0.4033	1	8	0.5431
Bartlett	0.2102	1	.	0.6466
F Test 2-sided	1.6303	4	4	0.6474

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB081**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.26627	1.26627	1.31933	1.41017	1.45766	1.45939	1.45939

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.07929
Mean of Response	1.39283
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514775	0.006287		
C. Total	4	0.02514775			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.39283	0.03546	1.2944	1.4913

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.39283	0.079290	0.03546	1.2944	1.4913

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

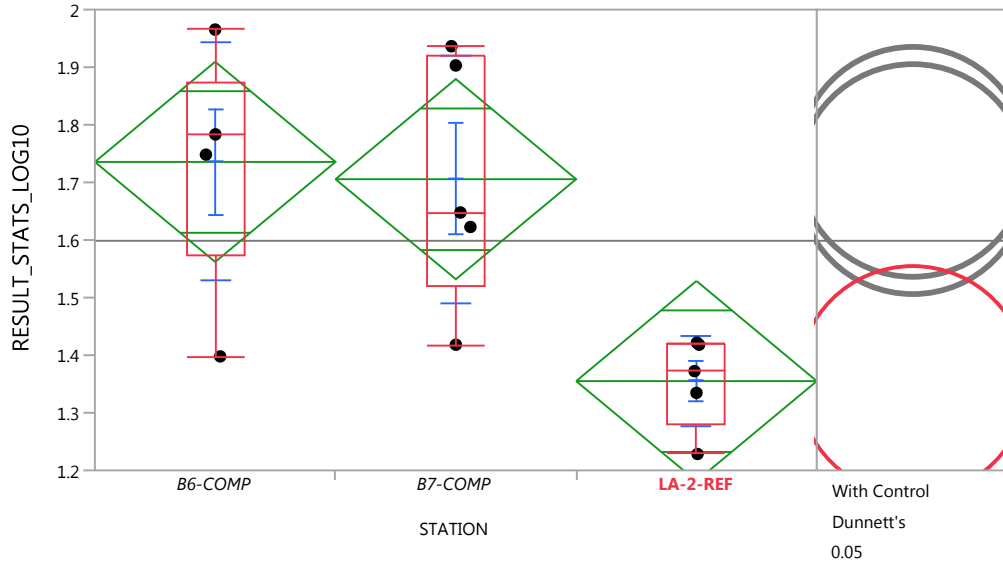
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.39794	1.39794	1.573065	1.78329	1.874265	1.96524	1.96524
B7-COMP	1.41814	1.41814	1.52036	1.64782	1.91971	1.93633	1.93633
LA-2-REF	1.22848	1.22848	1.28154	1.37239	1.41987	1.4216	1.4216

**Oneway Anova**

**Summary of Fit**

Rsquare	0.539767
Adj Rsquare	0.463061
Root Mean Square Error	0.178351
Mean of Response	1.598741
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.44766994	0.223835	7.0369	0.0095*
Error	12	0.38170681	0.031809		
C. Total	14	0.82937675			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.73559	0.07976	1.5618	1.9094
B7-COMP	5	1.70559	0.07976	1.5318	1.8794
LA-2-REF	5	1.35504	0.07976	1.1813	1.5288

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.73559	0.207036	0.09259	1.4785	1.9927
B7-COMP	5	1.70559	0.215118	0.09620	1.4385	1.9727
LA-2-REF	5	1.35504	0.079291	0.03546	1.2566	1.4535

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.098	0.0103*
B7-COMP	0.068	0.0167*
LA-2-REF	-0.28	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	52.000	40.000	10.4000	1.411
B7-COMP	5	49.500	40.000	9.9000	1.104
LA-2-REF	5	18.500	40.000	3.7000	-2.577

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
6.9900	2	0.0303*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

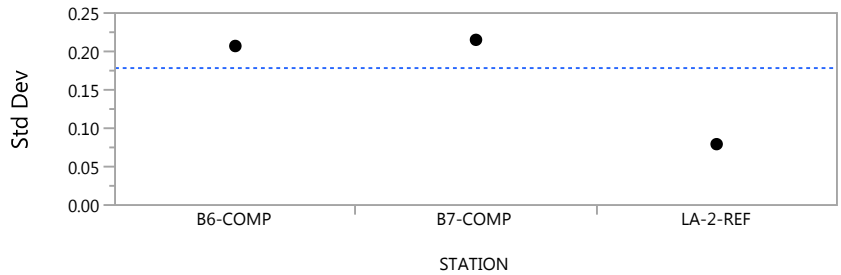
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.00000	1.909043	-2.09529	0.0664	-0.410900	-0.736760	0.0236600
B7-COMP	LA-2-REF	-4.20000	1.909043	-2.20006	0.0515	-0.313220	-0.707850	0.0034600

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.2070362	0.1350600	0.1204800
B7-COMP	5	0.2151178	0.1712944	0.1597400
LA-2-REF	5	0.0792908	0.0588016	0.0553320

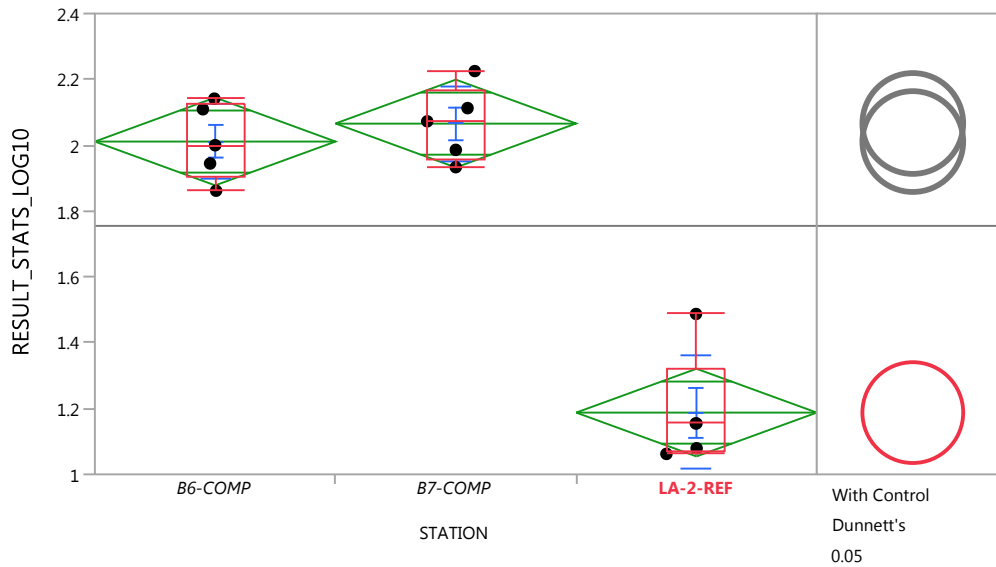
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.9585	2	12	0.4110
Brown-Forsythe	0.8522	2	12	0.4507
Levene	1.5638	2	12	0.2491
Bartlett	1.7066	2	.	0.1815

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.8617	1.8617	1.90309	2	2.125235	2.14133	2.14133
B7-COMP	1.93305	1.93305	1.959405	2.07255	2.169005	2.22531	2.22531
LA-2-REF	1.06215	1.06215	1.070665	1.1549	1.32112	1.48734	1.48734

**Oneway Anova**

**Summary of Fit**

Rsquare	0.915086
Adj Rsquare	0.900933
Root Mean Square Error	0.136823
Mean of Response	1.754966
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	2.4209190	1.21046	64.6596	<.0001*
Error	12	0.2246460	0.01872		
C. Total	14	2.6455650			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.01133	0.06119	1.8780	2.1446
B7-COMP	5	2.06587	0.06119	1.9326	2.1992
LA-2-REF	5	1.18769	0.06119	1.0544	1.3210

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.01133	0.115600	0.05170	1.8678	2.1549
B7-COMP	5	2.06587	0.113707	0.05085	1.9247	2.2071
LA-2-REF	5	1.18769	0.172826	0.07729	0.9731	1.4023

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.662	<.0001*
B6-COMP	0.607	<.0001*
LA-2-REF	-0.22	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	50.000	40.000	10.0000	1.165
B7-COMP	5	55.000	40.000	11.0000	1.777
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.5170	2	0.0086*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

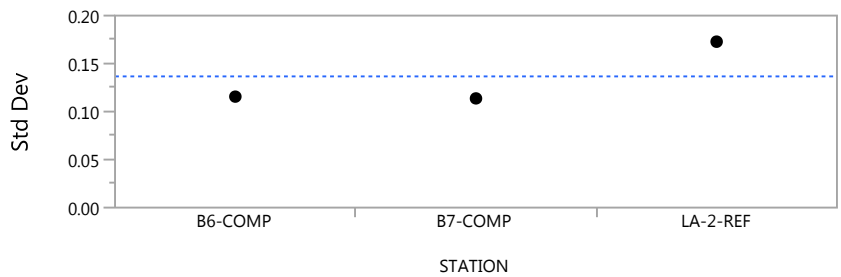
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.845100	-1.07918	-0.374360	
B7-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.917650	-1.16316	-0.445710	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1155998	0.0911240	0.0888580
B7-COMP	5	0.1137075	0.0851752	0.0838400
LA-2-REF	5	0.1728259	0.1198584	0.1001820

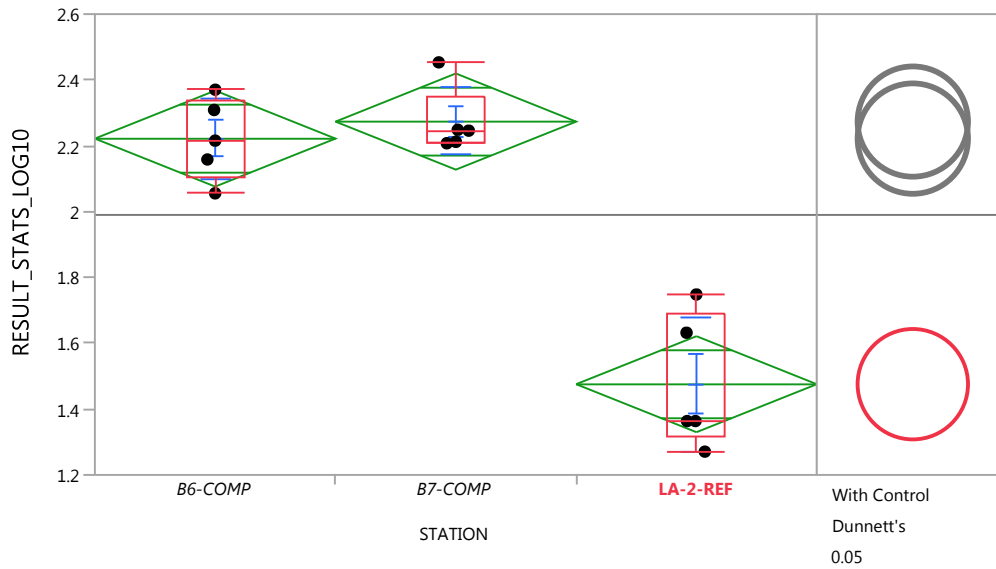
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.4116	2	12	0.6716
Brown-Forsythe	0.0396	2	12	0.9613
Levene	0.2751	2	12	0.7642
Bartlett	0.4320	2	.	0.6492

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.05552	2.05552	2.10694	2.2156	2.33954	2.37036	2.37036
B7-COMP	2.20761	2.20761	2.20985	2.24598	2.35098	2.45332	2.45332
LA-2-REF	1.27077	1.27077	1.317145	1.36352	1.690105	1.74819	1.74819

**Oneway Anova**

**Summary of Fit**

Rsquare	0.881095
Adj Rsquare	0.861278
Root Mean Square Error	0.149725
Mean of Response	1.990281
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.9934079	0.996704	44.4606	<.0001*
Error	12	0.2690122	0.022418		
C. Total	14	2.2624201			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.22171	0.06696	2.0758	2.3676
B7-COMP	5	2.27353	0.06696	2.1276	2.4194
LA-2-REF	5	1.47560	0.06696	1.3297	1.6215

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.22171	0.123832	0.05538	2.0680	2.3755
B7-COMP	5	2.27353	0.102254	0.04573	2.1466	2.4005
LA-2-REF	5	1.47560	0.203624	0.09106	1.2228	1.7284

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.561	<.0001*
B6-COMP	0.509	<.0001*
LA-2-REF	-0.24	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	50.000	40.000	10.0000	1.165
B7-COMP	5	55.000	40.000	11.0000	1.777
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.5170	2	0.0086*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

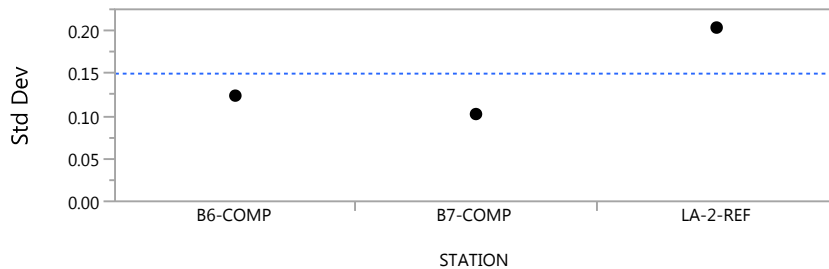
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.784750	-1.09959	-0.307330
B7-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.848570	-1.18255	-0.459420

**Tests that the Variances are Equal**





**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**

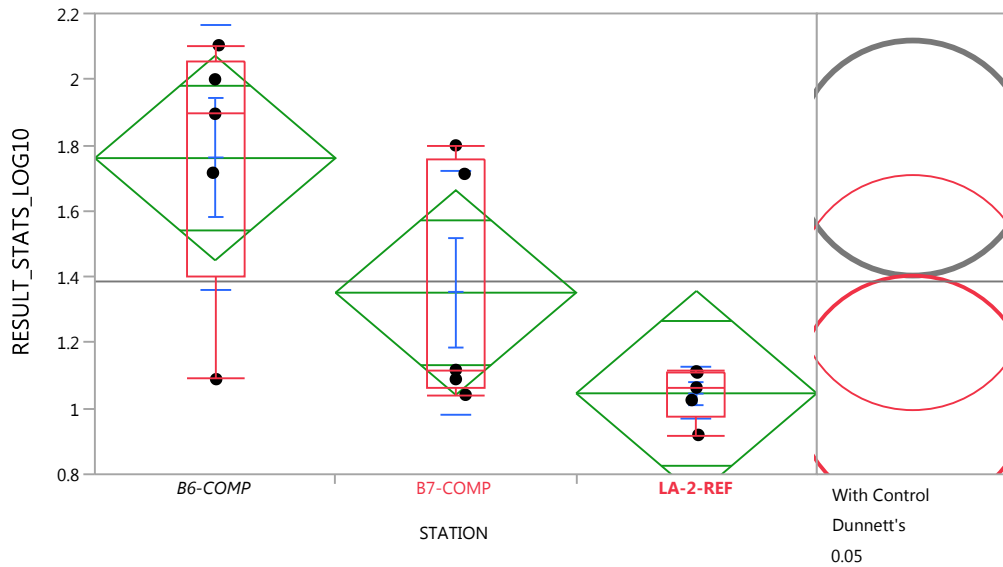
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.1238318	0.0942624	0.0930400
B7-COMP	5	0.1022537	0.0719168	0.0564520
LA-2-REF	5	0.2036245	0.1716008	0.1491840

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.9629	2	12	0.1830
Brown-Forsythe	0.7918	2	12	0.4753
Levene	3.1884	2	12	0.0775
Bartlett	0.9495	2	.	0.3869

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.08894	1.08894	1.40247	1.89526	2.05177	2.10354	2.10354
B7-COMP	1.04139	1.04139	1.065165	1.11711	1.755925	1.79909	1.79909
LA-2-REF	0.91948	0.91948	0.97254	1.06339	1.11087	1.1126	1.1126

**Oneway Anova**

**Summary of Fit**

Rsquare	0.512691
Adj Rsquare	0.431472
Root Mean Square Error	0.31914
Mean of Response	1.386216
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.2858652	0.642933	6.3125	0.0134*
Error	12	1.2222074	0.101851		
C. Total	14	2.5080726			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.76075	0.14272	1.4498	2.0717
B7-COMP	5	1.35186	0.14272	1.0409	1.6628
LA-2-REF	5	1.04604	0.14272	0.7351	1.3570

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.76075	0.401923	0.17975	1.2617	2.2598
B7-COMP	5	1.35186	0.371110	0.16597	0.8911	1.8127
LA-2-REF	5	1.04604	0.079291	0.03546	0.9476	1.1445

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.21	0.0076*
B7-COMP	-0.2	0.2602
LA-2-REF	-0.51	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	58.500	40.000	11.7000	2.207
B7-COMP	5	39.500	40.000	7.9000	0.000
LA-2-REF	5	22.000	40.000	4.4000	-2.145

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
6.6769	2	0.0355*

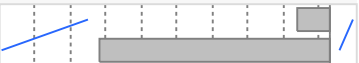
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

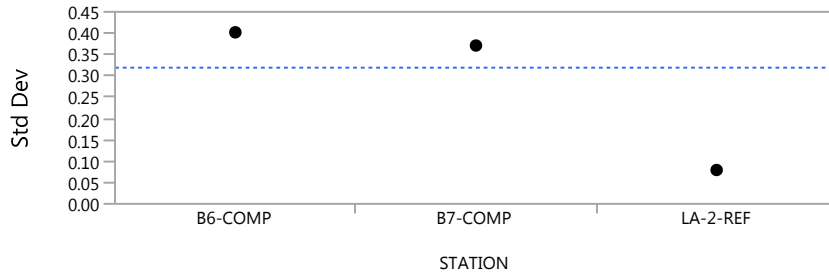
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-2.80000	1.914854	-1.46225	0.2463	-0.121910	-0.87961	0.0712100
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.831870	-1.18406	0.0236600



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**

**Tests that the Variances are Equal**

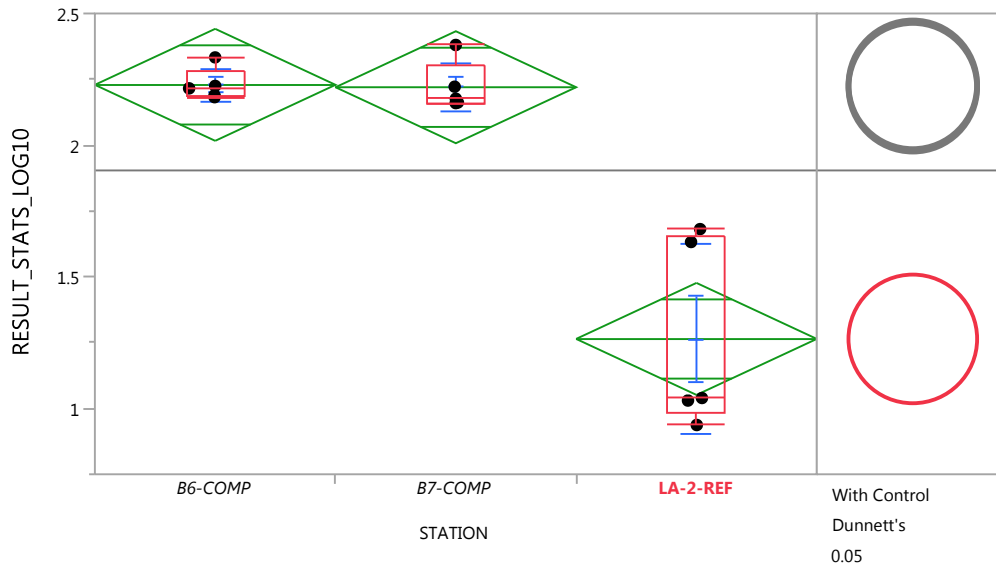


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.4019234	0.2866224	0.2597200
B7-COMP	5	0.3711097	0.3232536	0.2763040
LA-2-REF	5	0.0792908	0.0588016	0.0553320

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.3049	2	12	0.3071
Brown-Forsythe	1.0624	2	12	0.3760
Levene	4.5338	2	12	0.0342*
Bartlett	3.6396	2	.	0.0263*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.18184	2.18184	2.18545	2.2156	2.279075	2.33321	2.33321
B7-COMP	2.1597	2.1597	2.160775	2.17609	2.30103	2.38021	2.38021
LA-2-REF	0.937209	0.937209	0.983585	1.03951	1.65663	1.68124	1.68124

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.843397
Adj Rsquare	0.817296
Root Mean Square Error	0.218133
Mean of Response	1.904286
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	3.0750648	1.53753	32.3134	<.0001*
Error	12	0.5709820	0.04758		
C. Total	14	3.6460468			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.22893	0.09755	2.0164	2.4415
B7-COMP	5	2.21994	0.09755	2.0074	2.4325
LA-2-REF	5	1.26399	0.09755	1.0514	1.4765

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.22893	0.060982	0.02727	2.1532	2.3046
B7-COMP	5	2.21994	0.093027	0.04160	2.1044	2.3354
LA-2-REF	5	1.26399	0.361072	0.16148	0.8157	1.7123

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.62	<.0001*
B7-COMP	0.611	<.0001*
LA-2-REF	-0.35	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	57.000	40.000	11.4000	2.021
B7-COMP	5	48.000	40.000	9.6000	0.919
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.7800	2	0.0075*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

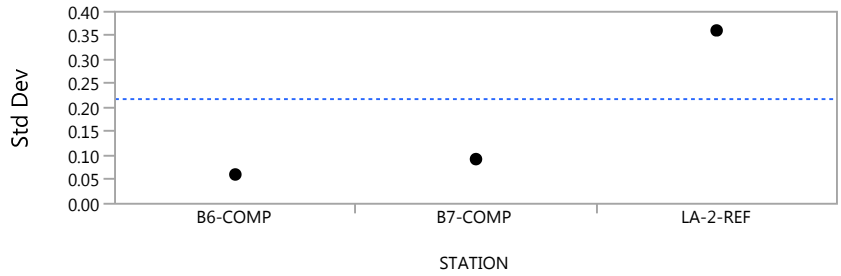
Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**

**Nonparametric Comparisons With Control Using Steel Method**

q*		Alpha						
2.21213		0.05						
Score Mean				Hodges-				
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.15188	-1.39600	-0.500600
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.12974	-1.44300	-0.478460

**Tests that the Variances are Equal**

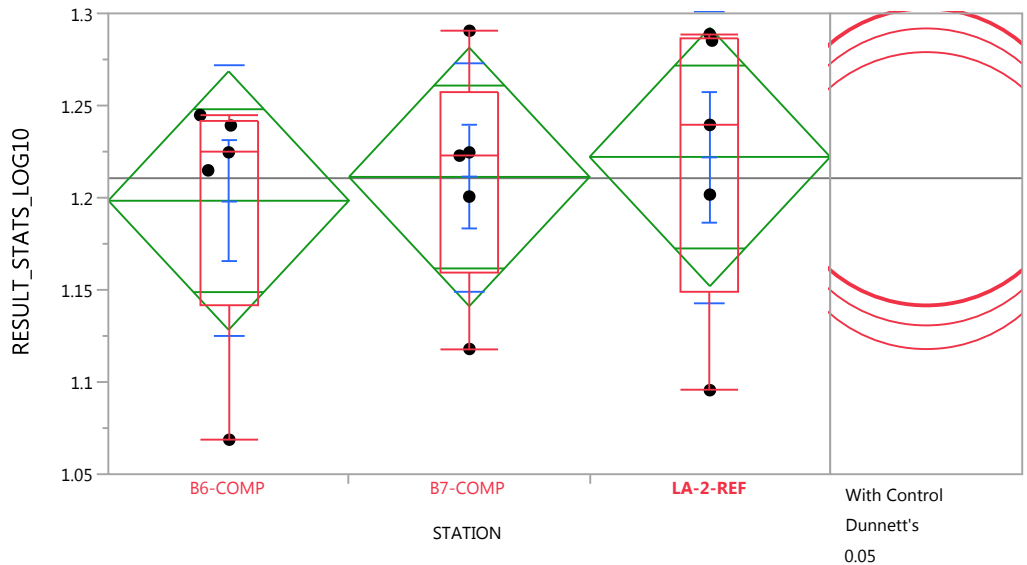


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0609816	0.0417120	0.0374500
B7-COMP	5	0.0930272	0.0648720	0.0561020
LA-2-REF	5	0.3610716	0.3141138	0.2692182

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	12.3707	2	12	0.0012*
Brown-Forsythe	2.2191	2	12	0.1513
Levene	28.5701	2	12	<.0001*
Bartlett	5.8420	2	.	0.0029*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.06872	1.06872	1.14178	1.2246	1.242005	1.24481	1.24481
B7-COMP	1.11793	1.11793	1.159265	1.22281	1.25758	1.29056	1.29056
LA-2-REF	1.09557	1.09557	1.14863	1.23948	1.28697	1.2887	1.2887

**Oneway Anova**

**Summary of Fit**

Rsquare	0.022146
Adj Rsquare	-0.14083
Root Mean Square Error	0.071976
Mean of Response	1.210623
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00140790	0.000704	0.1359	0.8743
Error	12	0.06216679	0.005181		
C. Total	14	0.06357469			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.19843	0.03219	1.1283	1.2686
B7-COMP	5	1.21130	0.03219	1.1412	1.2814
LA-2-REF	5	1.22214	0.03219	1.1520	1.2923

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.19843	0.073471	0.03286	1.1072	1.2897
B7-COMP	5	1.21130	0.062097	0.02777	1.1342	1.2884
LA-2-REF	5	1.22214	0.079295	0.03546	1.1237	1.3206

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.11	1.0000
B7-COMP	-0.1	0.9595
B6-COMP	-0.09	0.8255

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	37.500	40.000	7.50000	-0.245
B7-COMP	5	37.500	40.000	7.50000	-0.245
LA-2-REF	5	45.000	40.000	9.00000	0.552

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.3757	2	0.8288

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

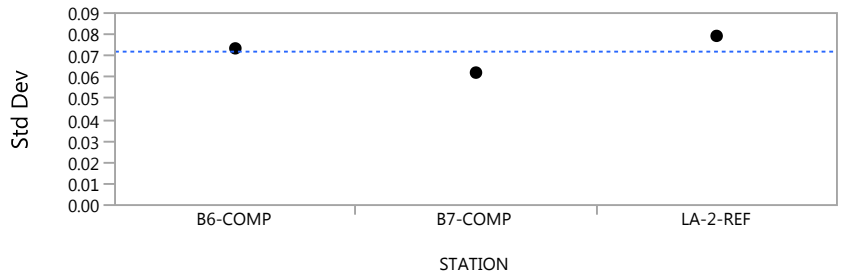
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

Level	- Level	Score Mean	Std Err Dif	Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.200000	1.914854	0.6266796	0.7553	0.0268500	-0.149240	0.2199800
B7-COMP	LA-2-REF	0.400000	1.914854	0.2088932	0.9685	0.0148800	-0.194990	0.1707700

**Tests that the Variances are Equal**

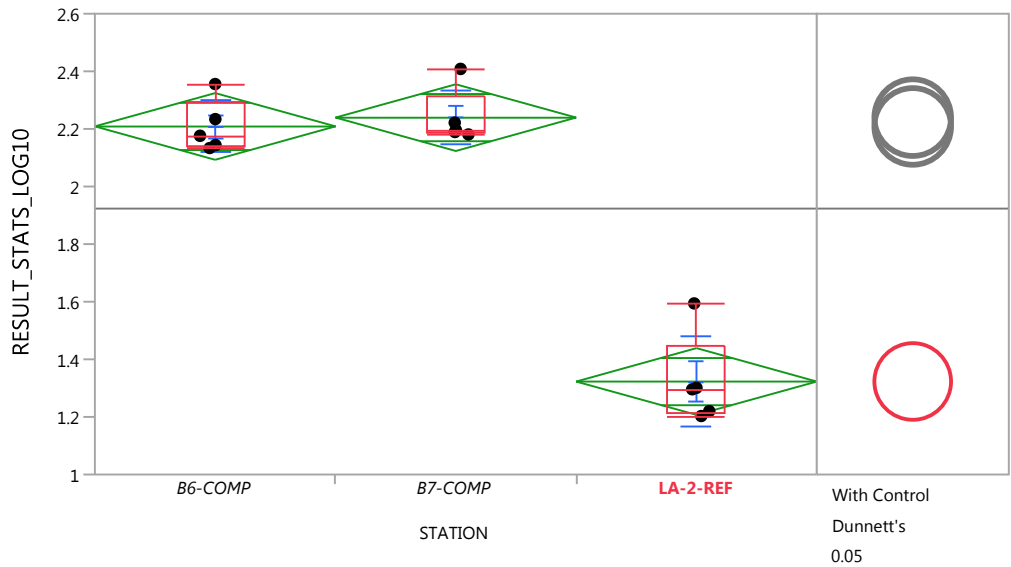


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0734713	0.0518856	0.0400900
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792948	0.0588048	0.0553360

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.0990	2	12	0.9065
Brown-Forsythe	0.1334	2	12	0.8764
Levene	0.1970	2	12	0.8238
Bartlett	0.1089	2		0.8968

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.13354	2.13354	2.138725	2.17609	2.29498	2.35588	2.35588
B7-COMP	2.18074	2.18074	2.1849	2.19629	2.315045	2.40824	2.40824
LA-2-REF	1.20307	1.20307	1.21159	1.29583	1.44763	1.59423	1.59423

**Oneway Anova**

**Summary of Fit**

Rsquare	0.941076
Adj Rsquare	0.931255
Root Mean Square Error	0.118891
Mean of Response	1.923597
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	2.7090193	1.35451	95.8262	<.0001*
Error	12	0.1696207	0.01414		
C. Total	14	2.8786400			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.20870	0.05317	2.0929	2.3245
B7-COMP	5	2.23924	0.05317	2.1234	2.3551
LA-2-REF	5	1.32285	0.05317	1.2070	1.4387

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.20870	0.091127	0.04075	2.0956	2.3218
B7-COMP	5	2.23924	0.095719	0.04281	2.1204	2.3581
LA-2-REF	5	1.32285	0.157921	0.07062	1.1268	1.5189

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.728	<.0001*
B6-COMP	0.698	<.0001*
LA-2-REF	-0.19	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	48.000	40.000	9.6000	0.919
B7-COMP	5	57.000	40.000	11.4000	2.021
LA-2-REF	5	15.000	40.000	3.0000	-3.001



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.7800	2	0.0075*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

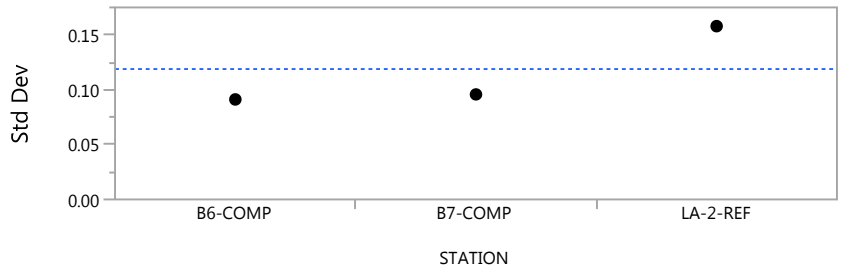
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
		Difference	Std Err Dif					
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.923800	-1.15281	-0.539310
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.926020	-1.20517	-0.586510

**Tests that the Variances are Equal**

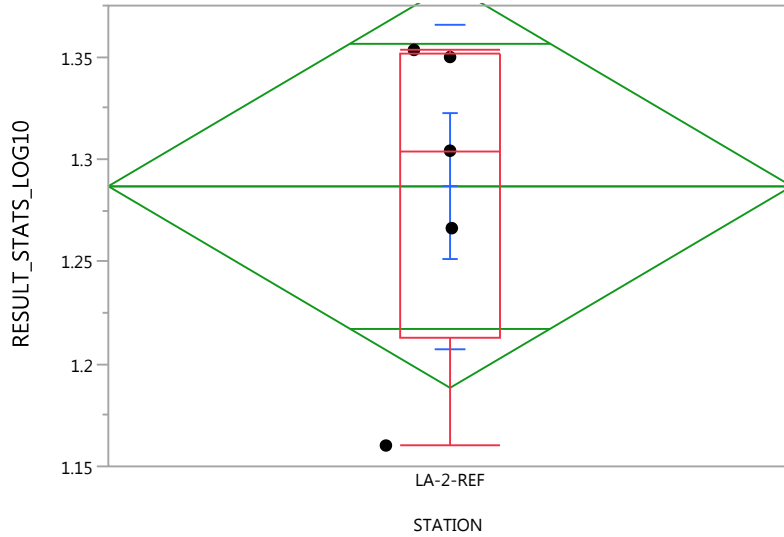


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0911267	0.0690240	0.0625020
B7-COMP	5	0.0957189	0.0676016	0.0520580
LA-2-REF	5	0.1579209	0.1085504	0.0944160

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.5357	2	12	0.5986
Brown-Forsythe	0.2652	2	12	0.7714
Levene	0.5062	2	12	0.6151
Bartlett	0.7159	2	.	0.4888

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB119**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.16021	1.16021	1.21327	1.30412	1.35161	1.35334	1.35334

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079295
Mean of Response	1.286776
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02515069	0.006288		
C. Total	4	0.02515069			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.28678	0.03546	1.1883	1.3852

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.28678	0.079295	0.03546	1.1883	1.3852

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

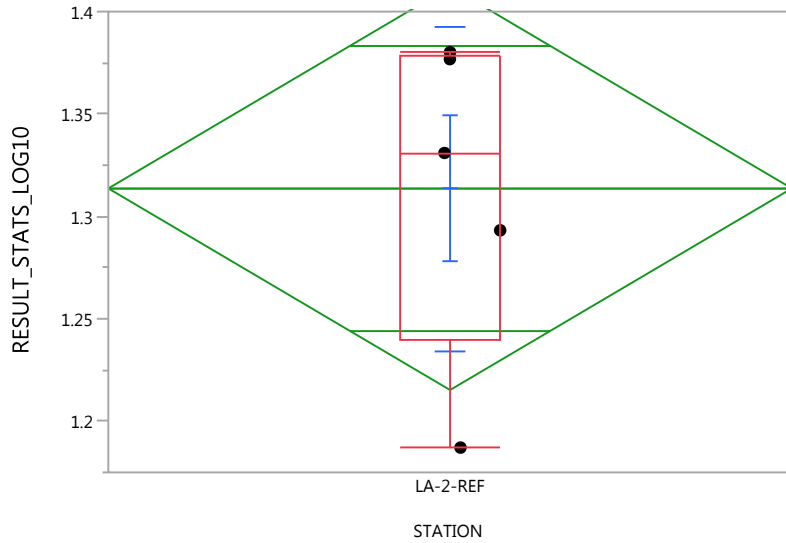
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB123**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.18709	1.18709	1.240145	1.33099	1.37848	1.38021	1.38021

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.313648
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514816	0.006287		
C. Total	4	0.02514816			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.31365	0.03546	1.2152	1.4121

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.31365	0.079291	0.03546	1.2152	1.4121

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

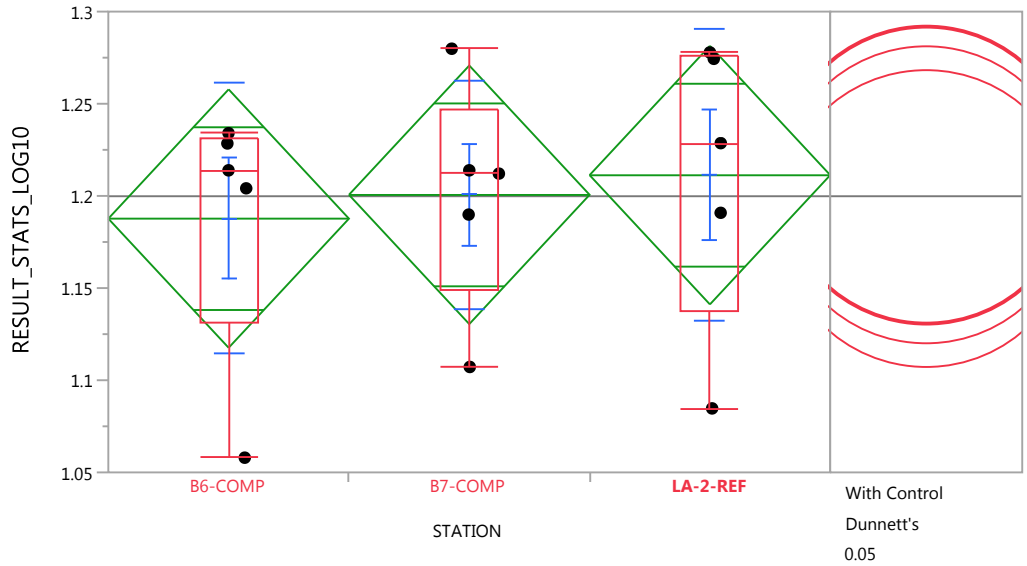
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB126**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.05799	1.05799	1.131055	1.21388	1.23128	1.23408	1.23408
B7-COMP	1.10721	1.10721	1.148545	1.21209	1.24686	1.27984	1.27984
LA-2-REF	1.08471	1.08471	1.13777	1.22862	1.27611	1.27784	1.27784

**Oneway Anova**

**Summary of Fit**

Rsquare	0.021905
Adj Rsquare	-0.14111
Root Mean Square Error	0.071977
Mean of Response	1.199855
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00139233	0.000696	0.1344	0.8756
Error	12	0.06216846	0.005181		
C. Total	14	0.06356079			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.18771	0.03219	1.1176	1.2578
B7-COMP	5	1.20058	0.03219	1.1304	1.2707
LA-2-REF	5	1.21128	0.03219	1.1411	1.2814

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.18771	0.073474	0.03286	1.0965	1.2789
B7-COMP	5	1.20058	0.062097	0.02777	1.1235	1.2777
LA-2-REF	5	1.21128	0.079295	0.03546	1.1128	1.3097

**Means Comparisons**

**Comparisons with a control using Dunnnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB126**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.11	1.0000
B7-COMP	-0.1	0.9605
B6-COMP	-0.09	0.8272

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	37.500	40.000	7.50000	-0.245
B7-COMP	5	37.500	40.000	7.50000	-0.245
LA-2-REF	5	45.000	40.000	9.00000	0.552

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.3757	2	0.8288

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

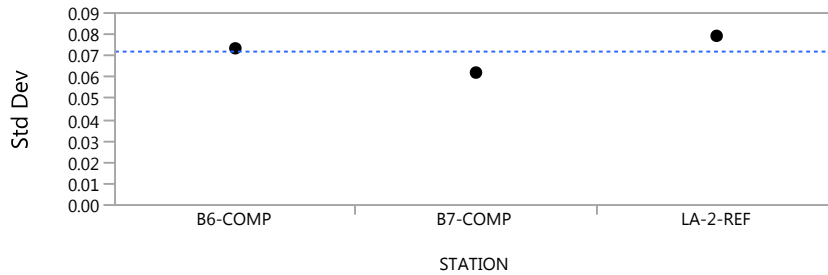
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.200000	1.914854	0.6266796	0.7553	0.0267200	-0.149370	0.2198500	
B7-COMP	LA-2-REF	0.400000	1.914854	0.2088932	0.9685	0.0147400	-0.195130	0.1706300	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0734742	0.0518880	0.0400900
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792948	0.0588048	0.0553360

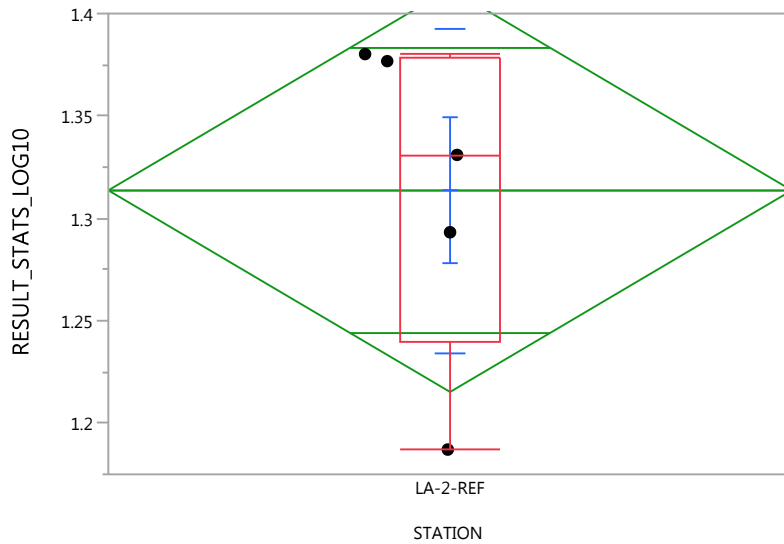
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.0989	2	12	0.9065
Brown-Forsythe	0.1334	2	12	0.8764
Levene	0.1970	2	12	0.8238
Bartlett	0.1089	2	.	0.8968

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB126**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB128**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.18709	1.18709	1.240145	1.33099	1.37848	1.38021	1.38021

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.313648
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514816	0.006287		
C. Total	4	0.02514816			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.31365	0.03546	1.2152	1.4121

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.31365	0.079291	0.03546	1.2152	1.4121

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

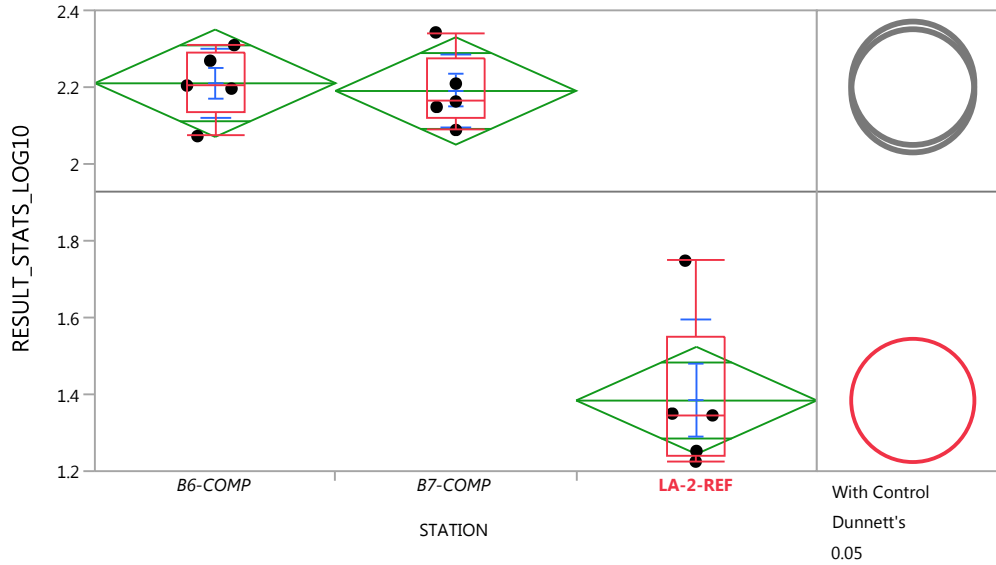
ChiSquare	DF	Prob>ChiSq
0.0000	0	

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB128**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.07255	2.07255	2.13442	2.20412	2.289075	2.3093	2.3093
B7-COMP	2.08842	2.08842	2.11842	2.16273	2.27584	2.34242	2.34242
LA-2-REF	1.22494	1.22494	1.23871	1.34523	1.549035	1.74819	1.74819

**Oneway Anova**

**Summary of Fit**

Rsquare	0.900018
Adj Rsquare	0.883354
Root Mean Square Error	0.143391
Mean of Response	1.928205
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	2.2210177	1.11051	54.0106	<.0001*
Error	12	0.2467313	0.02056		
C. Total	14	2.4677490			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.21022	0.06413	2.0705	2.3499
B7-COMP	5	2.19025	0.06413	2.0505	2.3300
LA-2-REF	5	1.38414	0.06413	1.2444	1.5239

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.21022	0.090054	0.04027	2.0984	2.3220
B7-COMP	5	2.19025	0.095385	0.04266	2.0718	2.3087
LA-2-REF	5	1.38414	0.210890	0.09431	1.1223	1.6460

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.599	<.0001*
B7-COMP	0.579	<.0001*
LA-2-REF	-0.23	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	54.000	40.000	10.8000	1.653
B7-COMP	5	51.000	40.000	10.2000	1.286
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.4200	2	0.0090*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

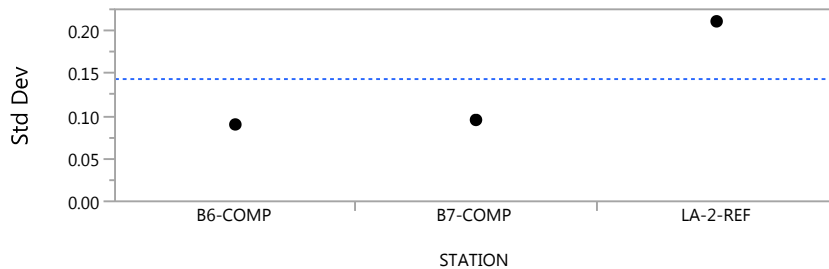
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean Difference	Std Err Dif	Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.858890	-1.08436	-0.324360
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.859380	-1.11748	-0.340230

**Tests that the Variances are Equal**





**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**

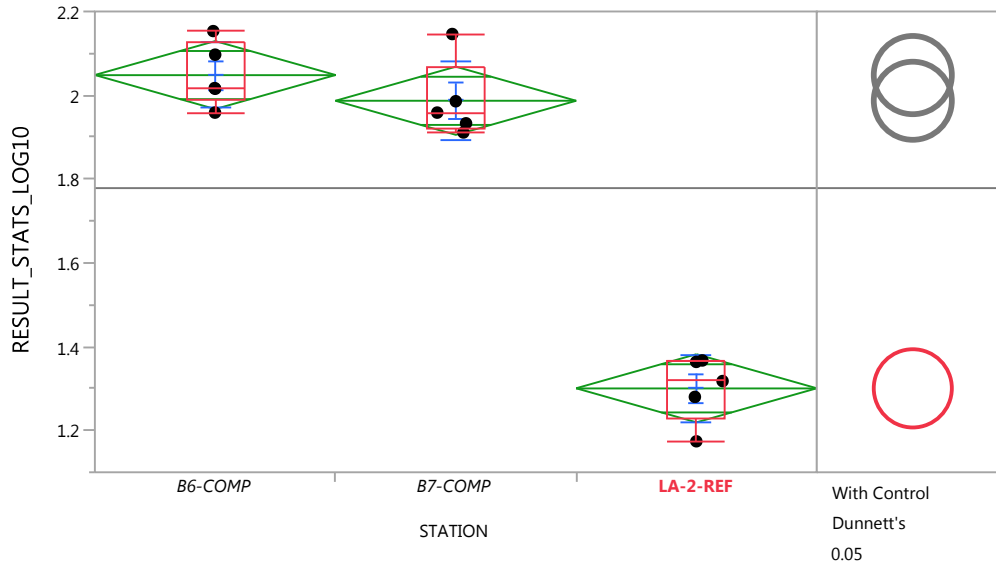
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0900536	0.0630824	0.0618620
B7-COMP	5	0.0953855	0.0684720	0.0629680
LA-2-REF	5	0.2108905	0.1456184	0.1241300

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.9444	2	12	0.4160
Brown-Forsythe	0.5355	2	12	0.5987
Levene	1.3139	2	12	0.3048
Bartlett	1.7534	2	.	0.1732

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.95861	1.95861	1.986925	2.01703	2.12507	2.15323	2.15323
B7-COMP	1.91106	1.91106	1.922055	1.95861	2.065945	2.14613	2.14613
LA-2-REF	1.17386	1.17386	1.22692	1.31776	1.36525	1.36698	1.36698

**Oneway Anova**

**Summary of Fit**

Rsquare	0.953826
Adj Rsquare	0.94613
Root Mean Square Error	0.083388
Mean of Response	1.778515
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.7237023	0.861851	123.9429	<.0001*
Error	12	0.0834434	0.006954		
C. Total	14	1.8071457			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.04820	0.03729	1.9670	2.1295
B7-COMP	5	1.98692	0.03729	1.9057	2.0682
LA-2-REF	5	1.30042	0.03729	1.2192	1.3817

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.04820	0.076629	0.03427	1.9531	2.1434
B7-COMP	5	1.98692	0.093284	0.04172	1.8711	2.1027
LA-2-REF	5	1.30042	0.079290	0.03546	1.2020	1.3989

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.616	<.0001*
B7-COMP	0.555	<.0001*
LA-2-REF	-0.13	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	59.500	40.000	11.9000	2.329
B7-COMP	5	45.500	40.000	9.1000	0.613
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
10.3735	2	0.0056*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

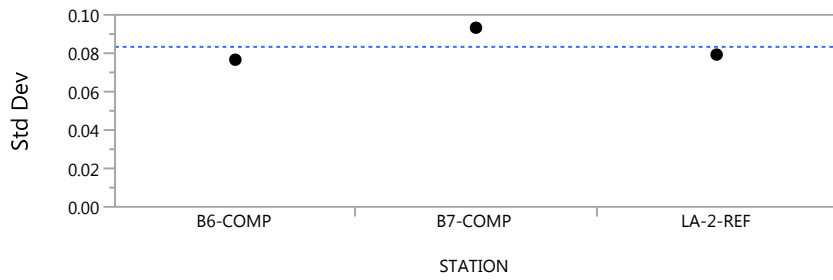
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.735260	-0.979370	-0.591630
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.653070	-0.972270	-0.544080



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**

**Tests that the Variances are Equal**

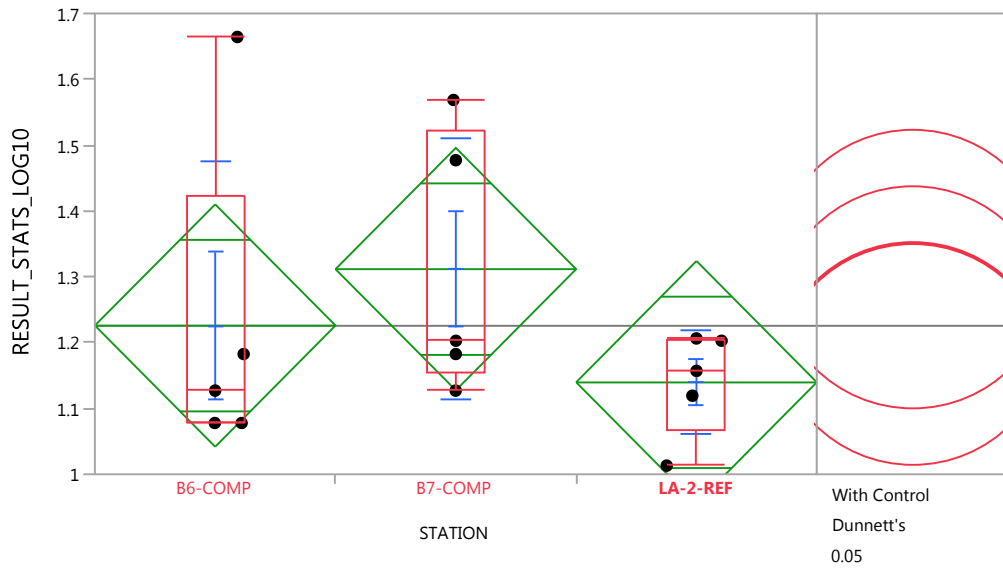


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0766294	0.0614928	0.0552580
B7-COMP	5	0.0932836	0.0636832	0.0575560
LA-2-REF	5	0.0792902	0.0588000	0.0553320

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.0952	2	12	0.9098
Brown-Forsythe	0.0022	2	12	0.9978
Levene	0.0133	2	12	0.9868
Bartlett	0.0820	2	.	0.9212

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.07789	1.07789	1.07789	1.1271	1.423415	1.66421	1.66421
B7-COMP	1.1271	1.1271	1.15486	1.20283	1.52288	1.56864	1.56864
LA-2-REF	1.01316	1.01316	1.06622	1.15707	1.20456	1.20629	1.20629

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.147048
Adj Rsquare	0.004889
Root Mean Square Error	0.189008
Mean of Response	1.225777
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.07390518	0.036953	1.0344	0.3851
Error	12	0.42868827	0.035724		
C. Total	14	0.50259344			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.22594	0.08453	1.0418	1.4101
B7-COMP	5	1.31166	0.08453	1.1275	1.4958
LA-2-REF	5	1.13973	0.08453	0.9556	1.3239

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.22594	0.248779	0.11126	0.9170	1.5348
B7-COMP	5	1.31166	0.197467	0.08831	1.0665	1.5569
LA-2-REF	5	1.13973	0.079295	0.03546	1.0413	1.2382

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.13	0.2914
B6-COMP	-0.21	0.6999
LA-2-REF	-0.3	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.000	40.000	6.8000	-0.676
B7-COMP	5	51.500	40.000	10.3000	1.352
LA-2-REF	5	34.500	40.000	6.9000	-0.615

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
1.9993	2	0.3680

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

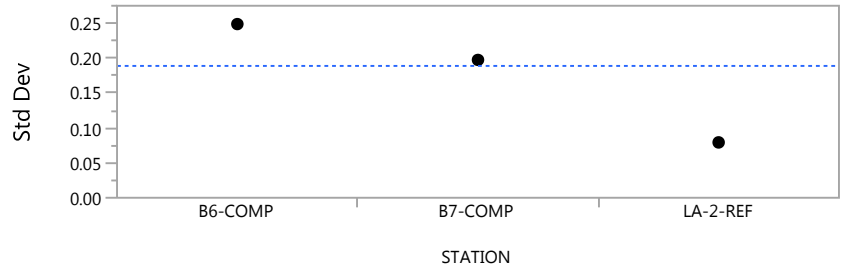
Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**

**Nonparametric Comparisons With Control Using Steel Method**

q*		Alpha						
2.21213		0.05						
Score Mean				Hodges-				
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	0.00000	1.909043	0.00000	1.0000	0.020210	-0.651050	0.1284000
B7-COMP	LA-2-REF	-2.20000	1.909043	-1.15241	0.4065	-0.113940	-0.555480	0.0791900

**Tests that the Variances are Equal**

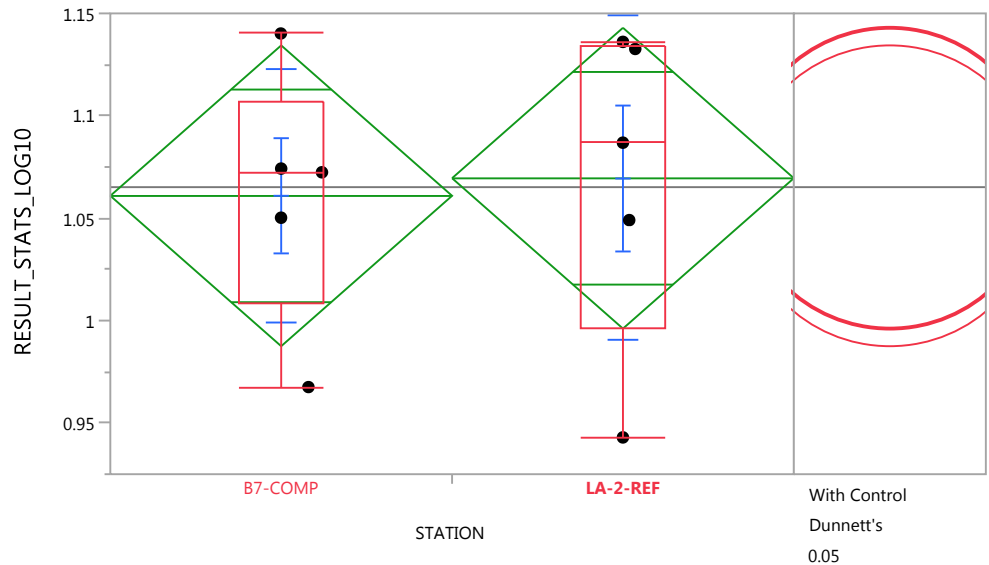


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.2487791	0.1753072	0.1382100
B7-COMP	5	0.1974673	0.1689744	0.1472080
LA-2-REF	5	0.0792948	0.0588048	0.0553360

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.7958	2	12	0.4736
Brown-Forsythe	0.4823	2	12	0.6288
Levene	2.2397	2	12	0.1491
Bartlett	1.9802	2	.	0.1380

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.967548	0.967548	1.008884	1.07243	1.1072	1.14018	1.14018
LA-2-REF	0.942962	0.942962	0.996021	1.08687	1.13436	1.13609	1.13609

**Oneway Anova**

**Summary of Fit**

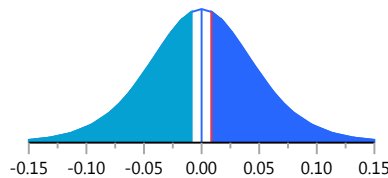
Rsquare	0.004544
Adj Rsquare	-0.11989
Root Mean Square Error	0.071217
Mean of Response	1.065223
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.00861	t Ratio	0.191087
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11247	Prob >  t	0.8532
Lower CL Dif	-0.09526	Prob > t	0.4266
Confidence	0.95	Prob < t	0.5734



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00018519	0.000185	0.0365	0.8532
Error	8	0.04057452	0.005072		
C. Total	9	0.04075971			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	1.06092	0.03185	0.98748	1.1344
LA-2-REF	5	1.06953	0.03185	0.99608	1.1430

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

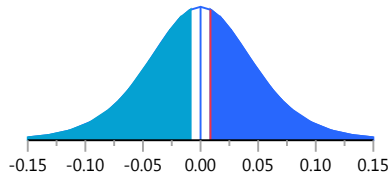
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	1.06092	0.062097	0.02777	0.98382	1.1380
LA-2-REF	5	1.06953	0.079294	0.03546	0.97107	1.1680

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.00861	t Ratio	0.191087
Std Err Dif	0.04504	DF	7.565315
Upper CL Dif	0.11352	Prob >  t	0.8535
Lower CL Dif	-0.09631	Prob > t	0.4267
Confidence	0.95	Prob < t	0.5733



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.1	0.8532

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	27.000	27.500	5.40000	0.000
LA-2-REF	5	28.000	27.500	5.60000	-0.000

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
28	-0.00000	1.0000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0109	1	0.9168

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

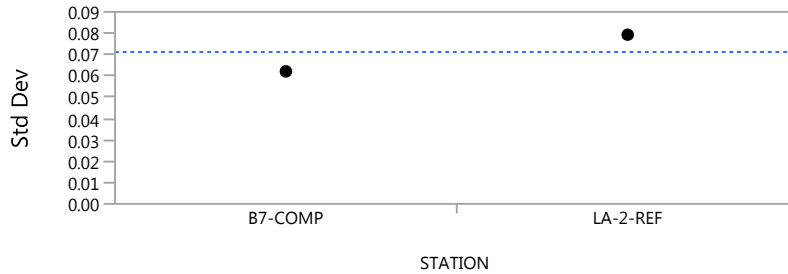
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lower CL	Upper CL	
B7-COMP	LA-2-REF	0	1.914854	0	1.0000	0.0126500	-0.131258	0.1650820	

**Tests that the Variances are Equal**

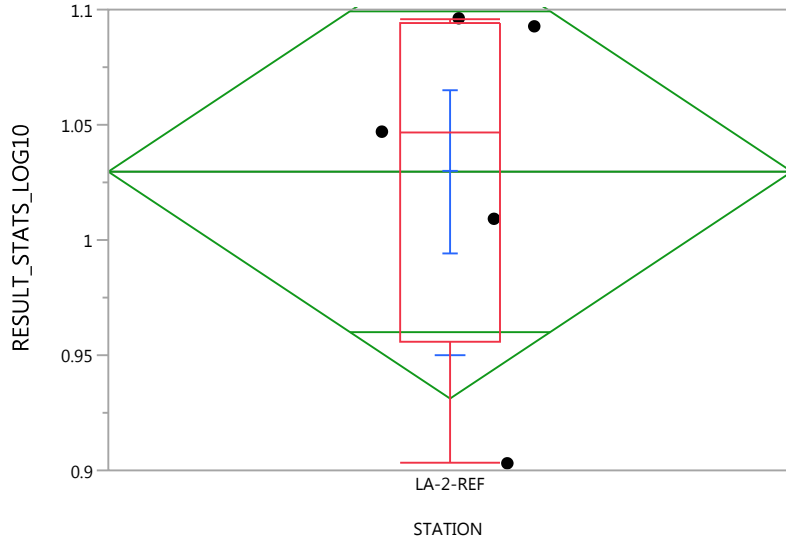


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.0620974	0.0416285	0.0393264
LA-2-REF	5	0.0792940	0.0588043	0.0553356

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.2378	1	8	0.6389
Brown-Forsythe	0.2602	1	8	0.6237
Levene	0.4036	1	8	0.5430
Bartlett	0.2104	1	.	0.6465
F Test 2-sided	1.6306	4	4	0.6473

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB157**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.90309	0.90309	0.95615	1.047	1.09448	1.09621	1.09621

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.029652
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514809	0.006287		
C. Total	4	0.02514809			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.02965	0.03546	0.93120	1.1281

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.02965	0.079291	0.03546	0.93120	1.1281

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

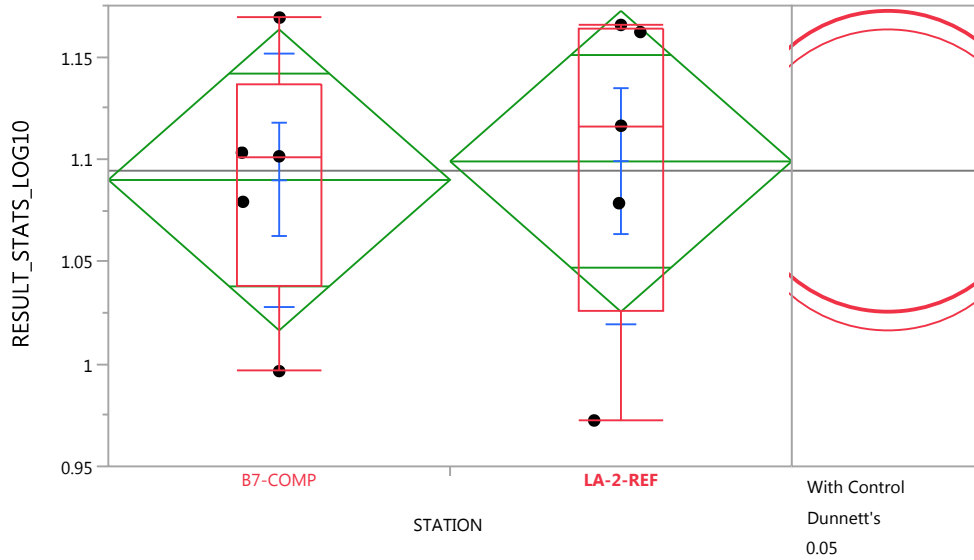
**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.996512	0.996512	1.037846	1.10139	1.13616	1.16914	1.16914
LA-2-REF	0.972417	0.972417	1.025474	1.11632	1.16381	1.16554	1.16554

**Oneway Anova**

**Summary of Fit**

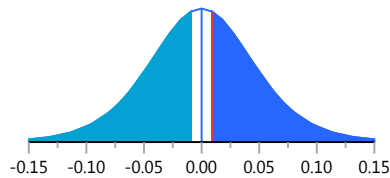
Rsquare	0.005073
Adj Rsquare	-0.11929
Root Mean Square Error	0.071215
Mean of Response	1.094429
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.00910	t Ratio	0.201975
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11296	Prob >  t	0.8450
Lower CL Dif	-0.09477	Prob > t	0.4225
Confidence	0.95	Prob < t	0.5775



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00020689	0.000207	0.0408	0.8450
Error	8	0.04057251	0.005072		
C. Total	9	0.04077939			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	1.08988	0.03185	1.0164	1.1633
LA-2-REF	5	1.09898	0.03185	1.0255	1.1724

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**

**Means and Std Deviations**

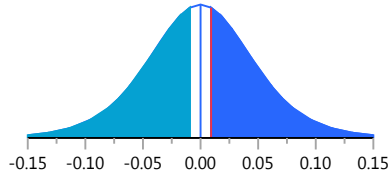
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	1.08988	0.062096	0.02777	1.0128	1.1670
LA-2-REF	5	1.09898	0.079292	0.03546	1.0005	1.1974

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.00910	t Ratio	0.201975
Std Err Dif	0.04504	DF	7.565318
Upper CL Dif	0.11401	Prob >  t	0.8453
Lower CL Dif	-0.09581	Prob > t	0.4226
Confidence	0.95	Prob < t	0.5774



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.09	0.8450

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	27.000	27.500	5.40000	0.000
LA-2-REF	5	28.000	27.500	5.60000	-0.000

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
28	-0.00000	1.0000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0109	1	0.9168

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

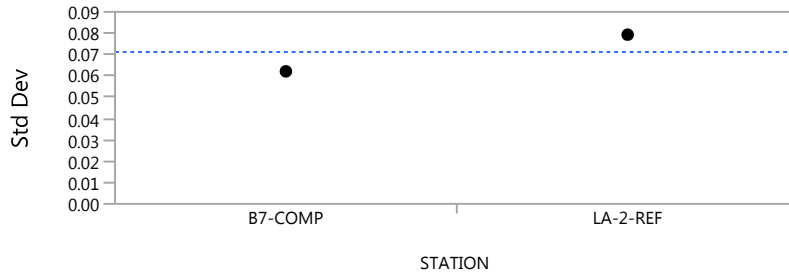
Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0	1.914854	0	1.0000	0.0131400	-0.130763	0.1655680

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**

**Tests that the Variances are Equal**

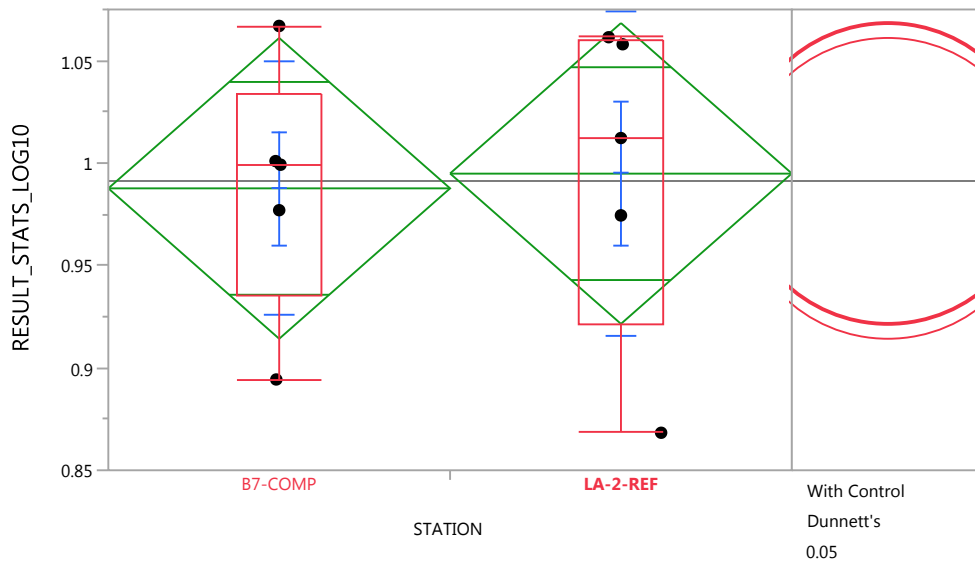


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B7-COMP	5	0.0620959	0.0416275	0.0393256
LA-2-REF	5	0.0792920	0.0588031	0.0553346

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.2378	1	8	0.6389
Brown-Forsythe	0.2602	1	8	0.6237
Levene	0.4036	1	8	0.5430
Bartlett	0.2104	1	.	0.6465
F Test 2-sided	1.6305	4	4	0.6473

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.894316	0.894316	0.935651	0.999195	1.03397	1.06695	1.06695
LA-2-REF	0.868328	0.868328	0.921387	1.01223	1.05972	1.06145	1.06145

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**

**Oneway Anova**

**Summary of Fit**

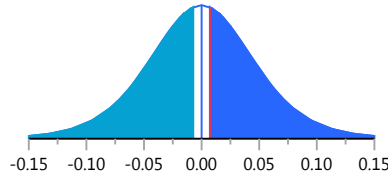
Rsquare	0.003185
Adj Rsquare	-0.12142
Root Mean Square Error	0.071215
Mean of Response	0.991288
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.00720	t Ratio	0.159887
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11107	Prob >  t	0.8769
Lower CL Dif	-0.09666	Prob > t	0.4385
Confidence	0.95	Prob < t	0.5615



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00012965	0.000130	0.0256	0.8769
Error	8	0.04057310	0.005072		
C. Total	9	0.04070275			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.987687	0.03185	0.91424	1.0611
LA-2-REF	5	0.994889	0.03185	0.92145	1.0683

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

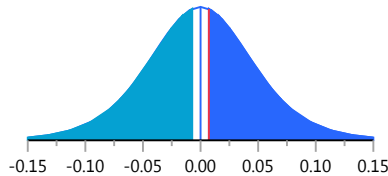
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.987687	0.062098	0.02777	0.91058	1.0648
LA-2-REF	5	0.994889	0.079291	0.03546	0.89644	1.0933

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.00720	t Ratio	0.159887
Std Err Dif	0.04504	DF	7.565464
Upper CL Dif	0.11211	Prob >  t	0.8772
Lower CL Dif	-0.09771	Prob > t	0.4386
Confidence	0.95	Prob < t	0.5614



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.1	0.8769

Positive values show pairs of means that are significantly different.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	27.000	27.500	5.40000	0.000
LA-2-REF	5	28.000	27.500	5.60000	-0.000

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
28	-0.00000	1.0000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0109	1	0.9168

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

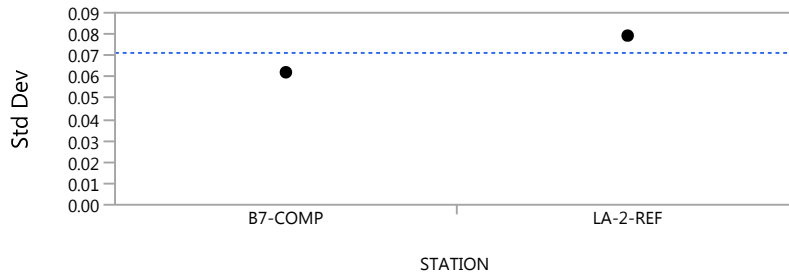
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0	1.914854	0	1.0000	0.0112400	-0.132662	0.1636740	

**Tests that the Variances are Equal**

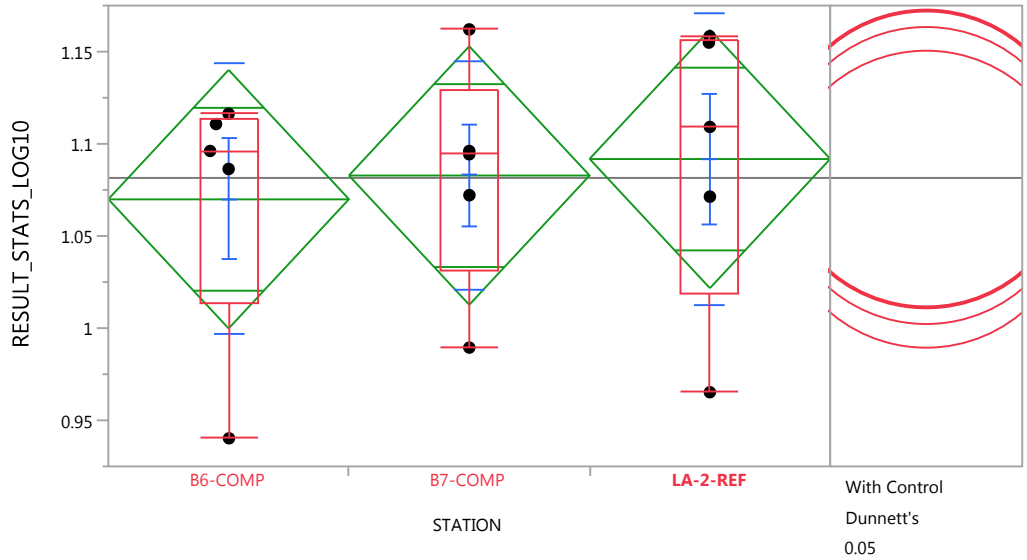


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.0620981	0.0416291	0.0393276
LA-2-REF	5	0.0792913	0.0588014	0.0553332

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[.5]	0.2377	1	8	0.6389
Brown-Forsythe	0.2601	1	8	0.6238
Levene	0.4034	1	8	0.5431
Bartlett	0.2103	1	.	0.6465
F Test 2-sided	1.6304	4	4	0.6474

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.940232	0.940232	1.013296	1.09612	1.11352	1.11632	1.11632
B7-COMP	0.98945	0.98945	1.030785	1.09433	1.1291	1.16208	1.16208
LA-2-REF	0.965238	0.965238	1.018299	1.10914	1.15663	1.15836	1.15836

**Oneway Anova**

**Summary of Fit**

Rsquare	0.019032
Adj Rsquare	-0.14446
Root Mean Square Error	0.071975
Mean of Response	1.081523
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00120608	0.000603	0.1164	0.8911
Error	12	0.06216550	0.005180		
C. Total	14	0.06337158			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.06995	0.03219	0.9998	1.1401
B7-COMP	5	1.08282	0.03219	1.0127	1.1530
LA-2-REF	5	1.09180	0.03219	1.0217	1.1619

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.06995	0.073473	0.03286	0.9787	1.1612
B7-COMP	5	1.08282	0.062097	0.02777	1.0057	1.1599
LA-2-REF	5	1.09180	0.079291	0.03546	0.9933	1.1903

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.11	1.0000
B7-COMP	-0.1	0.9720
B6-COMP	-0.09	0.8488

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	38.500	40.000	7.70000	-0.123
B7-COMP	5	38.500	40.000	7.70000	-0.123
LA-2-REF	5	43.000	40.000	8.60000	0.306

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.1352	2	0.9346

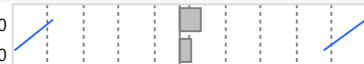
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

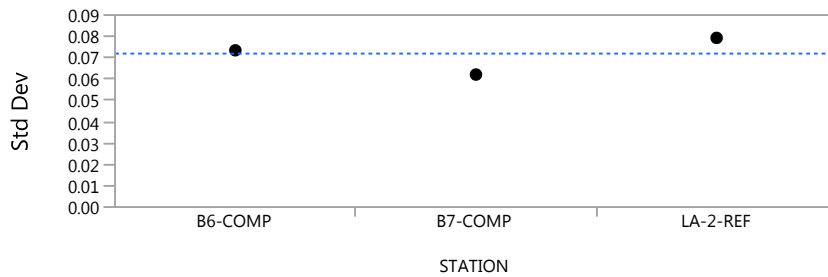
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.8810	0.0250060	-0.151082	0.2181280
B7-COMP	LA-2-REF	0.0000000	1.914854	0.0000000	1.0000	0.0130200	-0.196842	0.1689100



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0734733	0.0518874	0.0400896
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792910	0.0588005	0.0553324

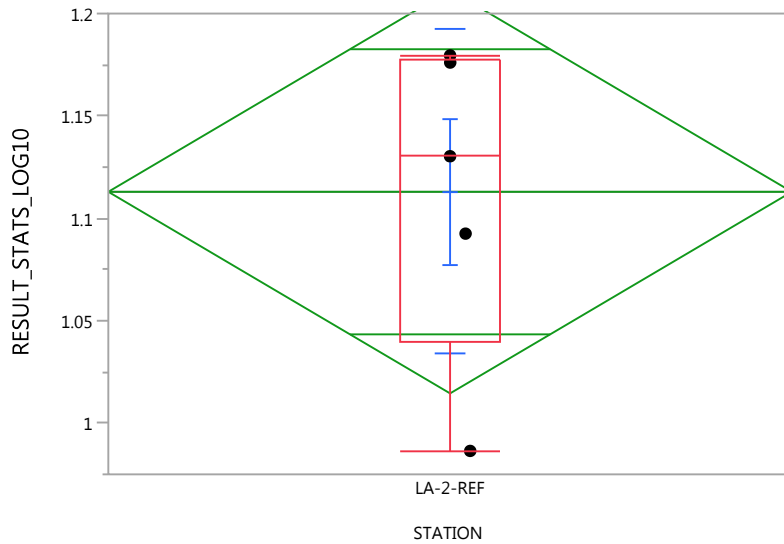
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.0989	2	12	0.9066
Brown-Forsythe	0.1334	2	12	0.8764
Levene	0.1969	2	12	0.8239
Bartlett	0.1088	2	.	0.8969

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB170**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.986427	0.986427	1.039489	1.13033	1.17782	1.17955	1.17955

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.112989
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514851	0.006287		
C. Total	4	0.02514851			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.11299	0.03546	1.0145	1.2114

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.11299	0.079291	0.03546	1.0145	1.2114

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

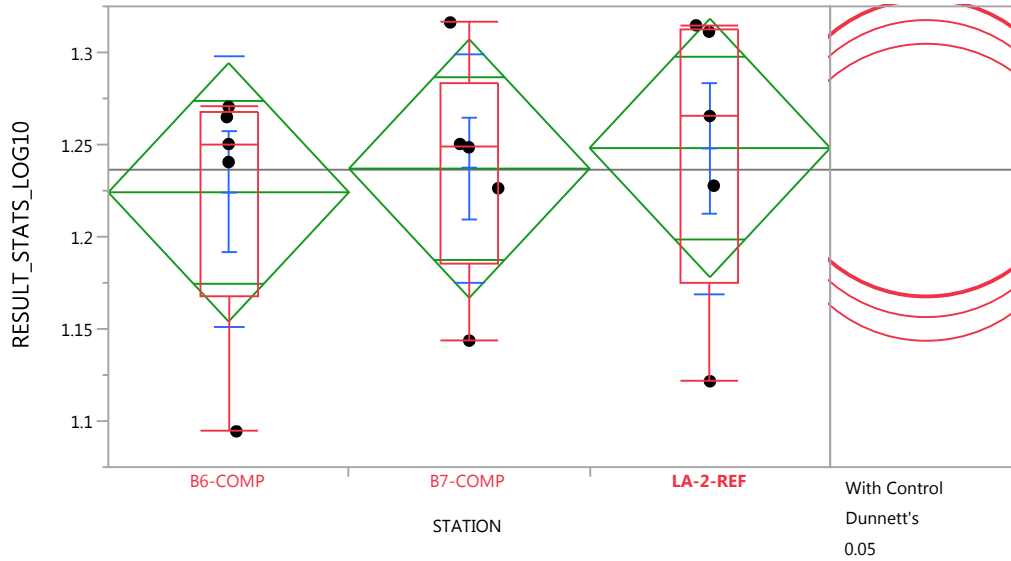


**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB170**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.09442	1.09442	1.167485	1.25031	1.26771	1.27051	1.27051
B7-COMP	1.14364	1.14364	1.184975	1.24852	1.28329	1.31627	1.31627
LA-2-REF	1.12159	1.12159	1.174645	1.26549	1.31298	1.31471	1.31471

**Oneway Anova**

**Summary of Fit**

Rsquare	0.022693
Adj Rsquare	-0.14019
Root Mean Square Error	0.071976
Mean of Response	1.236433
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00144346	0.000722	0.1393	0.8713
Error	12	0.06216593	0.005180		
C. Total	14	0.06360939			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.22414	0.03219	1.1540	1.2943
B7-COMP	5	1.23701	0.03219	1.1669	1.3071
LA-2-REF	5	1.24815	0.03219	1.1780	1.3183

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.22414	0.073474	0.03286	1.1329	1.3154
B7-COMP	5	1.23701	0.062097	0.02777	1.1599	1.3141
LA-2-REF	5	1.24815	0.079291	0.03546	1.1497	1.3466

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.11	1.0000
B7-COMP	-0.1	0.9573
B6-COMP	-0.09	0.8215

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	37.500	40.000	7.50000	-0.245
B7-COMP	5	37.500	40.000	7.50000	-0.245
LA-2-REF	5	45.000	40.000	9.00000	0.552

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.3757	2	0.8288

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

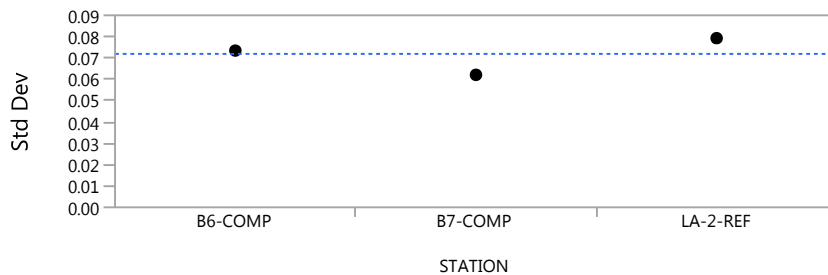
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.200000	1.914854	0.6266796	0.7553	0.0271700	-0.148920	0.2202900
B7-COMP	LA-2-REF	0.400000	1.914854	0.2088932	0.9685	0.0151800	-0.194680	0.1710700



**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**

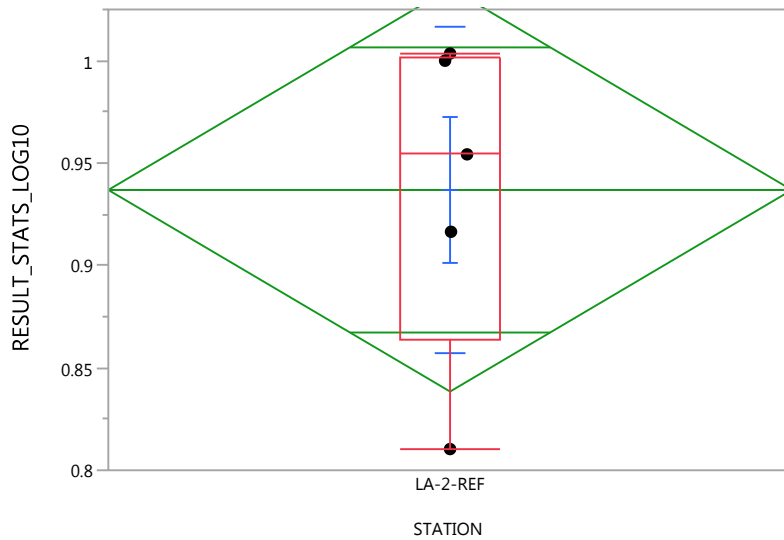
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B6-COMP	5	0.0734742	0.0518880	0.0400900
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792908	0.0588024	0.0553340

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.0989	2	12	0.9066
Brown-Forsythe	0.1334	2	12	0.8764
Levene	0.1969	2	12	0.8238
Bartlett	0.1088	2	.	0.8969

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB180**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.810336	0.810336	0.863395	0.954243	1.00173	1.00346	1.00346

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079292
Mean of Response	0.936899
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000	.	.	.
Error	4	0.02514911	0.006287		
C. Total	4	0.02514911			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.936899	0.03546	0.83844	1.0354

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB180**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.936899	0.079292	0.03546	0.83844	1.0354

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

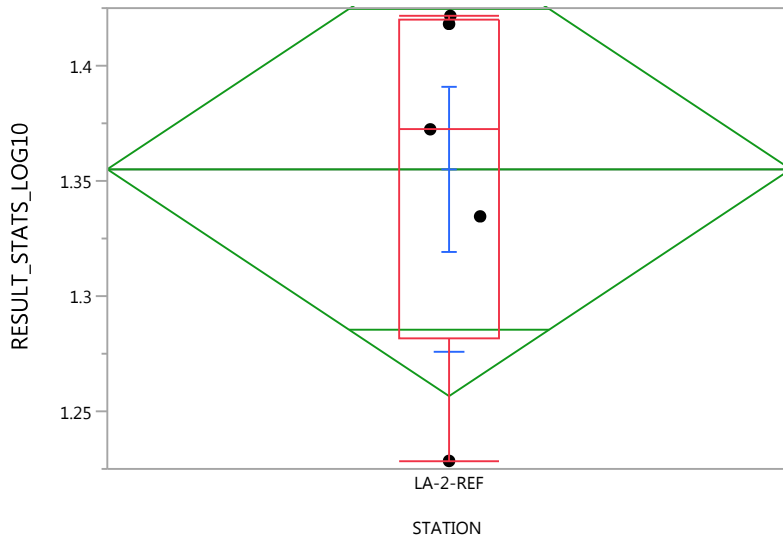
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB183**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.22848	1.22848	1.28154	1.37239	1.41987	1.4216	1.4216

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.355042
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514809	0.006287		
C. Total	4	0.02514809			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.35504	0.03546	1.2566	1.4535

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB183**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.35504	0.079291	0.03546	1.2566	1.4535

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

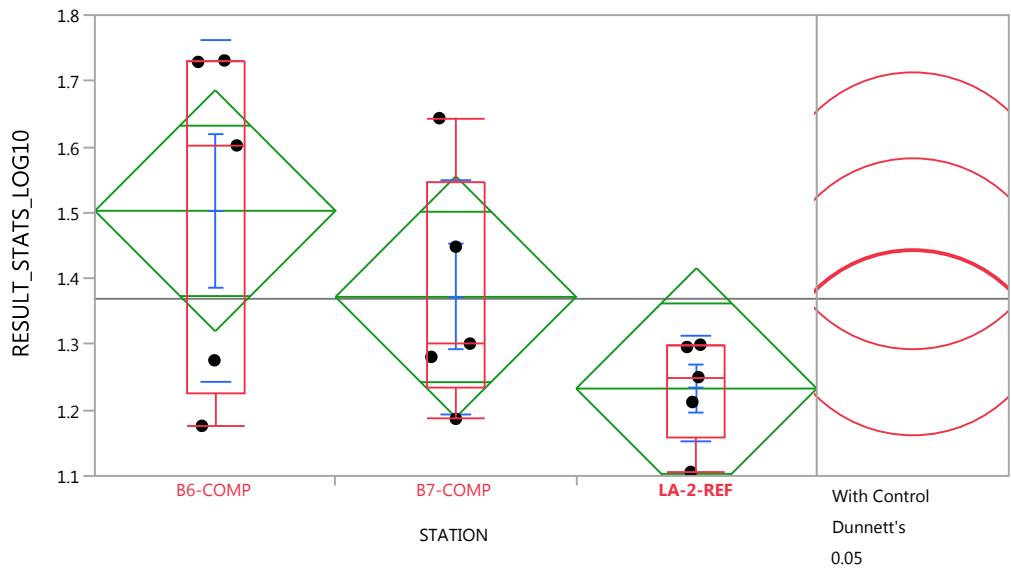
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.17609	1.17609	1.22586	1.60206	1.73004	1.73115	1.73115
B7-COMP	1.18668	1.18668	1.233755	1.30103	1.545805	1.64345	1.64345
LA-2-REF	1.10616	1.10616	1.15922	1.25007	1.29756	1.29929	1.29929

**Oneway Anova**

**Summary of Fit**

Rsquare	0.300857
Adj Rsquare	0.184334
Root Mean Square Error	0.187928
Mean of Response	1.369176
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.18237320	0.091187	2.5819	0.1168
Error	12	0.42380502	0.035317		
C. Total	14	0.60617821			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.50277	0.08404	1.3197	1.6859
B7-COMP	5	1.37203	0.08404	1.1889	1.5551
LA-2-REF	5	1.23273	0.08404	1.0496	1.4158

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.50277	0.260517	0.11651	1.1793	1.8262
B7-COMP	5	1.37203	0.178310	0.07974	1.1506	1.5934
LA-2-REF	5	1.23273	0.079295	0.03546	1.1343	1.3312

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	-0.03	0.0752
B7-COMP	-0.16	0.4211
LA-2-REF	-0.3	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	49.000	40.000	9.80000	1.041
B7-COMP	5	44.000	40.000	8.80000	0.429
LA-2-REF	5	27.000	40.000	5.40000	-1.531

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
2.6600	2	0.2645

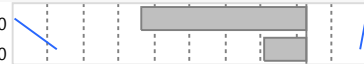
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

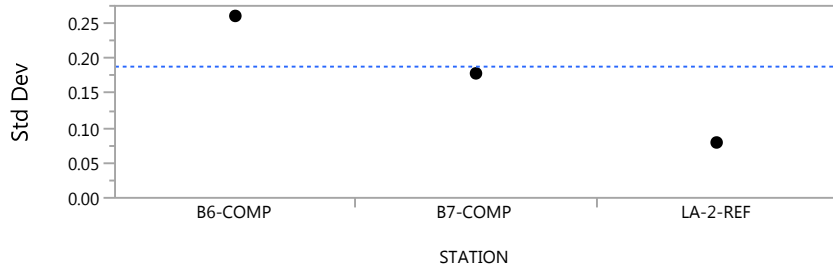
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-2.40000	1.914854	-1.25336	0.3489	-0.351990	-0.624990	0.1232000
B7-COMP	LA-2-REF	-2.40000	1.914854	-1.25336	0.3489	-0.088750	-0.537290	0.1126100



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**

**Tests that the Variances are Equal**

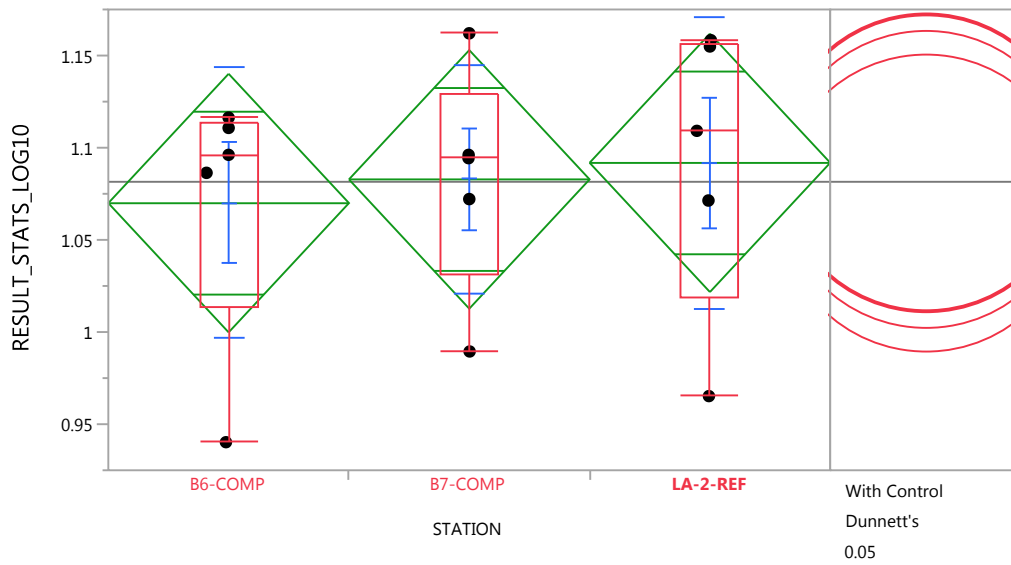


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.2605171	0.2215296	0.2016720
B7-COMP	5	0.1783099	0.1390200	0.1248200
LA-2-REF	5	0.0792948	0.0588048	0.0553360

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	3.2111	2	12	0.0764
Brown-Forsythe	1.5818	2	12	0.2456
Levene	6.1579	2	12	0.0144*
Bartlett	2.1197	2	.	0.1201

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.940232	0.940232	1.013296	1.09612	1.11352	1.11632	1.11632
B7-COMP	0.98945	0.98945	1.030785	1.09433	1.1291	1.16208	1.16208
LA-2-REF	0.965238	0.965238	1.018299	1.10914	1.15663	1.15836	1.15836

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.019032
Adj Rsquare	-0.14446
Root Mean Square Error	0.071975
Mean of Response	1.081523
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00120608	0.000603	0.1164	0.8911
Error	12	0.06216550	0.005180		
C. Total	14	0.06337158			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.06995	0.03219	0.9998	1.1401
B7-COMP	5	1.08282	0.03219	1.0127	1.1530
LA-2-REF	5	1.09180	0.03219	1.0217	1.1619

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.06995	0.073473	0.03286	0.9787	1.1612
B7-COMP	5	1.08282	0.062097	0.02777	1.0057	1.1599
LA-2-REF	5	1.09180	0.079291	0.03546	0.9933	1.1903

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.11	1.0000
B7-COMP	-0.1	0.9720
B6-COMP	-0.09	0.8488

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	38.500	40.000	7.70000	-0.123
B7-COMP	5	38.500	40.000	7.70000	-0.123
LA-2-REF	5	43.000	40.000	8.60000	0.306

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.1352	2	0.9346

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF



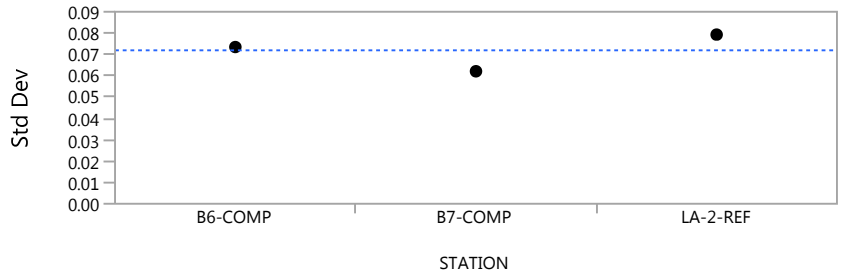
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**

**Nonparametric Comparisons With Control Using Steel Method**

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.8810	0.0250060	-0.151082	0.2181280
B7-COMP	LA-2-REF	0.0000000	1.914854	0.0000000	1.0000	0.0130200	-0.196842	0.1689100

**Tests that the Variances are Equal**

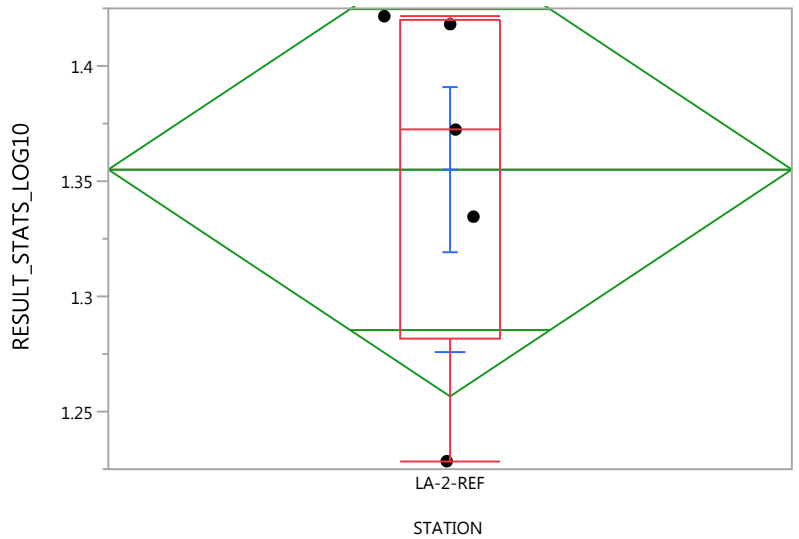


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0734733	0.0518874	0.0400896
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792910	0.0588005	0.0553324

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.0989	2	12	0.9066
Brown-Forsythe	0.1334	2	12	0.8764
Levene	0.1969	2	12	0.8239
Bartlett	0.1088	2	.	0.8969

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB194**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.22848	1.22848	1.28154	1.37239	1.41987	1.4216	1.4216

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB194**

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.355042
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514809	0.006287		
C. Total	4	0.02514809			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.35504	0.03546	1.2566	1.4535

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.35504	0.079291	0.03546	1.2566	1.4535

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

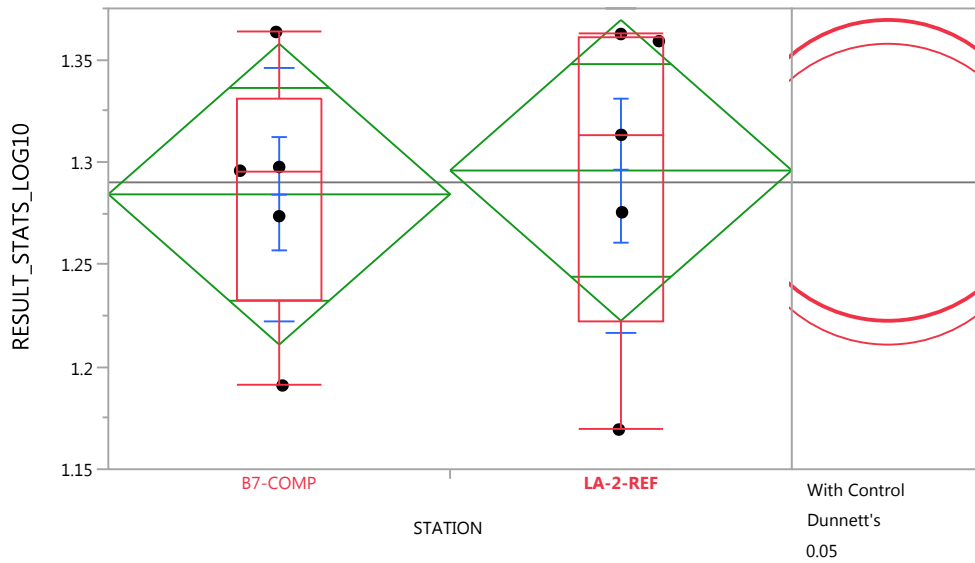
Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	1.19089	1.19089	1.232225	1.29577	1.33054	1.36352	1.36352
LA-2-REF	1.16936	1.16936	1.22242	1.31326	1.36075	1.36248	1.36248

**Oneway Anova**

**Summary of Fit**

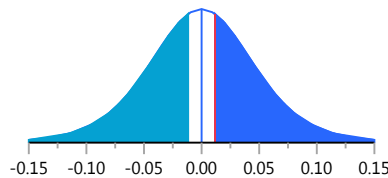
Rsquare	0.008308
Adj Rsquare	-0.11565
Root Mean Square Error	0.071214
Mean of Response	1.29009
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.01166	t Ratio	0.258882
Std Err Dif	0.04504	DF	8
Upper CL Dif	0.11552	Prob >  t	0.8023
Lower CL Dif	-0.09220	Prob > t	0.4011
Confidence	0.95	Prob < t	0.5989



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00033989	0.000340	0.0670	0.8023
Error	8	0.04057171	0.005071		
C. Total	9	0.04091160			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	1.28426	0.03185	1.2108	1.3577
LA-2-REF	5	1.29592	0.03185	1.2225	1.3694

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

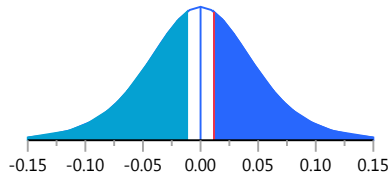
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	1.28426	0.062097	0.02777	1.2072	1.3614
LA-2-REF	5	1.29592	0.079290	0.03546	1.1975	1.3944

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.01166	t Ratio	0.258882
Std Err Dif	0.04504	DF	7.565432
Upper CL Dif	0.11657	Prob >  t	0.8026
Lower CL Dif	-0.09325	Prob > t	0.4013
Confidence	0.95	Prob < t	0.5987



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.1	1.0000
B7-COMP	-0.09	0.8023

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	26.000	27.500	5.20000	-0.209
LA-2-REF	5	29.000	27.500	5.80000	0.209

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
29	0.20889	0.8345

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0982	1	0.7540

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

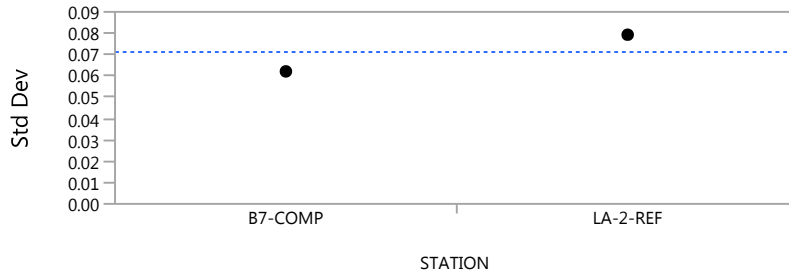
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.4000000	1.914854	0.2088932	0.8345	0.0157000	-0.128200	0.1681300

**Tests that the Variances are Equal**

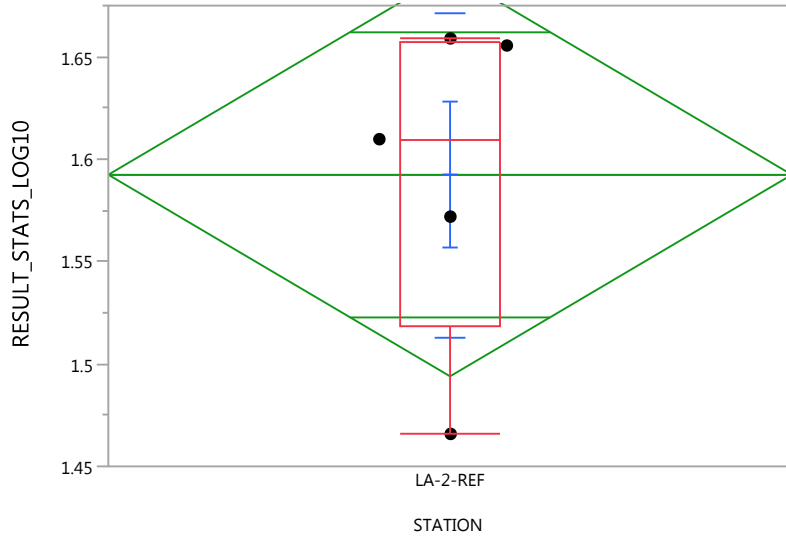


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.0620966	0.0416280	0.0393260
LA-2-REF	5	0.0792902	0.0588000	0.0553320

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.2377	1	8	0.6389
Brown-Forsythe	0.2601	1	8	0.6238
Levene	0.4034	1	8	0.5431
Bartlett	0.2103	1	.	0.6465
F Test 2-sided	1.6304	4	4	0.6474

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB206**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	1.46584	1.46584	1.5189	1.60975	1.65723	1.65896	1.65896

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.079291
Mean of Response	1.592402
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.02514809	0.006287		
C. Total	4	0.02514809			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	1.59240	0.03546	1.4939	1.6909

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	1.59240	0.079291	0.03546	1.4939	1.6909

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

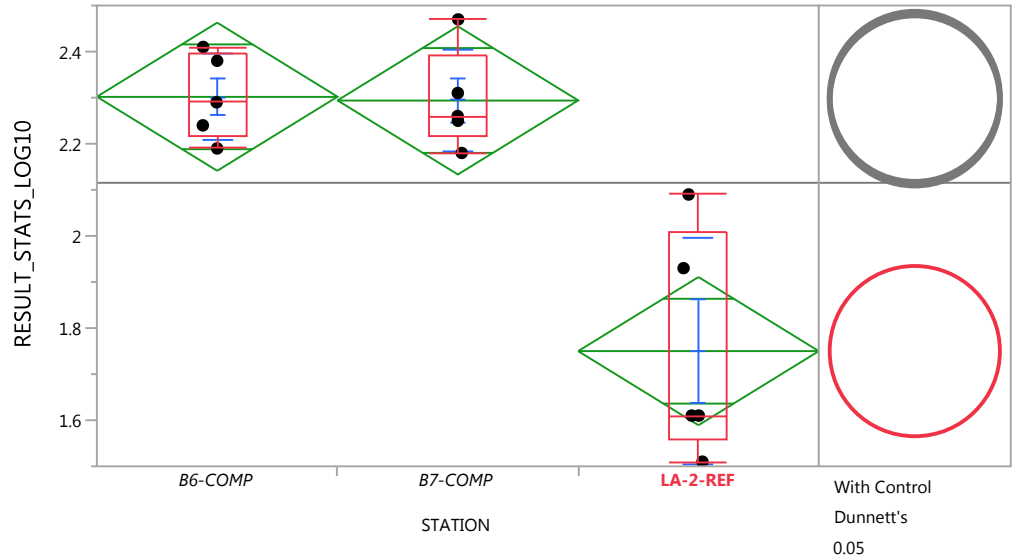
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.19	2.19	2.215	2.29	2.395	2.41	2.41
B7-COMP	2.18	2.18	2.215	2.26	2.39	2.47	2.47
LA-2-REF	1.51	1.51	1.56	1.61	2.01	2.09	2.09

**Oneway Anova**

**Summary of Fit**

Rsquare	0.754138
Adj Rsquare	0.713161
Root Mean Square Error	0.164924
Mean of Response	2.115333
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.0011733	0.500587	18.4039	0.0002*
Error	12	0.3264000	0.027200		
C. Total	14	1.3275733			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.30200	0.07376	2.1413	2.4627
B7-COMP	5	2.29400	0.07376	2.1333	2.4547
LA-2-REF	5	1.75000	0.07376	1.5893	1.9107

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.30200	0.092574	0.04140	2.1871	2.4169
B7-COMP	5	2.29400	0.108766	0.04864	2.1589	2.4291
LA-2-REF	5	1.75000	0.247386	0.11063	1.4428	2.0572

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.291	0.0004*
B7-COMP	0.283	0.0004*
LA-2-REF	-0.26	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	53.000	40.000	10.6000	1.532
B7-COMP	5	52.000	40.000	10.4000	1.410
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.3968	2	0.0091*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

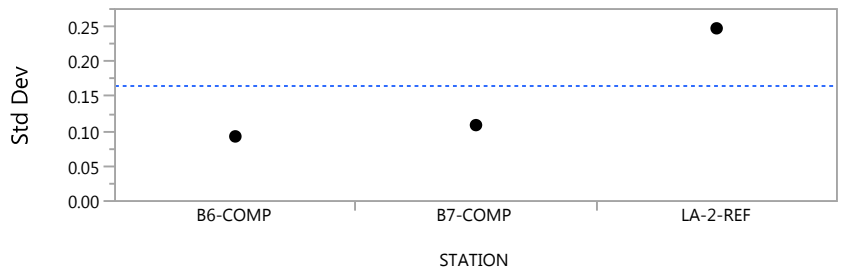
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.630000	-0.900000	-0.100000
B7-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.640000	-0.960000	-0.090000

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0925743	0.0744000	0.0720000
B7-COMP	5	0.1087658	0.0768000	0.0700000
LA-2-REF	5	0.2473863	0.2080000	0.1800000

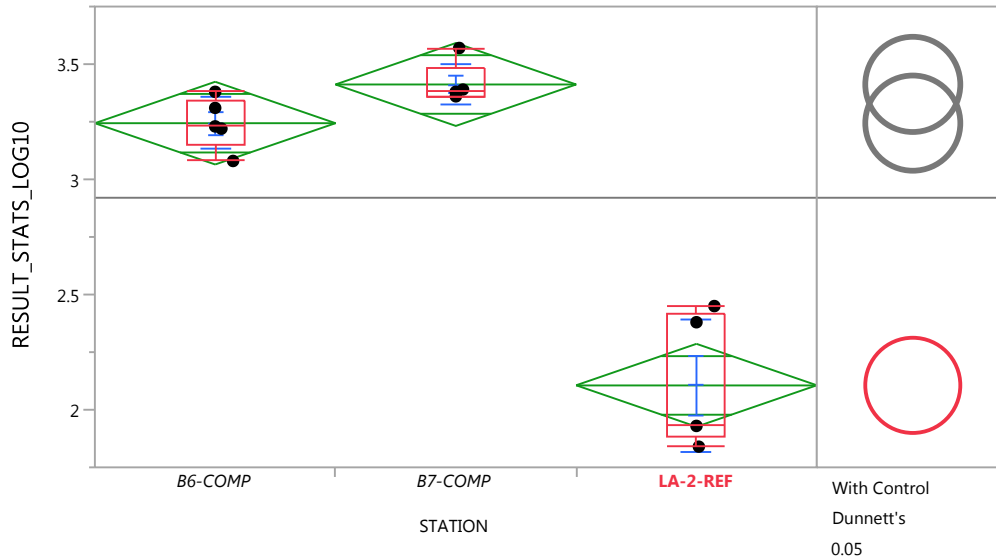
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	3.3565	2	12	0.0695
Brown-Forsythe	1.0879	2	12	0.3680
Levene	6.6276	2	12	0.0115*
Bartlett	2.1179	2	.	0.1203

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	3.08	3.08	3.15	3.23	3.345	3.38	3.38
B7-COMP	3.36	3.36	3.36	3.38	3.48	3.57	3.57
LA-2-REF	1.84	1.84	1.885	1.93	2.415	2.45	2.45

**Oneway Anova**

**Summary of Fit**

Rsquare	0.925134
Adj Rsquare	0.912657
Root Mean Square Error	0.184508
Mean of Response	2.920667
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	5.0481733	2.52409	74.1433	<.0001*
Error	12	0.4085200	0.03404		
C. Total	14	5.4566933			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	3.24400	0.08251	3.0642	3.4238
B7-COMP	5	3.41200	0.08251	3.2322	3.5918
LA-2-REF	5	2.10600	0.08251	1.9262	2.2858

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	3.24400	0.112383	0.05026	3.1045	3.3835
B7-COMP	5	3.41200	0.089275	0.03992	3.3012	3.5228
LA-2-REF	5	2.10600	0.285535	0.12769	1.7515	2.4605



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.014	<.0001*
B6-COMP	0.846	<.0001*
LA-2-REF	-0.29	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	42.500	40.000	8.5000	0.246
B7-COMP	5	62.500	40.000	12.5000	2.702
LA-2-REF	5	15.000	40.000	3.0000	-3.009

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.4363	2	0.0033*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

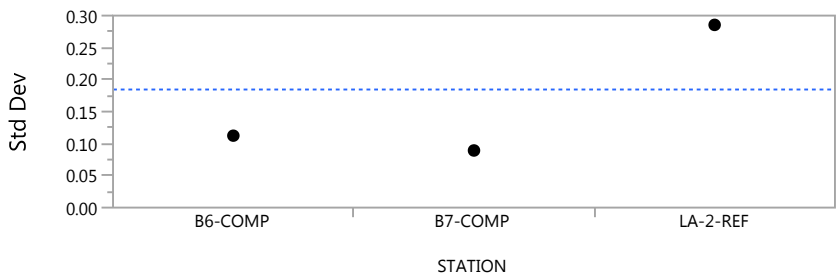
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-1.24000	-1.54000	-0.630000
B7-COMP	LA-2-REF	-4.80000	1.903214	-2.52205	0.0221*	-1.43000	-1.73000	-0.910000

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1123833	0.0808000	0.0780000
B7-COMP	5	0.0892749	0.0632000	0.0480000
LA-2-REF	5	0.2855346	0.2472000	0.2120000

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	7.5923	2	12	0.0074*
Brown-Forsythe	1.5108	2	12	0.2599
Levene	12.2809	2	12	0.0013*
Bartlett	2.8263	2	.	0.0592

Warning: Small sample sizes. Use Caution.

**Distributions ANALYTE=PCB018**

**RESULT\_LIPID\_NORM**

LogNormal(2.65113,1.70161)

**Quantiles**

100.0%	maximum	182.796
99.5%		182.796
97.5%		182.796
90.0%		163.1184
75.0%	quartile	137.931
50.0%	median	4.92958
25.0%	quartile	3.22727
10.0%		2.913878
2.5%		2.86364
0.5%		2.86364
0.0%	minimum	2.86364

**Summary Statistics**

Mean	52.718807
Std Dev	70.600049
Std Err Mean	18.228854
Upper 95% Mean	91.815812
Lower 95% Mean	13.621803
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.651126	1.7318172	3.5704348
Shape	$\sigma$	1.7016118	1.2358883	2.5540773

-2log(Likelihood) = 138.049213650812

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.324650	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB028**

**RESULT\_LIPID\_NORM**

LogNormal(2.59858,1.66567)

**Quantiles**

100.0%	maximum	103.226
99.5%		103.226
97.5%		103.226
90.0%		94.31366
75.0%	quartile	79.5699
50.0%	median	25.4545
25.0%	quartile	2.2
10.0%		1.373682
2.5%		1.35
0.5%		1.35
0.0%	minimum	1.35

**Summary Statistics**

Mean	35.674621
Std Dev	37.460968
Std Err Mean	9.6723804
Upper 95% Mean	56.419814
Lower 95% Mean	14.929429
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.5985845	1.698694	3.498475
Shape	$\sigma$	1.665669	1.2097829	2.5001281

-2log(Likelihood) = 135.832496660459

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.248379	0.0179*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB037**

**RESULT\_LIPID\_NORM**

LogNormal(1.21593,0.2528)

**Quantiles**

100.0%	maximum	4.4
99.5%		4.4
97.5%		4.4
90.0%		4.4
75.0%	quartile	4.312675
50.0%	median	3.78947
25.0%	quartile	2.490435
10.0%		2.45455
2.5%		2.45455
0.5%		2.45455
0.0%	minimum	2.45455

**Summary Statistics**

Mean	3.479138
Std Dev	0.9298881
Std Err Mean	0.4158586
Upper 95% Mean	4.6337466
Lower 95% Mean	2.3245294
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.215928	0.9441129	1.487743
Shape	$\sigma$	0.2528014	0.1511655	0.5508357

-2log(Likelihood) = 12.5971559102181

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.277255	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB044**

**RESULT\_LIPID\_NORM**

LogNormal(2.40326,0.95023)

**Quantiles**

100.0%	maximum	34.4086
99.5%		34.4086
97.5%		34.4086
90.0%		34.26346
75.0%	quartile	30
50.0%	median	6.30667
25.0%	quartile	3.90909
10.0%		3.55727
2.5%		3.51818
0.5%		3.51818
0.0%	minimum	3.51818

**Summary Statistics**

Mean	16.590411
Std Dev	13.338255
Std Err Mean	3.4439226
Upper 95% Mean	23.976891
Lower 95% Mean	9.203932
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.4032574	1.8898864	2.9166284
Shape	$\sigma$	0.9502336	0.6901589	1.4262772

-2log(Likelihood) = 113.134455860898

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.268157	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB049**

**RESULT\_LIPID\_NORM**

LogNormal(3.06085,0.99848)

**Quantiles**

100.0%	maximum	78.4946
99.5%		78.4946
97.5%		78.4946
90.0%		77.39786
75.0%	quartile	66.6667
50.0%	median	21.8182
25.0%	quartile	7.74648
10.0%		4.578948
2.5%		4.5
0.5%		4.5
0.0%	minimum	4.5

**Summary Statistics**

Mean	32.832307
Std Dev	27.900986
Std Err Mean	7.2040035
Upper 95% Mean	48.283357
Lower 95% Mean	17.381256
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.060845	2.5214076	3.6002825
Shape	$\sigma$	0.9984817	0.7252018	1.4986964

-2log(Likelihood) = 134.347923966783

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.170601	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB052**

**RESULT\_LIPID\_NORM**

LogNormal(3.76872,1.41434)

**Quantiles**

100.0%	maximum	215.054
99.5%		215.054
97.5%		215.054
90.0%		189.47
75.0%	quartile	161.29
50.0%	median	62.5
25.0%	quartile	19.0909
10.0%		3.26316
2.5%		3.26316
0.5%		3.26316
0.0%	minimum	3.26316

**Summary Statistics**

Mean	82.874448
Std Dev	71.530436
Std Err Mean	18.469079
Upper 95% Mean	122.48668
Lower 95% Mean	43.262213
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.7687189	3.0046124	4.5328253
Shape	$\sigma$	1.414337	1.0272393	2.1228849

-2log(Likelihood) = 166.029547349875

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.225082	0.0440*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB066**

**RESULT\_LIPID\_NORM**

LogNormal(3.37983,0.95125)

**Quantiles**

100.0%	maximum	92.4731
99.5%		92.4731
97.5%		92.4731
90.0%		82.48922
75.0%	quartile	66.6667
50.0%	median	36
25.0%	quartile	13.6842
10.0%		4.976076
2.5%		4.54545
0.5%		4.54545
0.0%	minimum	4.54545

**Summary Statistics**

Mean	41.035617
Std Dev	27.513471
Std Err Mean	7.1039475
Upper 95% Mean	56.272069
Lower 95% Mean	25.799165
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.3798283	2.865909	3.8937477
Shape	$\sigma$	0.9512486	0.6908961	1.4278007

-2log(Likelihood) = 142.463611288869

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.249540	0.0161*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB070**

**RESULT\_LIPID\_NORM**

LogNormal(2.60897,0.89705)

**Quantiles**

100.0%	maximum	32.2581
99.5%		32.2581
97.5%		32.2581
90.0%		31.90326
75.0%	quartile	26.8817
50.0%	median	18.1818
25.0%	quartile	4.15493
10.0%		2.954064
2.5%		2.72727
0.5%		2.72727
0.0%	minimum	2.72727

**Summary Statistics**

Mean	18.219348
Std Dev	10.696952
Std Err Mean	2.7619411
Upper 95% Mean	24.143123
Lower 95% Mean	12.295573
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.6089716	2.1243332	3.09361
Shape	$\sigma$	0.8970505	0.6515318	1.3464506

-2log(Likelihood) = 117.578009629945

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.273710	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB074**

**RESULT\_LIPID\_NORM**

LogNormal(2.4186,0.71542)

**Quantiles**

100.0%	maximum	29.8851
99.5%		29.8851
97.5%		29.8851
90.0%		28.08306
75.0%	quartile	20.4301
50.0%	median	14.7727
25.0%	quartile	5.73333
10.0%		3.579902
2.5%		3.51818
0.5%		3.51818
0.0%	minimum	3.51818

**Summary Statistics**

Mean	14.10625
Std Dev	8.9024209
Std Err Mean	2.2985952
Upper 95% Mean	19.036246
Lower 95% Mean	9.1762536
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.4185956	2.0320857	2.8051055
Shape	$\sigma$	0.7154176	0.519611	1.0738241

-2log(Likelihood) = 105.079358238064

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.190024	0.1491

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB077**

**RESULT\_LIPID\_NORM**

LogNormal(1.42693,0.23225)

**Quantiles**

100.0%	maximum	5.64667
99.5%		5.64667
97.5%		5.64667
90.0%		5.624257
75.0%	quartile	5.08144
50.0%	median	4.50147
25.0%	quartile	3.2190825
10.0%		2.91375
2.5%		2.8875
0.5%		2.8875
0.0%	minimum	2.8875

**Summary Statistics**

Mean	4.276872
Std Dev	1.0073373
Std Err Mean	0.318548
Upper 95% Mean	4.9974777
Lower 95% Mean	3.5562663
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.4269344	1.2679869	1.585882
Shape	$\sigma$	0.2322545	0.1584228	0.3878451

-2log(Likelihood) = 27.7190250502269

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.247394	0.0820

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB081**

**RESULT\_LIPID\_NORM**

LogNormal(1.90907,0.2528)

**Quantiles**

100.0%	maximum	8.8
99.5%		8.8
97.5%		8.8
90.0%		8.8
75.0%	quartile	8.62535
50.0%	median	7.57895
25.0%	quartile	4.98086
10.0%		4.90909
2.5%		4.90909
0.5%		4.90909
0.0%	minimum	4.90909

**Summary Statistics**

Mean	6.958274
Std Dev	1.8597824
Std Err Mean	0.83172
Upper 95% Mean	9.2674989
Lower 95% Mean	4.6490491
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.9090746	1.6372584	2.1808908
Shape	$\sigma$	0.2528025	0.1511662	0.550838

-2log(Likelihood) = 19.528665305495

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.277257	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB087**

**RESULT\_LIPID\_NORM**

LogNormal(2.13034,0.47449)

**Quantiles**

100.0%	maximum	17.5
99.5%		17.5
97.5%		17.5
90.0%		17.32258
75.0%	quartile	14.1667
50.0%	median	7.33333
25.0%	quartile	5.91398
10.0%		4.578948
2.5%		4.5
0.5%		4.5
0.0%	minimum	4.5

**Summary Statistics**

Mean	9.454164
Std Dev	4.8476399
Std Err Mean	1.2516552
Upper 95% Mean	12.138697
Lower 95% Mean	6.7696305
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.1303426	1.8739947	2.3866906
Shape	$\sigma$	0.474492	0.3446257	0.7122007

-2log(Likelihood) = 84.1131175756944

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.202437	0.0951

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB099**

**RESULT\_LIPID\_NORM**

LogNormal(3.8706,0.36144)

**Quantiles**

100.0%	maximum	87.0968
99.5%		87.0968
97.5%		87.0968
90.0%		79.35488
75.0%	quartile	64.3678
50.0%	median	55
25.0%	quartile	30.9091
10.0%		29.05266
2.5%		28.4211
0.5%		28.4211
0.0%	minimum	28.4211

**Summary Statistics**

Mean	51.08716
Std Dev	18.183048
Std Err Mean	4.6948428
Upper 95% Mean	61.156596
Lower 95% Mean	41.017724
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.8706049	3.6753363	4.0658736
Shape	$\sigma$	0.3614361	0.2625126	0.5425066

-2log(Likelihood) = 128.156201483991

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.220053	0.0492*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB101**

**RESULT\_LIPID\_NORM**

LogNormal(4.49547,0.37385)

**Quantiles**

100.0%	maximum	150.538
99.5%		150.538
97.5%		150.538
90.0%		136.579
75.0%	quartile	118.28
50.0%	median	100
25.0%	quartile	52.6316
10.0%		50.03828
2.5%		47.3684
0.5%		47.3684
0.0%	minimum	47.3684

**Summary Statistics**

Mean	95.543413
Std Dev	32.602149
Std Err Mean	8.4178386
Upper 95% Mean	113.59788
Lower 95% Mean	77.488945
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.4954692	4.2934919	4.6974466
Shape	$\sigma$	0.3738537	0.2715316	0.5611452

-2log(Likelihood) = 147.915511033098

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.239754	0.0291*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB105**

**RESULT\_LIPID\_NORM**

LogNormal(3.40641,0.36594)

**Quantiles**

100.0%	maximum	45.4545
99.5%		45.4545
97.5%		45.4545
90.0%		44.6334
75.0%	quartile	37.3333
50.0%	median	35
25.0%	quartile	29.0698
10.0%		15.19618
2.5%		12.7273
0.5%		12.7273
0.0%	minimum	12.7273

**Summary Statistics**

Mean	31.956847
Std Dev	9.8670182
Std Err Mean	2.5476531
Upper 95% Mean	37.421019
Lower 95% Mean	26.492674
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.4064099	3.2087059	3.6041138
Shape	$\sigma$	0.3659437	0.2657866	0.5492725

-2log(Likelihood) = 114.602181981559

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.260047	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB110**

**RESULT\_LIPID\_NORM**

LogNormal(3.9058,0.48004)

**Quantiles**

100.0%	maximum	101.075
99.5%		101.075
97.5%		101.075
90.0%		86.23646
75.0%	quartile	70.9091
50.0%	median	60
25.0%	quartile	27.3684
10.0%		22.36622
2.5%		20
0.5%		20
0.0%	minimum	20

**Summary Statistics**

Mean	55.048953
Std Dev	23.267404
Std Err Mean	6.0076179
Upper 95% Mean	67.934012
Lower 95% Mean	42.163894
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.9058016	3.6464587	4.1651445
Shape	$\sigma$	0.4800356	0.348652	0.7205216

-2log(Likelihood) = 137.725351335863

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.217172	0.0555

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB114**

**RESULT\_LIPID\_NORM**

LogNormal(1.45483,0.25121)

**Quantiles**

100.0%	maximum	6.48
99.5%		6.48
97.5%		6.48
90.0%		6.156
75.0%	quartile	5.29032
50.0%	median	4.4086
25.0%	quartile	3.31364
10.0%		3.02318
2.5%		2.94545
0.5%		2.94545
0.0%	minimum	2.94545

**Summary Statistics**

Mean	4.4206553
Std Dev	1.1457998
Std Err Mean	0.2958442
Upper 95% Mean	5.0551781
Lower 95% Mean	3.7861325
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.4548276	1.3191097	1.5905455
Shape	$\sigma$	0.2512096	0.1824546	0.3770593

-2log(Likelihood) = 44.7689509201038

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.160092	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB118**

**RESULT\_LIPID\_NORM**

LogNormal(3.96814,0.39744)

**Quantiles**

100.0%	maximum	91.3979
99.5%		91.3979
97.5%		91.3979
90.0%		83.65592
75.0%	quartile	72.4138
50.0%	median	57.5
25.0%	quartile	32.7273
10.0%		27.82506
2.5%		25.3521
0.5%		25.3521
0.0%	minimum	25.3521

**Summary Statistics**

Mean	56.876953
Std Dev	20.789877
Std Err Mean	5.3679231
Upper 95% Mean	68.390003
Lower 95% Mean	45.363903
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.9681435	3.7534256	4.1828615
Shape	$\sigma$	0.3974362	0.2886597	0.5965419

-2log(Likelihood) = 133.930832607488

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.205314	0.0874

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB119**

**RESULT\_LIPID\_NORM**

LogNormal(1.66488,0.2528)

**Quantiles**

100.0%	maximum	6.89333
99.5%		6.89333
97.5%		6.89333
90.0%		6.89333
75.0%	quartile	6.756525
50.0%	median	5.93684
25.0%	quartile	3.90167
10.0%		3.84545
2.5%		3.84545
0.5%		3.84545
0.0%	minimum	3.84545

**Summary Statistics**

Mean	5.450646
Std Dev	1.4568314
Std Err Mean	0.6515148
Upper 95% Mean	7.259541
Lower 95% Mean	3.641751
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.6648772	1.3930605	1.9366939
Shape	$\sigma$	0.2528029	0.1511664	0.5508389

-2log(Likelihood) = 17.0867077478694

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.277257	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB123**

**RESULT\_LIPID\_NORM**

LogNormal(1.72675,0.2528)

**Quantiles**

100.0%	maximum	7.33333
99.5%		7.33333
97.5%		7.33333
90.0%		7.33333
75.0%	quartile	7.18779
50.0%	median	6.31579
25.0%	quartile	4.15072
10.0%		4.09091
2.5%		4.09091
0.5%		4.09091
0.0%	minimum	4.09091

**Summary Statistics**

Mean	5.798562
Std Dev	1.549816
Std Err Mean	0.6930988
Upper 95% Mean	7.7229127
Lower 95% Mean	3.8742113
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.7267532	1.4549376	1.9985689
Shape	$\sigma$	0.252802	0.1511659	0.5508369

-2log(Likelihood) = 17.7054319506571

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.277257	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB126**

**RESULT\_LIPID\_NORM**

LogNormal(1.42993,0.25121)

**Quantiles**

100.0%	maximum	6.32
99.5%		6.32
97.5%		6.32
90.0%		6.003998
75.0%	quartile	5.16129
50.0%	median	4.30108
25.0%	quartile	3.23182
10.0%		2.949092
2.5%		2.87273
0.5%		2.87273
0.0%	minimum	2.87273

**Summary Statistics**

Mean	4.3119407
Std Dev	1.1175459
Std Err Mean	0.2885491
Upper 95% Mean	4.930817
Lower 95% Mean	3.6930644
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.4299294	1.2942124	1.5656463
Shape	$\sigma$	0.2512079	0.1824534	0.3770568

-2log(Likelihood) = 44.0218038457256

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.159965	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB128**

**RESULT\_LIPID\_NORM**

LogNormal(1.83689,0.3864)

**Quantiles**

100.0%	maximum	17.5
99.5%		17.5
97.5%		17.5
90.0%		16.483333
75.0%	quartile	7.11502
50.0%	median	5.78054
25.0%	quartile	5.0848875
10.0%		4.102872
2.5%		4.09091
0.5%		4.09091
0.0%	minimum	4.09091

**Summary Statistics**

Mean	6.880657
Std Dev	3.875586
Std Err Mean	1.2255679
Upper 95% Mean	9.6530842
Lower 95% Mean	4.1082298
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.8368944	1.5724515	2.1013372
Shape	$\sigma$	0.3864044	0.2635699	0.6452623

-2log(Likelihood) = 46.099242846188

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.243651	0.0904

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB138/158**

**RESULT\_LIPID\_NORM**

LogNormal(5.14943,0.15999)

**Quantiles**

100.0%	maximum	247.312
99.5%		247.312
97.5%		247.312
90.0%		229.834
75.0%	quartile	183.908
50.0%	median	174.419
25.0%	quartile	157.895
10.0%		133.0144
2.5%		127.273
0.5%		127.273
0.0%	minimum	127.273

**Summary Statistics**

Mean	174.59067
Std Dev	29.835582
Std Err Mean	7.7035141
Upper 95% Mean	191.11306
Lower 95% Mean	158.06827
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	5.1494349	5.0630001	5.2358696
Shape	$\sigma$	0.159988	0.1162	0.240138

-2log(Likelihood) = 142.071508666208

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.175430	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB149**

**RESULT\_LIPID\_NORM**

LogNormal(4.84793,0.18591)

**Quantiles**

100.0%	maximum	182.796
99.5%		182.796
97.5%		182.796
90.0%		176.7546
75.0%	quartile	139.785
50.0%	median	128
25.0%	quartile	114.085
10.0%		94.4689
2.5%		90.9091
0.5%		90.9091
0.0%	minimum	90.9091

**Summary Statistics**

Mean	129.71075
Std Dev	25.314114
Std Err Mean	6.5360762
Upper 95% Mean	143.72924
Lower 95% Mean	115.69226
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.8479337	4.7474939	4.9483736
Shape	$\sigma$	0.185911	0.135028	0.2790478

-2log(Likelihood) = 137.531550268448

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.110023	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB151**

**RESULT\_LIPID\_NORM**

LogNormal(3.48266,0.17878)

**Quantiles**

100.0%	maximum	43.6364
99.5%		43.6364
97.5%		43.6364
90.0%		43.05458
75.0%	quartile	36.6667
50.0%	median	32.2581
25.0%	quartile	28.1818
10.0%		24.84212
2.5%		24.2105
0.5%		24.2105
0.0%	minimum	24.2105

**Summary Statistics**

Mean	33.07024
Std Dev	6.1365799
Std Err Mean	1.5844581
Upper 95% Mean	36.468565
Lower 95% Mean	29.671915
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.4826611	3.3860754	3.5792467
Shape	$\sigma$	0.178777	0.1298466	0.2683399

-2log(Likelihood) = 95.3995102365719

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.172439	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB156**

**RESULT\_LIPID\_NORM**

LogNormal(1.12618,0.23225)

**Quantiles**

100.0%	maximum	4.18
99.5%		4.18
97.5%		4.18
90.0%		4.163408
75.0%	quartile	3.761585
50.0%	median	3.33226
25.0%	quartile	2.382955
10.0%		2.156932
2.5%		2.1375
0.5%		2.1375
0.0%	minimum	2.1375

**Summary Statistics**

Mean	3.165995
Std Dev	0.7456904
Std Err Mean	0.235808
Upper 95% Mean	3.6994298
Lower 95% Mean	2.6325602
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.1261799	0.9672325	1.2851274
Shape	$\sigma$	0.2322544	0.1584228	0.3878449

-2log(Likelihood) = 21.7039264180975

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.247394	0.0820

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB157**

**RESULT\_LIPID\_NORM**

LogNormal(1.07283,0.2528)

**Quantiles**

100.0%	maximum	3.81333
99.5%		3.81333
97.5%		3.81333
90.0%		3.81333
75.0%	quartile	3.73765
50.0%	median	3.28421
25.0%	quartile	2.15837
10.0%		2.12727
2.5%		2.12727
0.5%		2.12727
0.0%	minimum	2.12727

**Summary Statistics**

Mean	3.01525
Std Dev	0.8059062
Std Err Mean	0.3604122
Upper 95% Mean	4.0159147
Lower 95% Mean	2.0145853
N	5

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.0728258	0.8010092	1.3446424
Shape	$\sigma$	0.2528029	0.1511664	0.5508388

-2log(Likelihood) = 11.1661915658928

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.277257	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB167**

**RESULT\_LIPID\_NORM**

LogNormal(1.194,0.23225)

**Quantiles**

100.0%	maximum	4.47333
99.5%		4.47333
97.5%		4.47333
90.0%		4.455574
75.0%	quartile	4.0255525
50.0%	median	3.5661
25.0%	quartile	2.5501775
10.0%		2.308295
2.5%		2.2875
0.5%		2.2875
0.0%	minimum	2.2875

**Summary Statistics**

Mean	3.388168
Std Dev	0.7980191
Std Err Mean	0.2523558
Upper 95% Mean	3.9590365
Lower 95% Mean	2.8172995
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.1940019	1.0350545	1.3529494
Shape	$\sigma$	0.2322544	0.1584228	0.3878449

-2log(Likelihood) = 23.0603663440024

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.247394	0.0820

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB168**

**RESULT\_LIPID\_NORM**

LogNormal(0.95433,0.23225)

**Quantiles**

100.0%	maximum	3.52
99.5%		3.52
97.5%		3.52
90.0%		3.506028
75.0%	quartile	3.1676475
50.0%	median	2.806115
25.0%	quartile	2.0066975
10.0%		1.816364
2.5%		1.8
0.5%		1.8
0.0%	minimum	1.8

**Summary Statistics**

Mean	2.666101
Std Dev	0.6279492
Std Err Mean	0.198575
Upper 95% Mean	3.1153088
Lower 95% Mean	2.2168932
N	10

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	0.9543297	0.7953824	1.113277
Shape	$\sigma$	0.2322541	0.1584226	0.3878445

-2log(Likelihood) = 18.2669022848498

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.247395	0.0820

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB169**

**RESULT\_LIPID\_NORM**

LogNormal(1.15614,0.2512)

**Quantiles**

100.0%	maximum	4.8
99.5%		4.8
97.5%		4.8
90.0%		4.56
75.0%	quartile	3.93548
50.0%	median	3.27957
25.0%	quartile	2.45455
10.0%		2.245228
2.5%		2.18182
0.5%		2.18182
0.0%	minimum	2.18182

**Summary Statistics**

Mean	3.2791487
Std Dev	0.8491713
Std Err Mean	0.2192551
Upper 95% Mean	3.749404
Lower 95% Mean	2.8088933
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.1561429	1.0204315	1.2918544
Shape	$\sigma$	0.2511975	0.1824459	0.3770413

-2log(Likelihood) = 35.8069765361403

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.158341	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB170**

**RESULT\_LIPID\_NORM**

LogNormal(3.96983,0.18228)

**Quantiles**

100.0%	maximum	74.1936
99.5%		74.1936
97.5%		74.1936
90.0%		71.05674
75.0%	quartile	60.4651
50.0%	median	52.5
25.0%	quartile	46.3158
10.0%		41.07174
2.5%		36.3636
0.5%		36.3636
0.0%	minimum	36.3636

**Summary Statistics**

Mean	53.8624
Std Dev	10.208529
Std Err Mean	2.6358309
Upper 95% Mean	59.515695
Lower 95% Mean	48.209105
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.9698301	3.8713532	4.0683069
Shape	$\sigma$	0.1822775	0.132389	0.2735941

-2log(Likelihood) = 110.596314367949

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.132476	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB177**

**RESULT\_LIPID\_NORM**

LogNormal(3.38521,0.19916)

**Quantiles**

100.0%	maximum	40
99.5%		40
97.5%		40
90.0%		39.22582
75.0%	quartile	34.6667
50.0%	median	31.5789
25.0%	quartile	24.1667
10.0%		22.2484
2.5%		21.8182
0.5%		21.8182
0.0%	minimum	21.8182

**Summary Statistics**

Mean	30.110493
Std Dev	6.1324533
Std Err Mean	1.5833926
Upper 95% Mean	33.506533
Lower 95% Mean	26.714454
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.3852124	3.2776173	3.4928075
Shape	$\sigma$	0.1991552	0.1446473	0.2989271

-2log(Likelihood) = 95.714403151756

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.173790	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB180**

**RESULT\_LIPID\_NORM**

LogNormal(4.5913,0.1899)

**Quantiles**

100.0%	maximum	139.785
99.5%		139.785
97.5%		139.785
90.0%		137.7324
75.0%	quartile	113.333
50.0%	median	95.7895
25.0%	quartile	90.8046
10.0%		72.57416
2.5%		70.9091
0.5%		70.9091
0.0%	minimum	70.9091

**Summary Statistics**

Mean	100.42786
Std Dev	20.037868
Std Err Mean	5.1737553
Upper 95% Mean	111.52446
Lower 95% Mean	89.331259
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.5912952	4.4887002	4.6938903
Shape	$\sigma$	0.1899002	0.1379254	0.2850355

-2log(Likelihood) = 130.469315400771

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.131822	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB183**

**RESULT\_LIPID\_NORM**

LogNormal(3.6872,0.16434)

**Quantiles**

100.0%	maximum	58.0645
99.5%		58.0645
97.5%		58.0645
90.0%		53.77126
75.0%	quartile	42.5
50.0%	median	39.7849
25.0%	quartile	36.6197
10.0%		31.48324
2.5%		28.1818
0.5%		28.1818
0.0%	minimum	28.1818

**Summary Statistics**

Mean	40.485207
Std Dev	7.1259139
Std Err Mean	1.8399031
Upper 95% Mean	44.431406
Lower 95% Mean	36.539007
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.6871992	3.598411	3.7759873
Shape	$\sigma$	0.164344	0.1193638	0.2466763

-2log(Likelihood) = 99.0103242233501

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.152302	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB187**

**RESULT\_LIPID\_NORM**

LogNormal(4.51042,0.16586)

**Quantiles**

100.0%	maximum	129.032
99.5%		129.032
97.5%		129.032
90.0%		122.522
75.0%	quartile	103.409
50.0%	median	90.9091
25.0%	quartile	83.3333
10.0%		71.21532
2.5%		69.0909
0.5%		69.0909
0.0%	minimum	69.0909

**Summary Statistics**

Mean	92.2417
Std Dev	16.325737
Std Err Mean	4.2152872
Upper 95% Mean	101.28259
Lower 95% Mean	83.200808
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	4.510422	4.4208158	4.6000282
Shape	$\sigma$	0.1658582	0.1204636	0.2489491

-2log(Likelihood) = 123.982161346637

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.148063	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB189**

**RESULT\_LIPID\_NORM**

LogNormal(1.15614,0.2512)

**Quantiles**

100.0%	maximum	4.8
99.5%		4.8
97.5%		4.8
90.0%		4.56
75.0%	quartile	3.93548
50.0%	median	3.27957
25.0%	quartile	2.45455
10.0%		2.245228
2.5%		2.18182
0.5%		2.18182
0.0%	minimum	2.18182

**Summary Statistics**

Mean	3.2791487
Std Dev	0.8491713
Std Err Mean	0.2192551
Upper 95% Mean	3.749404
Lower 95% Mean	2.8088933
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.1561429	1.0204315	1.2918544
Shape	$\sigma$	0.2511975	0.1824459	0.3770413

-2log(Likelihood) = 35.8069765361403

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.158341	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB194**

**RESULT\_LIPID\_NORM**

LogNormal(2.96758,0.43914)

**Quantiles**

100.0%	maximum	34.4086
99.5%		34.4086
97.5%		34.4086
90.0%		34.21798
75.0%	quartile	24.5455
50.0%	median	20.8333
25.0%	quartile	17.2043
10.0%		7.33333
2.5%		7.33333
0.5%		7.33333
0.0%	minimum	7.33333

**Summary Statistics**

Mean	21.103731
Std Dev	7.7785957
Std Err Mean	2.0084248
Upper 95% Mean	25.411373
Lower 95% Mean	16.796088
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	2.9675846	2.7303378	3.2048315
Shape	$\sigma$	0.4391364	0.3189468	0.6591329

-2log(Likelihood) = 106.907339977285

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.190204	0.1483

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB201**

**RESULT\_LIPID\_NORM**

LogNormal(1.68,0.3124)

**Quantiles**

100.0%	maximum	12.5
99.5%		12.5
97.5%		12.5
90.0%		9.224
75.0%	quartile	6.4
50.0%	median	5.16129
25.0%	quartile	4.04211
10.0%		3.796362
2.5%		3.6
0.5%		3.6
0.0%	minimum	3.6

**Summary Statistics**

Mean	5.6663173
Std Dev	2.2136524
Std Err Mean	0.5715626
Upper 95% Mean	6.8921972
Lower 95% Mean	4.4404375
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	1.6800044	1.5112301	1.8487787
Shape	$\sigma$	0.3123959	0.2268945	0.4688985

-2log(Likelihood) = 58.0637663061215

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.188422	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.



**Distributions ANALYTE=PCB206**

**RESULT\_LIPID\_NORM**

LogNormal(3.51259,0.3001)

**Quantiles**

100.0%	maximum	51.7241
99.5%		51.7241
97.5%		51.7241
90.0%		47.96234
75.0%	quartile	39.0909
50.0%	median	34.7368
25.0%	quartile	30.9091
10.0%		22.66666
2.5%		12.6667
0.5%		12.6667
0.0%	minimum	12.6667

**Summary Statistics**

Mean	34.820273
Std Dev	8.5983549
Std Err Mean	2.2200857
Upper 95% Mean	39.581884
Lower 95% Mean	30.058663
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	3.5125919	3.3504622	3.6747215
Shape	$\sigma$	0.3000969	0.2179617	0.450438

-2log(Likelihood) = 111.836413927391

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.261102	< 0.0100*

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=PCB132/153**

**RESULT\_LIPID\_NORM**

LogNormal(5.72678,0.1746)

**Quantiles**

100.0%	maximum	483.9
99.5%		483.9
97.5%		483.9
90.0%		428.1
75.0%	quartile	333.3
50.0%	median	291.7
25.0%	quartile	280
10.0%		242.48
2.5%		227.3
0.5%		227.3
0.0%	minimum	227.3

**Summary Statistics**

Mean	311.95333
Std Dev	61.581802
Std Err Mean	15.900353
Upper 95% Mean	346.0562
Lower 95% Mean	277.85047
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	5.7267752	5.6324439	5.8211065
Shape	$\sigma$	0.1746043	0.1268159	0.2620767

-2log(Likelihood) = 162.014421235325

**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.162027	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Distributions ANALYTE=Total PCB Congeners (ND = 0)**

**RESULT\_LIPID\_NORM**

LogNormal(7.33131,0.30728)

**Quantiles**

100.0%	maximum	2716
99.5%		2716
97.5%		2716
90.0%		2290
75.0%	quartile	1975
50.0%	median	1560
25.0%	quartile	1109
10.0%		943.2
2.5%		921
0.5%		921
0.0%	minimum	921

**Summary Statistics**

Mean	1599.8667
Std Dev	500.3156
Std Err Mean	129.18093
Upper 95% Mean	1876.9322
Lower 95% Mean	1322.8011
N	15

**Fitted LogNormal**

**Parameter Estimates**

Type	Parameter	Estimate	Lower 95%	Upper 95%
Scale	$\mu$	7.3313056	7.165293	7.4973181
Shape	$\sigma$	0.3072839	0.2231817	0.4612256

-2log(Likelihood) = 227.107830078438

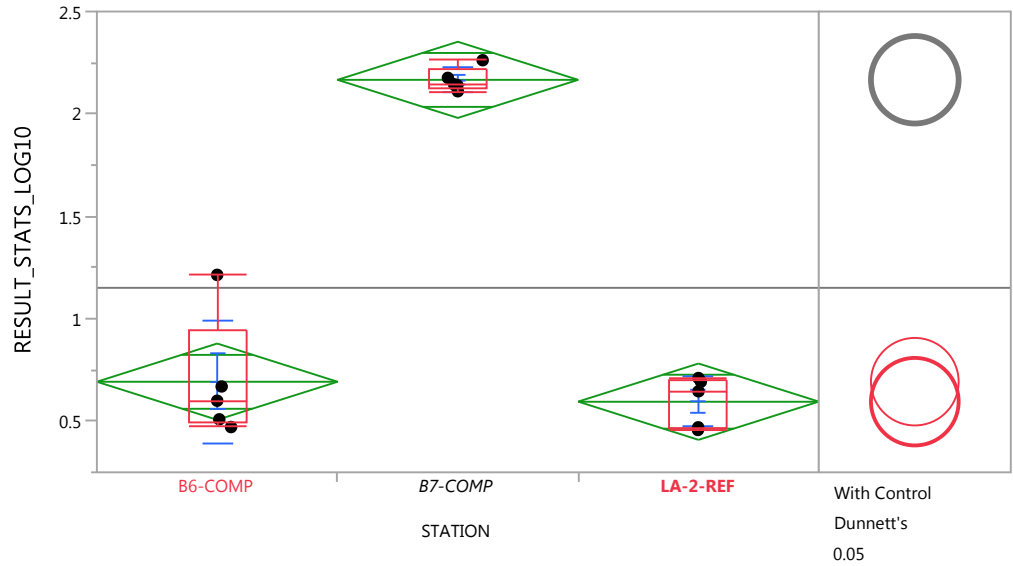
**Goodness-of-Fit Test**

Kolmogorov's D

D	Prob>D
0.168623	> 0.1500

Note: Ho = The data is from the LogNormal distribution. Small p-values reject Ho.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.471047	0.471047	0.489942	0.599585	0.941444	1.21388	1.21388
B7-COMP	2.1107	2.1107	2.12518	2.14468	2.21903	2.26197	2.26197
LA-2-REF	0.456918	0.456918	0.463176	0.645526	0.701605	0.7104	0.7104

**Oneway Anova**

**Summary of Fit**

Rsquare	0.946583
Adj Rsquare	0.93768
Root Mean Square Error	0.190959
Mean of Response	1.15137
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	7.7542442	3.87712	106.3238	<.0001*
Error	12	0.4375830	0.03647		
C. Total	14	8.1918272			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.69247	0.08540	0.5064	0.8785
B7-COMP	5	2.16662	0.08540	1.9806	2.3527
LA-2-REF	5	0.59502	0.08540	0.4089	0.7811

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.69247	0.301578	0.13487	0.3180	1.0669
B7-COMP	5	2.16662	0.058130	0.02600	2.0944	2.2388
LA-2-REF	5	0.59502	0.122750	0.05490	0.4426	0.7474

**Means Comparisons**

**Comparisons with a control using Dunnnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.269	<.0001*
B6-COMP	-0.2	0.6440
LA-2-REF	-0.3	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	29.000	40.000	5.8000	-1.286
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	26.000	40.000	5.2000	-1.653

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.4200	2	0.0090*

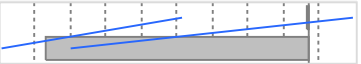
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

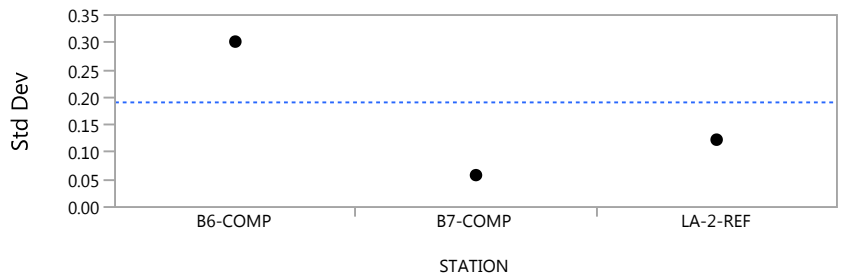
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lower CL	Upper CL	
B6-COMP	LA-2-REF	-0.40000	1.914854	-0.20889	0.9685	-0.01413	-0.75696	0.23935	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.55157	-1.80505	-1.40030	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.3015776	0.2085636	0.1806008
B7-COMP	5	0.0581304	0.0419280	0.0375400
LA-2-REF	5	0.1227500	0.1054733	0.0953716

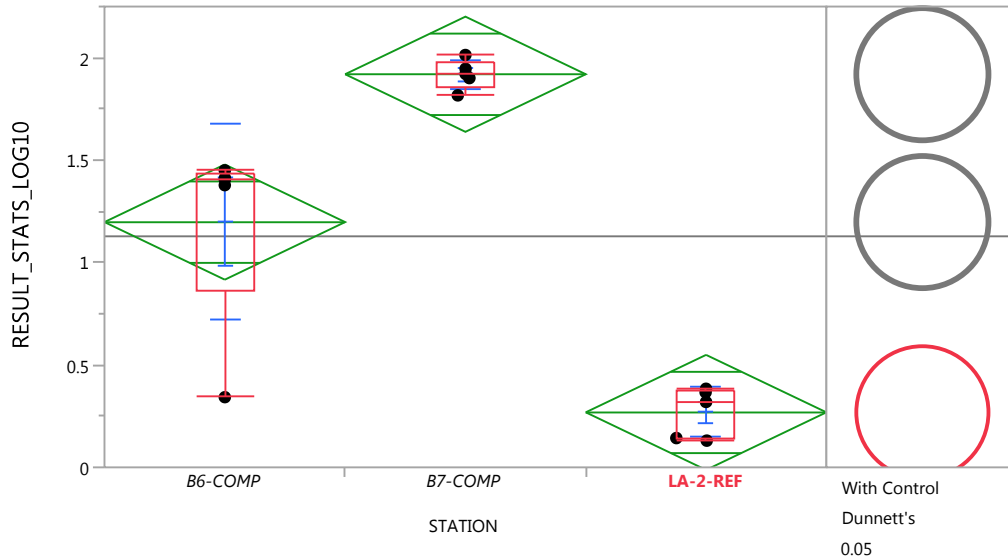
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.2437	2	12	0.3229
Brown-Forsythe	1.1087	2	12	0.3615
Levene	2.7257	2	12	0.1057
Bartlett	4.2275	2	.	0.0146*

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB018**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.342423	0.342423	0.860082	1.40577	1.431075	1.44997	1.44997
B7-COMP	1.81636	1.81636	1.858555	1.92082	1.980055	2.01379	2.01379
LA-2-REF	0.130334	0.130334	0.136592	0.318942	0.375021	0.383815	0.383815

**Oneway Anova**

**Summary of Fit**

Rsquare	0.872893
Adj Rsquare	0.851708
Root Mean Square Error	0.288346
Mean of Response	1.128553
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	6.8517176	3.42586	41.2043	<.0001*
Error	12	0.9977191	0.08314		
C. Total	14	7.8494367			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.19762	0.12895	0.917	1.4786
B7-COMP	5	1.91961	0.12895	1.639	2.2006
LA-2-REF	5	0.26843	0.12895	-0.013	0.5494

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.19762	0.478761	0.21411	0.6032	1.7921
B7-COMP	5	1.91961	0.071765	0.03209	1.8305	2.0087
LA-2-REF	5	0.26843	0.122750	0.05490	0.1160	0.4208

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	1.195	<.0001*
B6-COMP	0.473	0.0005*
LA-2-REF	-0.46	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	38.000	40.000	7.6000	-0.184
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	17.000	40.000	3.4000	-2.756

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.5800	2	0.0031*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

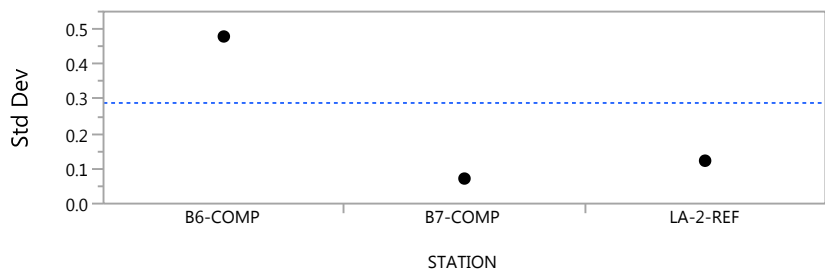
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-1.06616	-1.31964	0.04139	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.62998	-1.88346	-1.43255	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.4787609	0.3420774	0.2283974
B7-COMP	5	0.0717653	0.0488424	0.0486000
LA-2-REF	5	0.1227498	0.1054731	0.0953714

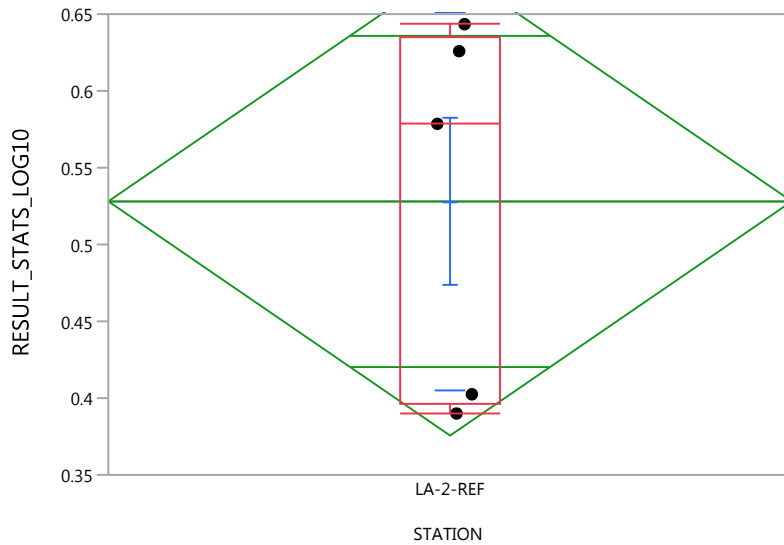
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB028**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.2021	2	12	0.3343
Brown-Forsythe	0.5744	2	12	0.5778
Levene	4.2070	2	12	0.0413*
Bartlett	6.2558	2	.	0.0019*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB037**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.389971	0.389971	0.39623	0.578579	0.634658	0.643453	0.643453

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.12275
Mean of Response	0.528071
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.0000000	.	.	.
Error	4	0.06027004	0.015068		
C. Total	4	0.06027004			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.528071	0.05490	0.37566	0.68048

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.528071	0.122750	0.05490	0.37566	0.68048



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB037**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

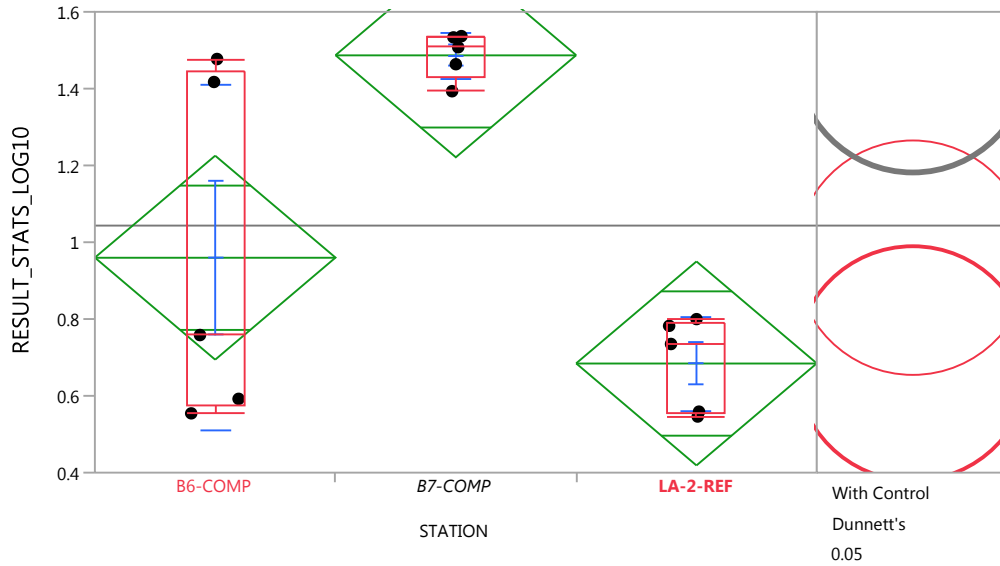
Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.554287	0.554287	0.573182	0.758407	1.447185	1.47712	1.47712
B7-COMP	1.39324	1.39324	1.42834	1.50764	1.535135	1.53667	1.53667
LA-2-REF	0.546318	0.546318	0.552577	0.734926	0.791005	0.7998	0.7998

**Oneway Anova**

**Summary of Fit**

Rsquare	0.650909
Adj Rsquare	0.592727
Root Mean Square Error	0.272608
Mean of Response	1.043721
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.6628020	0.831401	11.1875	0.0018*
Error	12	0.8917820	0.074315		
C. Total	14	2.5545841			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.95983	0.12191	0.6942	1.2255
B7-COMP	5	1.48692	0.12191	1.2213	1.7525
LA-2-REF	5	0.68442	0.12191	0.4188	0.9500

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**

**Oneway Anova**

**Means for Oneway Anova**

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.95983	0.451968	0.20213	0.3986	1.5210
B7-COMP	5	1.48692	0.060022	0.02684	1.4124	1.5614
LA-2-REF	5	0.68442	0.122750	0.05490	0.5320	0.8368

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.371	0.0011*
B6-COMP	-0.16	0.2297
LA-2-REF	-0.43	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.000	40.000	6.8000	-0.674
B7-COMP	5	62.000	40.000	12.4000	2.633
LA-2-REF	5	24.000	40.000	4.8000	-1.898

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
7.7600	2	0.0207*

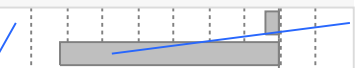
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

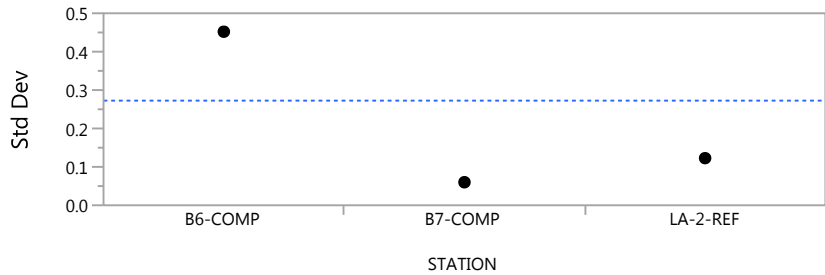
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-1.20000	1.914854	-0.62668	0.7553	-0.045758	-0.930802	0.245513
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.772714	-0.990352	-0.593440



**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB044**

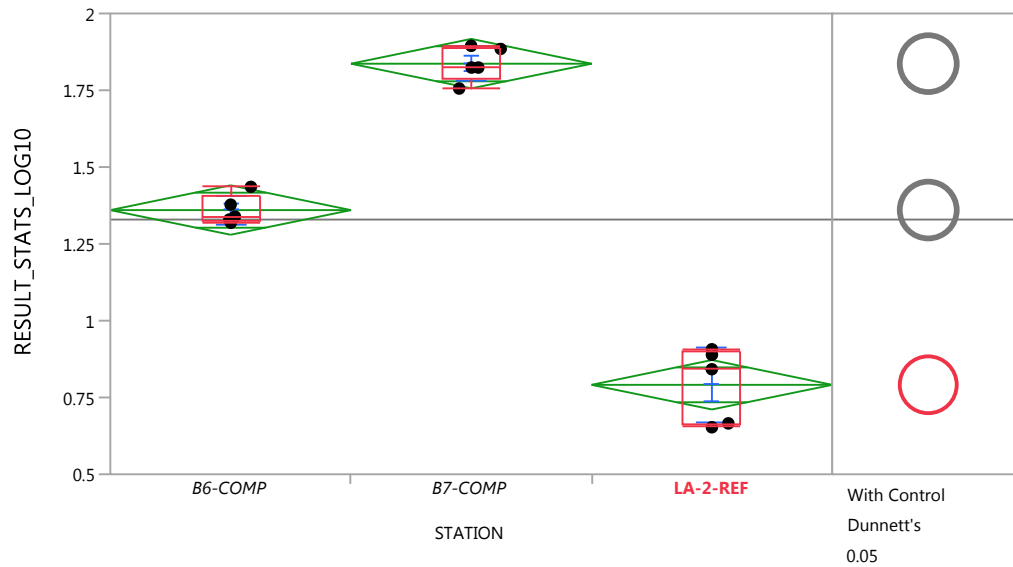
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.4519683	0.3898856	0.3496014
B7-COMP	5	0.0600222	0.0468624	0.0427180
LA-2-REF	5	0.1227498	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	12.3357	2	12	0.0012*
Brown-Forsythe	3.6407	2	12	0.0581
Levene	31.0159	2	12	<.0001*
Bartlett	6.5003	2	.	0.0015*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.31876	1.31876	1.32391	1.33882	1.406735	1.43573	1.43573
B7-COMP	1.7557	1.7557	1.789805	1.82391	1.889725	1.89484	1.89484
LA-2-REF	0.653212	0.653212	0.659471	0.84182	0.897899	0.906694	0.906694

**Oneway Anova**

**Summary of Fit**

Rsquare	0.970932
Adj Rsquare	0.966087
Root Mean Square Error	0.082659
Mean of Response	1.329309
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	2.7386117	1.36931	200.4103	<.0001*
Error	12	0.0819901	0.00683		
C. Total	14	2.8206019			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.36002	0.03697	1.2795	1.4406
B7-COMP	5	1.83659	0.03697	1.7561	1.9171
LA-2-REF	5	0.79131	0.03697	0.7108	0.8719

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.36002	0.047844	0.02140	1.3006	1.4194
B7-COMP	5	1.83659	0.056044	0.02506	1.7670	1.9062
LA-2-REF	5	0.79131	0.122750	0.05490	0.6389	0.9437

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.914	<.0001*
B6-COMP	0.438	<.0001*
LA-2-REF	-0.13	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.003
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5224	2	0.0019*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

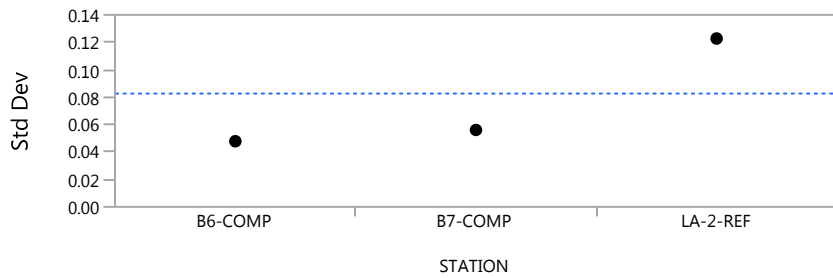
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.53592	-0.78252	-0.412066
B7-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-1.00574	-1.24163	-0.849006



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB049**

**Tests that the Variances are Equal**

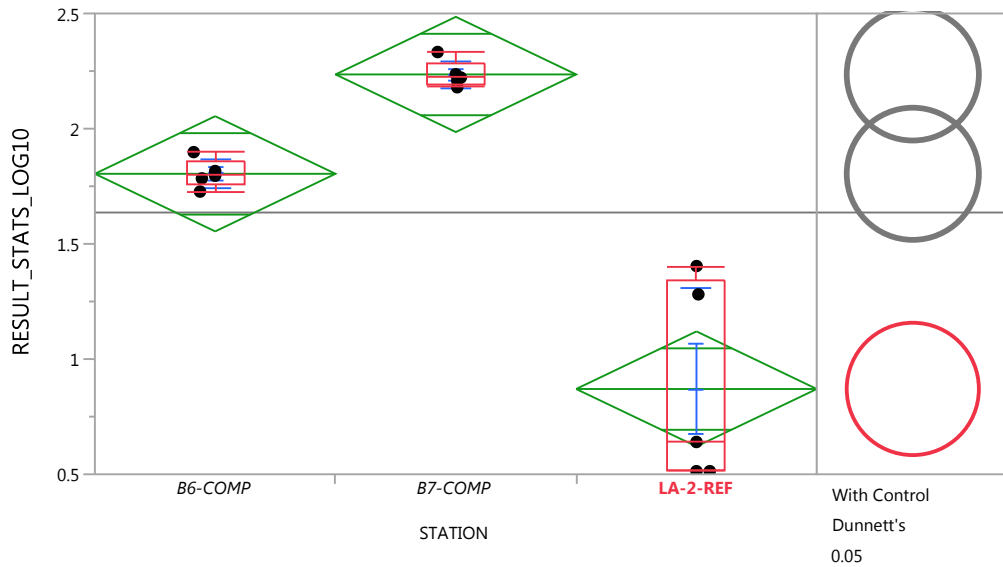


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0478444	0.0373704	0.0331300
B7-COMP	5	0.0560440	0.0425048	0.0399680
LA-2-REF	5	0.1227498	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	6.8740	2	12	0.0102*
Brown-Forsythe	1.7996	2	12	0.2072
Levene	8.3365	2	12	0.0054*
Bartlett	1.9438	2	.	0.1432

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.727	1.727	1.75557	1.79588	1.857035	1.89813	1.89813
B7-COMP	2.17945	2.17945	2.19353	2.22185	2.28456	2.33255	2.33255
LA-2-REF	0.513638	0.513638	0.513638	0.640103	1.34226	1.40369	1.40369

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.86052
Adj Rsquare	0.837274
Root Mean Square Error	0.256477
Mean of Response	1.636735
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	4.8699866	2.43499	37.0171	<.0001*
Error	12	0.7893637	0.06578		
C. Total	14	5.6593503			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.80422	0.11470	1.5543	2.0541
B7-COMP	5	2.23561	0.11470	1.9857	2.4855
LA-2-REF	5	0.87038	0.11470	0.6205	1.1203

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.80422	0.062033	0.02774	1.7272	1.8812
B7-COMP	5	2.23561	0.058150	0.02601	2.1634	2.3078
LA-2-REF	5	0.87038	0.436018	0.19499	0.3290	1.4118

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.959	<.0001*
B6-COMP	0.528	0.0002*
LA-2-REF	-0.41	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.003
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5224	2	0.0019*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

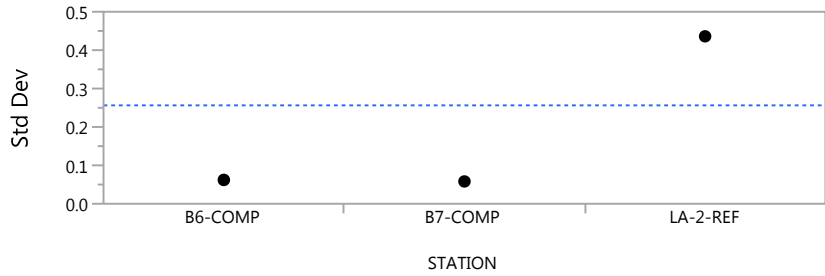
Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB052**

**Nonparametric Comparisons With Control Using Steel Method**

q*		Alpha						
2.21213		0.05						
Score Mean				Hodges-				
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-1.15578	-1.38449	-0.323310
B7-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-1.58175	-1.81891	-0.775760

**Tests that the Variances are Equal**

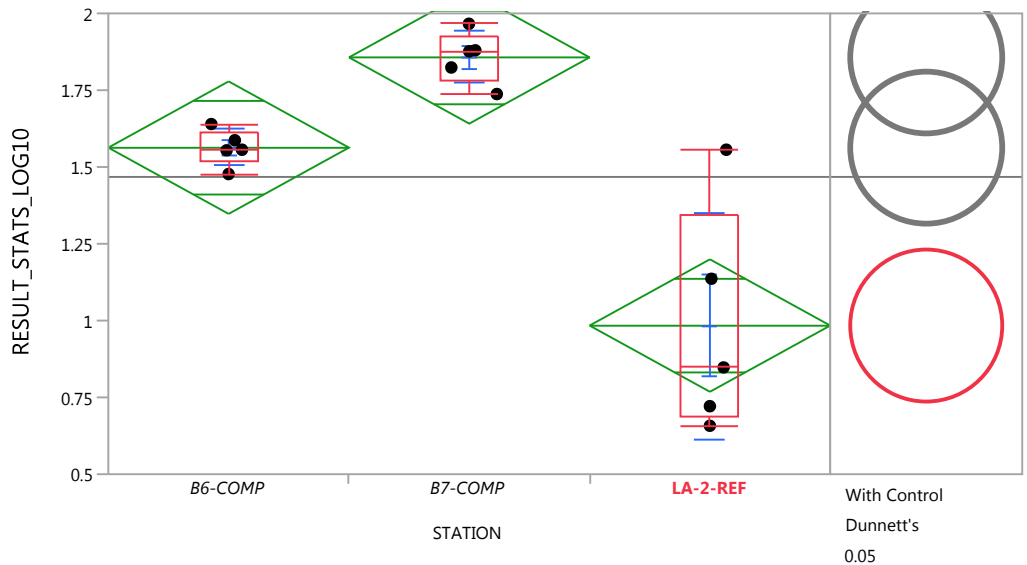


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0620325	0.0422536	0.0405860
B7-COMP	5	0.0581497	0.0391632	0.0364120
LA-2-REF	5	0.4360178	0.3775042	0.3314488

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	11.2968	2	12	0.0017*
Brown-Forsythe	3.4917	2	12	0.0638
Levene	37.6740	2	12	<.0001*
Bartlett	8.5419	2	.	0.0002*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**



Dunnett's  
0.05

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.47712	1.47712	1.515705	1.5563	1.613425	1.63985	1.63985
B7-COMP	1.7376	1.7376	1.780755	1.87662	1.92294	1.96602	1.96602
LA-2-REF	0.657577	0.657577	0.689412	0.847712	1.34626	1.5563	1.5563

**Oneway Anova**

**Summary of Fit**

Rsquare	0.770714
Adj Rsquare	0.732499
Root Mean Square Error	0.221169
Mean of Response	1.467842
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.9730710	0.986535	20.1682	0.0001*
Error	12	0.5869861	0.048916		
C. Total	14	2.5600571			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.56291	0.09891	1.3474	1.7784
B7-COMP	5	1.85680	0.09891	1.6413	2.0723
LA-2-REF	5	0.98381	0.09891	0.7683	1.1993

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.56291	0.059114	0.02644	1.4895	1.6363
B7-COMP	5	1.85680	0.083881	0.03751	1.7527	1.9610
LA-2-REF	5	0.98381	0.369075	0.16506	0.5255	1.4421

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.523	<.0001*
B6-COMP	0.229	0.0026*
LA-2-REF	-0.35	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	37.500	40.000	7.5000	-0.245
B7-COMP	5	65.000	40.000	13.0000	3.003
LA-2-REF	5	17.500	40.000	3.5000	-2.697

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.3953	2	0.0034*



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB066**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

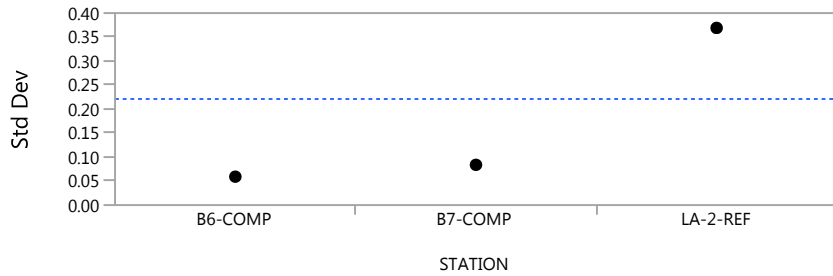
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

		q*	Alpha					
		2.21213	0.05					
Level	- Level	Score Mean	Std Err Dif	Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-3.80000	1.909043	-1.99053	0.0847	-0.70859	-0.98227	0.079180
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-1.01635	-1.30844	-0.181300

**Tests that the Variances are Equal**

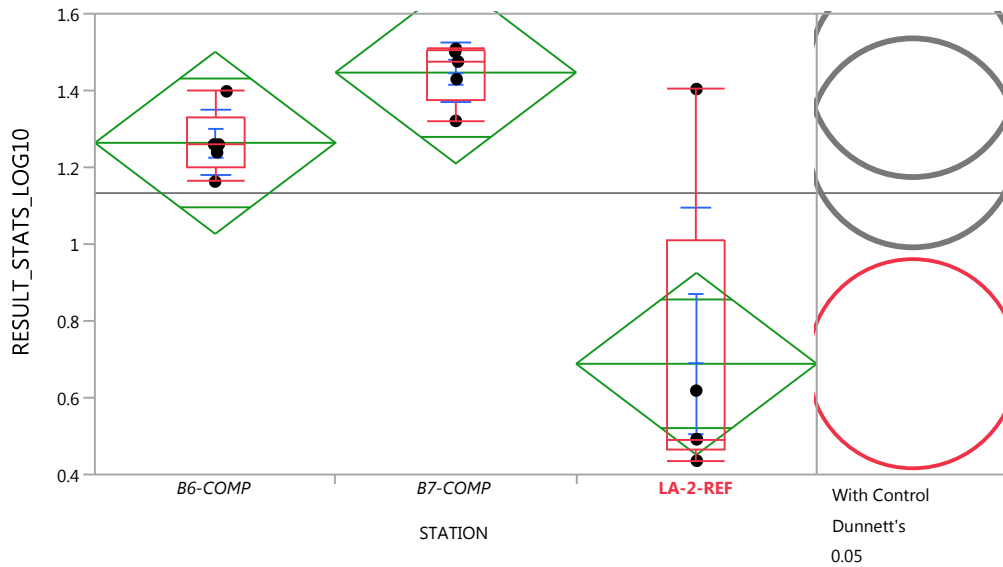


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0591143	0.0404104	0.0390880
B7-COMP	5	0.0838809	0.0608376	0.0568740
LA-2-REF	5	0.3690746	0.2899592	0.2627394

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	2.4732	2	12	0.1261
Brown-Forsythe	2.9640	2	12	0.0899
Levene	8.2317	2	12	0.0056*
Bartlett	6.3969	2		0.0017*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.16273	1.16273	1.200805	1.25964	1.32879	1.39794	1.39794
B7-COMP	1.32077	1.32077	1.375115	1.47545	1.50462	1.50864	1.50864
LA-2-REF	0.435729	0.435729	0.463914	0.492098	1.011127	1.40369	1.40369

**Oneway Anova**

**Summary of Fit**

Rsquare	0.688129
Adj Rsquare	0.63615
Root Mean Square Error	0.243245
Mean of Response	1.133062
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.5666151	0.783308	13.2387	0.0009*
Error	12	0.7100162	0.059168		
C. Total	14	2.2766313			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.26377	0.10878	1.0267	1.5008
B7-COMP	5	1.44698	0.10878	1.2100	1.6840
LA-2-REF	5	0.68844	0.10878	0.4514	0.9255

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.26377	0.084947	0.03799	1.1583	1.3692
B7-COMP	5	1.44698	0.077012	0.03444	1.3514	1.5426
LA-2-REF	5	0.68844	0.405410	0.18130	0.1851	1.1918

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.374	0.0007*
B6-COMP	0.19	0.0053*
LA-2-REF	-0.38	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	36.000	40.000	7.2000	-0.429
B7-COMP	5	63.000	40.000	12.6000	2.761
LA-2-REF	5	21.000	40.000	4.2000	-2.270

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB070**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.0925	2	0.0106*

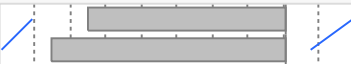
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

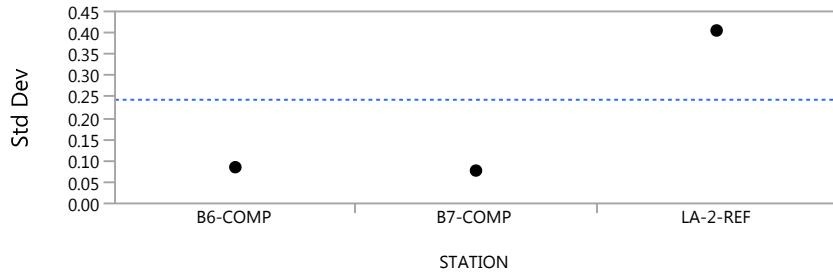
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
		Difference	Std Err Dif					
B6-COMP	LA-2-REF	-2.80000	1.903214	-1.47120	0.2424	-0.746782	-0.96221	0.2409600
B7-COMP	LA-2-REF	-4.40000	1.909043	-2.30482	0.0396*	-0.890076	-1.07291	0.0829200



**Tests that the Variances are Equal**

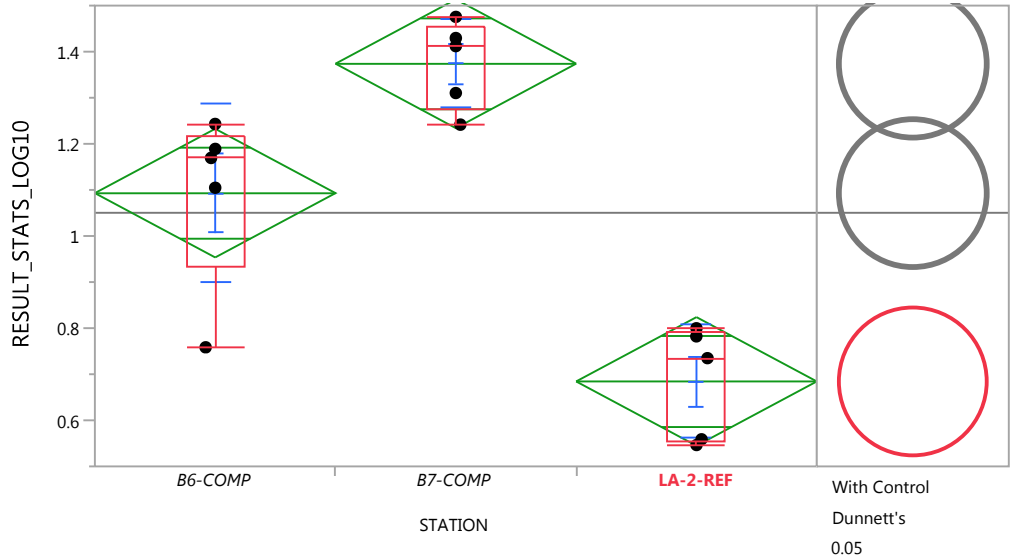


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0849475	0.0536696	0.0511940
B7-COMP	5	0.0770122	0.0574952	0.0518020
LA-2-REF	5	0.4054098	0.2861017	0.2188854

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.2809	2	12	0.3132
Brown-Forsythe	0.8745	2	12	0.4421
Levene	3.9397	2	12	0.0484*
Bartlett	6.0887	2	.	0.0023*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.758407	0.758407	0.931574	1.16946	1.21605	1.24304	1.24304
B7-COMP	1.24159	1.24159	1.27593	1.41218	1.452455	1.47545	1.47545
LA-2-REF	0.546318	0.546318	0.552577	0.734926	0.791005	0.7998	0.7998

**Oneway Anova**

**Summary of Fit**

Rsquare	0.829862
Adj Rsquare	0.801506
Root Mean Square Error	0.143284
Mean of Response	1.050383
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	1.2016692	0.600835	29.2655	<.0001*
Error	12	0.2463653	0.020530		
C. Total	14	1.4480345			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.09294	0.06408	0.9533	1.2326
B7-COMP	5	1.37379	0.06408	1.2342	1.5134
LA-2-REF	5	0.68442	0.06408	0.5448	0.8240

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.09294	0.193440	0.08651	0.8528	1.3331
B7-COMP	5	1.37379	0.095419	0.04267	1.2553	1.4923
LA-2-REF	5	0.68442	0.122750	0.05490	0.5320	0.8368

**Means Comparisons**

**Comparisons with a control using Dunnnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.463	<.0001*
B6-COMP	0.182	0.0014*
LA-2-REF	-0.23	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	39.000	40.000	7.8000	-0.061
B7-COMP	5	64.000	40.000	12.8000	2.878
LA-2-REF	5	17.000	40.000	3.4000	-2.756

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.0600	2	0.0040*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

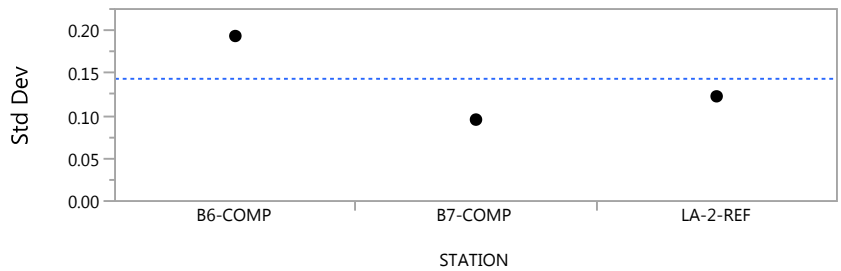
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.434534	-0.696722	0.041393	
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.682755	-0.929132	-0.441790	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1934399	0.1338138	0.1137906
B7-COMP	5	0.0954192	0.0782880	0.0706100
LA-2-REF	5	0.1227498	0.1054730	0.0953714

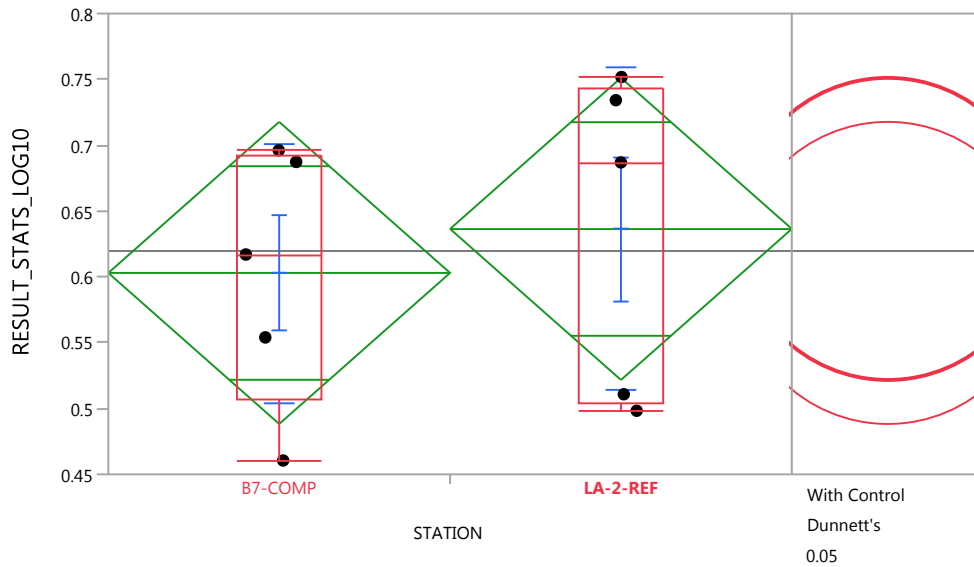
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.6979	2	12	0.5168
Brown-Forsythe	0.1754	2	12	0.8412
Levene	0.6555	2	12	0.5368
Bartlett	0.9400	2	.	0.3906

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB074**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.460522	0.460522	0.507287	0.616978	0.691747	0.696159	0.696159
LA-2-REF	0.498311	0.498311	0.504569	0.686918	0.742997	0.751792	0.751792

**Oneway Anova**

**Summary of Fit**

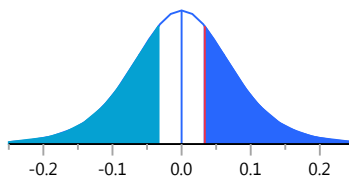
Rsquare	0.027413
Adj Rsquare	-0.09416
Root Mean Square Error	0.111216
Mean of Response	0.61971
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.03340	t Ratio	0.474857
Std Err Dif	0.07034	DF	8
Upper CL Dif	0.19560	Prob >  t	0.6476
Lower CL Dif	-0.12880	Prob > t	0.3238
Confidence	0.95	Prob < t	0.6762



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00278907	0.002789	0.2255	0.6476
Error	8	0.09895186	0.012369		
C. Total	9	0.10174092			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.603009	0.04974	0.48831	0.71770
LA-2-REF	5	0.636410	0.04974	0.52172	0.75110

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**

**Oneway Anova**

**Means for Oneway Anova**

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

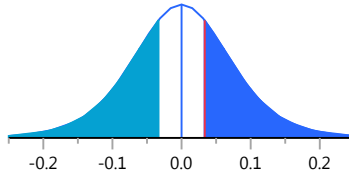
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.603009	0.098339	0.04398	0.48091	0.72511
LA-2-REF	5	0.636410	0.122750	0.05490	0.48400	0.78882

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.03340	t Ratio	0.474857
Std Err Dif	0.07034	DF	7.636537
Upper CL Dif	0.19696	Prob >  t	0.6482
Lower CL Dif	-0.13015	Prob > t	0.3241
Confidence	0.95	Prob < t	0.6759



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.16	1.0000
B7-COMP	-0.13	0.6476

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	25.000	27.500	5.00000	-0.418
LA-2-REF	5	30.000	27.500	6.00000	0.418

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
30	0.41779	0.6761

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.2727	1	0.6015

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

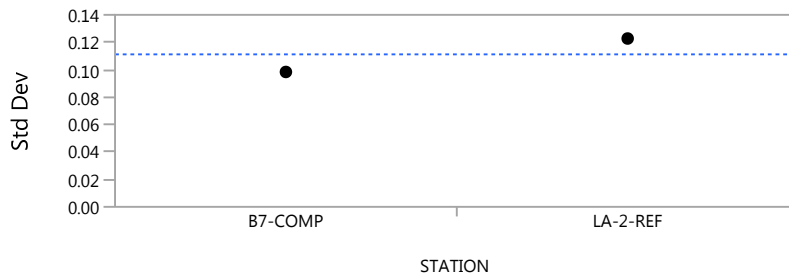
Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean Difference	Std Err Dif	Z	p-Value	Hodges-Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.6761	0.0468680	-0.189023	0.2736800

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB077**

**Tests that the Variances are Equal**

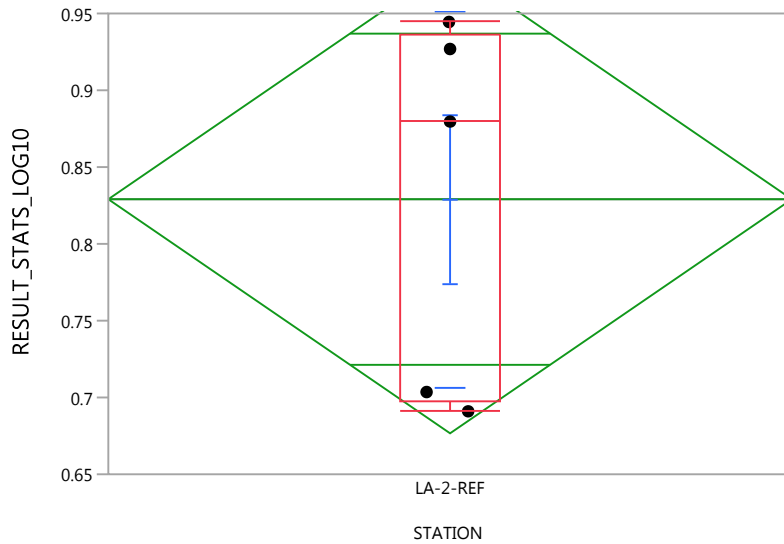


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227495	0.1054728	0.0953712

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.6751	1	8	0.4351
Brown-Forsythe	0.2331	1	8	0.6422
Levene	1.1920	1	8	0.3067
Bartlett	0.1734	1	.	0.6771
F Test 2-sided	1.5581	4	4	0.6779

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB081**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.691001	0.691001	0.69726	0.879609	0.935688	0.944483	0.944483

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.12275
Mean of Response	0.829101
Observations (or Sum Wgts)	5



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB081**

**Oneway Anova**

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.06027004	0.015068		
C. Total	4	0.06027004			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.829101	0.05490	0.67669	0.98151

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.829101	0.122750	0.05490	0.67669	0.98151

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

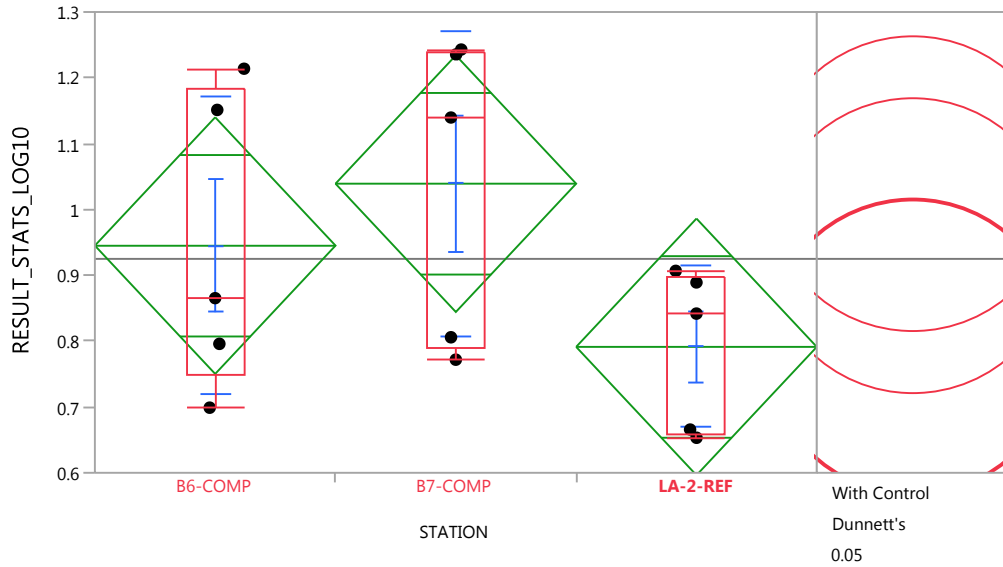
Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.69897	0.69897	0.747425	0.865301	1.182575	1.21388	1.21388
B7-COMP	0.77188	0.77188	0.788872	1.13966	1.23934	1.24304	1.24304
LA-2-REF	0.653212	0.653212	0.659471	0.84182	0.897899	0.906694	0.906694

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.245853
Adj Rsquare	0.120162
Root Mean Square Error	0.200077
Mean of Response	0.925196
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.15660154	0.078301	1.9560	0.1840
Error	12	0.48037055	0.040031		
C. Total	14	0.63697210			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.94506	0.08948	0.75011	1.1400
B7-COMP	5	1.03922	0.08948	0.84426	1.2342
LA-2-REF	5	0.79131	0.08948	0.59636	0.9863

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.94506	0.225811	0.10099	0.66468	1.2254
B7-COMP	5	1.03922	0.232453	0.10396	0.75059	1.3278
LA-2-REF	5	0.79131	0.122750	0.05490	0.63890	0.9437

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.07	0.1284
B6-COMP	-0.16	0.3979
LA-2-REF	-0.32	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	41.000	40.000	8.2000	0.061
B7-COMP	5	50.000	40.000	10.0000	1.164
LA-2-REF	5	29.000	40.000	5.8000	-1.286

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
2.2200	2	0.3296

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

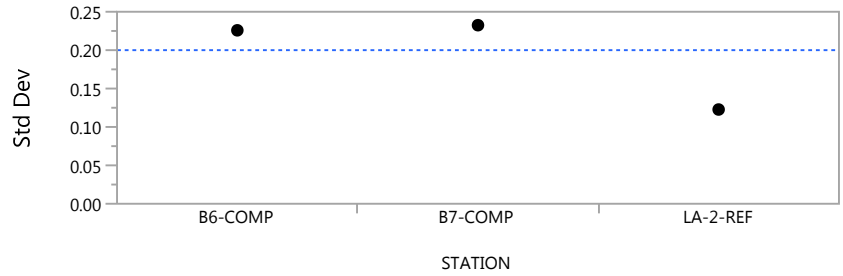
Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB087**

**Nonparametric Comparisons With Control Using Steel Method**

q*		Alpha						
2.21213		0.05						
Score Mean				Hodges-				
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-1.60000	1.914854	-0.83557	0.6130	-0.142668	-0.560668	0.2077240
B7-COMP	LA-2-REF	-2.40000	1.914854	-1.25336	0.3489	-0.297840	-0.589828	0.1348140

**Tests that the Variances are Equal**

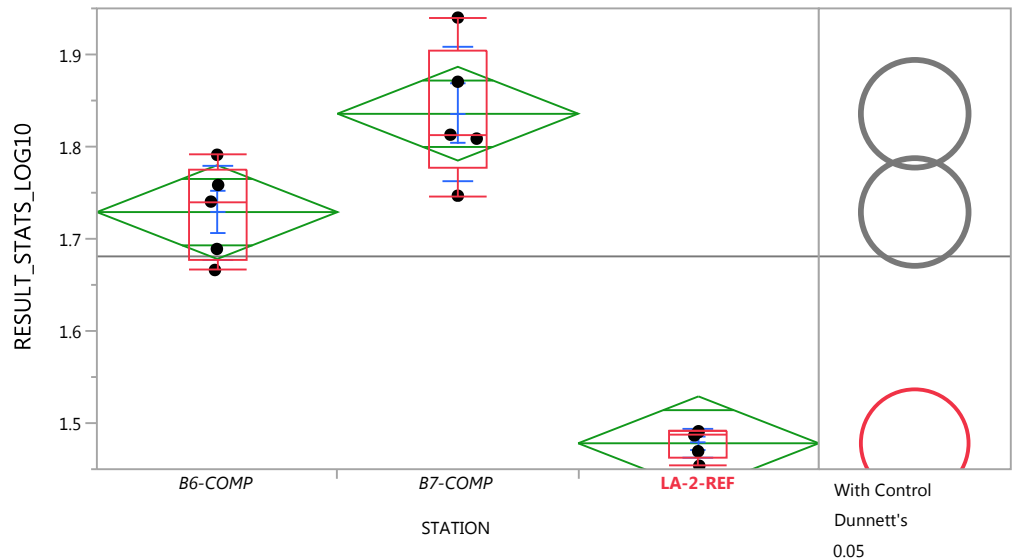


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.2258114	0.1900118	0.1740600
B7-COMP	5	0.2324528	0.2002758	0.1801872
LA-2-REF	5	0.1227498	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	2.5877	2	12	0.1163
Brown-Forsythe	0.6212	2	12	0.5537
Levene	3.7185	2	12	0.0554
Bartlett	0.7833	2	.	0.4569

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.66618	1.66618	1.677585	1.74036	1.774765	1.79112	1.79112
B7-COMP	1.74674	1.74674	1.777705	1.81291	1.905185	1.94	1.94
LA-2-REF	1.45364	1.45364	1.461535	1.48667	1.490625	1.49116	1.49116

**Oneway Anova**

**Summary of Fit**

Rsquare	0.911509
Adj Rsquare	0.896761
Root Mean Square Error	0.052206
Mean of Response	1.680983
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.33688826	0.168444	61.8038	<.0001*
Error	12	0.03270560	0.002725		
C. Total	14	0.36959386			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.72901	0.02335	1.6781	1.7799
B7-COMP	5	1.83574	0.02335	1.7849	1.8866
LA-2-REF	5	1.47820	0.02335	1.4273	1.5291

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.72901	0.050990	0.02280	1.6657	1.7923
B7-COMP	5	1.83574	0.072877	0.03259	1.7452	1.9262
LA-2-REF	5	1.47820	0.016288	0.00728	1.4580	1.4984

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.275	<.0001*
B6-COMP	0.168	<.0001*
LA-2-REF	-0.08	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	42.000	40.000	8.4000	0.184
B7-COMP	5	63.000	40.000	12.6000	2.756
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
11.5800	2	0.0031*

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB099**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

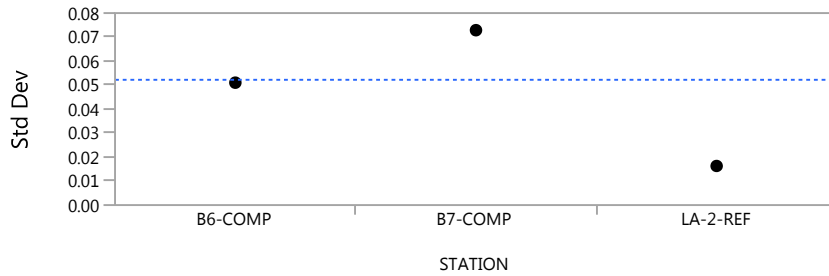
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

		q*	Alpha					
		2.21213	0.05					
		Score Mean			Hodges-			
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.253690	-0.337480	-0.175020
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.343480	-0.486360	-0.255580

**Tests that the Variances are Equal**

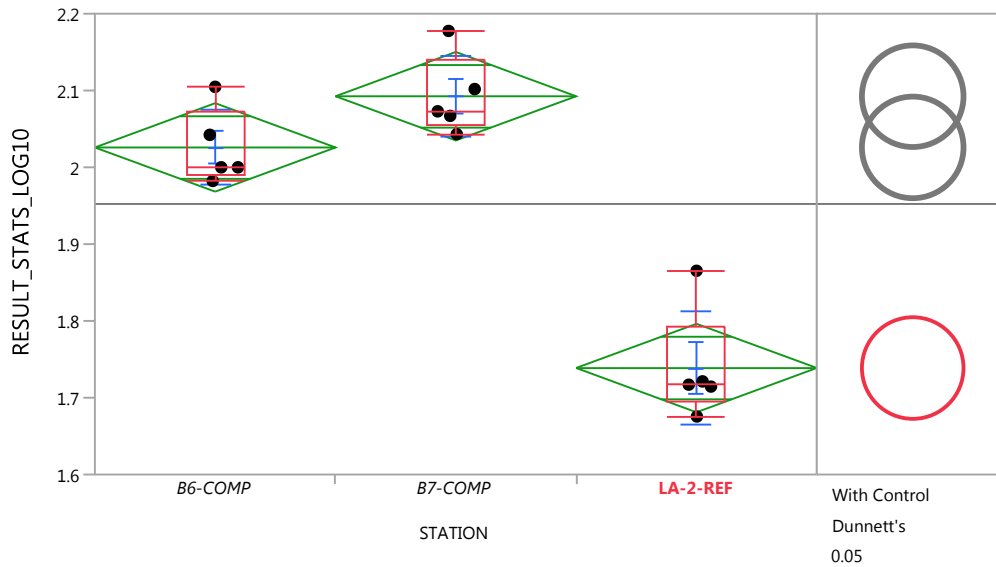


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0509903	0.0411416	0.0388720
B7-COMP	5	0.0728773	0.0555576	0.0509920
LA-2-REF	5	0.0162879	0.0133304	0.0116360

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.7093	2	12	0.2222
Brown-Forsythe	1.6163	2	12	0.2390
Levene	3.4901	2	12	0.0639
Bartlett	3.0771	2		0.0461*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.98227	1.98227	1.991135	2	2.073515	2.10474	2.10474
B7-COMP	2.04323	2.04323	2.05509	2.07291	2.139755	2.17764	2.17764
LA-2-REF	1.67549	1.67549	1.694985	1.71694	1.793275	1.8653	1.8653

**Oneway Anova**

**Summary of Fit**

Rsquare	0.893992
Adj Rsquare	0.876324
Root Mean Square Error	0.059103
Mean of Response	1.952357
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.35350545	0.176753	50.5996	<.0001*
Error	12	0.04191796	0.003493		
C. Total	14	0.39542341			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.02586	0.02643	1.9683	2.0834
B7-COMP	5	2.09252	0.02643	2.0349	2.1501
LA-2-REF	5	1.73869	0.02643	1.6811	1.7963

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.02586	0.049319	0.02206	1.9646	2.0871
B7-COMP	5	2.09252	0.051963	0.02324	2.0280	2.1570
LA-2-REF	5	1.73869	0.073123	0.03270	1.6479	1.8295

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.26	<.0001*
B6-COMP	0.194	<.0001*
LA-2-REF	-0.09	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	44.000	40.000	8.8000	0.429
B7-COMP	5	61.000	40.000	12.2000	2.513
LA-2-REF	5	15.000	40.000	3.0000	-3.003

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB101**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
10.8394	2	0.0044*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

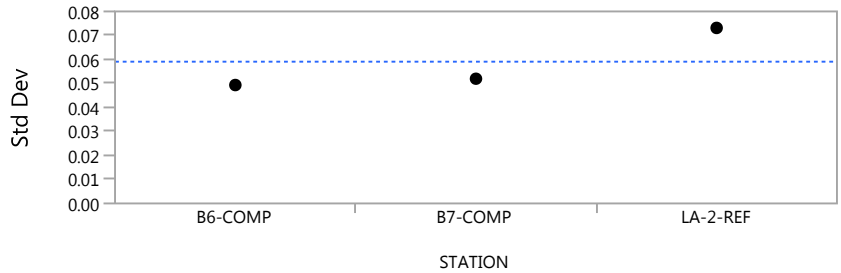
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.909043	-2.51435	0.0226*	-0.285520	-0.429250	-0.116970
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.355970	-0.502150	-0.177930

**Tests that the Variances are Equal**

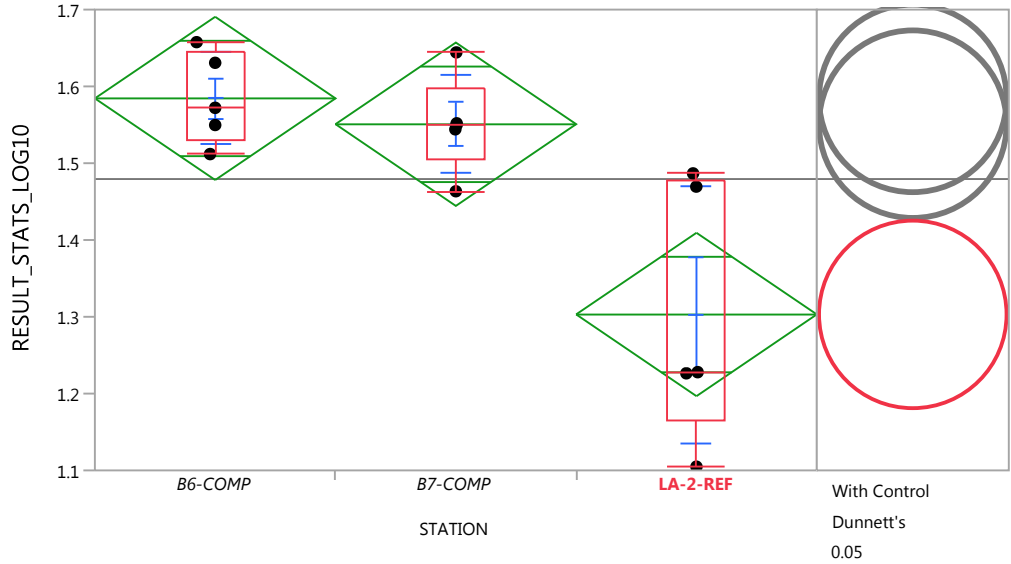


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0493193	0.0381240	0.0329520
B7-COMP	5	0.0519633	0.0377880	0.0338660
LA-2-REF	5	0.0731226	0.0506432	0.0393160

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3024	2	12	0.7445
Brown-Forsythe	0.0232	2	12	0.9771
Levene	0.2193	2	12	0.8062
Bartlett	0.3487	2	.	0.7056

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.51188	1.51188	1.530775	1.5721	1.644145	1.65758	1.65758
B7-COMP	1.46344	1.46344	1.503755	1.55003	1.59807	1.6443	1.6443
LA-2-REF	1.10474	1.10474	1.16557	1.22792	1.47805	1.48667	1.48667

**Oneway Anova**

**Summary of Fit**

Rsquare	0.623133
Adj Rsquare	0.560322
Root Mean Square Error	0.109081
Mean of Response	1.479385
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.23608488	0.118042	9.9207	0.0029*
Error	12	0.14278271	0.011899		
C. Total	14	0.37886759			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.58439	0.04878	1.4781	1.6907
B7-COMP	5	1.55074	0.04878	1.4444	1.6570
LA-2-REF	5	1.30303	0.04878	1.1967	1.4093

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.58439	0.059407	0.02657	1.5106	1.6582
B7-COMP	5	1.55074	0.064072	0.02865	1.4712	1.6303
LA-2-REF	5	1.30303	0.167515	0.07492	1.0950	1.5110

**Means Comparisons**

**Comparisons with a control using Dunnnett's Method**

Control Group = LA-2-REF



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.109	0.0029*
B7-COMP	0.075	0.0069*
LA-2-REF	-0.17	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	56.000	40.000	11.2000	1.898
B7-COMP	5	47.000	40.000	9.4000	0.796
LA-2-REF	5	17.000	40.000	3.4000	-2.756

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
8.3400	2	0.0155*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

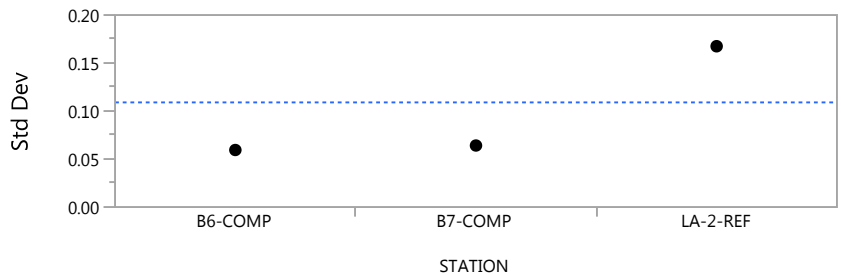
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.316150	-0.539560	0.023230	
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.321750	-0.552840	-0.025210	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0594065	0.0478056	0.0453480
B7-COMP	5	0.0640722	0.0378672	0.0377260
LA-2-REF	5	0.1675151	0.1400144	0.1249920

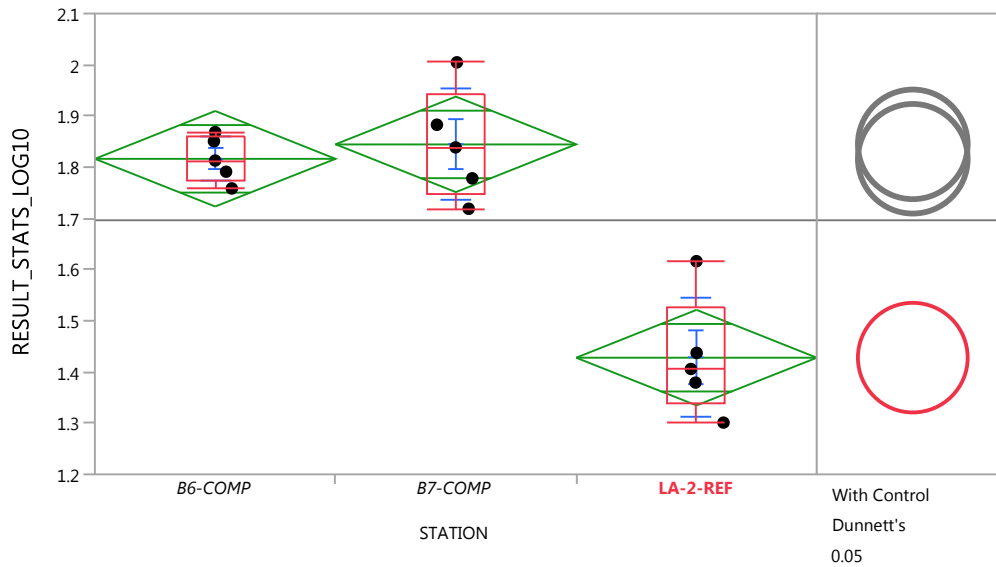
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	5.0281	2	12	0.0259*
Brown-Forsythe	1.8386	2	12	0.2011
Levene	7.2748	2	12	0.0085*
Bartlett	2.5588	2	.	0.0774

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB105**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.75841	1.75841	1.774765	1.81291	1.859565	1.86843	1.86843
B7-COMP	1.71871	1.71871	1.74843	1.83863	1.94371	2.00464	2.00464
LA-2-REF	1.30103	1.30103	1.34011	1.40577	1.526775	1.6163	1.6163

**Oneway Anova**

**Summary of Fit**

Rsquare	0.831566
Adj Rsquare	0.803493
Root Mean Square Error	0.095659
Mean of Response	1.696268
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.54212587	0.271063	29.6222	<.0001*
Error	12	0.10980810	0.009151		
C. Total	14	0.65193397			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.81631	0.04278	1.7231	1.9095
B7-COMP	5	1.84458	0.04278	1.7514	1.9378
LA-2-REF	5	1.42791	0.04278	1.3347	1.5211

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.81631	0.044434	0.01987	1.7611	1.8715
B7-COMP	5	1.84458	0.108823	0.04867	1.7095	1.9797
LA-2-REF	5	1.42791	0.116769	0.05222	1.2829	1.5729

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.265	<.0001*
B6-COMP	0.237	<.0001*
LA-2-REF	-0.15	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	51.000	40.000	10.2000	1.286
B7-COMP	5	54.000	40.000	10.8000	1.653
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
9.4200	2	0.0090*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

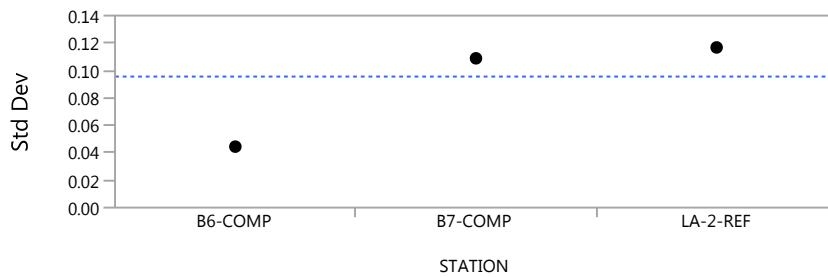
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.411930	-0.567400	-0.142110
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.417680	-0.703610	-0.102410

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0444344	0.0346008	0.0339200
B7-COMP	5	0.1088233	0.0793024	0.0781120
LA-2-REF	5	0.1167694	0.0790936	0.0746660

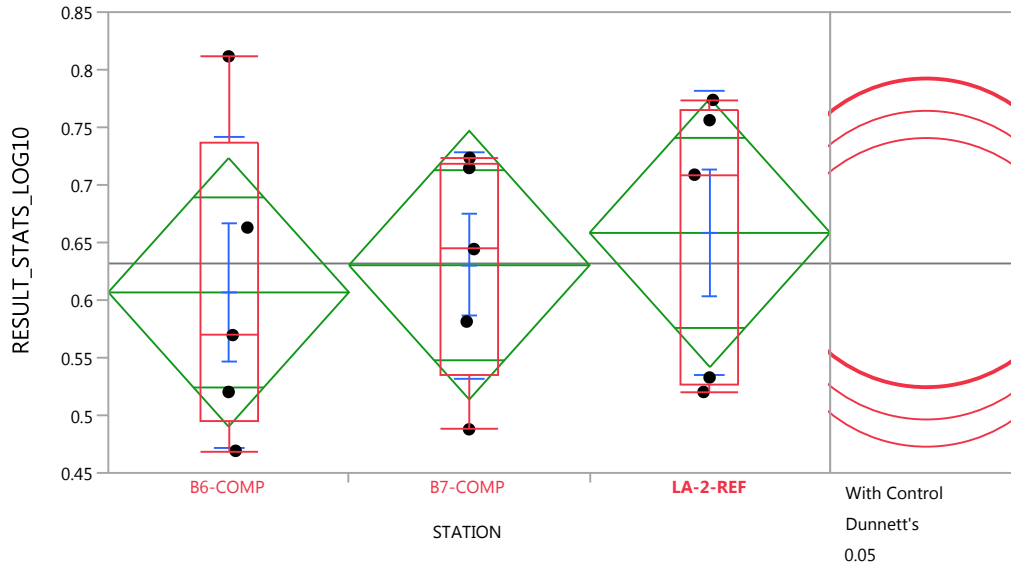
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB110**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.7845	2	12	0.4784
Brown-Forsythe	0.7496	2	12	0.4934
Levene	0.9679	2	12	0.4077
Bartlett	1.5784	2	.	0.2063

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.469152	0.469152	0.494729	0.569666	0.737274	0.811575	0.811575
B7-COMP	0.487845	0.487845	0.53461	0.644301	0.71907	0.723482	0.723482
LA-2-REF	0.520305	0.520305	0.526563	0.708913	0.764992	0.773786	0.773786

**Oneway Anova**

**Summary of Fit**

Rsquare	0.037478
Adj Rsquare	-0.12294
Root Mean Square Error	0.119669
Mean of Response	0.631823
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00669126	0.003346	0.2336	0.7952
Error	12	0.17184752	0.014321		
C. Total	14	0.17853878			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.606734	0.05352	0.49013	0.72334
B7-COMP	5	0.630332	0.05352	0.51373	0.74694
LA-2-REF	5	0.658404	0.05352	0.54180	0.77501

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.606734	0.134996	0.06037	0.43911	0.77435
B7-COMP	5	0.630332	0.098339	0.04398	0.50823	0.75244
LA-2-REF	5	0.658404	0.122750	0.05490	0.50599	0.81082

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.19	1.0000
B7-COMP	-0.16	0.9056
B6-COMP	-0.14	0.7248

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.500	40.000	6.90000	-0.613
B7-COMP	5	40.000	40.000	8.00000	0.000
LA-2-REF	5	45.500	40.000	9.10000	0.613

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.6061	2	0.7386

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

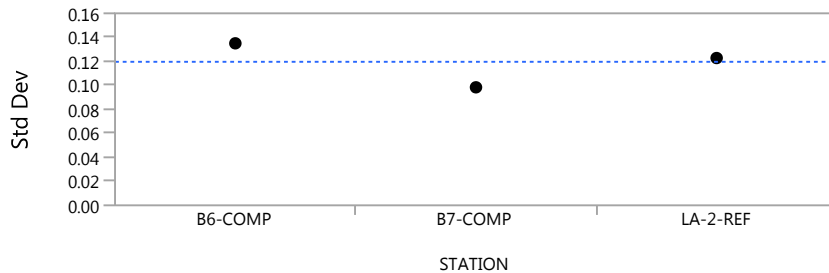
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.000000	1.909043	0.5238227	0.8206	0.0511530	-0.291270	0.3046340
B7-COMP	LA-2-REF	0.800000	1.914854	0.4177864	0.8810	0.0415400	-0.203177	0.2859410



**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB114**

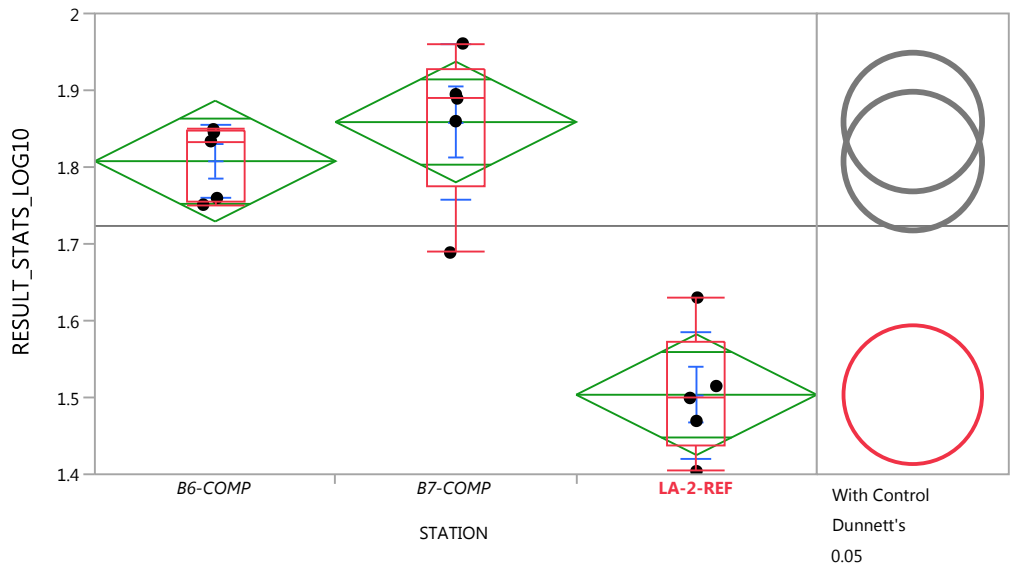
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.1349957	0.1044316	0.0970180
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227498	0.1054731	0.0953714

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3451	2	12	0.7150
Brown-Forsythe	0.1388	2	12	0.8718
Levene	0.4979	2	12	0.6198
Bartlett	0.1813	2	.	0.8341

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.751	1.751	1.755335	1.83367	1.847155	1.84921	1.84921
B7-COMP	1.68875	1.68875	1.774285	1.8893	1.92789	1.96094	1.96094
LA-2-REF	1.40401	1.40401	1.43672	1.4994	1.5725	1.63009	1.63009

**Oneway Anova**

**Summary of Fit**

Rsquare	0.825171
Adj Rsquare	0.796033
Root Mean Square Error	0.080689
Mean of Response	1.723343
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.36875928	0.184380	28.3193	<.0001*
Error	12	0.07812881	0.006511		
C. Total	14	0.44688809			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.80773	0.03609	1.7291	1.8864
B7-COMP	5	1.85873	0.03609	1.7801	1.9374
LA-2-REF	5	1.50357	0.03609	1.4249	1.5822

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.80773	0.048265	0.02158	1.7478	1.8677
B7-COMP	5	1.85873	0.101956	0.04560	1.7321	1.9853
LA-2-REF	5	1.50357	0.082509	0.03690	1.4011	1.6060

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.227	< 0.0001*
B6-COMP	0.176	0.0001*
LA-2-REF	-0.13	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	45.000	40.000	9.0000	0.551
B7-COMP	5	60.000	40.000	12.0000	2.388
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
10.5000	2	0.0052*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

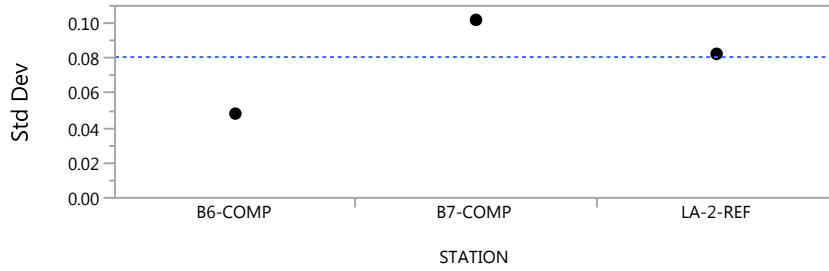
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.330190	-0.445200	-0.120910
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.379930	-0.556930	-0.058660



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB118**

**Tests that the Variances are Equal**

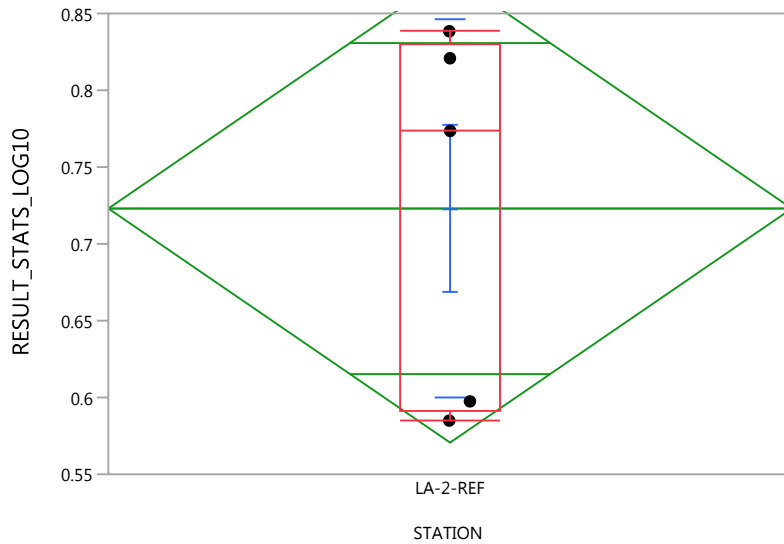


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0482650	0.0419160	0.0367280
B7-COMP	5	0.1019555	0.0679920	0.0614420
LA-2-REF	5	0.0825091	0.0551456	0.0543120

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.5673	2	12	0.5815
Brown-Forsythe	0.2116	2	12	0.8123
Levene	0.3288	2	12	0.7261
Bartlett	0.9276	2	.	0.3955

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB119**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.584948	0.584948	0.591206	0.773556	0.829634	0.838429	0.838429

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.12275
Mean of Response	0.723047
Observations (or Sum Wgts)	5



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB119**

**Oneway Anova**

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.06026986	0.015067		
C. Total	4	0.06026986			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.723047	0.05490	0.57063	0.87546

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.723047	0.122750	0.05490	0.57063	0.87546

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

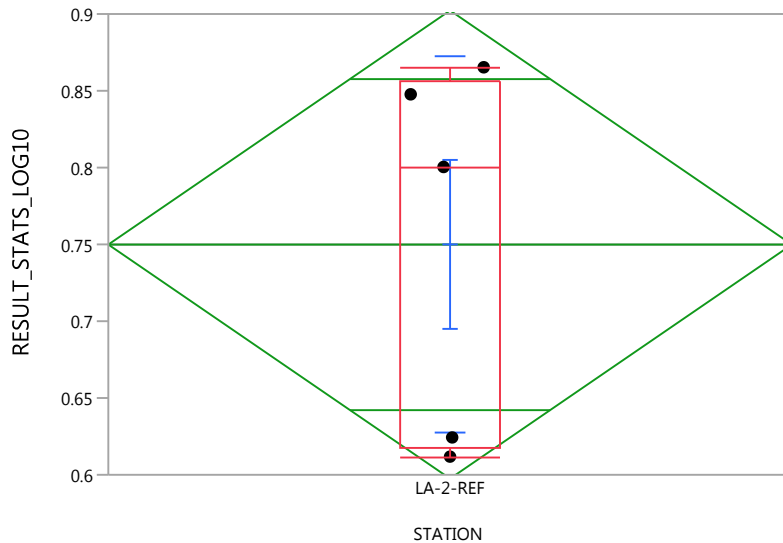
Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB123**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.61182	0.61182	0.618078	0.800428	0.856507	0.865301	0.865301

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB123**

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.12275
Mean of Response	0.749919
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.06027006	0.015068		
C. Total	4	0.06027006			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.749919	0.05490	0.59751	0.90233

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.749919	0.122750	0.05490	0.59751	0.90233

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

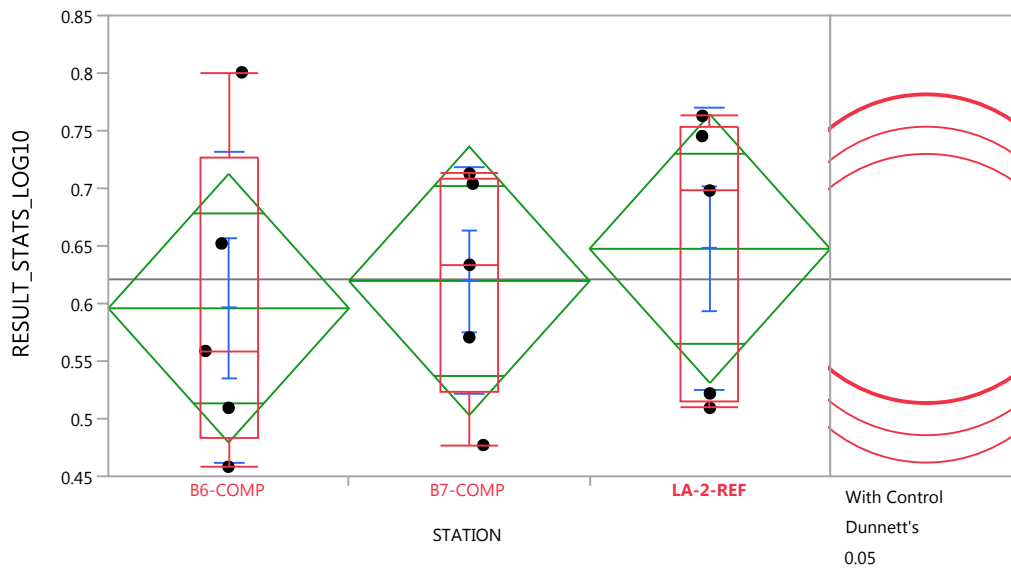
Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000	

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB123**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB126**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.458294	0.458294	0.483871	0.558809	0.726416	0.800717	0.800717
B7-COMP	0.477121	0.477121	0.523887	0.633577	0.708346	0.712758	0.712758
LA-2-REF	0.509447	0.509447	0.515705	0.698055	0.754134	0.762929	0.762929

**Oneway Anova**

**Summary of Fit**

Rsquare	0.037467
Adj Rsquare	-0.12295
Root Mean Square Error	0.119669
Mean of Response	0.62101
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00668932	0.003345	0.2336	0.7952
Error	12	0.17184758	0.014321		
C. Total	14	0.17853690			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.595876	0.05352	0.47927	0.71248
B7-COMP	5	0.619608	0.05352	0.50300	0.73621
LA-2-REF	5	0.647547	0.05352	0.53094	0.76415

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.595876	0.134996	0.06037	0.42826	0.76350
B7-COMP	5	0.619608	0.098339	0.04398	0.49750	0.74171
LA-2-REF	5	0.647547	0.122750	0.05490	0.49513	0.79996

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.19	1.0000
B7-COMP	-0.16	0.9065
B6-COMP	-0.14	0.7248

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.500	40.000	6.90000	-0.613
B7-COMP	5	40.000	40.000	8.00000	0.000
LA-2-REF	5	45.500	40.000	9.10000	0.613

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.6061	2	0.7386

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB126**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

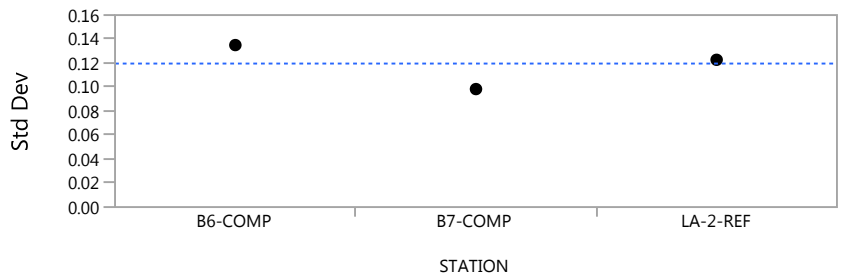
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

		q*	Alpha					
		2.21213	0.05					
		Score Mean			Hodges-			
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.000000	1.909043	0.5238227	0.8206	0.0511530	-0.291270	0.3046350
B7-COMP	LA-2-REF	0.800000	1.914854	0.4177864	0.8810	0.0414060	-0.203311	0.2858080

**Tests that the Variances are Equal**

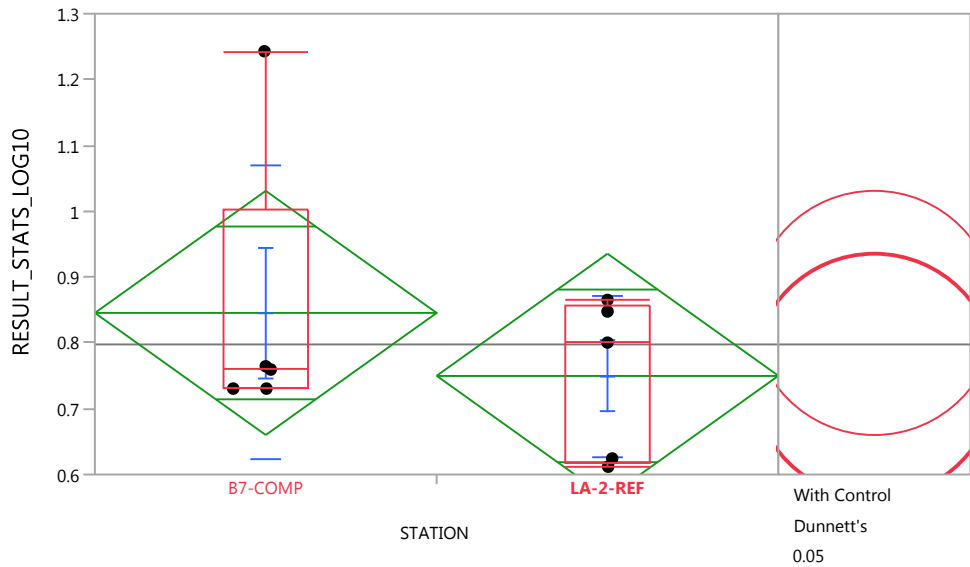


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1349956	0.1044314	0.0970180
B7-COMP	5	0.0983387	0.0765774	0.0737836
LA-2-REF	5	0.1227500	0.1054733	0.0953716

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3451	2	12	0.7150
Brown-Forsythe	0.1388	2	12	0.8718
Levene	0.4979	2	12	0.6198
Bartlett	0.1813	2		0.8341

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB128**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB128**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.730487	0.730487	0.730487	0.759451	1.003756	1.24304	1.24304
LA-2-REF	0.61182	0.61182	0.618078	0.800428	0.856507	0.865301	0.865301

**Oneway Anova**

**Summary of Fit**

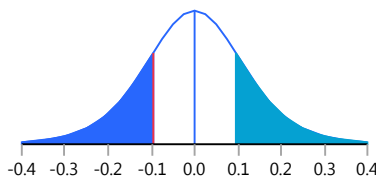
Rsquare	0.081249
Adj Rsquare	-0.03359
Root Mean Square Error	0.179838
Mean of Response	0.797753
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	-0.09567	t Ratio	-0.84111
Std Err Dif	0.11374	DF	8
Upper CL Dif	0.16662	Prob >  t	0.4247
Lower CL Dif	-0.35795	Prob > t	0.7876
Confidence	0.95	Prob < t	0.2124



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.02288092	0.022881	0.7075	0.4247
Error	8	0.25873402	0.032342		
C. Total	9	0.28161494			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.845587	0.08043	0.66012	1.0311
LA-2-REF	5	0.749919	0.08043	0.56446	0.9354

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

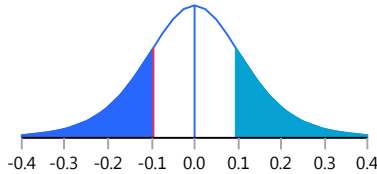
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.845587	0.222746	0.09962	0.56901	1.1222
LA-2-REF	5	0.749919	0.122750	0.05490	0.59751	0.9023

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	-0.09567	t Ratio	-0.84111
Std Err Dif	0.11374	DF	6.224327
Upper CL Dif	0.18023	Prob >  t	0.4314
Lower CL Dif	-0.37157	Prob > t	0.7843
Confidence	0.95	Prob < t	0.2157



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB128**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.17	0.4247
LA-2-REF	-0.26	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	28.000	27.500	5.60000	-0.000
LA-2-REF	5	27.000	27.500	5.40000	0.000

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
27	0.00000	1.0000

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0110	1	0.9166

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

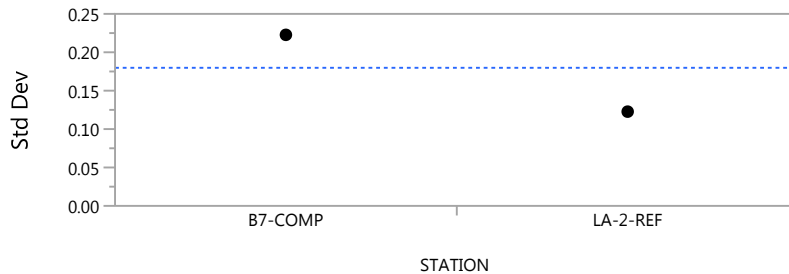
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0	1.909043	0	1.0000	-0.106151	-0.618704	0.1348140

**Tests that the Variances are Equal**

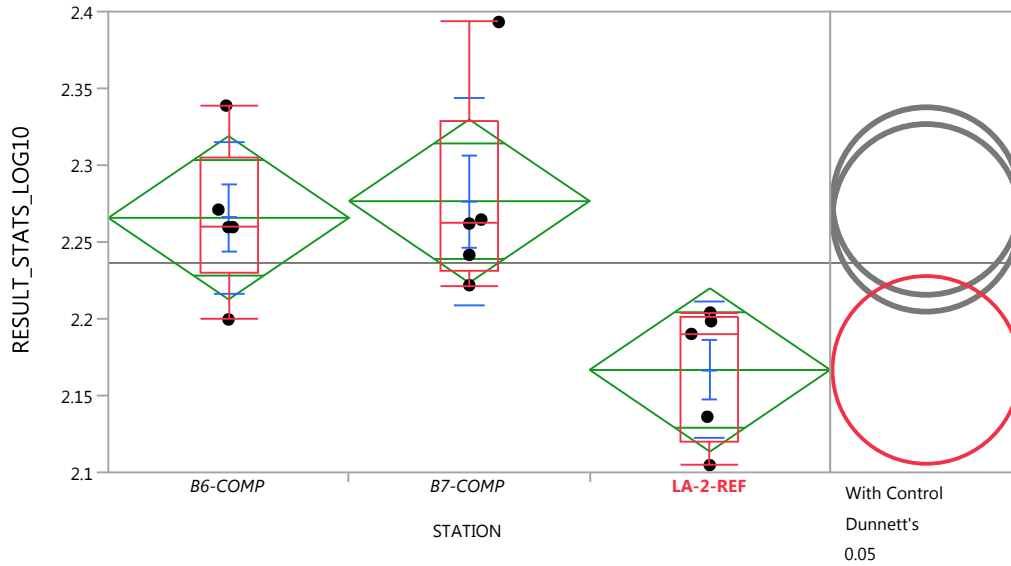


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.2227465	0.1589810	0.1093076
LA-2-REF	5	0.1227498	0.1054731	0.0953714

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.6346	1	8	0.4487
Brown-Forsythe	0.0191	1	8	0.8935
Levene	0.7462	1	8	0.4128
Bartlett	1.1942	1	.	0.2745
F Test 2-sided	3.2929	4	4	0.2750

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.19957	2.19957	2.229605	2.25964	2.304945	2.33882	2.33882
B7-COMP	2.22185	2.22185	2.23172	2.26197	2.32892	2.39324	2.39324
LA-2-REF	2.10474	2.10474	2.12048	2.19013	2.201245	2.20412	2.20412

**Oneway Anova**

**Summary of Fit**

Rsquare	0.506613
Adj Rsquare	0.424381
Root Mean Square Error	0.054565
Mean of Response	2.236371
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.03668612	0.018343	6.1608	0.0144*
Error	12	0.03572844	0.002977		
C. Total	14	0.07241457			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.26575	0.02440	2.2126	2.3189
B7-COMP	5	2.27665	0.02440	2.2235	2.3298
LA-2-REF	5	2.16672	0.02440	2.1135	2.2199

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.26575	0.049553	0.02216	2.2042	2.3273
B7-COMP	5	2.27665	0.067428	0.03015	2.1929	2.3604
LA-2-REF	5	2.16672	0.043933	0.01965	2.1122	2.2213

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.024	0.0145*
B6-COMP	0.013	0.0257*
LA-2-REF	-0.09	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	51.000	40.000	10.2000	1.287
B7-COMP	5	53.000	40.000	10.6000	1.532
LA-2-REF	5	16.000	40.000	3.2000	-2.881

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
8.6755	2	0.0131*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

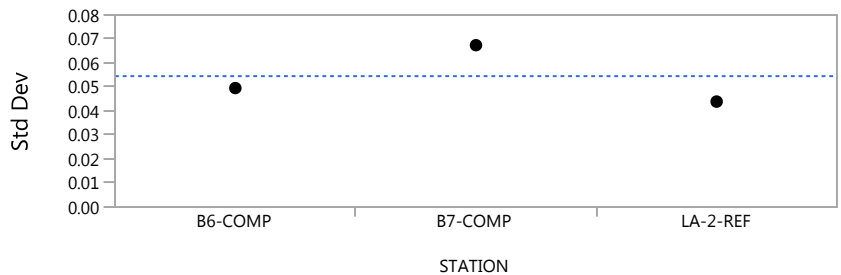
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.40000	1.909043	-2.30482	0.0396*	-0.080940	-0.234080	0.004550
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.085630	-0.288500	-0.017730

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0495530	0.0313576	0.0301360
B7-COMP	5	0.0674281	0.0466360	0.0388800
LA-2-REF	5	0.0439326	0.0369888	0.0323060

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.3284	2	12	0.7264
Brown-Forsythe	0.0555	2	12	0.9463
Levene	0.2735	2	12	0.7653
Bartlett	0.3652	2	.	0.6941

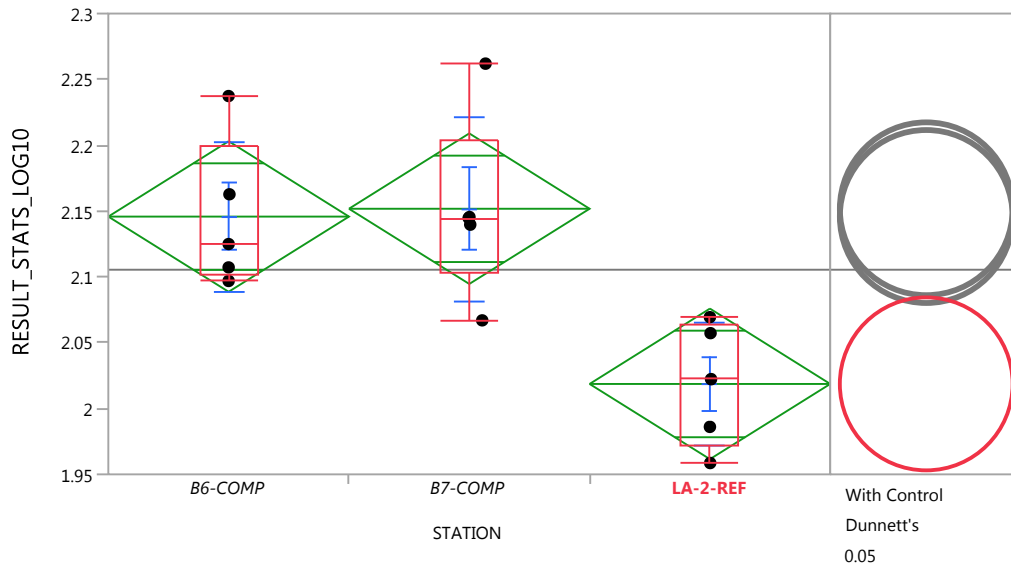


**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB138/158**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.09691	2.09691	2.10206	2.12494	2.200045	2.23736	2.23736
B7-COMP	2.06695	2.06695	2.103305	2.14468	2.203715	2.26197	2.26197
LA-2-REF	1.95861	1.95861	1.972335	2.02228	2.063325	2.06942	2.06942

**Oneway Anova**

**Summary of Fit**

Rsquare	0.577585
Adj Rsquare	0.507182
Root Mean Square Error	0.05867
Mean of Response	2.105431
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.05647885	0.028239	8.2040	0.0057*
Error	12	0.04130569	0.003442		
C. Total	14	0.09778454			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.14583	0.02624	2.0887	2.2030
B7-COMP	5	2.15174	0.02624	2.0946	2.2089
LA-2-REF	5	2.01872	0.02624	1.9616	2.0759

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.14583	0.056975	0.02548	2.0751	2.2166
B7-COMP	5	2.15174	0.069956	0.03129	2.0649	2.2386
LA-2-REF	5	2.01872	0.046760	0.02091	1.9607	2.0768

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.04	0.0070*
B6-COMP	0.034	0.0093*
LA-2-REF	-0.09	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	51.000	40.000	10.2000	1.286
B7-COMP	5	53.000	40.000	10.6000	1.531
LA-2-REF	5	16.000	40.000	3.2000	-2.878

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
8.6600	2	0.0132*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

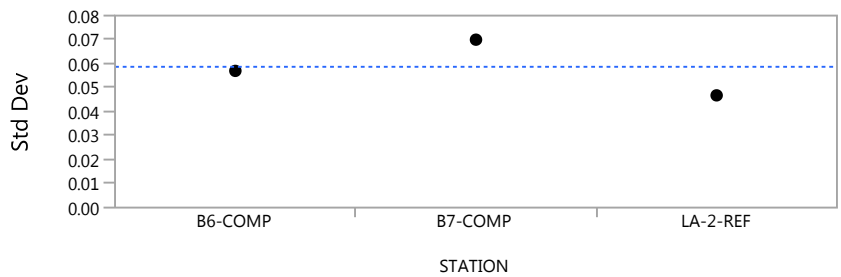
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-4.40000	1.914854	-2.29783	0.0403*	-0.122400	-0.303360	0.002470
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.121150	-0.278750	-0.027490

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0569746	0.0433720	0.0391940
B7-COMP	5	0.0699557	0.0440904	0.0401640
LA-2-REF	5	0.0467602	0.0371080	0.0363960

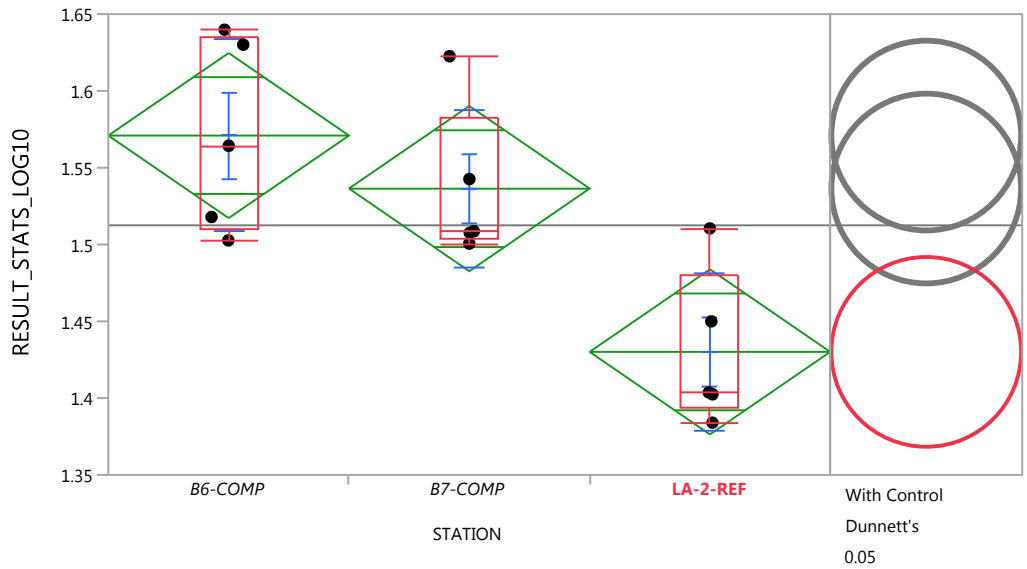
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB149**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.2999	2	12	0.7463
Brown-Forsythe	0.0107	2	12	0.9893
Levene	0.0579	2	12	0.9440
Bartlett	0.2890	2	.	0.7490

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.50268	1.50268	1.5103	1.56427	1.63497	1.63985	1.63985
B7-COMP	1.5006	1.5006	1.50412	1.50864	1.5826	1.62258	1.62258
LA-2-REF	1.384	1.384	1.393245	1.40369	1.48022	1.51047	1.51047

**Oneway Anova**

**Summary of Fit**

Rsquare	0.595833
Adj Rsquare	0.528472
Root Mean Square Error	0.055186
Mean of Response	1.512501
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.05387793	0.026939	8.8454	0.0044*
Error	12	0.03654658	0.003046		
C. Total	14	0.09042451			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.57096	0.02468	1.5172	1.6247
B7-COMP	5	1.53642	0.02468	1.4826	1.5902
LA-2-REF	5	1.43012	0.02468	1.3764	1.4839

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.57096	0.062774	0.02807	1.4930	1.6489
B7-COMP	5	1.53642	0.050855	0.02274	1.4733	1.5996
LA-2-REF	5	1.43012	0.051086	0.02285	1.3667	1.4936

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.053	0.0031*
B7-COMP	0.019	0.0187*
LA-2-REF	-0.09	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	57.000	40.000	11.4000	2.021
B7-COMP	5	44.000	40.000	8.8000	0.429
LA-2-REF	5	19.000	40.000	3.8000	-2.511

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
7.4600	2	0.0240*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

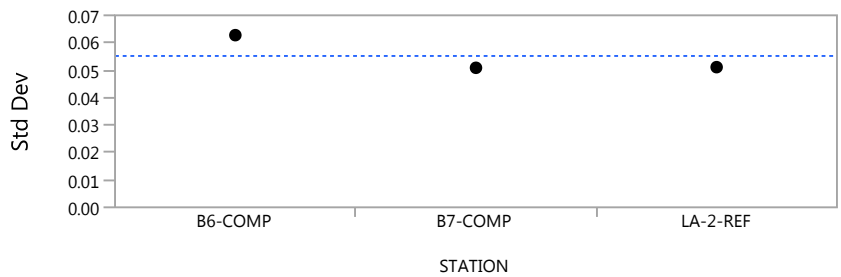
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-3.60000	1.914854	-1.88004	0.1082	-0.105150	-0.238580	0.0098700
B6-COMP	LA-2-REF	-4.40000	1.914854	-2.29783	0.0403*	-0.129380	-0.255850	0.0077900

**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB151**

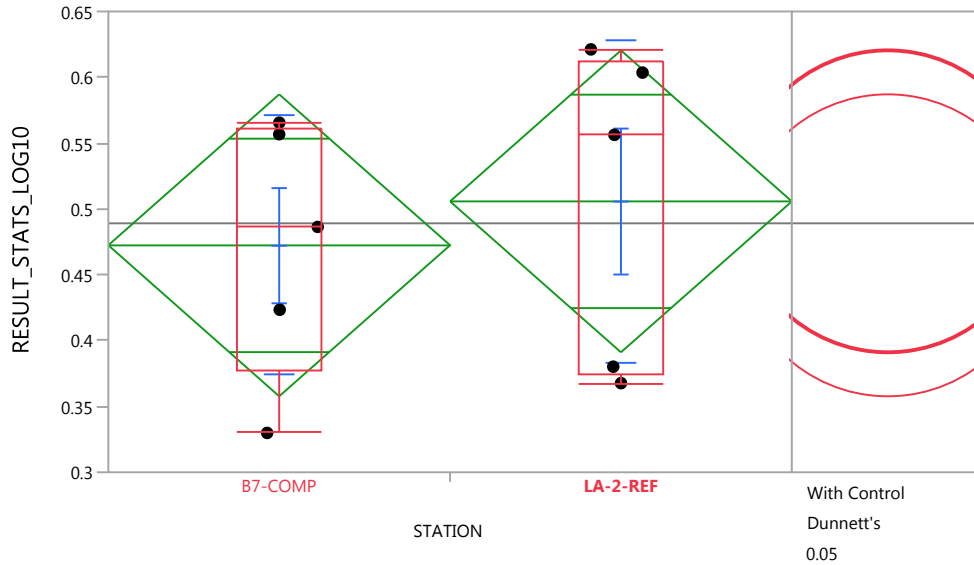
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B6-COMP	5	0.0627741	0.0512064	0.0498680
B7-COMP	5	0.0508554	0.0369472	0.0313920
LA-2-REF	5	0.0510861	0.0400768	0.0347900

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.2202	2	12	0.8055
Brown-Forsythe	0.2802	2	12	0.7604
Levene	0.3928	2	12	0.6836
Bartlett	0.1084	2	.	0.8973

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.329906	0.329906	0.376671	0.486362	0.561131	0.565543	0.565543
LA-2-REF	0.367695	0.367695	0.373953	0.556303	0.612381	0.621176	0.621176

**Oneway Anova**

**Summary of Fit**

Rsquare	0.027414
Adj Rsquare	-0.09416
Root Mean Square Error	0.111216
Mean of Response	0.489094
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

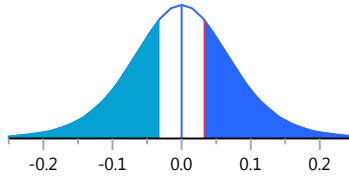
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**

**Oneway Anova**

**t Test**

Assuming equal variances

Difference	0.03340	t Ratio	0.474859
Std Err Dif	0.07034	DF	8
Upper CL Dif	0.19560	Prob >  t	0.6476
Lower CL Dif	-0.12880	Prob > t	0.3238
Confidence	0.95	Prob < t	0.6762



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00278910	0.002789	0.2255	0.6476
Error	8	0.09895196	0.012369		
C. Total	9	0.10174106			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.472393	0.04974	0.35770	0.58709
LA-2-REF	5	0.505794	0.04974	0.39110	0.62049

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

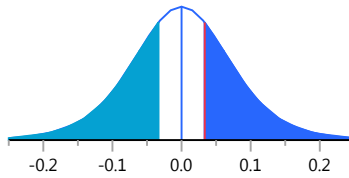
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.472393	0.098339	0.04398	0.35029	0.59450
LA-2-REF	5	0.505794	0.122750	0.05490	0.35338	0.65821

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.03340	t Ratio	0.474859
Std Err Dif	0.07034	DF	7.636535
Upper CL Dif	0.19696	Prob >  t	0.6482
Lower CL Dif	-0.13015	Prob > t	0.3241
Confidence	0.95	Prob < t	0.6759



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.16	1.0000
B7-COMP	-0.13	0.6476

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	25.000	27.500	5.00000	-0.418
LA-2-REF	5	30.000	27.500	6.00000	0.418

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB156**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
30	0.41779	0.6761

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.2727	1	0.6015

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

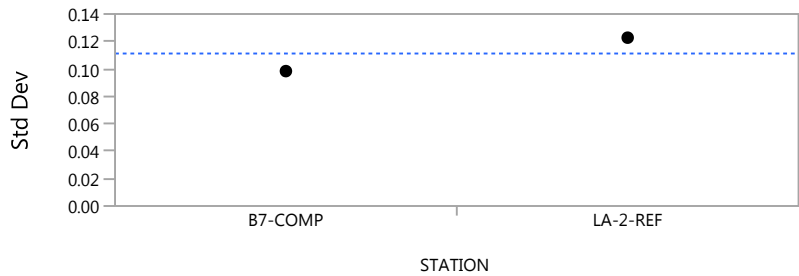
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	Score Mean				Hodges-			
	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.6761	0.0468680	-0.189023	0.2736800

**Tests that the Variances are Equal**

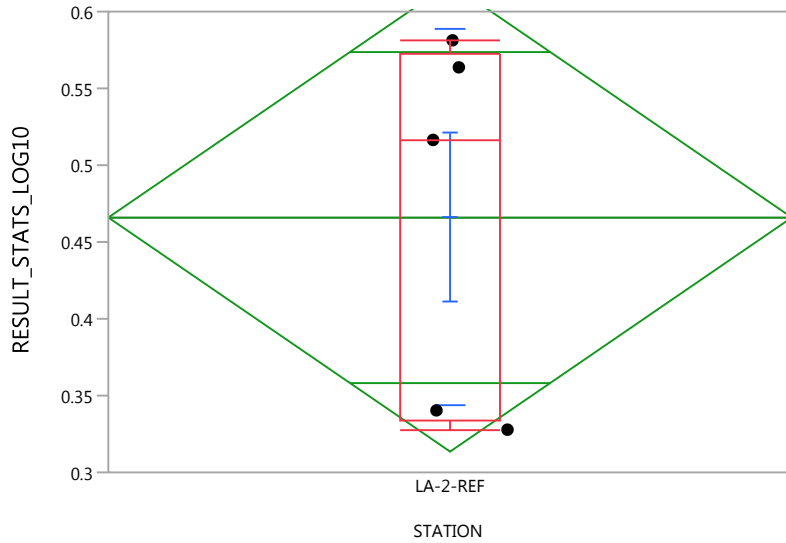


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227496	0.1054730	0.0953712

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[.5]	0.6751	1	8	0.4351
Brown-Forsythe	0.2331	1	8	0.6422
Levene	1.1920	1	8	0.3067
Bartlett	0.1734	1	.	0.6771
F Test 2-sided	1.5581	4	4	0.6779

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB157**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
LA-2-REF	0.327823	0.327823	0.334082	0.516431	0.57251	0.581305	0.581305

**Oneway Anova**

**Summary of Fit**

Rsquare	0
Adj Rsquare	0
Root Mean Square Error	0.12275
Mean of Response	0.465923
Observations (or Sum Wgts)	5

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	0	0.00000000			
Error	4	0.06027004	0.015068		
C. Total	4	0.06027004			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
LA-2-REF	5	0.465923	0.05490	0.31351	0.61834

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
LA-2-REF	5	0.465923	0.122750	0.05490	0.31351	0.61834

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean (Mean-Mean0)/Std0
LA-2-REF	5	15.000	15.000	3.00000

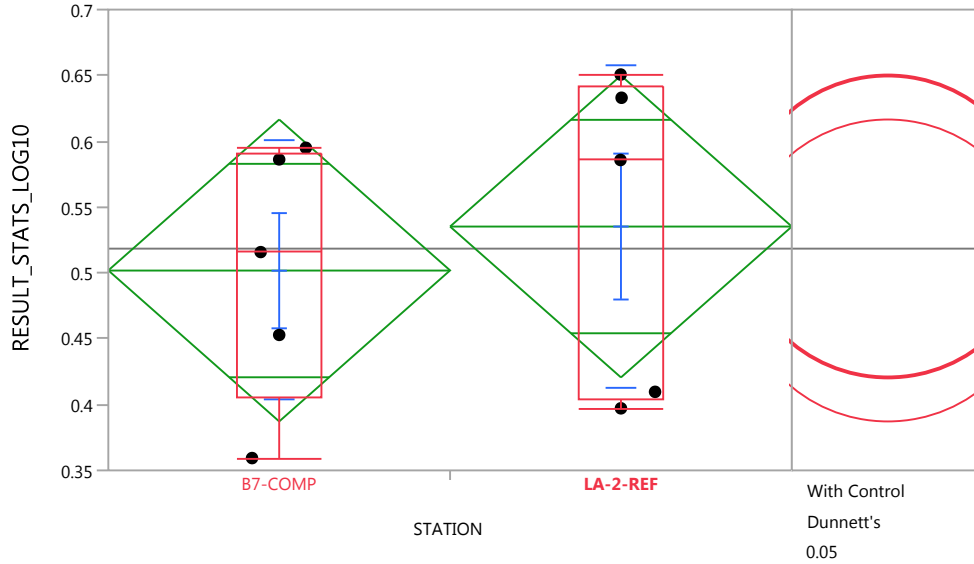
**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.0000	0	

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.359361	0.359361	0.406126	0.515817	0.590586	0.594998	0.594998
LA-2-REF	0.39715	0.39715	0.403408	0.585757	0.641837	0.650631	0.650631

**Oneway Anova**

**Summary of Fit**

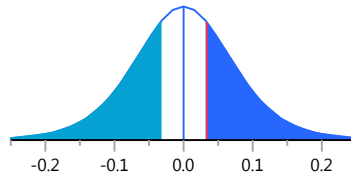
Rsquare	0.027414
Adj Rsquare	-0.09416
Root Mean Square Error	0.111216
Mean of Response	0.518549
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.03340	t Ratio	0.474859
Std Err Dif	0.07034	DF	8
Upper CL Dif	0.19560	Prob >  t	0.6476
Lower CL Dif	-0.12880	Prob > t	0.3238
Confidence	0.95	Prob < t	0.6762



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00278910	0.002789	0.2255	0.6476
Error	8	0.09895205	0.012369		
C. Total	9	0.10174115			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.501848	0.04974	0.38715	0.61654
LA-2-REF	5	0.535249	0.04974	0.42055	0.64994

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**

**Means and Std Deviations**

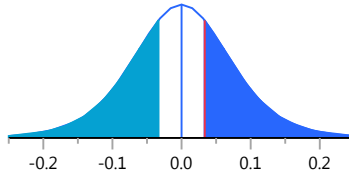
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.501848	0.098339	0.04398	0.37974	0.62395
LA-2-REF	5	0.535249	0.122750	0.05490	0.38284	0.68766

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.03340	t Ratio	0.474859
Std Err Dif	0.07034	DF	7.636532
Upper CL Dif	0.19696	Prob >  t	0.6482
Lower CL Dif	-0.13015	Prob > t	0.3241
Confidence	0.95	Prob < t	0.6759



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.16	1.0000
B7-COMP	-0.13	0.6476

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	25.000	27.500	5.00000	-0.418
LA-2-REF	5	30.000	27.500	6.00000	0.418

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
30	0.41779	0.6761

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.2727	1	0.6015

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

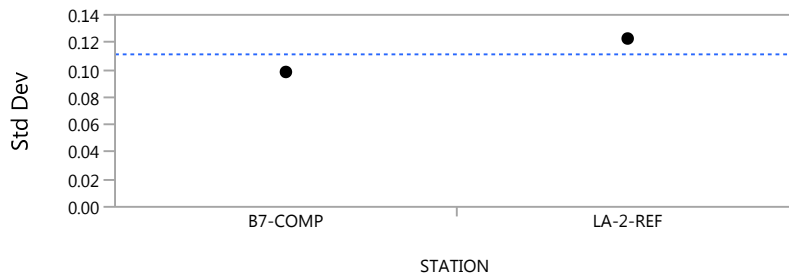
Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.6761	0.0468690	-0.189023	0.2736810	

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB167**

**Tests that the Variances are Equal**

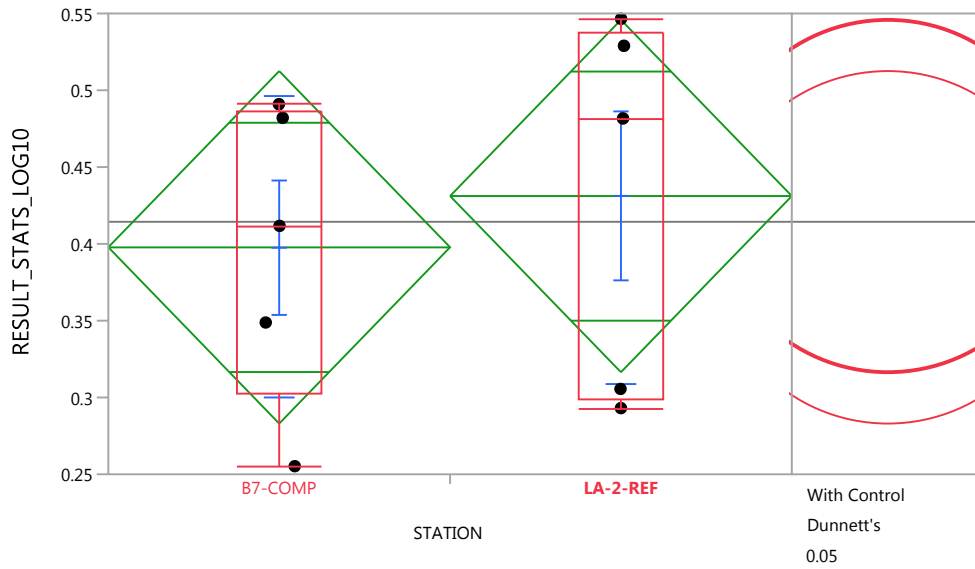


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227497	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[5]	0.6751	1	8	0.4351
Brown-Forsythe	0.2331	1	8	0.6422
Levene	1.1920	1	8	0.3067
Bartlett	0.1734	1	.	0.6771
F Test 2-sided	1.5581	4	4	0.6779

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B7-COMP	0.255273	0.255273	0.302038	0.411728	0.486498	0.49091	0.49091
LA-2-REF	0.293061	0.293061	0.29932	0.481669	0.537748	0.546543	0.546543

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**

**Oneway Anova**

**Summary of Fit**

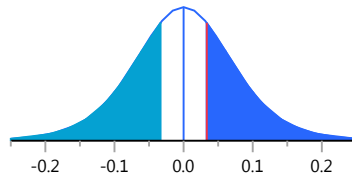
Rsquare	0.027413
Adj Rsquare	-0.09416
Root Mean Square Error	0.111216
Mean of Response	0.41446
Observations (or Sum Wgts)	10

**t Test**

LA-2-REF-B7-COMP

Assuming equal variances

Difference	0.03340	t Ratio	0.474856
Std Err Dif	0.07034	DF	8
Upper CL Dif	0.19560	Prob >  t	0.6476
Lower CL Dif	-0.12880	Prob > t	0.3238
Confidence	0.95	Prob < t	0.6762



**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	1	0.00278907	0.002789	0.2255	0.6476
Error	8	0.09895211	0.012369		
C. Total	9	0.10174117			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B7-COMP	5	0.397760	0.04974	0.28307	0.51245
LA-2-REF	5	0.431161	0.04974	0.31647	0.54586

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

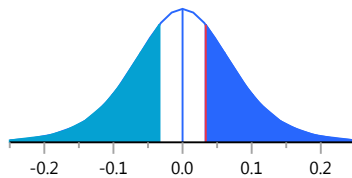
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B7-COMP	5	0.397760	0.098339	0.04398	0.27566	0.51986
LA-2-REF	5	0.431161	0.122750	0.05490	0.27875	0.58357

**t Test**

LA-2-REF-B7-COMP

Assuming unequal variances

Difference	0.03340	t Ratio	0.474856
Std Err Dif	0.07034	DF	7.636529
Upper CL Dif	0.19696	Prob >  t	0.6482
Lower CL Dif	-0.13016	Prob > t	0.3241
Confidence	0.95	Prob < t	0.6759



**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.30601	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.16	1.0000
B7-COMP	-0.13	0.6476

Positive values show pairs of means that are significantly different.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB168**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B7-COMP	5	25.000	27.500	5.00000	-0.418
LA-2-REF	5	30.000	27.500	6.00000	0.418

**2-Sample Test, Normal Approximation**

S	Z	Prob> Z
30	0.41779	0.6761

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.2727	1	0.6015

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

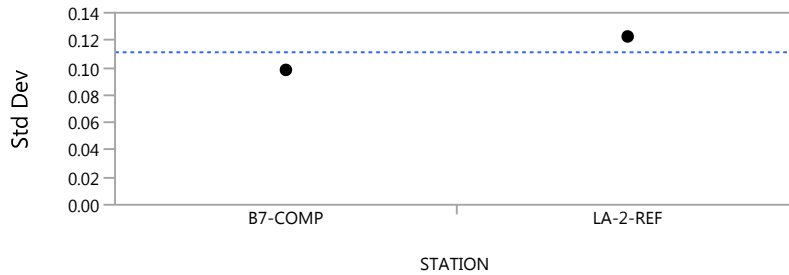
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
1.95996	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.6761	0.0468680	-0.189024	0.2736800

**Tests that the Variances are Equal**

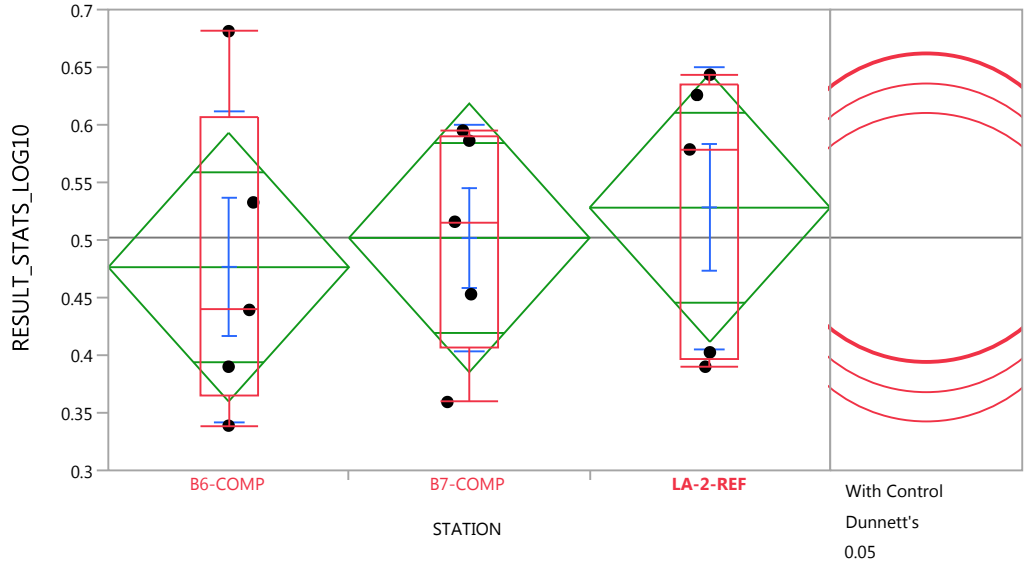


Level	Count	Std Dev	MeanAbsDif	MeanAbsDif
			to Mean	to Median
B7-COMP	5	0.0983388	0.0765774	0.0737838
LA-2-REF	5	0.1227498	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	p-Value
O'Brien[.5]	0.6751	1	8	0.4351
Brown-Forsythe	0.2331	1	8	0.6422
Levene	1.1920	1	8	0.3067
Bartlett	0.1734	1	.	0.6771
F Test 2-sided	1.5581	4	4	0.6779

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.338819	0.338819	0.364395	0.439333	0.60694	0.681241	0.681241
B7-COMP	0.359361	0.359361	0.406126	0.515817	0.590586	0.594998	0.594998
LA-2-REF	0.389971	0.389971	0.39623	0.578579	0.634658	0.643453	0.643453

**Oneway Anova**

**Summary of Fit**

Rsquare	0.03739
Adj Rsquare	-0.12304
Root Mean Square Error	0.119669
Mean of Response	0.502106
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00667502	0.003338	0.2331	0.7956
Error	12	0.17184726	0.014321		
C. Total	14	0.17852228			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.476401	0.05352	0.35980	0.59301
B7-COMP	5	0.501848	0.05352	0.38524	0.61845
LA-2-REF	5	0.528071	0.05352	0.41147	0.64468

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.476401	0.134995	0.06037	0.30878	0.64402
B7-COMP	5	0.501848	0.098339	0.04398	0.37974	0.62395
LA-2-REF	5	0.528071	0.122750	0.05490	0.37566	0.68048

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.19	1.0000
B7-COMP	-0.16	0.9169
B6-COMP	-0.14	0.7248

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.500	40.000	6.90000	-0.613
B7-COMP	5	40.000	40.000	8.00000	0.000
LA-2-REF	5	45.500	40.000	9.10000	0.613

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.6061	2	0.7386

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

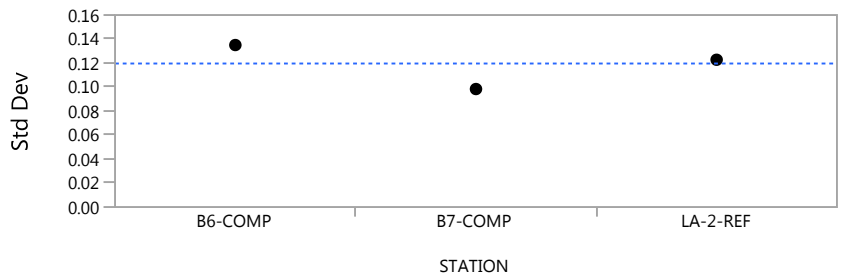
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Hodges-			
		Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.000000	1.909043	0.5238227	0.8206	0.0511520	-0.291270	0.3046340
B7-COMP	LA-2-REF	0.800000	1.914854	0.4177864	0.8810	0.0396900	-0.205027	0.2840920

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1349955	0.1044315	0.0970180
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227498	0.1054730	0.0953714

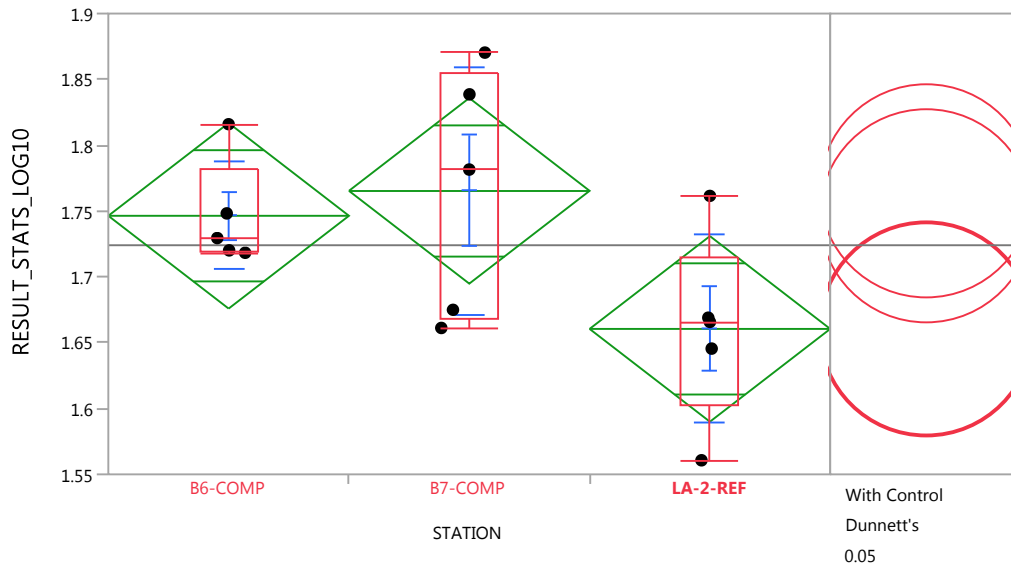
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.3451	2	12	0.7150
Brown-Forsythe	0.1388	2	12	0.8718
Levene	0.4979	2	12	0.6198
Bartlett	0.1813	2	.	0.8341

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB169**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB170**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.71828	1.71828	1.71922	1.72946	1.782065	1.81594	1.81594
B7-COMP	1.66118	1.66118	1.668075	1.7815	1.8545	1.87037	1.87037
LA-2-REF	1.56067	1.56067	1.6031	1.66573	1.71527	1.76153	1.76153

**Oneway Anova**

**Summary of Fit**

Rsquare	0.332091
Adj Rsquare	0.220773
Root Mean Square Error	0.072331
Mean of Response	1.724077
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.03121596	0.015608	2.9833	0.0888
Error	12	0.06278213	0.005232		
C. Total	14	0.09399809			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.74641	0.03235	1.6759	1.8169
B7-COMP	5	1.76533	0.03235	1.6949	1.8358
LA-2-REF	5	1.66049	0.03235	1.5900	1.7310

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.74641	0.040636	0.01817	1.6959	1.7969
B7-COMP	5	1.76533	0.094446	0.04224	1.6481	1.8826
LA-2-REF	5	1.66049	0.071584	0.03201	1.5716	1.7494



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB170**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.01	0.0726
B6-COMP	-0.03	0.1469
LA-2-REF	-0.11	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	47.000	40.000	9.4000	0.796
B7-COMP	5	50.000	40.000	10.0000	1.164
LA-2-REF	5	23.000	40.000	4.6000	-2.021

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
4.3800	2	0.1119

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

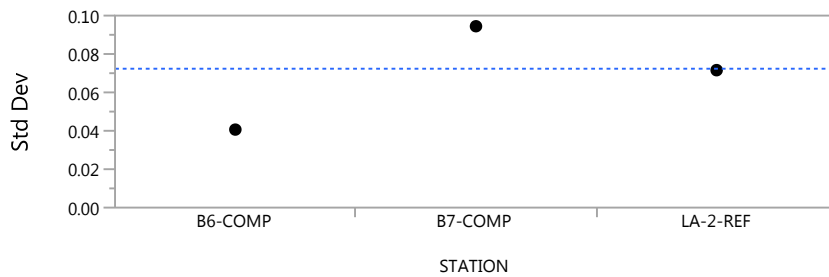
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-3.20000	1.914854	-1.67115	0.1667	-0.074630	-0.255270	0.0432500	
B7-COMP	LA-2-REF	-3.20000	1.914854	-1.67115	0.1667	-0.112490	-0.309700	0.1003500	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0406363	0.0285272	0.0251380
B7-COMP	5	0.0944456	0.0778040	0.0745700
LA-2-REF	5	0.0715838	0.0459152	0.0448680

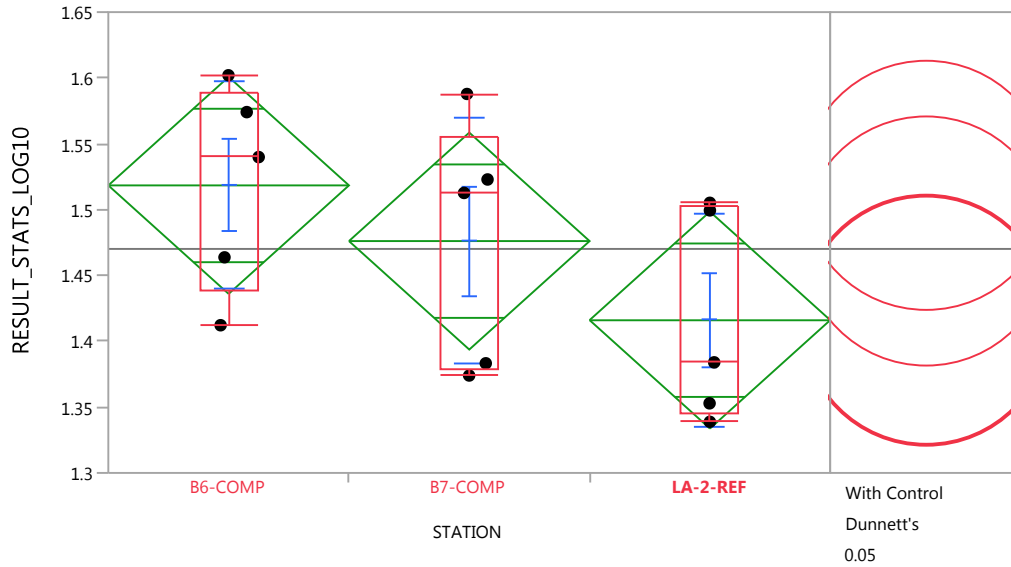
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB170**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.7282	2	12	0.2190
Brown-Forsythe	1.5081	2	12	0.2605
Levene	2.0930	2	12	0.1661
Bartlett	1.1528	2	.	0.3158

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.41218	1.41218	1.43797	1.53991	1.588045	1.60206	1.60206
B7-COMP	1.37394	1.37394	1.37858	1.51266	1.55535	1.58782	1.58782
LA-2-REF	1.33882	1.33882	1.34584	1.384	1.502275	1.50515	1.50515

**Oneway Anova**

**Summary of Fit**

Rsquare	0.235694
Adj Rsquare	0.10831
Root Mean Square Error	0.08454
Mean of Response	1.470179
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.02644797	0.013224	1.8503	0.1993
Error	12	0.08576499	0.007147		
C. Total	14	0.11221297			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.51839	0.03781	1.4360	1.6008
B7-COMP	5	1.47610	0.03781	1.3937	1.5585
LA-2-REF	5	1.41605	0.03781	1.3337	1.4984

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.51839	0.078779	0.03523	1.4206	1.6162
B7-COMP	5	1.47610	0.093635	0.04187	1.3598	1.5924
LA-2-REF	5	1.41605	0.080422	0.03597	1.3162	1.5159

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	-0.03	0.1384
B7-COMP	-0.07	0.4483
LA-2-REF	-0.13	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	53.000	40.000	10.6000	1.531
B7-COMP	5	42.000	40.000	8.4000	0.184
LA-2-REF	5	25.000	40.000	5.0000	-1.776

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
3.9800	2	0.1367

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

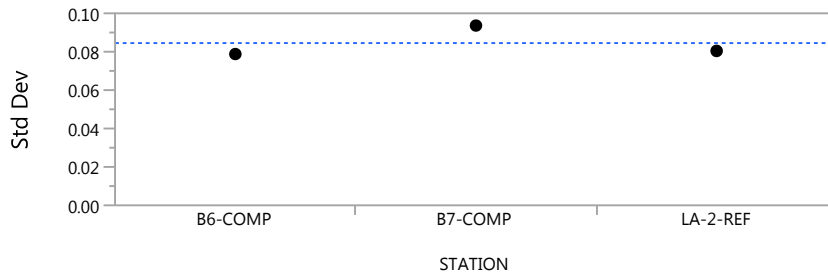
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-2.40000	1.914854	-1.25336	0.3489	-0.035120	-0.249000	0.1312100
B6-COMP	LA-2-REF	-3.20000	1.914854	-1.67115	0.1667	-0.096910	-0.263240	0.0929700



**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB177**

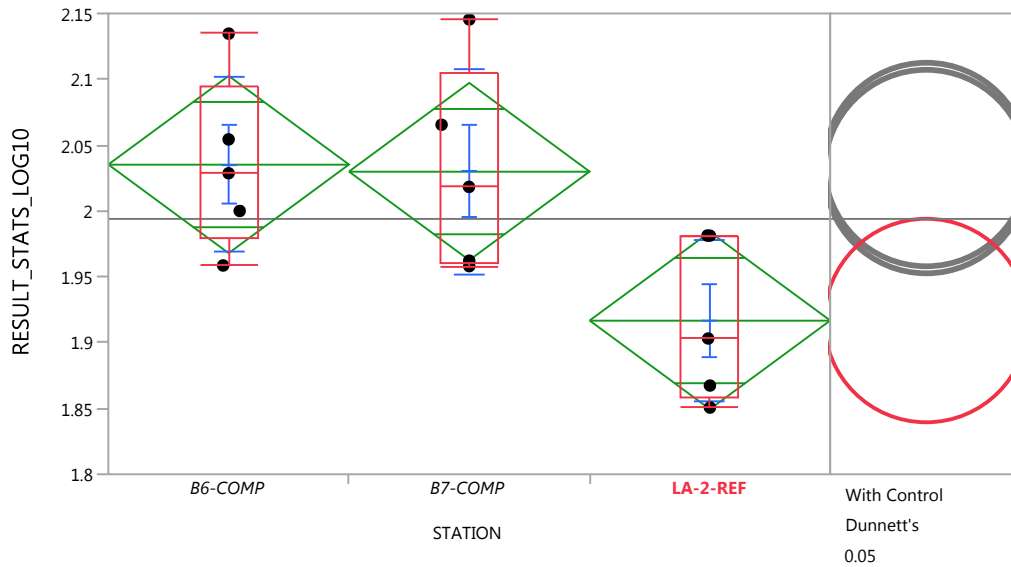
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0787791	0.0643344	0.0600300
B7-COMP	5	0.0936346	0.0780192	0.0707080
LA-2-REF	5	0.0804218	0.0689832	0.0625740

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.2782	2	12	0.7619
Brown-Forsythe	0.0500	2	12	0.9514
Levene	0.2680	2	12	0.7694
Bartlett	0.0661	2	.	0.9361

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB180**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.95861	1.95861	1.979305	2.02865	2.09453	2.1347	2.1347
B7-COMP	1.95811	1.95811	1.96016	2.01829	2.10548	2.14546	2.14546
LA-2-REF	1.8507	1.8507	1.859035	1.90309	1.981285	1.98132	1.98132

**Oneway Anova**

**Summary of Fit**

Rsquare	0.43913
Adj Rsquare	0.345652
Root Mean Square Error	0.069056
Mean of Response	1.993975
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.04480356	0.022402	4.6977	0.0311*
Error	12	0.05722443	0.004769		
C. Total	14	0.10202799			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB180**

**Oneway Anova**

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.03526	0.03088	1.9680	2.1026
B7-COMP	5	2.02991	0.03088	1.9626	2.0972
LA-2-REF	5	1.91675	0.03088	1.8495	1.9840

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.03526	0.065984	0.02951	1.9533	2.1172
B7-COMP	5	2.02991	0.078250	0.03499	1.9328	2.1271
LA-2-REF	5	1.91675	0.061881	0.02767	1.8399	1.9936

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.009	0.0342*
B7-COMP	0.004	0.0426*
LA-2-REF	-0.11	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	51.000	40.000	10.2000	1.286
B7-COMP	5	48.000	40.000	9.6000	0.919
LA-2-REF	5	21.000	40.000	4.2000	-2.266

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
5.4600	2	0.0652

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

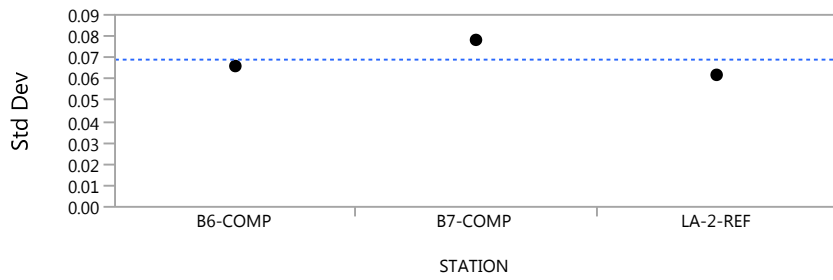
q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-3.20000	1.914854	-1.67115	0.1667	-0.107410	-0.294760	0.0232100
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.125560	-0.284000	0.0227100



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB180**

**Tests that the Variances are Equal**

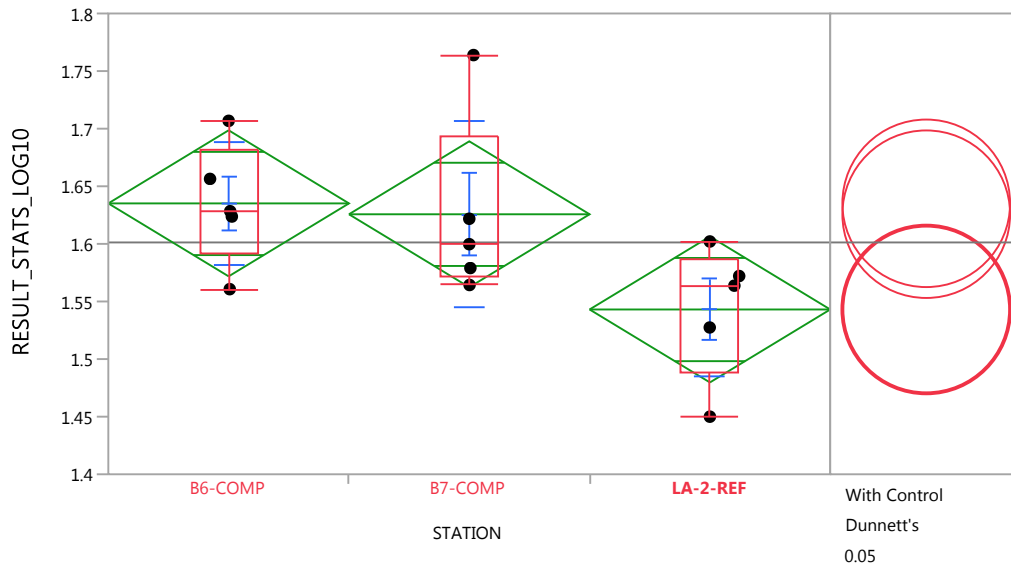


Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0659835	0.0474128	0.0460900
B7-COMP	5	0.0782496	0.0604528	0.0581280
LA-2-REF	5	0.0618812	0.0516312	0.0489000

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.2105	2	12	0.8131
Brown-Forsythe	0.1215	2	12	0.8866
Levene	0.1847	2	12	0.8337
Bartlett	0.1088	2	.	0.8969

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB183**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.56067	1.56067	1.592195	1.62839	1.68161	1.7068	1.7068
B7-COMP	1.56427	1.56427	1.57163	1.59972	1.692855	1.76391	1.76391
LA-2-REF	1.44997	1.44997	1.4887	1.56371	1.58708	1.60206	1.60206

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB183**

**Oneway Anova**

**Summary of Fit**

Rsquare	0.336265
Adj Rsquare	0.225642
Root Mean Square Error	0.065012
Mean of Response	1.601331
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.02569510	0.012848	3.0398	0.0855
Error	12	0.05071816	0.004227		
C. Total	14	0.07641326			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.63520	0.02907	1.5719	1.6985
B7-COMP	5	1.62574	0.02907	1.5624	1.6891
LA-2-REF	5	1.54305	0.02907	1.4797	1.6064

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.63520	0.053174	0.02378	1.5692	1.7012
B7-COMP	5	1.62574	0.080230	0.03588	1.5261	1.7254
LA-2-REF	5	1.54305	0.058440	0.02614	1.4705	1.6156

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	-0.01	0.0793
B7-COMP	-0.02	0.1177
LA-2-REF	-0.1	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	53.000	40.000	10.6000	1.531
B7-COMP	5	45.000	40.000	9.0000	0.551
LA-2-REF	5	22.000	40.000	4.4000	-2.143

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
5.1800	2	0.0750

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

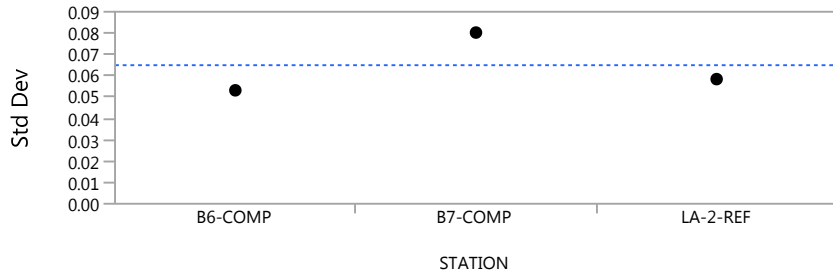
Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB183**

**Nonparametric Comparisons With Control Using Steel Method**

q*		Alpha						
2.21213		0.05						
Score Mean				Hodges-				
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-3.20000	1.914854	-1.67115	0.1667	-0.051560	-0.313940	0.0377900
B6-COMP	LA-2-REF	-3.60000	1.914854	-1.88004	0.1082	-0.092710	-0.256830	0.0413900

**Tests that the Variances are Equal**

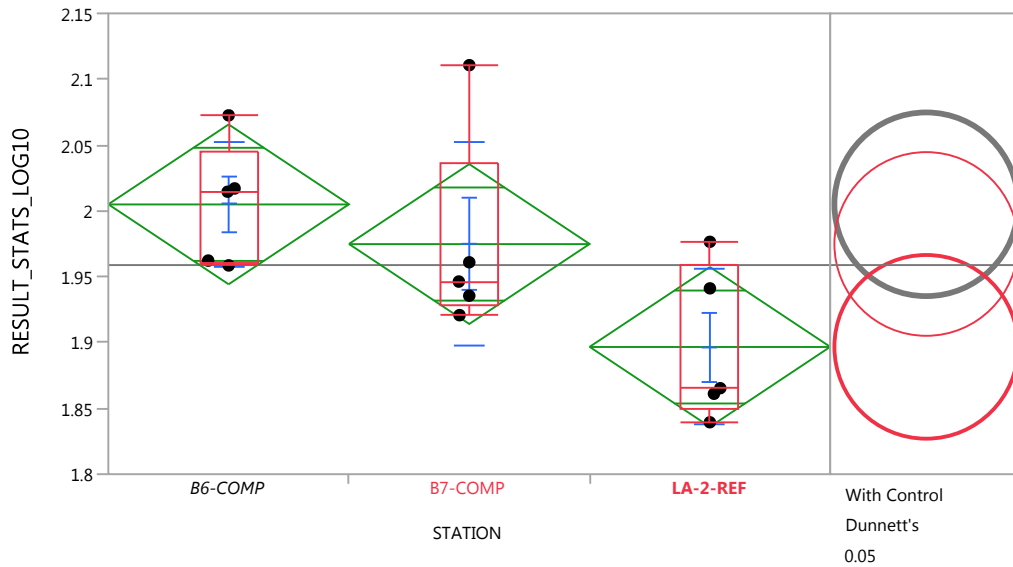


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0531736	0.0371280	0.0357660
B7-COMP	5	0.0802304	0.0552688	0.0484900
LA-2-REF	5	0.0584397	0.0434832	0.0393520

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3168	2	12	0.7344
Brown-Forsythe	0.0845	2	12	0.9195
Levene	0.2662	2	12	0.7707
Bartlett	0.3501	2	.	0.7046

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**





**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.95861	1.95861	1.96041	2.01456	2.04479	2.07255	2.07255
B7-COMP	1.92082	1.92082	1.92818	1.94632	2.03582	2.1107	2.1107
LA-2-REF	1.83942	1.83942	1.850275	1.8653	1.958825	1.97652	1.97652

**Oneway Anova**

**Summary of Fit**

Rsquare	0.40141
Adj Rsquare	0.301645
Root Mean Square Error	0.062308
Mean of Response	1.958852
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.03124077	0.015620	4.0236	0.0460*
Error	12	0.04658676	0.003882		
C. Total	14	0.07782754			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.00499	0.02786	1.9443	2.0657
B7-COMP	5	1.97486	0.02786	1.9142	2.0356
LA-2-REF	5	1.89670	0.02786	1.8360	1.9574

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.00499	0.046857	0.02095	1.9468	2.0632
B7-COMP	5	1.97486	0.077342	0.03459	1.8788	2.0709
LA-2-REF	5	1.89670	0.058901	0.02634	1.8236	1.9698

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	0.01	0.0321*
B7-COMP	-0.02	0.1233
LA-2-REF	-0.1	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	57.000	40.000	11.4000	2.021
B7-COMP	5	40.000	40.000	8.0000	0.000
LA-2-REF	5	23.000	40.000	4.6000	-2.021

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
5.7800	2	0.0556

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB187**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

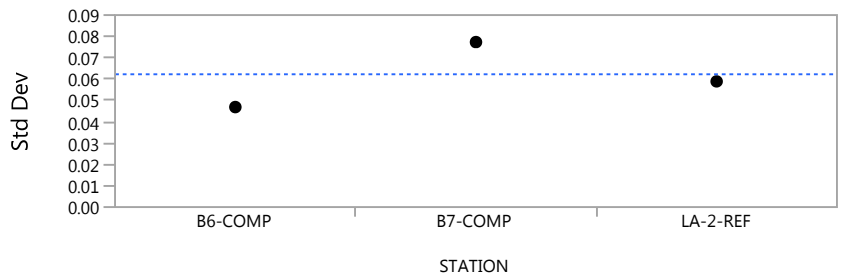
Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

		q*	Alpha					
		2.21213	0.05					
		Score Mean			Hodges-			
Level	- Level	Difference	Std Err Dif	Z	p-Value	Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-2.40000	1.914854	-1.25336	0.3489	-0.081020	-0.271280	0.0557000
B6-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.101080	-0.233130	0.0179100

**Tests that the Variances are Equal**

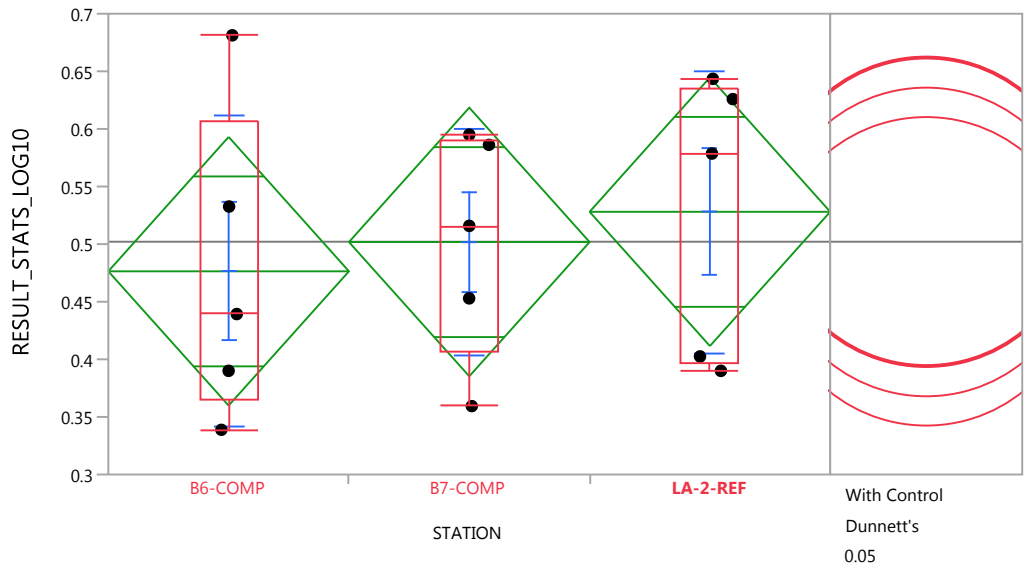


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0468565	0.0356656	0.0337520
B7-COMP	5	0.0773421	0.0543344	0.0430560
LA-2-REF	5	0.0589013	0.0497000	0.0434200

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3874	2	12	0.6870
Brown-Forsythe	0.0569	2	12	0.9449
Levene	0.4323	2	12	0.6587
Bartlett	0.4502	2	.	0.6375

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**

**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.338819	0.338819	0.364395	0.439333	0.60694	0.681241	0.681241
B7-COMP	0.359361	0.359361	0.406126	0.515817	0.590586	0.594998	0.594998
LA-2-REF	0.389971	0.389971	0.39623	0.578579	0.634658	0.643453	0.643453

**Oneway Anova**

**Summary of Fit**

Rsquare	0.03739
Adj Rsquare	-0.12304
Root Mean Square Error	0.119669
Mean of Response	0.502106
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00667502	0.003338	0.2331	0.7956
Error	12	0.17184726	0.014321		
C. Total	14	0.17852228			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.476401	0.05352	0.35980	0.59301
B7-COMP	5	0.501848	0.05352	0.38524	0.61845
LA-2-REF	5	0.528071	0.05352	0.41147	0.64468

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.476401	0.134995	0.06037	0.30878	0.64402
B7-COMP	5	0.501848	0.098339	0.04398	0.37974	0.62395
LA-2-REF	5	0.528071	0.122750	0.05490	0.37566	0.68048

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
LA-2-REF	-0.19	1.0000
B7-COMP	-0.16	0.9169
B6-COMP	-0.14	0.7248

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	34.500	40.000	6.90000	-0.613
B7-COMP	5	40.000	40.000	8.00000	0.000
LA-2-REF	5	45.500	40.000	9.10000	0.613

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB189**

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.6061	2	0.7386

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

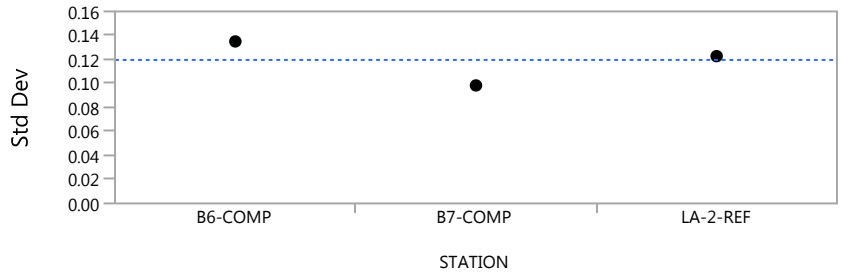
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	1.000000	1.909043	0.5238227	0.8206	0.0511520	-0.291270	0.3046340
B7-COMP	LA-2-REF	0.800000	1.914854	0.4177864	0.8810	0.0396900	-0.205027	0.2840920



**Tests that the Variances are Equal**

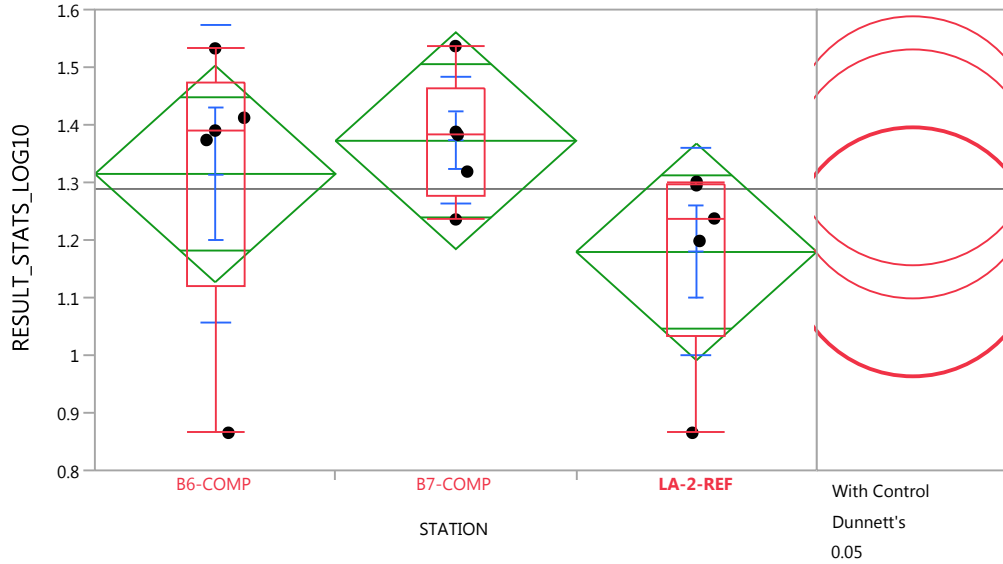


Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.1349955	0.1044315	0.0970180
B7-COMP	5	0.0983388	0.0765776	0.0737838
LA-2-REF	5	0.1227498	0.1054730	0.0953714

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.3451	2	12	0.7150
Brown-Forsythe	0.1388	2	12	0.8718
Levene	0.4979	2	12	0.6198
Bartlett	0.1813	2	.	0.8341

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB194**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.865301	0.865301	1.119441	1.38997	1.47241	1.53264	1.53264
B7-COMP	1.23564	1.23564	1.2772	1.3827	1.462195	1.53667	1.53667
LA-2-REF	0.865301	0.865301	1.031836	1.23736	1.29795	1.30103	1.30103

**Oneway Anova**

**Summary of Fit**

Rsquare	0.17977
Adj Rsquare	0.043065
Root Mean Square Error	0.193111
Mean of Response	1.288806
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.09807939	0.049040	1.3150	0.3045
Error	12	0.44750258	0.037292		
C. Total	14	0.54558197			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.31473	0.08636	1.1266	1.5029
B7-COMP	5	1.37230	0.08636	1.1841	1.5605
LA-2-REF	5	1.17939	0.08636	0.9912	1.3676

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.31473	0.258888	0.11578	0.9933	1.6362
B7-COMP	5	1.37230	0.110573	0.04945	1.2350	1.5096
LA-2-REF	5	1.17939	0.180627	0.08078	0.9551	1.4037

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB194**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.11	0.2360
B6-COMP	-0.17	0.4569
LA-2-REF	-0.31	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	49.500	40.000	9.90000	1.103
B7-COMP	5	48.000	40.000	9.60000	0.919
LA-2-REF	5	22.500	40.000	4.50000	-2.084

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
4.6132	2	0.0996

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

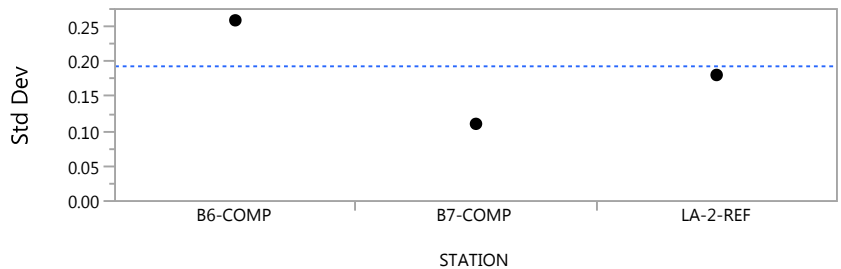
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-3.00000	1.909043	-1.57147	0.2019	-0.152610	-0.667339	0.4357290	
B7-COMP	LA-2-REF	-3.60000	1.914854	-1.88004	0.1082	-0.145340	-0.671369	0.0653900	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.2588880	0.1797733	0.1411878
B7-COMP	5	0.1105734	0.0760784	0.0739980
LA-2-REF	5	0.1806271	0.1256341	0.1064458

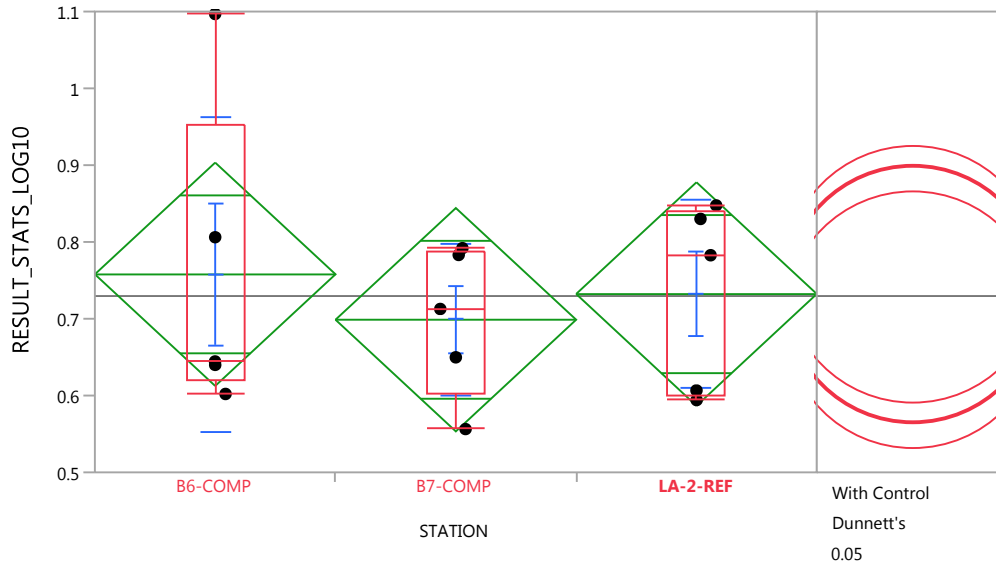
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.5985	2	12	0.5653
Brown-Forsythe	0.2189	2	12	0.8065
Levene	0.9064	2	12	0.4299
Bartlett	1.1926	2	.	0.3034

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB194**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	0.60206	0.60206	0.620955	0.644349	0.951545	1.09691	1.09691
B7-COMP	0.556302	0.556302	0.603068	0.712758	0.787528	0.79194	0.79194
LA-2-REF	0.594091	0.594091	0.60035	0.782699	0.838778	0.847573	0.847573

**Oneway Anova**

**Summary of Fit**

Rsquare	0.031785
Adj Rsquare	-0.12958
Root Mean Square Error	0.149256
Mean of Response	0.729617
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.00877581	0.004388	0.1970	0.8238
Error	12	0.26732710	0.022277		
C. Total	14	0.27610291			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	0.757870	0.06675	0.61244	0.90330
B7-COMP	5	0.698790	0.06675	0.55336	0.84422
LA-2-REF	5	0.732191	0.06675	0.58676	0.87762

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	0.757870	0.205167	0.09175	0.50312	1.0126
B7-COMP	5	0.698790	0.098339	0.04398	0.57669	0.8209
LA-2-REF	5	0.732191	0.122750	0.05490	0.57978	0.8846

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B6-COMP	-0.21	0.9476
LA-2-REF	-0.24	1.0000
B7-COMP	-0.2	0.9136

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	41.000	40.000	8.20000	0.061
B7-COMP	5	37.000	40.000	7.40000	-0.306
LA-2-REF	5	42.000	40.000	8.40000	0.184

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
0.1400	2	0.9324

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

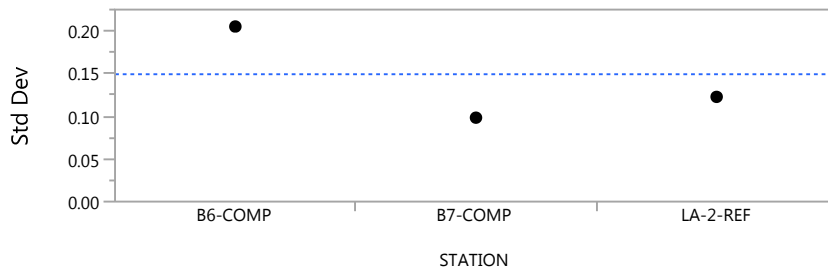
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	0.8000000	1.914854	0.4177864	0.8810	0.046868	-0.197849	0.2912710	
B6-COMP	LA-2-REF	0.0000000	1.914854	0.0000000	1.0000	-0.007969	-0.502819	0.2455130	



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.2051674	0.1549403	0.1322362
B7-COMP	5	0.0983391	0.0765777	0.0737840
LA-2-REF	5	0.1227498	0.1054730	0.0953714



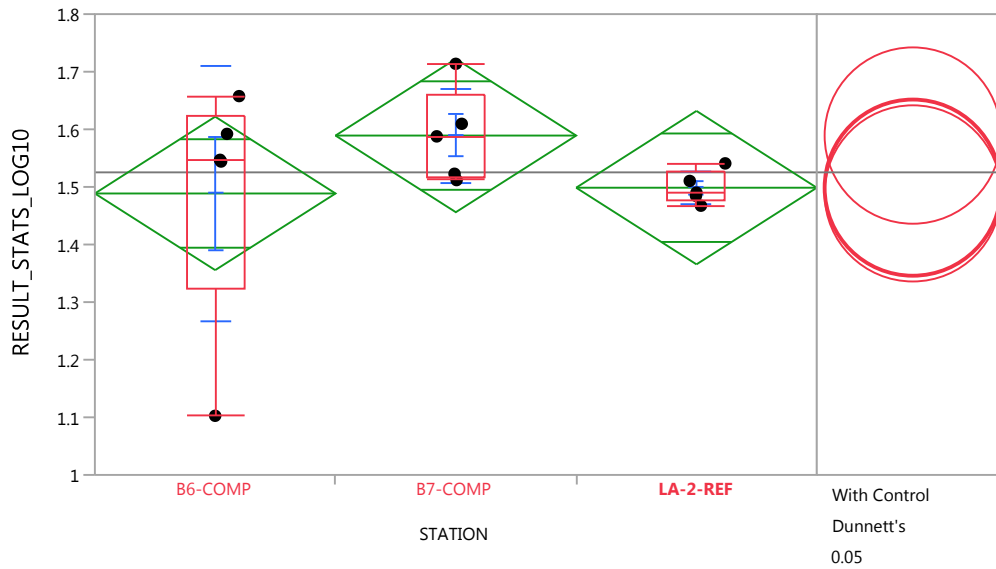
**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB201**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	0.9563	2	12	0.4118
Brown-Forsythe	0.2828	2	12	0.7586
Levene	1.5112	2	12	0.2598
Bartlett	1.0605	2	.	0.3463

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB206**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	1.10266	1.10266	1.323365	1.54688	1.62483	1.65758	1.65758
B7-COMP	1.51188	1.51188	1.51738	1.58782	1.66163	1.71369	1.71369
LA-2-REF	1.46736	1.46736	1.476015	1.49009	1.52563	1.54079	1.54079

**Oneway Anova**

**Summary of Fit**

Rsquare	0.120308
Adj Rsquare	-0.02631
Root Mean Square Error	0.136669
Mean of Response	1.525499
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.03065384	0.015327	0.8206	0.4634
Error	12	0.22414009	0.018678		
C. Total	14	0.25479393			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	1.48865	0.06112	1.3555	1.6218
B7-COMP	5	1.58917	0.06112	1.4560	1.7223
LA-2-REF	5	1.49868	0.06112	1.3655	1.6318

Std Error uses a pooled estimate of error variance

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB206**

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	1.48865	0.220616	0.09866	1.2147	1.7626
B7-COMP	5	1.58917	0.081073	0.03626	1.4885	1.6898
LA-2-REF	5	1.49868	0.028121	0.01258	1.4638	1.5336

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.13	0.4928
LA-2-REF	-0.22	1.0000
B6-COMP	-0.21	0.9902

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	46.000	40.000	9.2000	0.674
B7-COMP	5	52.000	40.000	10.4000	1.408
LA-2-REF	5	22.000	40.000	4.4000	-2.143

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
5.0400	2	0.0805

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

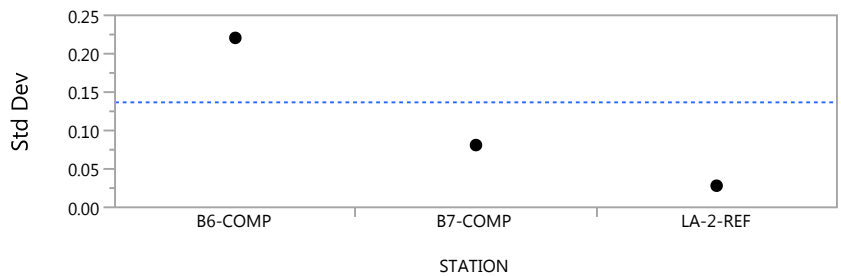
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-2.80000	1.914854	-1.46225	0.2463	-0.059400	-0.190220	0.4381300
B7-COMP	LA-2-REF	-4.00000	1.914854	-2.08893	0.0674	-0.077350	-0.246330	0.0289100



**Tests that the Variances are Equal**



**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB206**

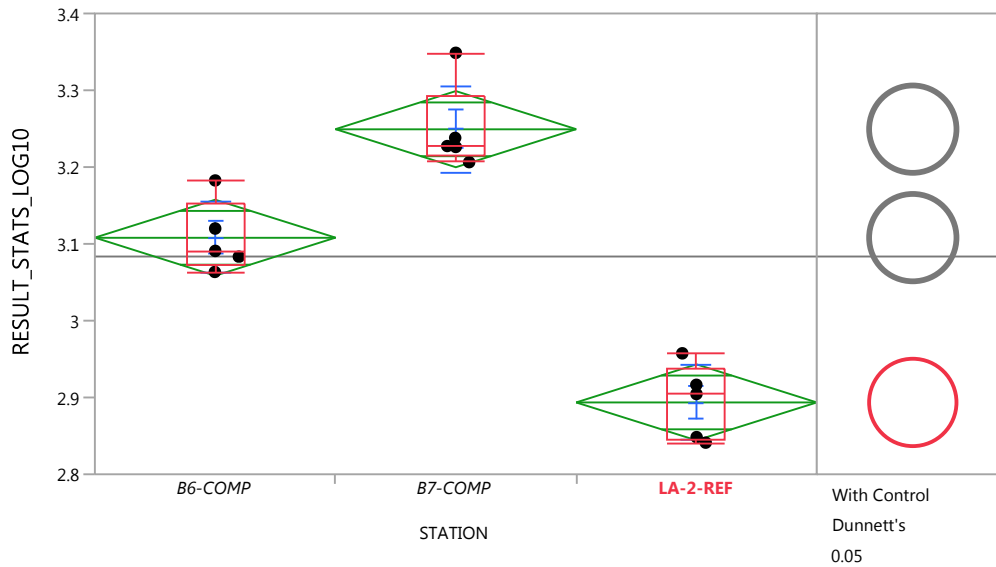
**Tests that the Variances are Equal**

Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.2206159	0.1543976	0.1205860
B7-COMP	5	0.0810730	0.0579696	0.0577000
LA-2-REF	5	0.0281215	0.0215632	0.0198460

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[5]	1.2253	2	12	0.3279
Brown-Forsythe	1.0347	2	12	0.3850
Levene	3.2940	2	12	0.0724
Bartlett	5.8477	2	.	0.0029*

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	3.06346	3.06346	3.07342	3.09087	3.1513	3.18262	3.18262
B7-COMP	3.20632	3.20632	3.216245	3.22742	3.29338	3.34874	3.34874
LA-2-REF	2.84113	2.84113	2.84474	2.90462	2.93702	2.95745	2.95745

**Oneway Anova**

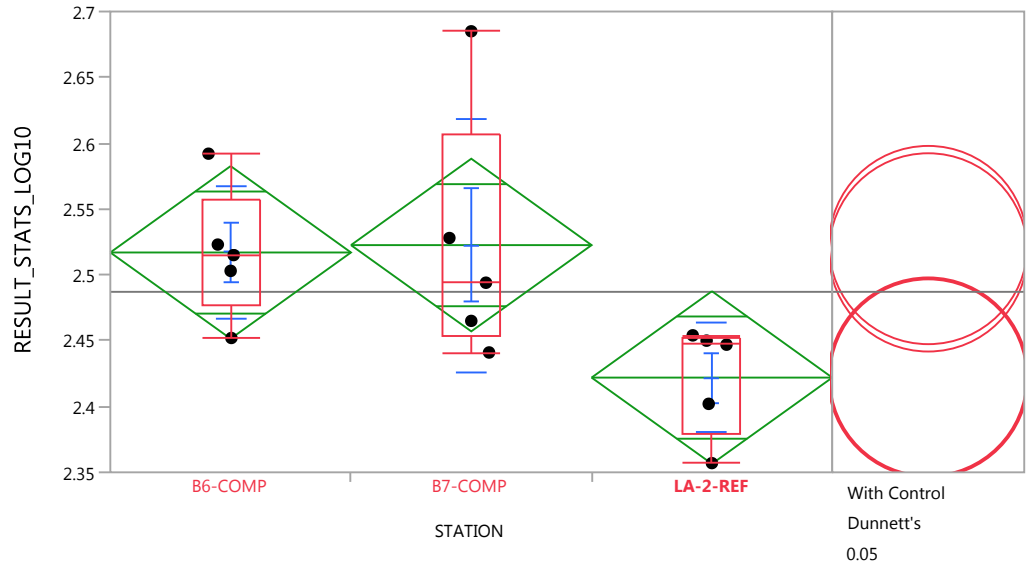
**Summary of Fit**

Rsquare	0.911879
Adj Rsquare	0.897192
Root Mean Square Error	0.050826
Mean of Response	3.083675
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.32077746	0.160389	62.0878	<.0001*
Error	12	0.03099906	0.002583		
C. Total	14	0.35177652			

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**



Quantiles							
Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	2.452	2.452	2.4775	2.515	2.5575	2.592	2.592
B7-COMP	2.441	2.441	2.453	2.494	2.6065	2.685	2.685
LA-2-REF	2.357	2.357	2.3795	2.447	2.452	2.454	2.454

**Oneway Anova**

**Summary of Fit**

Rsquare	0.37034
Adj Rsquare	0.265396
Root Mean Square Error	0.067294
Mean of Response	2.4872
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.03196120	0.015981	3.5289	0.0623
Error	12	0.05434120	0.004528		
C. Total	14	0.08630240			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	2.51700	0.03009	2.4514	2.5826
B7-COMP	5	2.52260	0.03009	2.4570	2.5882
LA-2-REF	5	2.42200	0.03009	2.3564	2.4876

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	2.51700	0.050215	0.02246	2.4547	2.5793
B7-COMP	5	2.52260	0.096433	0.04313	2.4029	2.6423
LA-2-REF	5	2.42200	0.042006	0.01879	2.3698	2.4742

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	-0.01	0.0640
B6-COMP	-0.01	0.0806
LA-2-REF	-0.11	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	53.000	40.000	10.6000	1.531
B7-COMP	5	48.000	40.000	9.6000	0.919
LA-2-REF	5	19.000	40.000	3.8000	-2.511

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
6.7400	2	0.0344*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

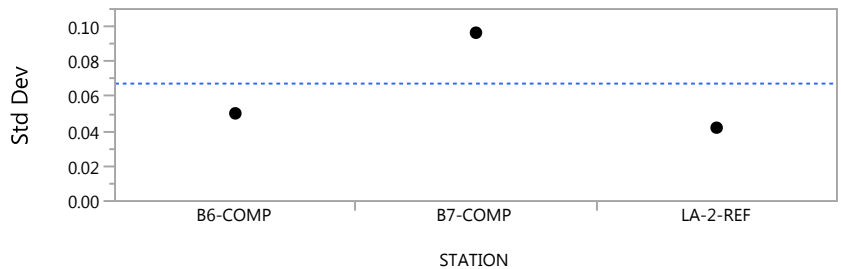
**Nonparametric Comparisons With Control Using Steel Method**

Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean			Z	p-Value	Hodges-		
		Difference	Std Err Dif				Lehmann	Lower CL	Upper CL
B7-COMP	LA-2-REF	-3.60000	1.914854	-1.88004	0.1082	-0.078000	-0.328000	0.0130000	
B6-COMP	LA-2-REF	-4.40000	1.914854	-2.29783	0.0403*	-0.076000	-0.235000	0.0020000	

**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif	
			to Mean	to Median
B6-COMP	5	0.0502145	0.0324000	0.0320000
B7-COMP	5	0.0964329	0.0671200	0.0614000
LA-2-REF	5	0.0420060	0.0340000	0.0290000

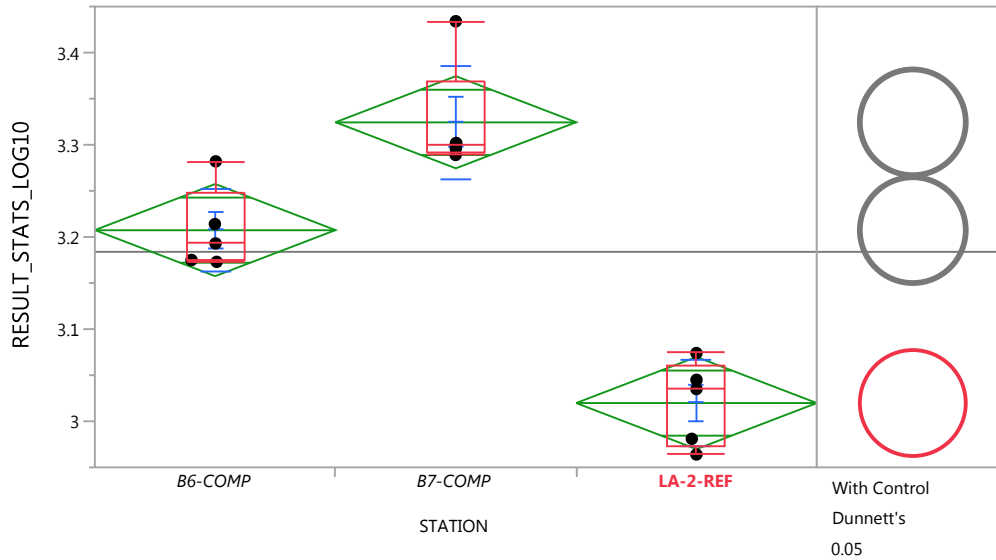
Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.9446	2	12	0.4159
Brown-Forsythe	0.5758	2	12	0.5771
Levene	1.1089	2	12	0.3615
Bartlett	1.4552	2	.	0.2333

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=PCB132/153**

**Tests that the Variances are Equal**

Warning: Small sample sizes. Use Caution.

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**



**Quantiles**

Level	Minimum	10%	25%	Median	75%	90%	Maximum
B6-COMP	3.173	3.173	3.174	3.193	3.248	3.282	3.282
B7-COMP	3.289	3.289	3.2925	3.301	3.368	3.434	3.434
LA-2-REF	2.964	2.964	2.9725	3.035	3.0595	3.074	3.074

**Oneway Anova**

**Summary of Fit**

Rsquare	0.881983
Adj Rsquare	0.862313
Root Mean Square Error	0.05131
Mean of Response	3.183867
Observations (or Sum Wgts)	15

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
STATION	2	0.23610653	0.118053	44.8400	<.0001*
Error	12	0.03159320	0.002633		
C. Total	14	0.26769973			

**Means for Oneway Anova**

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
B6-COMP	5	3.20740	0.02295	3.1574	3.2574
B7-COMP	5	3.32440	0.02295	3.2744	3.3744
LA-2-REF	5	3.01980	0.02295	2.9698	3.0698

Std Error uses a pooled estimate of error variance

**Means and Std Deviations**

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
B6-COMP	5	3.20740	0.044859	0.02006	3.1517	3.2631
B7-COMP	5	3.32440	0.061484	0.02750	3.2481	3.4007
LA-2-REF	5	3.01980	0.045888	0.02052	2.9628	3.0768

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**

**Means Comparisons**

**Comparisons with a control using Dunnett's Method**

Control Group = LA-2-REF

**Confidence Quantile**

d	Alpha
2.50241	0.05

**LSD Threshold Matrix**

Level	Abs(Dif)-LSD	p-Value
B7-COMP	0.223	<.0001*
B6-COMP	0.106	0.0002*
LA-2-REF	-0.08	1.0000

Positive values show pairs of means that are significantly different.

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
B6-COMP	5	40.000	40.000	8.0000	0.000
B7-COMP	5	65.000	40.000	13.0000	3.001
LA-2-REF	5	15.000	40.000	3.0000	-3.001

**1-way Test, ChiSquare Approximation**

ChiSquare	DF	Prob>ChiSq
12.5000	2	0.0019*

Small sample sizes. Refer to statistical tables for tests, rather than large-sample approximations.

**Nonparametric Comparisons With Control Using Steel Method**

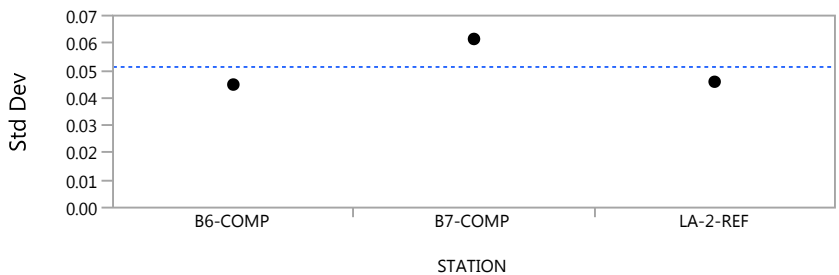
Control Group = LA-2-REF

q*	Alpha
2.21213	0.05

Level	- Level	Score Mean		Z	p-Value	Hodges-Lehmann		
		Difference	Std Err Dif			Lehmann	Lower CL	Upper CL
B6-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.192000	-0.318000	-0.099000
B7-COMP	LA-2-REF	-4.80000	1.914854	-2.50672	0.0231*	-0.308000	-0.470000	-0.215000



**Tests that the Variances are Equal**



Level	Count	Std Dev	MeanAbsDif to Mean	MeanAbsDif to Median
B6-COMP	5	0.0448587	0.0324800	0.0296000
B7-COMP	5	0.0614841	0.0438400	0.0302000
LA-2-REF	5	0.0458879	0.0378400	0.0348000

**Oneway Analysis of RESULT\_STATS\_LOG10 By STATION ANALYTE=Total PCB Congeners (ND = 0)**

**Tests that the Variances are Equal**

Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	0.2169	2	12	0.8081
Brown-Forsythe	0.0226	2	12	0.9777
Levene	0.2029	2	12	0.8191
Bartlett	0.2347	2	.	0.7908

Warning: Small sample sizes. Use Caution.



APPENDIX F  
DATA VALIDATION REPORTS

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## DATA VALIDATION REVIEW REPORT - EPA STAGE 2A

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**Project:** City of Long Beach – Alamitos Bay Marina Basins 6 and 7  
**Project Number:** 160548-04.01  
**Date:** August 8, 2016

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This report summarizes the review of analytical results for 36 tissue samples collected in June and July 2016, and composited on June 8, 2016. Bioaccumulation studies were performed by Nautilus Environmental in San Diego, California, and the resulting tissues were submitted to Eurofins Calscience, Inc. (ECI), in Garden Grove, California. ECI homogenized and composited the frozen tissue samples. The samples were analyzed for the following parameters:

- Polychlorinated biphenyl (PCB) congeners by U.S. Environmental Protection Agency (USEPA) method 8270C SIM
- % Lipids by NOAA 1993

ECI sample data group number 16-07-2046 was reviewed in this report. Samples reviewed in this report are presented in Table 1.

**Table 1**  
**Samples Reviewed**

Sample ID	Lab ID	Matrix	Analyses Requested
T0-A-MACOMA-062916	16-07-2046-01	Tissue	PCBs, lipids
T0-B-MACOMA-062916	16-07-2046-02	Tissue	PCBs, lipids
T0-C-MACOMA-062916	16-07-2046-03	Tissue	PCBs, lipids
T0-A-NEREIS-062916	16-07-2046-04	Tissue	PCBs, lipids
T0-B-NEREIS-062916	16-07-2046-05	Tissue	PCBs, lipids
T0-C-NEREIS-062916	16-07-2046-06	Tissue	PCBs, lipids
LA-2-REF-A-MACOMA-072816	16-07-2046-12	Tissue	PCBs, lipids
LA-2-REF-B-MACOMA-072816	16-07-2046-13	Tissue	PCBs, lipids
LA-2-REF-C-MACOMA-072816	16-07-2046-14	Tissue	PCBs, lipids
LA-2-REF-D-MACOMA-072816	16-07-2046-15	Tissue	PCBs, lipids
LA-2-REF-E-MACOMA-072816	16-07-2046-16	Tissue	PCBs, lipids
B6-COMP-A-MACOMA-072816	16-07-2046-17	Tissue	PCBs, lipids

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Sample ID	Lab ID	Matrix	Analyses Requested
B6-COMP-B-MACOMA-072816	16-07-2046-18	Tissue	PCBs, lipids
B6-COMP-C-MACOMA-072816	16-07-2046-19	Tissue	PCBs, lipids
B6-COMP-D-MACOMA-072816	16-07-2046-20	Tissue	PCBs, lipids
B6-COMP-E-MACOMA-072816	16-07-2046-21	Tissue	PCBs, lipids
B7-COMP-A-MACOMA-072816	16-07-2046-22	Tissue	PCBs, lipids
B7-COMP-B-MACOMA-072816	16-07-2046-23	Tissue	PCBs, lipids
B7-COMP-C-MACOMA-072816	16-07-2046-24	Tissue	PCBs, lipids
B7-COMP-D-MACOMA-072816	16-07-2046-25	Tissue	PCBs, lipids
B7-COMP-E-MACOMA-072816	16-07-2046-26	Tissue	PCBs, lipids
LA-2-REF-A-NEREIS-072816	16-07-2046-32	Tissue	PCBs, lipids
LA-2-REF-B-NEREIS-072816	16-07-2046-33	Tissue	PCBs, lipids
LA-2-REF-C-NEREIS-072816	16-07-2046-34	Tissue	PCBs, lipids
LA-2-REF-D-NEREIS-072816	16-07-2046-35	Tissue	PCBs, lipids
LA-2-REF-E-NEREIS-072816	16-07-2046-36	Tissue	PCBs, lipids
B6-COMP-A-NEREIS-072816	16-07-2046-37	Tissue	PCBs, lipids
B6-COMP-B-NEREIS-072816	16-07-2046-38	Tissue	PCBs, lipids
B6-COMP-C-NEREIS-072816	16-07-2046-39	Tissue	PCBs, lipids
B6-COMP-D-NEREIS-072816	16-07-2046-40	Tissue	PCBs, lipids
B6-COMP-E-NEREIS-072816	16-07-2046-41	Tissue	PCBs, lipids
B7-COMP-A-NEREIS-072816	16-07-2046-42	Tissue	PCBs, lipids
B7-COMP-B-NEREIS-072816	16-07-2046-43	Tissue	PCBs, lipids
B7-COMP-C-NEREIS-072816	16-07-2046-44	Tissue	PCBs, lipids
B7-COMP-D-NEREIS-072816	16-07-2046-45	Tissue	PCBs, lipids
B7-COMP-E-NEREIS-072816	16-07-2046-46	Tissue	PCBs, lipids

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## DATA VALIDATION AND QUALIFICATIONS

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures and data quality objective sections of the *Sampling and Analysis Plan* (Anchor QEA 2016).

Laboratory results were reviewed using *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2008).

Laboratory and method QC criteria were also used as stated in USEPA 1986 (SW-846, Third Edition), *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, update 1, August 1993; update II, January 1995; update IIA, February 1994; update IIB, August 1995;

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update III, June 1997; update IIIA, May 1999; update IIIB, June 2008; update IVA and IVB, January 2008. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

## **FIELD DOCUMENTATION**

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECI at the time of sample receipt; the samples were received within the recommended temperature range and in good condition.

## **HOLDING TIMES AND SAMPLE PRESERVATION**

Samples were stored frozen prior to analysis and analyzed within holding times.

## **LABORATORY METHOD BLANKS**

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

## **FIELD QUALITY CONTROL**

### **Rinse Blanks**

No rinse blanks were required in association with this sample set.

### **Field Duplicates**

No field duplicates were required in association with this sample set.

## **SURROGATE RECOVERIES**

Surrogate recoveries were within laboratory control limits.

## **LABORATORY CONTROL SAMPLES AND LABORATORY CONTROL SAMPLE DUPLICATES**

Laboratory control samples (LCS) and LCS duplicates (LCSD) were analyzed at the required frequency. All LCS/LCSD recoveries and relative percent difference (RPD) values were within project-required control limits.

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## **MATRIX SPIKE AND MATRIX SPIKE DUPLICATE**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency. All MS/MSD results recoveries RPD values were within project-required control limits.

## **LABORATORY DUPLICATES**

Laboratory duplicates were analyzed at the required frequency for lipids and the RPD was within control limits.

## **METHOD DETECTION LIMITS**

Method detection limits (MDLs) were deemed acceptable as reported. Detected values above the MDL and below the method reporting limit have been qualified with a “J” to indicate that they are estimated. Values were reported as undiluted, or when reported as diluted, the reporting and detection limits accurately reflect the dilution factor.

## **OVERALL ASSESSMENT**

The laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exceptions noted above. Precision was also acceptable as demonstrated by the laboratory duplicate, LCS/LCSD, and MS/MSD RPD values. All data were acceptable as reported.

## **REFERENCES**

- Anchor QEA, 2016. *Sampling and Analysis Plan, Alamitos Bay Marina Basins 6 and 7 Maintenance Dredging*. Prepared for the City of Long Beach. May 2016.
- NOAA (National Oceanic and Atmospheric Administration), 1993. *Sampling and Analytical Methods of the National Status and Trends Program, National Benthic Surveillance and Mussel Watch Projects, 1984-1992 Volume I. Overview and Summary of Methods*. Coastal Monitoring and Bioeffects Assessment Division, Office of Ocean Resources Conservation and Assessment, National Ocean Service. July, 1993.
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USEPA (U.S. Environmental Protection Agency), 1986. *Test methods for Evaluating Solid Waste: Physical/Chemical Methods*. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 530/SW-846.

USEPA, 2008. *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. USEPA 540-R-08-01. June 2008.

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## DATA VALIDATION REVIEW REPORT – EPA STAGE 2A

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**Project:** City of Long Beach – Alamitos Bay Marina, Basins 6 and 7  
**Project Number:** 160548-04.01  
**Date:** August 1, 2016

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This report summarizes the review of analytical results for two sediments composited on June 21 and 22, 2016, and one reference sediment sample collected on June 23, 2016. The samples were collected by Anchor QEA, LLC, and submitted to Eurofins Calscience, Inc. (ECI), in Garden Grove, California. The samples were analyzed for the following parameters:

- Total sulfide (S<sup>2-</sup>) by U.S. Environmental Protection Agency (USEPA) method 376.2
- Total organic carbon (TOC) by USEPA method 9060A
- Total solids (TS) by standard method 2540B
- Ammonia (NH<sub>3</sub>) by Standard Method (SM) 4500-NH<sub>3</sub> B/C
- Pyrethroids by USEPA method 8270D modified, triple quadrupole/electron ionization (TQ/EI)
- Total metals by USEPA methods 6020 inductively coupled plasma mass spectrometry (ICP/MS), and 7471A
- Particle size by ASTM method D4464
- Organochlorine pesticides by USEPA method 8081A
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA method 8270C selective ion monitoring (SIM)
- Polychlorinated biphenyl congeners (PCBs) by USEPA method 8270C SIM
- Organotins by Krone et al. 1989

ECI sample data group number 16-06-1737\_s1 was reviewed in this report. Samples reviewed in this report are presented in Table 1.

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**Table 1**  
**Samples Reviewed**

Sample ID	Lab ID	Matrix	Analyses Requested
B6-COMP-062116	16-06-1737-11	Sediment	S <sup>2-</sup> , TOC, TS, NH <sub>3</sub> , pyrethroids, metals, particle size, pesticides, PAHs, PCBs, organotins
B7-COMP-062216	16-06-1737-18	Sediment	S <sup>2-</sup> , TOC, TS, NH <sub>3</sub> , pyrethroids, metals, particle size, pesticides, PAHs, PCBs, organotins
LA-2-REF-062316	16-06-1737-19	Sediment	S <sup>2-</sup> , TOC, TS, NH <sub>3</sub> , pyrethroids, metals, particle size, pesticides, PAHs, PCBs, organotins

## DATA VALIDATION AND QUALIFICATIONS

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures and data quality objective sections of the *Sampling and Analysis Plan* (SAP; Anchor QEA 2016).

Laboratory results were reviewed using the following guidelines:

- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2008)
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA 2010)

Laboratory and method QC criteria were also used as stated in USEPA 1986 (SW-846, Third Edition), *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, update 1, August 1993; update II, January 1995; update IIA, February 1994; update IIB, August 1995; update III, June 1997; update IIIA, May 1999; update IIIB, June 2008; and updates IVA and IVB, January 2008. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

## FIELD DOCUMENTATION

Field documentation was checked for completeness and accuracy. The chain-of-custody form was signed by ECI at the time of sample receipt; the sample was received chilled to within the correct temperature range and in good condition.



## **HOLDING TIMES AND SAMPLE PRESERVATION**

Samples were appropriately preserved and analyzed within holding times. The hold time listed in the SAP for TOC is incorrect. The correct holding time for TOC is 28 days (SWRCB 2008).

## **LABORATORY METHOD BLANKS**

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

## **FIELD QUALITY CONTROL**

### **Rinse Blanks**

No rinse blanks were required in association with these samples.

### **Field Duplicates**

No field duplicates were required in association with these samples.

## **SURROGATE RECOVERIES**

All surrogate recoveries were within the laboratory control limits, with the exception of the surrogate dibutylchloroendate in the pyrethroid analysis of sample LA-2-REF-062316, which recovered below the control limit. Results were qualified "UJ" to indicate a potentially low bias.

Qualified data are summarized in Table 2.

## **LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE**

Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) were analyzed at the required frequencies. All LCS/LCSD analyses resulted in recoveries and/or relative percent difference (RPD) values within project-required control limits, with the exception of the LCS and LCSD analyzed for pyrethroids. Fluvalinate recovered below the control limit, and associated sample results have been qualified "UJ" to indicate a potentially low bias.

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Qualified data are summarized in Table 2.

### **MATRIX SPIKE AND MATRIX SPIKE DUPLICATE**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at required frequencies, or LCS/LCSDs were analyzed in place of MS/MSDs. All MS/MSD analyses were analyzed on sample B6-COMP-062116 and resulted in recoveries and/or RPD values within project-required control limits, with the following exceptions:

- Conventionals: TOC recovered below the control limit in the MS and MSD. Associated results were qualified “J” to indicate a potentially low bias.
- Pyrethroids: The MS and/or MSD recovered below the control limit for several analytes. The parent sample results were qualified “UJ” to indicate a potentially low bias.
- Metals: The MS and MSD recovered above the control limit for copper and lead. Associated detected sample results have been qualified “J” to indicate a potentially high bias. The zinc percent recovery value was not calculated because the sample concentration was significantly higher (> 4x) the concentration of the spike; data are not expected to be affected.
- Pesticides: The MS recovered below the control limit for 4,4'-DDT and methoxychlor. Parent sample results were qualified “UJ” to indicate a potentially low bias.
- PCBs: The MS/MSD RPD exceeded the control limit for five PCB congeners. Detected parent sample results have been qualified “J” to indicate they are estimated. The MSD recovered above the control limit for PCB 128; however this compound was not detected in the sample, so no data were qualified.

Qualified data are summarized in Table 2.

### **METHOD REPORTING AND DETECTION LIMITS**

All values were reported using the laboratory detection limits (DLs). Values were reported as undiluted, or when reported as diluted, the DL accurately reflects the dilution factor. Several DLs were elevated above target DLs due to dry weight correction.

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## OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exceptions noted above. Precision was also acceptable as demonstrated by the laboratory MS/MSD and LCS/LCSD RPD values. Most data were acceptable as reported; all other data are acceptable as qualified. Table 2 summarizes the qualifiers applied to sample results reviewed in this report. Project completeness goals were met.

## DATA QUALIFIER DEFINITIONS

- J Indicates an estimated value.
- U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit.
- UJ Indicates the compound or analyte was analyzed for but not detected and the specified limit reported is estimated

**Table 2**  
**Data Qualification Summary**

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
B6-COMP-062116	Conventionals	Total organic carbon	1.1 pct	1.1J pct	Low MS/MSD %R
	Metals	Copper	78.1 mg/kg	78.1J mg/kg	High MS/MSD %R
		Lead	50.6 mg/kg	50.6J mg/kg	
	Pesticides	4,4'-DDT (p,p'-DDT)	0.71U µg/kg	0.71UJ µg/kg	Low MS %R
		Methoxychlor	0.91U µg/kg	0.91UJ µg/kg	
	Pyrethroids	Fluvalinate	0.41U µg/kg	0.41UJ µg/kg	Low LCS/LCSD and MS/MSD %R
		Tetramethrin	0.49U µg/kg	0.49UJ µg/kg	Low MS %R
		Allethrin	0.41U µg/kg	0.41UJ µg/kg	Low MS/MSD %R
		Cyfluthrin	0.41U µg/kg	0.41UJ µg/kg	
		Cypermethrin	0.41U µg/kg	0.41UJ µg/kg	
	Fenpropathrin	0.41U µg/kg	0.41UJ µg/kg		
	PCBs	PCB-066	2.3 µg/kg	2.3J µg/kg	High MS/MSD RPD value
		PCB-101	5 µg/kg	5J µg/kg	
PCB-206		1.1 µg/kg	1.1J µg/kg		
	Conventionals	Total organic carbon	0.12 pct	0.12J pct	Low MS/MSD %R
	Metals	Copper	39.3 mg/kg	39.3J mg/kg	High MS/MSD %R

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
B7- COMP- 062216		Lead	20.8 mg/kg	20.8J mg/kg	
	Pyrethroids	Fluvalinate	0.34U µg/kg	0.34UJ µg/kg	Low LCS/LCSD %R
LA-2- REF- 062316	Conventionals	Total organic carbon	0.09 pct	0.09J pct	Low MS/MSD %R
	Metals	Copper	9.7 mg/kg	9.7J mg/kg	High MS/MSD %R
		Lead	5.33 mg/kg	5.33J mg/kg	
	Pyrethroids	Fluvalinate	0.37U µg/kg	0.37UJ µg/kg	Low surrogate %R, low LCS/LCSD %R
		Allethrin	0.37U µg/kg	0.37UJ µg/kg	Low surrogate recovery
		Bifenthrin	0.45U µg/kg	0.45UJ µg/kg	
		Cyfluthrin	0.37U µg/kg	0.37UJ µg/kg	
		Cypermethrin	0.37U µg/kg	0.37UJ µg/kg	
		Deltamethrin/Tralome- methrin	0.37U µg/kg	0.37UJ µg/kg	
		Fenpropathrin	0.37U µg/kg	0.37UJ µg/kg	
		Fenvalerate	0.37U µg/kg	0.37UJ µg/kg	
		Lambda-cyhalothrin	0.37U µg/kg	0.37UJ µg/kg	
		Permethrin	0.75U µg/kg	0.75UJ µg/kg	
		Phenothrin	0.37U µg/kg	0.37UJ µg/kg	
Resmethrin/Bioresm- ethrin		0.64U µg/kg	0.64UJ µg/kg		
Tetramethrin	0.45U µg/kg	0.45UJ µg/kg			

## Notes:

µg/kg = microgram per kilogram

LCSD = laboratory control sample duplicate

mg/kg = milligram per kilogram

MS = matrix spike

MSD = matrix spike duplicate

PCB = polychlorinated biphenyl

pct = percent

R = recovery

RPD = relative percent difference

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