

HAND DELIVERED

February 15, 2006

Regional Water Quality Control Board  
Los Angeles Region  
320 West 4<sup>th</sup> Street, Suite 200  
Los Angeles, CA 90013



Attention: Information Technology Unit  
Reference: Compliance File CI-6027 and NPDES No. CA0001309  
Subject: 4th Quarter 2005 NPDES Discharge Monitoring Report Submittal-  
Santa Susana Field Laboratory

Dear Sir/Madam,

The Boeing Company hereby submits the discharge monitoring report (DMR) for the Santa Susana Field Laboratory (SSFL) for the 4th Quarter of 2005. This DMR provides the results of the sampling that occurred for the SSFL outfalls (see Appendix A of this report) for the period of October 1<sup>st</sup> through December 31<sup>st</sup> of 2005 as required by National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309. This quarterly DMR provides all information and data, including summary tables of surface water sample analytical results, rainfall summaries, liquid waste shipment summaries, and surface water sample laboratory analytical reports.

#### **4<sup>TH</sup> QUARTER REPORT CONTENTS AND SUMMARY**

Appendix A is a site location map indicating the locations of the Outfalls. The 4th Quarter 2005 precipitation at SSFL is presented in Appendix B. All sanitary wastes were shipped off-site and appropriately managed (summarized in Appendix C); therefore, there were no discharges associated with the domestic sewage treatment plants (Outfalls 015, 016, and 017).

Surface water samples were collected from Outfalls 003 through 010, and 018. Surface water samples were not collected from outfall locations 001, 002, or 011 due to the limited amount of rain and the lack of flow at these locations. Additionally, samples were not collected at Outfalls 012, 013, and 014 (engine test stands) as testing activities were not conducted during this quarter. Samples collected were analyzed at a California-certified laboratory. Appendices D and E contain summary tables of analytical results for surface water samples collected during the 4<sup>th</sup> Quarter 2005. These tables identify the Outfall, the constituents evaluated (analytes), the date of sampling, the analytical result, and data validation qualifiers. Appendix F provides a summary table of permit limit exceedances, and Appendix G contains copies of the analytical reports, chain of custody, and validation reports. As a supplement included with the summary tables in Appendices D, E, and F, the

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Quarterly Summary Notes are a compilation of notes, abbreviations, and data validation codes that are used in the analytical data summary tables.

As part of the Los Angeles Regional Water Quality Control Board (RWQCB) Section 13267 request (dated May 20, 2004) and in accordance with the August 31, 2004 Workplan (Submission of Technical Workplan Pursuant to Section 13267 of the California Water Code), and the corresponding RWQCB responses (dated January 12 and March 22, 2005) to the workplan, a surface water sample was collected during the 2<sup>nd</sup> Quarter 2005 from Outfall 003 and analyzed for Strontium-90. This sample result exceeded the permit limit of 8.0 picocuries per liter (pCi/L). Therefore, as indicated in the 2004 NPDES Permit, follow-up samples were collected during the next flow events (there was no flow at Outfall 003 in the 3<sup>rd</sup> Quarter, so samples were collected and analyzed during the 4<sup>th</sup> Quarter). Appendix F includes the results of the sample analysis. Results from the 4<sup>th</sup> Quarter sampling events did not exceed permit limits. Additional samples will be collected in subsequent sampling events to meet the requirements of the 2004 NPDES Permit for four consecutive sample results. Results of the 13267 Study will be provided in a separate technical report.

Data validation was performed on the analytical results and quality control elements were found to be within acceptable limits for all analytical methods reported, except as noted on the analytical summary tables. Laboratory analytical reports, including validation reports and notes, are included in Appendix G.

In addition, this DMR discusses the steps taken in the aftermath of the September 2005 Topanga Wildfire. This wildfire resulted in substantial loss of vegetation at SSFL and the destruction of many previously installed best management practices (BMPs). Before the fire, naturally occurring vegetation and BMPs aided in controlling sediment and constituent migration into and within surface water. Their loss in the fire had an impact on controlling sediment and constituent migration in the 4<sup>th</sup> Quarter 2005. Therefore, steps were taken as soon as feasible following the fire to control sediment and constituent run-off and re-deploy BMPs.

#### **BMP AND VEGETATION RESTORATION ACTIVITIES**

As a result of the Topanga Wildfire in late September 2005, over 70% of the SSFL property burned, and a majority of vegetation and many installed BMPs at SSFL were destroyed. The ground surface of the SSFL was impacted with ash and/or charred material, which are known to contain naturally occurring constituents such as dioxins (TCDD) and metals (USEPA, 2000; Aronsson and Ekelund, 2004). In addition, wild fires have been shown to increase soil pH, and to cause an increase in nitrate, ammonia, and other plant-nutrient-related compounds (Higgins, et. al., 1989; Earl and Blinn, 2003). To reduce the impact of the ash and charred material on surface water, numerous activities were implemented as soon as feasible and completed to help restore the natural, engineered and/or institutional controls that aid in minimizing the erosion of surface materials and the migration of sediment in surface water.

Boeing replaced and upgraded the BMPs that were destroyed, and installed additional BMPs across the site to reduce sediment and constituent runoff. During the process, early season rains on October 17-18<sup>th</sup> and November 9<sup>th</sup> occurred prior to the completion of some of the BMPs (as a result, surface water samples collected during the quarter exhibited greater quantities of suspended sediment and other constituents).



The following table lists the Outfall location and respective BMP activities completed during the 4<sup>th</sup> Quarter 2005:



OUTFALL	BMP ACTIVITIES DURING 4 <sup>th</sup> QUARTER 2005*
001 (South Slope below Perimeter Pond)	Upstream erosion controls installed --straw bales and fiber rolls
002 (South Slope below R-2 Pond)	Upstream erosion controls installed -- straw bales and fiber rolls
003 (RMHF)	Straw bales, fiber rolls, silt fence, media filter installed
004 (SRE)	Fiber mats/plastic tarp, silt fencing, sandbag barrier; dual media filtration under drain filtration system installed
005 (FSDF-1)	Fiber rolls, dual media filter installed
006 (FSDF-2)	Straw bales, fiber rolls, dual media filter installed
007 (Building 100)	Straw bales, fiber rolls, silt fencing, media filter installed
008 (Happy Valley)	Upstream erosion controls -- straw bales, fiber rolls, rip rap, silt fence installed
009 (WS-13 Drainage)	Upstream erosion controls --hydroseeding, straw bales, fiber rolls installed
010 (Building 203)	Fiber rolls, silt fencing, media filtration installed, sediment basin cleaned
011 (Perimeter Pond)	Silt fencing installed, initiated construction of filtration system
012 (ALFA Test Stand)	No activity
013 (BRAVO Test Stand)	No activity
014 (APTF Test Stand)	No activity
015 (STP I)	No activity
016 ( STP II)	No activity
017 (STP III)	No activity
018 (R-2 Spillway)	No activity

\*Other BMPs exist at these Outfalls that did not require upgrades or replacements.

Boeing is monitoring the effectiveness of the BMP program, and is currently reviewing the installation and evaluating the effectiveness of the newly deployed or upgraded BMPs as documented in the Response to Requirements to Submit a Technical Report Pursuant to Section 13267 of the California Water Code. This technical report was submitted to the RWQCB on December 16, 2005.

Additional to those BMPs implemented during the 4<sup>th</sup> Quarter 2005 (listed above), as part of our ongoing efforts to remove accumulated ash, Boeing removed accumulated ash to the extent practicable in the upstream drainage from Outfall 008. Hydromulch was also placed over approximately 800 acres of the undeveloped land at the SSFL. Hydromulch is a semi-liquid organic binder blended with hydromulch paper or wood fiber/pulp that is dispersed onto and adheres to the ground surface and soil surface to protect from further soil erosion, aid in minimizing sediment transport, and decrease the potential for landslides. Hydromulch application occurred between December 23, 2005 and January 13, 2006. The hydromulch was applied by a helicopter or by a truck where access was available. In addition, hydroseeding (mulch material with a native seed mix) was completed at other selected upgradient areas at the SSFL during the 4<sup>th</sup> Quarter in late October 2005.

#### **SUMMARY OF NON-COMPLIANCE AND CORRECTIVE ACTIONS TAKEN**

The following analytes exceeded permit limits during the 4<sup>th</sup> Quarter 2005 monitoring period, as noted in Appendix G: pH, copper, mercury, nitrate + nitrite as nitrogen, antimony, and TCDD TEQ. These permit limit exceedences are summarized below.

##### **pH Non-compliance, Discussion of Occurrence, and Potential Sources**

At Outfalls 009 (sample collected on October 17, 2005) and 003 (sample collected on November 9, 2005), pH levels were measured at 8.8 and 9.4, respectively, above the daily maximum permit limit range of 6.5 to 8.5.

The elevated pH value for Outfall 003 was likely a result of activated carbon bags at the surface-water sampling station. The activated carbon delivered was the type used for vapor-phase applications, and was not acid-washed as part of the manufacturing process. Activated carbon when not pre-washed can be high in pH. Upon contact with water, the carbons' high pH could cause a higher pH in the contacted water. Upon becoming aware of the supplier's mistake, the carbon bags were immediately removed and replaced with granular activated carbon for liquid phase applications. The liquid-phase carbon underwent the standard acid wash and rinse by the manufacturer prior to delivery and installation and is not expected to cause a future exceedance.

The elevated pH value at Outfall 009 in October could also be attributed to the presence of excessive ash material in the drainage due to the recent fires. Studies by the United States Fish and Wildlife and South Dakota State University report increased pH values in soils after wildfires have burned forest and/or grasslands (Higgins, et. al., 1989; Earl and Blinn, 2003). The increased pH is typically related to the alkalinity of the ash; because mineral substances are released as oxides or carbonates that usually have an alkaline reaction. This is also supported by studies that have found that ash is dominated by carbonates of alkaline and alkaline earth metals. The subsequent November sample result was within compliance. The pH exceedence occurred during the first storm event of the season. In the subsequent storm event in November, 2005, pH was below the permit limit and in compliance. This further supports the hypothesis that the pH exceedence was due to naturally occurring alkalinity in ash resulting from the Topanga Fire. The first rain event would be expected to wash ash from the watershed leaving less ash remaining, which would have a less severe impact on water pH during subsequent rain events.



#### **Antimony Non-Compliance, Discussion of Occurrence, and Potential Sources**

Antimony was detected at Outfall 007 (sampled on October 18, 2005) and Outfall 003 (sampled on November 9, 2005) at a concentration of 6.2 and 35 micrograms per liter ( $\mu\text{g/L}$ ), respectively. The daily maximum permit limit for Antimony is 6.0  $\mu\text{g/L}$ .

A comparison of these results against historic antimony concentrations for Outfalls 003 and 007 indicates these concentrations exceed previous concentrations of antimony during the 2004-2005 rainy season. The only change that occurred between conditions during the 2004-05 winter season and the 2005-06 winter season at the SSFL was the Topanga Fire burning of vegetation and the resulting destabilization of soils. Because of this, these exceedances may be the result of increased sediment loads following the Topanga Fire which transport a greater amount of native soil and ash, both of which contain antimony.

Boeing will continue to evaluate antimony values across the site to better understand its occurrence and whether its occurrence diminishes as native vegetation returns.

#### **Copper Non-Compliance, Discussion of Occurrence, and Potential Sources**

Copper was detected at Outfalls 003, 005, 006, and 007 (in samples collected on October 18, 2005) and at Outfalls 005 and 006 (samples collected on November 9, 2005), exceeding the daily maximum permit limit for copper of 14  $\mu\text{g/L}$ . Copper was detected at concentrations of 17, 30, 16, and 19  $\mu\text{g/L}$  at Outfalls 003, 005, 006, and 007 on October 18, respectively, and at concentrations of 20 and 34  $\mu\text{g/L}$  at Outfalls 005 and 006 on November 9, respectively.

A comparison of these results against historic copper concentrations for Outfalls 003-007 indicates that these concentrations generally exceed pre-fire concentrations by 3 to 20  $\mu\text{g/l}$ . Copper is naturally occurring and has been frequently detected in agency-approved background site soils (MWH, 2005). The only change that occurred between conditions during the 2004-05 winter season and the 2005-06 winter season at the SSFL was the Topanga Fire burning of vegetation and the resulting destabilization of soils. We have seen significant increases in TSS and turbidity in runoff since the Topanga Fire. The increase in copper could be a direct result of increased transport of background levels of copper in sediments and ash eroded from the Topanga Fire destabilized hillsides.

Boeing will continue to evaluate all data, improve BMPs, and implement measures to minimize sediment and resulting metals migration to and within surface water.

#### **Mercury Non-Compliance, Discussion of Occurrence, and Potential Sources**

Mercury was detected at Outfalls 004 and 005 (in samples collected on October 18, 2005) and Outfall 006 (in a sample collected on November 9, 2005), exceeding the daily maximum permit limit for mercury of 0.13  $\mu\text{g/L}$ . Mercury concentrations were 0.22, 0.41, and 0.89  $\mu\text{g/L}$ , respectively.

At Outfall 004, an area with mercury impacted soils has been covered with plastic sheeting to prevent contact between rainfall and site soils. However, the plastic sheeting was destroyed by the Topanga Fire, thus enabling rainfall to contact potentially impacted soils. Surface water transport of these potentially impacted soils could have resulted in the exceedance. This area has been retarped and the filtration system upgraded.



At Outfalls 005 and 006, soil removal has occurred to mitigate impacts in surface soils for mercury and other constituents under DTSC direction. Thus, the potential causes of these exceedences are unclear and are being further evaluated.

Boeing will continue to evaluate mercury data, improve on BMPs, and implement measures to minimize sediment migration to and within surface water as necessary.

#### **Nitrate and Nitrite as Nitrogen Non-Compliance, Discussion of Occurrence, and Potential Sources**

The daily maximum permit limit of nitrate and nitrite as nitrogen (10 milligrams per liter [mg/L]) was exceeded at Outfall 005 (in a sample collected on October 18, 2005) at a concentration of 16 mg/L. As referenced above, many studies of post wildfire studies indicate excess water-soluble nutrients (they are in excess because the plants that would have bound the nutrients within their plant tissue, were burned in the fires) may drain into nearby streams and bodies of water (Higgins, et. al., 1989). Nitrate-nitrogen is very soluble and is a nutrient particularly prone to leaching from soil. Based on this, it is possible that the nitrate/nitrite increases are naturally occurring and a result of the Topanga Fire.

Boeing will continue to evaluate nitrate and nitrite as nitrogen values at this and all Outfall locations across the site to better understand its occurrence and whether its occurrence diminishes as native vegetation returns.

#### **TCDD TEQ Non-Compliance, Discussion of Occurrence, and Potential Sources**

To enable a single total concentration (commonly called a Toxicity Equivalence [TEQ]) to be calculated from the sum of the 17 dioxin and furan congeners, 2,3,7,8-TCDD 'equivalent' concentrations are calculated for each congener by multiplying that individual congener's concentration by its toxic equivalency factor (TEF). The TEF is based on the toxicity of the congener compared to the toxicity of 2,3,7,8-TCDD. The dioxin summary tables in Appendix D show the TEFs for the various congeners. The common term for the sum of the factored concentration is TEQ. When subsequently used in this letter report, the term TCDD refers to the total equivalence of the seventeen 2,3,7,8-substituted dioxin and furan congeners (commonly called the TCDD TEQ).

During the 4<sup>th</sup> Quarter 2005, surface water samples were collected from Outfalls 003 through 010, and 018 and analyzed for TCDD TEQ, in accordance with the NPDES permit. Of these, permit limits for TCDD TEQ are established for Outfalls 003 through 007. Outfalls 008 through 010 are monitored for TCDD TEQ; however, permit limits were not established for these Outfalls in the 2004 NPDES Permit.

For the purposes of evaluating compliance with permit limits for Outfalls 003 through 007 (as stated in the NPDES permit on Page 40, Section II, C. 3), TCDD TEQ is based on detected congeners and does not include those congeners reported as ND (not detected) or detected, but not quantified (DNQ). A DNQ is a value less than the laboratory reporting limit, but greater than the laboratory level of detection [LOD]. Therefore, when evaluating whether a permit limit exceedence occurred, ND or DNQ data (the resulting estimated value) were considered zero in the calculation. Outfalls 003 through 007 have a compliance limit for TCDD TEQ, which is shown as the TCDD TEQ permit limit of  $2.8 \times 10^{-8}$   $\mu\text{g/L}$  or 28 parts per quintillion.



Limits for TCDD TEQ have not been established for Outfalls 008 through 011, and 018 in the 2004 Permit. For these Outfalls, TCDD TEQ is based on detected congeners and DNQ congeners. Congener values that are ND are considered to have concentrations equal to zero and are not included in the TCDD TEQ calculation for these Outfalls without permit limits. TCDD TEQ analytical results are included in Appendices D, E, and F.

During 4<sup>th</sup> Quarter 2005, TCDD TEQ concentrations at Outfalls 004, 005, 006, and 007 ( $5.86 \times 10^{-6}$ ,  $1.36 \times 10^{-6}$ ,  $3.40 \times 10^{-8}$ ,  $3.17 \times 10^{-7}$   $\mu\text{g/L}$ , respectively) exceeded the daily maximum permit limit of  $2.8 \times 10^{-8}$   $\mu\text{g/L}$  in the samples collected on October 18, 2005. TCDD TEQ concentrations at Outfalls 004, 005, and 006 ( $3.43 \times 10^{-6}$ ,  $1.76 \times 10^{-6}$ , and  $1.89 \times 10^{-6}$   $\mu\text{g/L}$ , respectively) exceeded the daily maximum permit limit of  $2.80 \times 10^{-8}$   $\mu\text{g/L}$  in the samples collected on November 9, 2005.

TCDD have been frequently detected in agency approved non-impacted background soils (MWH 2005). In some areas, operations onsite have utilized combustion processes, but when investigating these potentially impacted areas, the TCDD TEQ values in soils have been found either not to be elevated above background levels, or if elevated, they have been shown to decrease to near background levels within a short distance from the suspected source area.

Boeing has extended its TCDD sampling program to areas far offsite (some locations are about 20 miles away), where site-related impacts are virtually impossible. At these locations, similar concentrations of TCDD TEQ are found in stormwater runoff. The attached figure (Attachment 1) shows recent offsite surface water sampling locations and the onsite and offsite surface water TCDD concentrations from the October 2005 sampling event (Attachment 2). Based on this, it appears that TCDD TEQ found at the SSFL are largely due to atmospheric deposition of TCDD TEQ from various regional combustion activities.

Additionally, wildfires are known sources of TCDD TEQ (USEPA, 2000), and Boeing has documented the presence of dioxins in burn areas within the region. The 2005 Topanga Fire swept through SSFL and denuded approximately 70% of the site, which resulted in an increased amount of soil erosion and runoff in storm water.

Boeing will continue to investigate sources of TCDD onsite. However, the presence of TCDD in both background soils and fire-related materials, is well documented in the scientific literature (USEPA, 2000) and substantiated by our on- and offsite studies (MWH, 2005; Attachments 1 and 2). These suggest that the TCDD TEQ being measured in surface water is coming from naturally occurring sources over which Boeing has no reasonable control. Continued monitoring of surface water will provide a more thorough dataset with which to further evaluate the occurrence of TCDD.



## DATA VALIDATION DISCUSSION

All analyses of sample discharges were conducted at a California-state certified laboratory for such analysis in accordance with current EPA guidelines, procedures, or as specified in the monitoring program. Data validation was performed on the analytical results and quality control elements were found to be within acceptable limits for all analytical methods reported, except as noted on the analytical summary tables. Laboratory analytical reports, including validation reports and notes, are included in Appendix G. Attachment T-A of the NPDES permit issued to the SSFL presents the State Water Resources Control Board (SWRCB) minimum levels (MLs) for use in reporting and determining compliance with NPDES permit limits. The analytical laboratory achieved these MLs for this reporting period. However, some constituents' daily maximum discharge limits in the NPDES permit are less than their respective MLs, and less than the laboratory reporting limit (RL). In cases where the permit limit is less than the RL and ML, the RL was used to determine compliance. The specific constituents that have permit limits that are less than the RL and ML are mercury (daily maximum permit limit of 0.10 ug/L and 0.13 ug/L, monthly average limit of 0.05 ug/L, RL of 0.2 ug/L), cyanide (monthly average limit of 4.3 ug/L), RL of 5.0 ug/L, and Bis- (2-ethylhexyl) phthalate (daily maximum permit limit of 4.0, RL of 5.0 ug/L). Of these compounds, during the 4<sup>th</sup> Quarter 2005, none were detected at concentrations equal to or greater than its RL.

## FACILITY CONTACT

If there are any questions regarding this report or its enclosures, you may contact Mr. Paul Costa at (818) 466-8778.

## CERTIFICATION

I certify under penalty of law that this document and all appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for a knowing violation.

Executed on the 15<sup>th</sup> of February 2006 at The Boeing Company, SSFL.

Sincerely,



Steve Lafflam  
Director, Remediation Programs and  
Safety, Health and Environmental Affairs  
Laser & Electro-Optical Systems





SL:po

Attachments: 1 – Onsite and Offsite Surface Water Sampling Locations  
2 – TCDD TEQ Concentrations in Surface Water from Onsite and Offsite Locations

Appendices: A Figure 1 Storm Water Drainage System and Outfall Locations  
B 4<sup>th</sup> Quarter 2005 Rainfall Data Summary  
C 4<sup>th</sup> Quarter 2005 Liquid Waste Shipment Summary Tables  
D 4<sup>th</sup> Quarter 2005 Summary Tables, Discharge Monitoring Data, Outfall 003 through 010 and 018  
E 4<sup>th</sup> Quarter 2005 13267 Sampling Results  
F 4<sup>th</sup> Quarter 2005 Summary of Permit Limit Exceedances  
G 4<sup>th</sup> Quarter 2005 Analytical Laboratory Reports and Chain-of-Custody

cc: Jim Pappas, Department of Toxic Substances Control  
Robert Marshall, California State University – Northridge, Library  
Dale Redfield, Simi Valley Library  
Lynn Light, Platt Branch, Los Angeles Library  
Stephen Baxter, Department of Toxic Substances Control

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References Cited:

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Higgins, Kenneth F., Arnold D. Kruse, and James L. Piehl. 1989. Effects of fire in the Northern Great Plains. U.S. Fish and Wildlife Service and Cooperative Extension Service, South Dakota State University, Brookings, South Dakota. Extension Circular 761. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/2000/fire/fire.htm> (Version 16 May 2000).

MWH. 2005 Standardized Risk Assessment Methodology (SRAM) Work Plan – Revision 2 Final, Santa Susana Field Laboratory, Ventura County, California. September.

USEPA. 2000. Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) -and Related Compounds. Part I: Estimating Exposure to Dioxin-Like Compounds. Volume 3: Properties, Environmental Levels, and Background Exposures. Draft. EPA/600/P-00/001Ac. Office of Research and Development, Washington, DC. March.

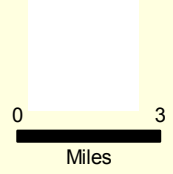




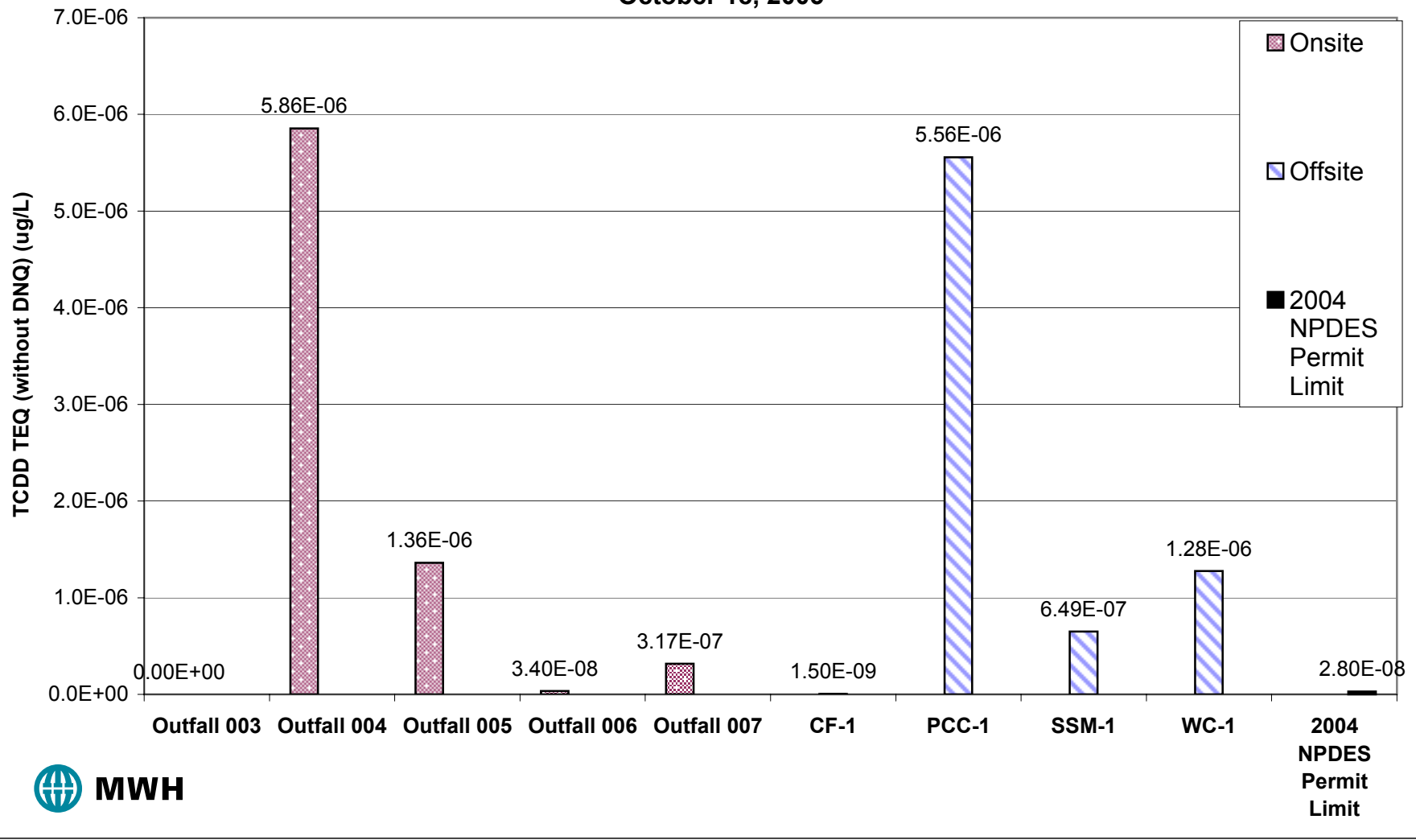
Attachment 1

Onsite  
and  
Offsite  
Sampling  
Locations

- Legend**
- Offsite Surface Water Monitoring Locations
  - Onsite Surface Water Monitoring Locations
  - National Parks/Forests
  - State Parks/Forests
  - Local Parks
  - Golf Courses
  - Military Installations
  - Prisons
  - Colleges/Universities
  - Amusement Parks
  - Cemeteries
  - Airports

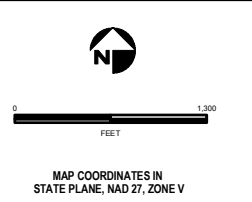
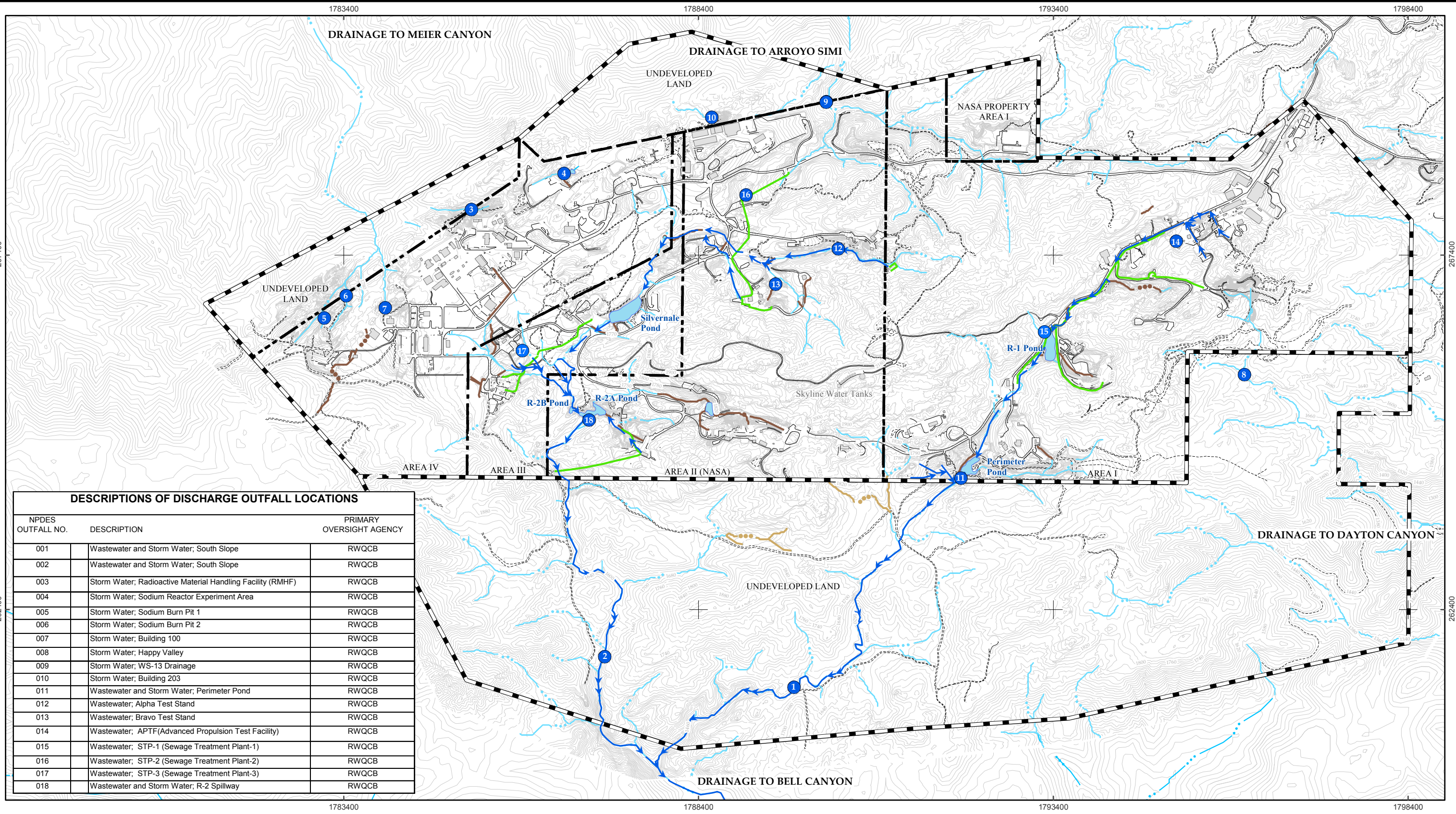


**Attachment 2**  
**TCDD TEQ (without DNQ) Concentrations in Surface Water**  
**from Onsite and Offsite Locations**  
**October 18, 2005**



APPENDIX A  
FIGURE 1

STORM WATER DRAINAGE SYSTEM AND OUTFALL LOCATIONS



- Legend**
- NPDES Outfalls (RWQCB Primary Oversight Authority)
  - Treated Effluent Pathways
  - HPDE Transmission Pipelines
  - Natural Drainage
  - Concrete Lined Drainage
  - Graded Drainage
  - Surface Water Reclamation Ponds

- Base Map Legend**
- SSFL Property Boundary
  - Administrative Area Boundary
  - Ground Elevation Contours
  - Drainage Pathways
  - A/C Curbing
  - Dirt Road
  - Existing Building or Structure

APPENDIX B

4<sup>th</sup> QUARTER 2005 RAINFALL DATA SUMMARY

TABLE B-1 (Page 1 of 3)  
DAILY RAINFALL SUMMARY

THE BOEING COMPANY-ROCKETDYNE  
NPDES PERMIT NUMBER  
CA0001309

Station: AREA4  
Parameter: Rain  
Month/Year: October 2005

OCTOBER 2005

Day	HOUR OF DAY																																					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23														
1	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	
2	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
3	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
4	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
5	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0.14	0.05	0.01	0	0	0	0	0	0.04	0.07	0.13	0.14	0.15	0	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
20	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.57	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.02	0.01	0.01	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D A Y    O F    T H E    M O N T H

INV Invalid data due to a power failure in the area caused by the Topanga Wildfires.

TABLE B-1 (Page 2 of 3)  
DAILY RAINFALL SUMMARY

THE BOEING COMPANY-ROCKETDYNE  
NPDES PERMIT NUMBER  
CA0001309

Station: AREA4  
Parameter: Rain  
Month/Year: November 2005

NOVEMBER 2005

HOUR OF DAY

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	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	0	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	0	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	0	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	0	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	0	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	0	0	0	0	0	0	0	0.02	0.07	0.08	0.15	0.08	0.04	0	0	0	0	0	0	0.02	0	0	0	0	0.01
10	0.01	0	0	0	0	0.03	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	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	0	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	0	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	0	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	0	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	0	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	0	0.14	0.5	0.01	0	0	0	0	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
18	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
19	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
20	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
21	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
22	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV	INV
23	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D A Y O F T H E M O N T H

INV Invalid data due to a power failure in the area caused by the Topanga Wildfires.



TABLE B-1 (Page 3 of 3)  
DAILY RAINFALL SUMMARY

THE BOEING COMPANY-ROCKETDYNE  
NPDES PERMIT NUMBER  
CA0001309

Station: AREA4  
Parameter: Rain  
Month/Year: December 2005  
DECEMBER 2005

Day	HOUR OF DAY																																					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23														
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0	0.01	0	0.01	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0.55	0.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0	0	0	0	0.01	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.02	0.03	0.01	0.01	0	0	0	0.01	0	0	0.01	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0.02	0.02	0.02	0.33	0.39	0.21	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D A Y O F T H E M O N T H

INV Invalid data due to a power failure in the area caused by the Topanga Wildfires.

APPENDIX C

4<sup>th</sup> QUARTER 2005 LIQUID WASTE SHIPMENTS SUMMARY  
TABLES

TABLE C-1  
 THE BOEING COMPANY - ROCKETDYNE  
 NPDES PERMIT CA0001309  
 LIQUID WASTE SHIPMENTS  
 October 2005

DATE SHIPPED	TYPE OF LIQUID	QTY.	LIMITS	TRANSPORTER	DESTINATION
10/3/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
10/3/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/3/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/6/2005	Waste Loosepac Flam Liq Waste Loosepac Corr Liq, Acid, Inorg Waste Labpac Nitric Acid not more than 70% Waste labpac hydrofluoric acid not more than 60% Waste Loosepac Corr Liq, Basic, Inorg Waste Mercury Contained in Mig Articles Waste Loosepac Non- RCRA Liquid Waste Loosepac Non- RCRA Liquid Waste Mixed Solvents Waste Mixed Solvents Waste Isopropanol Soln. Waste Hydrogen Peroxide Soln 10-20 Waste Mixed Acids - no metals Waste Mixed Acids - no metals Waste 301 Alkaline Cleaning Soln, KOH, NaOH Waste 301 Alkaline Cleaning Soln, KOH, NaOH Waste Antifreeze (N/R) Waste Oil / Water (N/R) Waste Oil / Water (N/R) Waste Antifreeze (N/R) Waste Water / Oil (N/R)	59 15 14 5 34 7 41 151 72 100 28 38 952 47 36 1069 258 259 925 757 125	LBS. LBS.	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702
10/11/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
10/11/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/11/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/24/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/24/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/24/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/24/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
10/31/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
10/31/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus

TABLE C-2  
 THE BOEING COMPANY - ROCKETDYNE  
 NPDES PERMIT CA0001309  
 LIQUID WASTE SHIPMENTS  
 November 2005

DATE SHIPPED	QTY.	UNITS	TRANSPORTER	DESTINATION
11/7/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/7/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/7/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
11/10/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/10/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
11/10/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/10/2005	36800	GAL	B/1301 non-haz rinse water	LACSD Saugus
11/14/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/14/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/14/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/14/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
11/16/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
11/16/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/16/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/16/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/21/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/21/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
11/21/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
11/28/2005	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus

TABLE C-2  
 THE BOEING COMPANY - ROCKETDYNE  
 NPDES PERMIT CA0001309  
 LIQUID WASTE SHIPMENTS  
 November 2005

DATE SHIPPED	QTY.	UNITS	TRANSPORTER	DESTINATION
11/28/2005	5000	GAL.	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA.	LACSD Carson.

TABLE C-3  
 THE BOEING COMPANY - ROCKETDYNE  
 NPDES PERMIT CA0001309  
 LIQUID WASTE SHIPMENTS  
 December 2005

DATE SHIPPED	TYPE OF LIQUID	QTY.	UNITS	TRANSPORTER	DESTINATION
12/5/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
12/5/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
12/12/2005	Alfa Kerosene Oil, Water Bulk	800	Grams	Ecology Control Industries (ECI) 204486 Normadle Ave, Torrance, CA 90502	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702
12/13/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
12/13/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
12/13/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
12/18/2005	WASTE WATER FROM AREA II SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Saugus
12/19/2005	WASTE WATER FROM AREA I SEWAGE TREATMENT PLANT	5000	GAL	SOUTHWEST PROCESSORS INC. 4120 BANDINI BLVD. LOS ANGELES, CA	LACSD Carson
12/22/2005	Waste Water / Oil (N/R)	24	LBS.	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702
	Waste Labpac N/R Isopropal liquid	6	LBS.		
	Waste Labpac N/R Isopropal liquid	32	LBS.		
	Waste Methanol Solution	286	LBS.		
	Waste Mixed Solvents	178	LBS.		
	Waste Mixed Acids - no metals	265	LBS.		
	Waste 301 Alkaline Cleaning Soln, KOH, NaOH	40	LBS.		
	Waste 301 Alkaline Cleaning Soln, KOH, NaOH	573	LBS.		
	Waste Oil / Water (N/R)	799	LBS.		
	Waste Oil / Water (N/R)	491	LBS.		
	Waste Water / Oil (N/R)	489	LBS.		
	Non RCRA Hazardous Liq with sludge	245	LBS.		
	Transformer with oil < 9 ppm PCB	1475	LBS.		
	Non-PCB Transformer	11053	LBS.	ONYX ENVIRONMENTAL SERVICES INC. 1704 W. FIRST ST. AZUSA, CA. 91702	ONYX ENVIRONMENTAL SERVICES INC. / PHOENIX
	Oil with 7 ppm PCB	2949	LBS.		

APPENDIX D

4<sup>th</sup> QUARTER 2005 SUMMARY TABLES, DISCHARGE MONITORING  
DATA, OUTFALLS 003 THROUGH 010, AND 018

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Notes:**

1. For Dioxins and Furans, laboratory results may have been reported in picograms/liter (pg/L). However, the permit limit is stated in micrograms/liter (µg/L). To evaluate permit compliance, the laboratory results have been converted to µg/L, as necessary, to calculate the TCDD TEQ.
2. TCDD TEQs for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's TEF. The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 40 of the NPDES permit.
3. For some sample dates, pH was determined with a field instrument and was noted as such. These results were not validated. Since pH does not have an RL, the possible pH range is shown in the RL column.
4. The NPDES permit limits for mercury of 0.10 µg/L (Outfalls 1-2) and 0.13 µg/L (Outfalls 3-7) are not achievable by the laboratory; therefore, the laboratory reporting limit of 0.20 µg/L was used to determine compliance.
5. The volume discharged at the Alfa Test Stand (Outfall 012) is estimated based on the run time of the test.
6. All of the following abbreviations and/or notes may not occur on every table.

---

-92.9 +/-200	A negative radiochemical analytical result indicates the count rate of the sample was less than the background condition
\$	reported result or other information was incorrectly reported by the laboratory; result was corrected by the data validator
--	based on validation of the data, a qualifier was not required
-/-	no permit limit established for daily maximum or monthly average
<(value)	analyte not detected at a concentration greater than or equal to the DL, MDL, or RL (see laboratory report for specific detail)
*	result not validated
*1	improper preservation of sample
*2	the ICP/MS ppb check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J)
*3	initial and or continuing calibration recoveries were outside acceptable control limits



**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

*5	blank spike/blank spike duplicate relative percent difference was outside the control limit
*10	value was estimated detect or estimated non detect (J,UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as Estimated Maximum Possible Concentration (EMPC) values
*11	no calibration was performed for this compound; result is reported as a tentatively identified compound (TIC)
ANR	analysis not required; e.g., constituent or outfall was not required by the permit to be sampled and analyzed (annual, semi-annual, etc.)
B	laboratory method blank contamination
C	calibration %RSD or %D were noncompliant
C5	Calibration verification %R was outside method control limits
%D	percent difference between the initial and continuing calibration relative response factors
deg F	degrees Fahrenheit
DL	detection limit
DNQ	detected but not quantified (constituent value greater than or equal to the laboratory method detection limit and less then the laboratory reporting limit)
E	duplicates show poor agreement
H	holding time was exceeded
I	ICP interference check solution results were unsatisfactory
J	estimated value
K	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 mg/l. Therefore, the reported result is an estimated value only.
L2	the laboratory control sample %R was below the method control limits
L	laboratory control sample %R was outside control limits
LOD	limit of detection
M1	matrix spike (MS) and/or MS duplicate were above the acceptance limits due to sample matrix interference
M2	the MS and/or MS duplicate were below the acceptance limits due to sample matrix interference
MDA	minimum detectable activity
MDL	method detection limit
MGD	million gallons per day
mg/L	milligrams per liter
ml/L/hr	milliliters per liter per hour
NA	not applicable; no permit limit established for the constituent and/or outfall
ND	analyte value less than the LOD or MDL
NM	not measured or determined
NTU	nephelometric turbidity unit
pCi/L	picocuries per liter
pg/L	picograms per liter
Q	matrix spike recovery outside of control limits

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

R	as a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified
R	(reason code in parentheses) %R for calibration not within control limits
RL	laboratory reporting limit
RL-1	reporting limit raised due to sample matrix effects
%RSD	percent relative standard deviation
S	surrogate recovery was outside control limits
TEQ	toxic equivalent
T	presumed contamination, as indicated by a detect in the trip blank
TU <sub>c</sub>	toxicity units (chronic)
U	result not detected
µg/L	micrograms per liter
UJ	result not detected at the estimated reporting limit
umhos/cm	micromhos per centimeter
WHO TEF	World Health Organization toxic equivalency factor
^	analysis not completed due to hold time exceedence or insufficient sample volume
+	False positive – reported compound was not present. Not applicable.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	100	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	ND < 0.072	U
Oil & Grease	mg/L	15/-	1.1	J (DNQ)
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	6.82	*
Sulfate	mg/L	250/-	80	--
Temperature	deg. F	86/-	61.5	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	850	--
Total Suspended Solids	mg/L	-/-	480	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	ND < 0.36	U
Antimony, dissolved	ug/L	-/-	0.73	*(DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.34	J (DNQ)
Cadmium, dissolved	ug/L	-/-	0.14	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	17	--
Copper, dissolved	ug/L	-/-	7.5	*
Lead	ug/L	-/-	11	--
Lead, dissolved	ug/L	-/-	1.1	*
Mercury	ug/L	0.13/-	ND < 0.063	U
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 003 (RMHF)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	2.50E-06	5.00E-05	8.50E-06	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	1.50E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	1.80E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.30E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.30E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.70E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.50E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	1.30E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.10E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	1.40E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.20E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	4.30E-06	1.00E-04	6.20E-05	J (DNQ)	0.0001	6.20E-09	ND
OCDF	1.60E-06	8.90E-06	ND	UJ (*10)	0.0001	ND	ND

TCDD TEQ w/DNQ Values	6.20E-09
TCDD TEQ w/out DNQ Values	ND

Dioxin TCDD TEQ compliance limit established for this outfall? Yes

TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	6.8	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1.3	--
Oil & Grease	mg/L	15/-	ND < 0.90	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.33	*
Sulfate	mg/L	250/-	5.5	--
Temperature	deg. F	86/-	60.1	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	110	--
Total Suspended Solids	mg/L	-/-	75	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	0.99	J (DNQ)
Antimony, dissolved	ug/L	-/-	1.2	*(DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.20	U (B)
Cadmium, dissolved	ug/L	-/-	0.041	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	7.0	--
Copper, dissolved	ug/L	-/-	2.0	*
Lead	ug/L	-/-	2.8	--
Lead, dissolved	ug/L	-/-	0.070	*(DNQ)
Mercury	ug/L	0.13/-	0.22	--
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR



**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 004 (SRE)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	3.40E-06	5.00E-05	4.90E-04	--	0.01	4.90E-06	4.90E-06
1,2,3,4,6,7,8-HpCDF	2.70E-06	5.00E-05	5.80E-05	--	0.01	5.80E-07	5.80E-07
1,2,3,4,7,8,9-HpCDF	2.90E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.10E-06	5.00E-05	6.70E-06	J (DNQ)	0.1	6.70E-07	ND
1,2,3,6,7,8-HxCDD	2.50E-06	5.00E-05	2.90E-05	J (DNQ)	0.1	2.90E-06	ND
1,2,3,6,7,8-HxCDF	2.30E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	2.00E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	2.20E-06	3.50E-06	ND	UJ (*10)	0.1	ND	ND
1,2,3,7,8-PeCDD	1.30E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	3.90E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.10E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	7.70E-07	5.70E-06	ND	UJ (*10)	0.5	ND	ND
2,3,7,8-TCDD	2.70E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.80E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	6.40E-06	1.00E-04	3.60E-03	--	0.0001	3.60E-07	3.60E-07
OCDF	2.70E-06	1.00E-04	1.50E-04	--	0.0001	1.50E-08	1.50E-08

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
9.43E-06	5.86E-06

Dioxin TCDD TEQ compliance limit established for this outfall? Yes

TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	27	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	16	--
Oil & Grease	mg/L	15/-	ND < 0.90	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.40	*
Sulfate	mg/L	250/-	18	--
Temperature	deg. F	86/-	57.0	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	540	--
Total Suspended Solids	mg/L	-/-	3000	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	ND < 0.36	U
Antimony, dissolved	ug/L	-/-	1.0	*(DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	1.6	J (DNQ)
Cadmium, dissolved	ug/L	-/-	0.049	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	30	--
Copper, dissolved	ug/L	-/-	4.2	*
Lead	ug/L	-/-	34	--
Lead, dissolved	ug/L	-/-	0.063	*(DNQ)
Mercury	ug/L	0.13/-	0.41	--
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through October 31, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR



**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	3.80E-06	5.00E-05	1.10E-04	--	0.01	1.10E-06	1.10E-06
1,2,3,4,6,7,8-HpCDF	3.40E-06	5.00E-05	1.10E-05	J (DNQ)	0.01	1.10E-07	ND
1,2,3,4,7,8,9-HpCDF	3.40E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	2.90E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	2.80E-06	2.80E-06	ND	UJ (*10)	0.1	ND	ND
1,2,3,6,7,8-HxCDF	2.90E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	2.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	3.60E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.90E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	3.50E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.60E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.70E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	3.10E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	2.60E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	6.90E-06	1.00E-04	2.60E-03	--	0.0001	2.60E-07	2.60E-07
OCDF	3.50E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>1.47E-06</b>
<b>TCDD TEQ w/out DNQ Values</b>	<b>1.36E-06</b>

Dioxin TCDD TEQ compliance limit established for this outfall? **Yes** TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	41	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	7.9	--
Oil & Grease	mg/L	15/-	ND < 0.94	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.30	*
Sulfate	mg/L	250/-	23	--
Temperature	deg. F	86/-	59.2	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	480	--
Total Suspended Solids	mg/L	-/-	520	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	0.42	J (DNQ)
Antimony, dissolved	ug/L	-/-	0.53	*(DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	ND < 1.0	U (B)
Cadmium, dissolved	ug/L	-/-	0.11	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	16	--
Copper, dissolved	ug/L	-/-	6.2	*
Lead	ug/L	-/-	12	--
Lead, dissolved	ug/L	-/-	0.76	*(DNQ)
Mercury	ug/L	0.13/-	0.13	J (DNQ)
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through October 31, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 006 (FSDF-2)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	4.40E-06	5.00E-05	3.00E-05	J (DNQ)	0.01	3.00E-07	ND
1,2,3,4,6,7,8-HpCDF	3.20E-06	5.00E-05	6.50E-06	J (DNQ)	0.01	6.50E-08	ND
1,2,3,4,7,8,9-HpCDF	3.10E-06	5.00E-05	4.20E-06	J (DNQ)	0.01	4.20E-08	ND
1,2,3,4,7,8-HxCDD	3.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	3.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	2.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	2.60E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	3.00E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	3.30E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.10E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	2.50E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	4.80E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	3.10E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	1.00E-05	1.00E-04	3.40E-04	--	0.0001	3.40E-08	3.40E-08
OCDF	3.90E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
	4.41E-07
	3.40E-08

Dioxin TCDD TEQ compliance limit established for this outfall? **Yes** TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 007 (Building 100)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	51	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	7.4	--
Oil & Grease	mg/L	15/-	ND < 0.89	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	6.93	*
Sulfate	mg/L	250/-	33	--
Temperature	deg. F	86/-	62.1	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	430	--
Total Suspended Solids	mg/L	-/-	670	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	6.2	--
Antimony, dissolved	ug/L	-/-	9.8	*
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.80	J (DNQ)
Cadmium, dissolved	ug/L	-/-	0.12	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	19	--
Copper, dissolved	ug/L	-/-	6.1	*
Lead	ug/L	-/-	20	--
Lead, dissolved	ug/L	-/-	1.8	*
Mercury	ug/L	0.13/-	0.10	J (DNQ)
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

**OUTFALL 007 (Building 100)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR



**OUTFALL 007 (Building 100)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 007 (Building 100)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through October 31, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

**OUTFALL 007 (Building 100)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	9.20E-06	5.00E-05	2.80E-05	--	0.01	2.80E-07	2.80E-07
1,2,3,4,6,7,8-HpCDF	3.60E-06	5.00E-05	6.90E-06	J (DNQ)	0.01	6.90E-08	ND
1,2,3,4,7,8,9-HpCDD	4.50E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.90E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	4.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	3.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	3.00E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	4.00E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	2.80E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	4.10E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.40E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.50E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	2.30E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	2.00E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	1.10E-05	1.00E-04	3.70E-04	--	0.0001	3.70E-08	3.70E-08
OCDF	7.70E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND
<b>TCDD TEQ w/ DNQ Values</b>						<b>3.86E-07</b>	<b>3.17E-07</b>
<b>TCDD TEQ w/out DNQ Values</b>							

Dioxin TCDD TEQ compliance limit established for this outfall? **Yes**

TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 008 (Happy Valley Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	4.6	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	8.0/-	0.95	--
Oil & Grease	mg/L	15/-	ND < 0.89	U
Perchlorate	ug/L	6.0/-	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	7.75	*
Sulfate	mg/L	300/-	14	--
Temperature	deg. F	86/-	59.9	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	950/-	270	--
Total Suspended Solids	mg/L	-/-	1300	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	-/-	0.54	J (DNQ)
Antimony, dissolved	ug/L	-/-	1.0	* (DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	-/-	ANR	ANR
Cadmium	ug/L	-/-	1.5	--
Cadmium, dissolved	ug/L	-/-	0.030	* (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	-/-	14	--
Copper, dissolved	ug/L	-/-	1.5	* (DNQ)
Lead	ug/L	-/-	120	--
Lead, dissolved	ug/L	-/-	0.76	* (DNQ)
Mercury	ug/L	-/-	0.14	J (DNQ)
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	-/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 008 (Happy Valley Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 008 (Happy Valley Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 008 (Happy Valley Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 008 (Happy Valley Drainage)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	3.20E-06	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	2.30E-06	5.00E-05	1.10E-05	I (DNQ)	0.01	1.10E-07	ND
1,2,3,4,7,8,9-HpCDF	3.60E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.10E-06	2.70E-06	ND	UJ (*10)	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.40E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.60E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	3.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	2.30E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.70E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	3.60E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	1.70E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.50E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	2.90E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	3.00E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	4.30E-06	1.00E-04	2.30E-04	--	0.0001	2.30E-08	2.30E-08
OCDF	2.00E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
1.33E-07	2.30E-08

Dioxin TCDD TEQ compliance limit established for this outfall? No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.



**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/17/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	7.5	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1.1	--
Oil & Grease	mg/L	15/-	ND < 0.94	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	8.80	*
Sulfate	mg/L	250/-	41	--
Temperature	deg. F	86/-	66.2	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	260	--
Total Suspended Solids	mg/L	-/-	4000	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	-/-	4.2	--
Antimony, dissolved	ug/L	-/-	5.2	*
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	-/-	9.2	--
Cadmium, dissolved	ug/L	-/-	0.057	*(DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	-/-	39	--
Copper, dissolved	ug/L	-/-	2.9	*
Lead	ug/L	-/-	260	--
Lead, dissolved	ug/L	-/-	2.0	*
Mercury	ug/L	-/-	0.21	--
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	-/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/17/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/17/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/17/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 009 (WS-13 Drainage)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 17, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	1.62E-02	--	0.01	1.62E-04	1.62E-04
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	2.12E-03	--	0.01	2.12E-05	2.12E-05
1,2,3,4,7,8,9-HpCDF	0.00E+00	2.50E-05	1.50E-04	--	0.01	1.50E-06	1.50E-06
1,2,3,4,7,8-HxCDD	0.00E+00	2.50E-05	2.66E-04	--	0.1	2.66E-05	2.66E-05
1,2,3,4,7,8-HxCDF	0.00E+00	2.50E-05	3.30E-04	--	0.1	3.30E-05	3.30E-05
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	7.56E-04	--	0.1	7.56E-05	7.56E-05
1,2,3,6,7,8-HxCDF	0.00E+00	2.50E-05	3.20E-04	J(*10)	0.1	3.20E-05	3.20E-05
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	5.67E-04	--	0.1	5.67E-05	5.67E-05
1,2,3,7,8,9-HxCDF	0.00E+00	2.50E-05	5.47E-05	--	0.1	5.47E-06	5.47E-06
1,2,3,7,8-PeCDD	0.00E+00	2.50E-05	1.62E-04	--	1	1.62E-04	1.62E-04
1,2,3,7,8-PeCDF	0.00E+00	2.50E-05	5.71E-04	--	0.05	2.86E-05	2.86E-05
2,3,4,6,7,8-HxCDF	0.00E+00	2.50E-05	1.78E-04	--	0.1	1.78E-05	1.78E-05
2,3,4,7,8-PeCDF	0.00E+00	2.50E-05	3.69E-04	--	0.5	1.85E-04	1.85E-04
2,3,7,8-TCDD	0.00E+00	5.00E-06	3.43E-05	--	1	3.43E-05	3.43E-05
2,3,7,8-TCDF	0.00E+00	5.00E-06	4.19E-04	--	0.1	4.19E-05	4.19E-05
OCDD	0.00E+00	5.00E-05	2.51E-01	--	0.0001	2.51E-05	2.51E-05
OCDF	0.00E+00	5.00E-05	9.15E-03	--	0.0001	9.15E-07	9.15E-07

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
9.09E-04	9.09E-04

Dioxin TCDD TEQ compliance limit established for this outfall? **No** TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 010 (Building 203)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	45	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	2.5	--
Oil & Grease	mg/L	15/-	ND < 0.94	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.14	*
Sulfate	mg/L	250/-	50	--
Temperature	deg. F	86/-	60.3	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	320	--
Total Suspended Solids	mg/L	-/-	86	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	-/-	20	--
Antimony, dissolved	ug/L	-/-	26	*
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	-/-	0.35	J (DNQ)
Cadmium, dissolved	ug/L	-/-	0.16	* (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	-/-	13	--
Copper, dissolved	ug/L	-/-	6.2	*
Lead	ug/L	-/-	79	--
Lead, dissolved	ug/L	-/-	2.4	*
Mercury	ug/L	-/-	0.097	J (DNQ)
Mercury, dissolved	ug/L	-/-	ND < 0.050	*
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	-/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 010 (Building 203)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 010 (Building 203)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.



**OUTFALL 010 (Building 203)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through October 31, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005	
			RESULT	VALIDATION QUALIFIER
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 010 (Building 203)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date October 18, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	5.95E-05	--	0.01	5.95E-07	5.95E-07
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	3.11E-05	--	0.01	3.11E-07	3.11E-07
1,2,3,4,7,8,9-HpCDF	0.00E+00	2.50E-05	5.76E-06	J (DNQ)	0.01	5.76E-08	ND
1,2,3,4,7,8-HxCDD	0.00E+00	2.50E-05	5.44E-06	J (DNQ)	0.1	5.44E-07	ND
1,2,3,4,7,8-HxCDF	0.00E+00	2.50E-05	2.27E-05	J (DNQ)	0.1	2.27E-06	ND
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	9.06E-06	J (DNQ)	0.1	9.06E-07	ND
1,2,3,6,7,8-HxCDF	0.00E+00	2.50E-05	1.80E-05	J (DNQ)	0.1	1.80E-06	ND
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	7.74E-06	J (DNQ)	0.1	7.74E-07	ND
1,2,3,7,8,9-HxCDF	0.00E+00	2.50E-05	5.84E-06	J (DNQ)	0.1	5.84E-07	ND
1,2,3,7,8-PeCDD	0.00E+00	2.50E-05	8.11E-06	J (DNQ)	1	8.11E-06	ND
1,2,3,7,8-PeCDF	0.00E+00	2.50E-05	2.52E-05	--	0.05	1.26E-06	1.26E-06
2,3,4,6,7,8-HxCDF	0.00E+00	2.50E-05	1.31E-05	J (DNQ)	0.1	1.31E-06	ND
2,3,4,7,8-PeCDF	0.00E+00	2.50E-05	2.59E-05	--	0.5	1.30E-05	1.30E-05
2,3,7,8-TCDD	0.00E+00	5.00E-06	2.94E-06	J (DNQ)	1	2.94E-06	ND
2,3,7,8-TCDF	0.00E+00	5.00E-06	2.30E-05	--	0.1	2.30E-06	2.30E-06
OCDD	0.00E+00	5.00E-05	3.37E-04	--	0.0001	3.37E-08	3.37E-08
OCDF	0.00E+00	5.00E-05	5.02E-05	--	0.0001	5.02E-09	5.02E-09

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values	TCDD TEQ PERMIT LIMIT = NA
3.68E-05	1.75E-05	

Dioxin TCDD TEQ compliance limit established for this outfall? No

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	98	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	2.9	--
Oil & Grease	mg/L	15/-	1.1	J (DNQ)
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	9.40	*
Sulfate	mg/L	250/-	99	--
Temperature	deg. F	86/-	59.7	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	590	--
Total Suspended Solids	mg/L	-/-	19	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	35	--
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.22	J (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	7.1	--
Lead	ug/L	-/-	1.4	--
Mercury	ug/L	0.13/-	ND < 0.20	UJ (B)
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 003 (RMHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 003 (RMHF)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date November 9, 2005

ANALYTE	LAB LOD (ug/L)	LAB RI (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEQ	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)	
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	1.73E-05	J (DNQ)	0.01	1.73E-07	ND	
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.71E-06	ND	UJ (*10)	0.01	ND	ND	
1,2,3,4,7,8,9-HpCDF	1.88E-06	5.00E-05	ND	U	0.01	ND	ND	
1,2,3,4,7,8-HxCDD	2.32E-06	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,4,7,8-HxCDF	9.51E-07	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,6,7,8-HxCDD	2.26E-06	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,6,7,8-HxCDF	9.08E-07	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,7,8,9-HxCDD	2.29E-06	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,7,8,9-HxCDF	1.63E-06	5.00E-05	ND	U	0.1	ND	ND	
1,2,3,7,8-PeCDD	1.00E-06	5.00E-05	ND	U	1	ND	ND	
1,2,3,7,8-PeCDF	2.23E-06	5.00E-05	ND	U	0.05	ND	ND	
2,3,4,6,7,8-HxCDF	1.05E-06	5.00E-05	ND	U	0.1	ND	ND	
2,3,4,7,8-PeCDF	0.00E+00	1.81E-06	ND	UJ (*10)	0.5	ND	ND	
2,3,7,8-TCDD	1.01E-06	1.00E-05	ND	U	1	ND	ND	
2,3,7,8-TCDF	0.00E+00	1.72E-06	ND	UJ (*10)	0.1	ND	ND	
OCDD	0.00E+00	1.00E-04	1.45E-04	--	0.0001	1.45E-08	1.45E-08	
OCDF	0.00E+00	1.00E-04	5.10E-06	J (DNQ)	0.0001	5.10E-10	ND	
TCDD TEQ w/ DNQ Values							1.88E-07	
TCDD TEQ w/out DNQ Values								1.45E-08

Dioxin TCDD TEQ compliance limit established for this outfall? Yes TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	14	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	2.4	--
Oil & Grease	mg/L	15/-	1.7	J (DNQ)
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.50	*
Sulfate	mg/L	250/-	11	--
Temperature	deg. F	86/-	61.0	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	190	--
Total Suspended Solids	mg/L	-/-	64	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	4.0	--
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.21	J (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	11	--
Lead	ug/L	-/-	2.7	--
Mercury	ug/L	0.13/-	0.065	J (B, DNQ)
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.



**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 004 (SRE)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 004 (SRE)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date November 9, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	2.09E-04	--	0.01	2.09E-06	2.09E-06
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	2.76E-05	--	0.01	2.76E-07	2.76E-07
1,2,3,4,7,8,9-HpCDF	2.99E-06	2.50E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	0.00E+00	2.50E-05	2.48E-06	J (DNQ)	0.1	2.48E-07	ND
1,2,3,4,7,8-HxCDF	0.00E+00	2.50E-05	5.10E-06	J (DNQ)	0.1	5.10E-07	ND
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	6.93E-06	J (DNQ)	0.1	6.93E-07	ND
1,2,3,6,7,8-HxCDF	0.00E+00	4.74E-06	ND	UJ (*10)	0.1	ND	ND
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	3.24E-06	J (DNQ)	0.1	3.24E-07	ND
1,2,3,7,8,9-HxCDF	1.65E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	0.00E+00	2.50E-05	1.68E-06	J (DNQ)	1	1.68E-06	ND
1,2,3,7,8-PeCDF	0.00E+00	2.50E-05	7.24E-06	J (DNQ)	0.05	3.62E-07	ND
2,3,4,6,7,8-HxCDF	0.00E+00	2.50E-05	4.81E-06	J (DNQ)	0.1	4.81E-07	ND
2,3,4,7,8-PeCDF	0.00E+00	2.50E-05	9.57E-06	J (DNQ)	0.5	4.79E-06	ND
2,3,7,8-TCDD	1.19E-06	5.00E-06	ND	U	1	ND	ND
2,3,7,8-TCDF	0.00E+00	5.00E-06	7.42E-06	--	0.1	7.42E-07	7.42E-07
OCDD	0.00E+00	5.00E-05	3.18E-03	--	0.0001	3.18E-07	3.18E-07
OCDF	0.00E+00	5.00E-05	7.64E-05	--	0.0001	7.64E-09	7.64E-09

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
1.25E-05	3.43E-06

Dioxin TCDD TEQ compliance limit established for this outfall? Yes

TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	62	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	6.6	--
Oil & Grease	mg/L	15/-	0.96	J (DNQ)
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.70	*
Sulfate	mg/L	250/-	25	--
Temperature	deg. F	86/-	60.8	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	370	--
Total Suspended Solids	mg/L	-/-	540	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	3.4	J (DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.51	J (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	20	--
Lead	ug/L	-/-	10	--
Mercury	ug/L	0.13/-	ND < 0.20	UJ (B)
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis- 1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 005 (FSDF-1)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR



OUTFALL 005 (FSDF-1)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date November 9, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)	
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	1.37E-04	--	0.01	1.37E-06	1.37E-06	
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	6.11E-06	J (DNQ)	0.01	6.11E-08	ND	
1,2,3,4,7,8,9-HpCDF	1.44E-06	2.50E-05	ND	U	0.01	ND	ND	
1,2,3,4,7,8-HxCDD	2.43E-06	2.50E-05	ND	U (+)	0.1	ND	ND	
1,2,3,4,7,8-HxCDF	1.19E-06	2.50E-05	ND	U	0.1	ND	ND	
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	2.24E-06	J (DNQ)	0.1	2.24E-07	ND	
1,2,3,6,7,8-HxCDF	1.19E-06	2.50E-05	ND	U	0.1	ND	ND	
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	1.68E-06	J (DNQ)	0.1	1.68E-07	ND	
1,2,3,7,8,9-HxCDF	2.13E-06	2.50E-05	ND	U	0.1	ND	ND	
1,2,3,7,8-PeCDD	9.86E-07	2.50E-05	ND	U	1	ND	ND	
1,2,3,7,8-PeCDF	0.00E+00	1.05E-06	ND	UJ (*10)	0.05	ND	ND	
2,3,4,6,7,8-HxCDF	1.34E-06	2.50E-05	ND	U	0.1	ND	ND	
2,3,4,7,8-PeCDF	0.00E+00	2.50E-05	1.81E-06	J (DNQ)	0.5	9.05E-07	ND	
2,3,7,8-TCDD	1.28E-06	5.00E-06	ND	U	1	ND	ND	
2,3,7,8-TCDF	0.00E+00	5.00E-06	1.48E-06	J (DNQ)	0.1	1.48E-07	ND	
OCDD	0.00E+00	5.00E-05	3.92E-03	--	0.0001	3.92E-07	3.92E-07	
OCDF	0.00E+00	5.00E-05	1.59E-05	J (DNQ)	0.0001	1.59E-09	ND	
TCDD TEQ w/ DNQ Values							3.27E-06	
TCDD TEQ w/out DNQ Values								1.76E-06

Dioxin TCDD TEQ compliance limit established for this outfall? **Yes**

TCDD TEQ PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	49	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	4.9	--
Oil & Grease	mg/L	15/-	ND < 0.99	U
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.90	*
Sulfate	mg/L	250/-	31	--
Temperature	deg. F	86/-	62.2	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	550	--
Total Suspended Solids	mg/L	-/-	710	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	6.0/-	1.3	J (DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	4.0/-	0.91	J (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	14.0/-	34	--
Lead	ug/L	-/-	29	--
Mercury	ug/L	0.13/-	0.89	--
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	2.0/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR

**OUTFALL 006 (FSDF-2)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 006 (FSDF-2)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date November 9, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	1.71E-04	--	0.01	1.71E-06	1.71E-06
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	2.32E-05	J (DNQ)	0.01	2.32E-07	ND
1,2,3,4,7,8,9-HpCDF	0.00E+00	2.50E-05	3.36E-06	J (DNQ)	0.01	3.36E-08	ND
1,2,3,4,7,8-HxCDD	0.00E+00	2.50E-05	3.94E-06	J (DNQ)	0.1	3.94E-07	ND
1,2,3,4,7,8-HxCDF	0.00E+00	2.50E-05	2.69E-06	J (DNQ)	0.1	2.69E-07	ND
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	7.07E-06	J (DNQ)	0.1	7.07E-07	ND
1,2,3,6,7,8-HxCDF	0.00E+00	2.50E-05	1.71E-06	J (DNQ)	0.1	1.71E-07	ND
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	5.34E-06	J (DNQ)	0.1	5.34E-07	ND
1,2,3,7,8,9-HxCDF	1.47E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	0.00E+00	1.48E-06	ND	UJ (*10)	1	ND	ND
1,2,3,7,8-PeCDF	1.18E-06	2.50E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	0.00E+00	2.50E-05	2.00E-06	J (DNQ)	0.1	2.00E-07	ND
2,3,4,7,8-PeCDF	0.00E+00	2.50E-05	1.69E-06	J (DNQ)	0.5	8.45E-07	ND
2,3,7,8-TCDD	9.66E-07	5.00E-06	ND	U	1	ND	ND
2,3,7,8-TCDF	0.00E+00	5.00E-06	1.72E-06	J (DNQ)	0.1	1.72E-07	ND
OCDD	0.00E+00	5.00E-05	1.80E-03	--	0.0001	1.80E-07	1.80E-07
OCDF	0.00E+00	5.00E-05	4.69E-05	J (DNQ)	0.0001	4.69E-09	ND

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values
5.45E-06	1.89E-06

Dioxin TCDD TEQ compliance limit established for this outfall? **Yes** **TCDD TEQ PERMIT LIMIT = 2.80E-08**

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Chloride	mg/L	150/-	11	--
Fluoride	mg/L	1.6/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	0.90	--
Oil & Grease	mg/L	15/-	1.1	J (DNQ)
Perchlorate	ug/L	6.0/-	ANR	ANR
pH (Field)	pH units	6.5-8.5/-	7.25	*
Sulfate	mg/L	250/-	38	--
Temperature	deg. F	86/-	61.2	*
Total Cyanide	ug/L	-/-	ANR	ANR
Total Dissolved Solids	mg/L	850/-	200	--
Total Suspended Solids	mg/L	-/-	19	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Aluminum	ug/L	-/-	ANR	ANR
Antimony	ug/L	-/-	0.74	J (DNQ)
Arsenic	ug/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	1.0/-	ANR	ANR
Cadmium	ug/L	-/-	0.071	J (DNQ)
Chromium	ug/L	-/-	ANR	ANR
Copper	ug/L	-/-	6.4	--
Lead	ug/L	-/-	3.3	--
Mercury	ug/L	-/-	ND < 0.20	UJ (B)
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	-/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	ANR	ANR
Chloroform	ug/L	-/-	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Tetrachloroethene	ug/L	-/-	ANR	ANR
Toluene	ug/L	-/-	ANR	ANR
Xylenes (Total)	ug/L	-/-	ANR	ANR
1,1,1-Trichloroethane	ug/L	-/-	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	ANR	ANR
Trichloroethene	ug/L	-/-	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	ANR	ANR
Vinyl chloride	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.



**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ANR	ANR
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ANR	ANR
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR

See attached notes for abbreviations, definitions and other explanations for the data presented.

**OUTFALL 009 (WS-13 Drainage)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ANR	ANR
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ANR	ANR
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR

OUTFALL 009 (WS-13 Drainage)

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

Sample Date November 9, 2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/E)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	5.37E-05	--	0.01	5.37E-07	5.37E-07
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	1.74E-05	J (DNQ)	0.01	1.74E-07	ND
1,2,3,4,7,8,9-HpCDF	0.00E+00	2.50E-05	1.95E-06	J (DNQ)	0.01	1.95E-08	ND
1,2,3,4,7,8-HxCDD	1.15E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	5.89E-07	2.50E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	0.00E+00	2.50E-05	3.02E-06	J (DNQ)	0.1	3.02E-07	ND
1,2,3,6,7,8-HxCDF	5.59E-07	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	0.00E+00	2.50E-05	2.70E-06	J (DNQ)	0.1	2.70E-07	ND
1,2,3,7,8,9-HxCDF	1.09E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	6.56E-07	2.50E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.11E-06	2.50E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.67E-07	2.50E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	9.86E-07	2.50E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	7.03E-07	5.00E-06	ND	U	1	ND	ND
2,3,7,8-TCDF	7.79E-07	5.00E-06	ND	U	0.1	ND	ND
OCDD	0.00E+00	5.00E-05	6.88E-04	--	0.0001	6.88E-08	6.88E-08
OCDF	0.00E+00	5.00E-05	8.55E-05	--	0.0001	8.55E-09	8.55E-09

TCDD TEQ w/ DNQ Values	TCDD TEQ w/out DNQ Values	TCDD TEQ PERMIT LIMIT = NA
1.38E-06	6.14E-07	

Dioxin TCDD TEQ compliance limit established for this outfall? No

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	2.4	--
Chloride	mg/L	-/-	36	--
Specific Conductivity (Lab)	umhos/cm	-/-	640	--
Surfactants (MBAS)	mg/L	-/-	0.089	J (DNQ, *10)
Fluoride	mg/L	-/-	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	ND < 0.080	U
Oil & Grease	mg/L	-/-	ND < 0.90	U
Perchlorate	ug/L	-/-	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	7.22	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U
Sulfate	mg/L	-/-	89	--
Temperature	deg. F	86/-	60.8	*
Total Cyanide	ug/L	-/-	ND < 2.2	U
Total Dissolved Solids	mg/L	-/-	420	--
Total Organic Carbon	mg/L	-/-	ANR	ANR
Total Residual Chlorine	mg/L	-/-	ANR	ANR
Total Suspended Solids	mg/L	-/-	ND < 10	U
Turbidity	NTU	-/-	3.6	--
Volume Discharged	MGD	-/-	ANR	ANR
<b>METALS</b>				
Antimony	ug/L	-/-	ANR	ANR
Arsenic	ug/L	-/-	ANR	ANR
Barium	mg/L	-/-	ANR	ANR
Beryllium	ug/L	-/-	ANR	ANR
Boron	mg/L	-/-	ANR	ANR
Cadmium	ug/L	-/-	ANR	ANR
Chromium	ug/L	-/-	ANR	ANR
Chromium VI	ug/L	-/-	ANR	ANR
Cobalt	ug/L	-/-	ANR	ANR
Copper	ug/L	-/-	ND < 2.0	U (B)
Iron	mg/L	-/-	ANR	ANR
Lead	ug/L	-/-	ND < 1.0	U (B)
Manganese	ug/L	-/-	ANR	ANR
Mercury	ug/L	-/-	ND < 0.063	U
Nickel	ug/L	-/-	ANR	ANR
Selenium	ug/L	-/-	ANR	ANR

**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Silver	ug/L	-/-	ANR	ANR
Thallium	ug/L	-/-	ANR	ANR
Vanadium	ug/L	-/-	ANR	ANR
Zinc	ug/L	-/-	ANR	ANR
<b>ORGANICS</b>				
Benzene	ug/L	-/-	ND < 0.28	U
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.42	U
1,4-Dioxane	ug/L	-/-	ANR	ANR
Ethylbenzene	ug/L	-/-	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U
<b>TPH</b>				
EFH (C13 - C22)	ug/L	-/-	ANR	ANR
GRO (C4 - C12)	ug/L	-/-	ANR	ANR
TRPH	ug/L	-/-	ANR	ANR
<b>ADDITIONAL ANALYTES</b>				
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ANR	ANR
1,1,2,2-Tetrachloroethane	ug/L	-/-	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.096	U
2,4-Dichlorophenol	ug/L	-/-	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	ANR	ANR

**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

November 1 through November 30, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
2,4-Dinitrophenol	ug/L	-/-	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.22	U
2,6-Dinitrotoluene	ug/L	-/-	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	ANR	ANR
2-Chlorophenol	ug/L	-/-	ANR	ANR
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ANR	ANR
2-Nitrophenol	ug/L	-/-	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	ANR	ANR
4,4'-DDD	ug/L	-/-	ANR	ANR
4,4'-DDE	ug/L	-/-	ANR	ANR
4,4'-DDT	ug/L	-/-	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	ANR	ANR
4-Nitrophenol	ug/L	-/-	ANR	ANR
Acenaphthene	ug/L	-/-	ANR	ANR
Acrolein	ug/L	-/-	ANR	ANR
Acrylonitrile	ug/L	-/-	ANR	ANR
Acute Toxicity	% SURVIVAL	70-100/-	ANR	ANR
Aldrin	ug/L	-/-	ANR	ANR
alpha-BHC	ug/L	-/-	ND < 0.00096	U
Anthracene	ug/L	-/-	ANR	ANR
Aroclor-1016	ug/L	-/-	ANR	ANR
Aroclor-1221	ug/L	-/-	ANR	ANR
Aroclor-1232	ug/L	-/-	ANR	ANR
Aroclor-1242	ug/L	-/-	ANR	ANR
Aroclor-1248	ug/L	-/-	ANR	ANR
Aroclor-1254	ug/L	-/-	ANR	ANR
Aroclor-1260	ug/L	-/-	ANR	ANR
Benzidine	ug/L	-/-	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	ANR	ANR
Benzo(g,h,i)perylene	ug/L	-/-	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	ANR	ANR
beta-BHC	ug/L	-/-	ANR	ANR
bis (2-Chloroethyl) ether	ug/L	-/-	ANR	ANR

**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND <4.8	U (B)
bis(2-Chloroethoxy) methane	ug/L	-/-	ANR	ANR
bis(2-Chloroisopropyl) ether	ug/L	-/-	ANR	ANR
Bromodichloromethane	ug/L	-/-	ANR	ANR
Bromoform	ug/L	-/-	ANR	ANR
Bromomethane	ug/L	-/-	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	ANR	ANR
Chlordane	ug/L	-/-	ANR	ANR
Chlorobenzene	ug/L	-/-	ANR	ANR
Chloroethane	ug/L	-/-	ANR	ANR
Chloromethane	ug/L	-/-	ANR	ANR
Chronic Toxicity	TUC	1.0/-	ANR	ANR
Chrysene	ug/L	-/-	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	ANR	ANR
Cyclohexane	ug/l	-/-	ANR	ANR
delta-BHC	ug/L	-/-	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	ANR	ANR
Dibromochloromethane	ug/L	-/-	ANR	ANR
Dieldrin	ug/L	-/-	ANR	ANR
Diethylphthalate	ug/L	-/-	ANR	ANR
Dimethylphthalate	ug/L	-/-	ANR	ANR
Di-n-butylphthalate	ug/L	-/-	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	ANR	ANR
Endosulfan I	ug/L	-/-	ANR	ANR
Endosulfan II	ug/L	-/-	ANR	ANR
Endosulfan sulfate	ug/L	-/-	ANR	ANR
Endrin	ug/L	-/-	ANR	ANR
Endrin aldehyde	ug/L	-/-	ANR	ANR
Fluoranthene	ug/L	-/-	ANR	ANR
Fluorene	ug/L	-/-	ANR	ANR
Heptachlor	ug/L	-/-	ANR	ANR
Heptachlor epoxide	ug/L	-/-	ANR	ANR
Hexachlorobenzene	ug/L	-/-	ANR	ANR
Hexachlorobutadiene	ug/l	-/-	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	ANR	ANR
Hexachloroethane	ug/L	-/-	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ANR	ANR
Isophorone	ug/L	-/-	ANR	ANR

**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**November 1 through November 30, 2005**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005	
			RESULT	VALIDATION QUALIFIER
Lindane (gamma-BHC)	ug/L	-/-	ANR	ANR
Methylene Chloride	ug/L	-/-	ANR	ANR
Monomethyl Hydrazine	ug/L	-/-	ANR	ANR
Naphthalene	ug/L	-/-	ANR	ANR
Nitrobenzene	ug/L	-/-	ANR	ANR
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.21	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ANR	ANR
n-Nitrosodiphenylamine	ug/L	-/-	ANR	ANR
Pentachlorophenol	ug/L	-/-	ND < 0.75	U
Phenanthrene	ug/L	-/-	ANR	ANR
Phenol	ug/L	-/-	ANR	ANR
Pyrene	ug/L	-/-	ANR	ANR
Toxaphene	ug/L	-/-	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	ANR	ANR



**OUTFALL 018 (R-2 Spillway)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Sample Date 11/9/2005

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	2.50E-05	1.43E-05	J (DNQ)	0.01	1.43E-07	ND
1,2,3,4,6,7,8-HpCDF	0.00E+00	2.50E-05	1.87E-06	J (DNQ)	0.01	1.87E-08	ND
1,2,3,4,7,8,9-HpCDF	1.25E-06	2.50E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.29E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	8.09E-07	2.50E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.62E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.12E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	3.47E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.29E-06	2.50E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.33E-06	2.50E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	2.10E-06	2.50E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	8.41E-07	2.50E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	2.00E-06	2.50E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	7.63E-07	5.00E-06	ND	U	1	ND	ND
2,3,7,8-TCDF	1.15E-06	5.00E-06	ND	U	0.1	ND	ND
OCDD	0.00E+00	5.00E-05	1.64E-04	--	0.0001	1.64E-08	1.64E-08
OCDF	0.00E+00	5.00E-05	6.42E-06	J (DNQ)	0.0001	6.42E-10	ND

TCDD TEQ w/ DNQ Values	1.79E-07
TCDD TEQ w/out DNQ Values	1.64E-08

Dioxin TCDD TEQ compliance limit established for this outfall? **No** TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

APPENDIX E

4<sup>th</sup> QUARTER 2005 SECTION 13267 SUMMARY TABLES,  
DISCHARGE MONITORING DATA, OUTFALL 003

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Notes:**

1. For Dioxins and Furans, laboratory results may have been reported in picograms/liter (pg/L). However, the permit limit is stated in micrograms/liter (µg/L). To evaluate permit compliance, the laboratory results have been converted to µg/L, as necessary, to calculate the TCDD TEQ.
2. TCDD TEQs for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's TEF. The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 40 of the NPDES permit.
3. For some sample dates, pH was determined with a field instrument and was noted as such. These results were not validated. Since pH does not have an RL, the possible pH range is shown in the RL column.
4. The NPDES permit limits for mercury of 0.10 µg/L (Outfalls 1-2) and 0.13 µg/L (Outfalls 3-7) are not achievable by the laboratory; therefore, the laboratory reporting limit of 0.20 µg/L was used to determine compliance.
5. The volume discharged at the Alfa Test Stand (Outfall 012) is estimated based on the run time of the test.
6. All of the following abbreviations and/or notes may not occur on every table.

---

-92.9 +/-200	A negative radiochemical analytical result indicates the count rate of the sample was less than the background condition
\$	reported result or other information was incorrectly reported by the laboratory; result was corrected by the data validator
--	based on validation of the data, a qualifier was not required
-/-	no permit limit established for daily maximum or monthly average
<(value)	analyte not detected at a concentration greater than or equal to the DL, MDL, or RL (see laboratory report for specific detail)
*	result not validated
*1	improper preservation of sample
*2	the ICP/MS ppb check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J)
*3	initial and or continuing calibration recoveries were outside acceptable control limits

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

*5	blank spike/blank spike duplicate relative percent difference was outside the control limit
*10	value was estimated detect or estimated non detect (J,UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as Estimated Maximum Possible Concentration (EMPC) values
*11	no calibration was performed for this compound; result is reported as a tentatively identified compound (TIC)
ANR	analysis not required; e.g., constituent or outfall was not required by the permit to be sampled and analyzed (annual, semi-annual, etc.)
B	laboratory method blank contamination
C	calibration %RSD or %D were noncompliant
C5	Calibration verification %R was outside method control limits
%D	percent difference between the initial and continuing calibration relative response factors
deg F	degrees Fahrenheit
DL	detection limit
DNQ	detected but not quantified (constituent value greater than or equal to the laboratory method detection limit and less than the laboratory reporting limit)
E	duplicates show poor agreement
H	holding time was exceeded
I	ICP interference check solution results were unsatisfactory
J	estimated value
K	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 mg/l. Therefore, the reported result is an estimated value only.
L2	the laboratory control sample %R was below the method control limits
L	laboratory control sample %R was outside control limits
LOD	limit of detection
M1	matrix spike (MS) and/or MS duplicate were above the acceptance limits due to sample matrix interference
M2	the MS and/or MS duplicate were below the acceptance limits due to sample matrix interference
MDA	minimum detectable activity
MDL	method detection limit
MGD	million gallons per day
mg/L	milligrams per liter
ml/L/hr	milliliters per liter per hour
NA	not applicable; no permit limit established for the constituent and/or outfall
ND	analyte value less than the LOD or MDL
NM	not measured or determined
NTU	nephelometric turbidity unit
pCi/L	picocuries per liter
pg/L	picograms per liter
Q	matrix spike recovery outside of control limits

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

R	as a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified
R	(reason code in parentheses) %R for calibration not within control limits
RL	laboratory reporting limit
RL-1	reporting limit raised due to sample matrix effects
%RSD	percent relative standard deviation
S	surrogate recovery was outside control limits
TEQ	toxic equivalent
T	presumed contamination, as indicated by a detect in the trip blank
TU <sub>c</sub>	toxicity units (chronic)
U	result not detected
µg/L	micrograms per liter
UJ	result not detected at the estimated reporting limit
umhos/cm	micromhos per centimeter
WHO TEF	World Health Organization toxic equivalency factor
^	analysis not completed due to hold time exceedence or insufficient sample volume
+	False positive – reported compound was not present. Not applicable.

**OUTFALL 003 (RMIHF)**

**FOURTH QUARTER 2005 REPORTING SUMMARY  
THE BOEING COMPANY-ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2005

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005			11/9/2005		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b> Strontium-90 (unfiltered)	pCi/L	8.0/-	8.44 ±1.3	0.992	J (H)	0.517 ±0.26	0.414	J (H)

APPENDIX F

4<sup>th</sup> QUARTER 2005 SUMMARY OF PERMIT LIMIT EXCEEDENCES

**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Notes:**

1. For Dioxins and Furans, laboratory results may have been reported in picograms/liter (pg/L). However, the permit limit is stated in micrograms/liter ( $\mu\text{g/L}$ ). To evaluate permit compliance, the laboratory results have been converted to  $\mu\text{g/L}$ , as necessary, to calculate the TCDD TEQ.
2. TCDD TEQs for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's TEF. The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 40 of the NPDES permit.
3. For some sample dates, pH was determined with a field instrument and was noted as such. These results were not validated. Since pH does not have an RL, the possible pH range is shown in the RL column.
4. The NPDES permit limits for mercury of 0.10  $\mu\text{g/L}$  (Outfalls 1-2) and 0.13  $\mu\text{g/L}$  (Outfalls 3-7) are not achievable by the laboratory; therefore, the laboratory reporting limit of 0.20  $\mu\text{g/L}$  was used to determine compliance.
5. The volume discharged at the Alfa Test Stand (Outfall 012) is estimated based on the run time of the test.
6. All of the following abbreviations and/or notes may not occur on every table.

---

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\$	reported result or other information was incorrectly reported by the laboratory; result was corrected by the data validator
--	based on validation of the data, a qualifier was not required
-/-	no permit limit established for daily maximum or monthly average
<(value)	analyte not detected at a concentration greater than or equal to the DL, MDL, or RL (see laboratory report for specific detail)
*	result not validated
*1	improper preservation of sample
*2	the ICP/MS ppb check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J)
*3	initial and or continuing calibration recoveries were outside acceptable control limits



**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

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*10	value was estimated detect or estimated non detect (J,UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as Estimated Maximum Possible Concentration (EMPC) values
*11	no calibration was performed for this compound; result is reported as a tentatively identified compound (TIC)
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NM	not measured or determined
NTU	nephelometric turbidity unit
pCi/L	picocuries per liter
pg/L	picograms per liter
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**4th QUARTER 2005 REPORTING SUMMARY NOTES  
THE BOEING COMPANY - ROCKETDYNE  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

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R	(reason code in parentheses) %R for calibration not within control limits
RL	laboratory reporting limit
RL-1	reporting limit raised due to sample matrix effects
%RSD	percent relative standard deviation
S	surrogate recovery was outside control limits
TEQ	toxic equivalent
T	presumed contamination, as indicated by a detect in the trip blank
TU <sub>c</sub>	toxicity units (chronic)
U	result not detected
µg/L	micrograms per liter
UJ	result not detected at the estimated reporting limit
umhos/cm	micromhos per centimeter
WHO TEF	World Health Organization toxic equivalency factor
^	analysis not completed due to hold time exceedence or insufficient sample volume
+	False positive – reported compound was not present. Not applicable.

SUMMARY OF PERMIT LIMIT EXCEEDANCES

FOURTH QUARTER 2005 REPORTING SUMMARY  
 THE BOEING COMPANY-ROCKETDYNE  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

OUTFALL	LOCATION	SAMPLE DATE	ANALYTE	PERMIT LIMIT DAILY MAX/ MONTHLY AVERAGE	RESULT DAILY MAX/MONTHLY AVERAGE	UNITS	VALIDATION QUALIFIER
Outfall 009	(WS-13 Drainage)	17-Oct-05	pH (Field)	6.5-8.5	8.80/--	pH Units	*
Outfall 003	(RMHF)	18-Oct-05	Copper	14.0/--	17/--	ug/L	--
Outfall 004	(SRE)	18-Oct-05	Mercury	0.13/--	0.22/--	ug/L	--
Outfall 004	(SRE)	18-Oct-05	TCDD TEQ_NoDNQ	2.80E-08/--	5.86E-06/--	ug/L	--
Outfall 005	(FSDF-1)	18-Oct-05	Copper	14.0/--	30/--	ug/L	--
Outfall 005	(FSDF-1)	18-Oct-05	Mercury	0.13/--	0.41/--	ug/L	--
Outfall 005	(FSDF-1)	18-Oct-05	Nitrate + Nitrite as Nitrogen (N)	10/--	16/--	mg/L	--
Outfall 005	(FSDF-1)	18-Oct-05	TCDD TEQ_NoDNQ	2.80E-08/--	1.36E-06/--	ug/L	--
Outfall 006	(FSDF-2)	18-Oct-05	Copper	14.0/--	16/--	ug/L	--
Outfall 006	(FSDF-2)	18-Oct-05	TCDD TEQ_NoDNQ	2.80E-08/--	3.40E-08/--	ug/L	--
Outfall 007	(Building 100)	18-Oct-05	Antimony	6.0/--	6.2/--	ug/L	--
Outfall 007	(Building 100)	18-Oct-05	Copper	14.0/--	19/--	ug/L	--
Outfall 007	(Building 100)	18-Oct-05	TCDD TEQ_NoDNQ	2.80E-08/--	3.17E-07/--	ug/L	--
Outfall 003	(RMHF)	09-Nov-05	Antimony	6.0/--	35/--	ug/L	--
Outfall 003	(RMHF)	09-Nov-05	pH (field)	6.5-8.5/--	9.4/--	pH Units	*
Outfall 004	(SRE)	09-Nov-05	TCDD TEQ_NoDNQ	2.80E-08/--	3.43E-06/--	ug/L	--
Outfall 005	(FSDF-1)	09-Nov-05	Copper	14.0/--	20/--	ug/L	--
Outfall 005	(FSDF-1)	09-Nov-05	TCDD TEQ_NoDNQ	2.80E-08/--	1.76E-06/--	ug/L	--
Outfall 006	(FSDF-2)	09-Nov-05	Copper	14.0/--	34/--	ug/L	--
Outfall 006	(FSDF-2)	09-Nov-05	Mercury	0.13/--	0.89/--	ug/L	--
Outfall 006	(FSDF-2)	09-Nov-05	TCDD TEQ_NoDNQ	2.80E-08/--	1.89E-06/--	ug/L	--

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**Volume 2 – Appendix G**

**APPENDIX G - VOLUME 2**  
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## **APPENDIX G**

### **Section 1**

Outfall 003, October 18, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 16:28

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1231-01

**CLIENT ID**  
Outfall 003

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1231-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.36	4.0	ND	2	10/19/05	10/21/05	RL-1
Cadmium	EPA 200.8	5J19098	0.030	2.0	<b>0.34</b>	2	10/19/05	10/21/05	RL-1, B, J
Copper	EPA 200.8	5J19098	2.0	8.0	<b>17</b>	4	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.16	4.0	<b>11</b>	4	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	<b>0.059</b>	1	10/19/05	10/19/05	J
<b>Sample ID: IOJ1231-01RE1 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5J19098	2.0	8.0	<b>17</b>	4	10/19/05	10/24/05	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1231-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	2.6	5.0	100	10	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	ND	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.90	4.8	1.1	1	10/24/05	10/24/05	J
Sulfate	EPA 300.0	5J18042	1.8	5.0	80	10	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J24100	10	10	850	1	10/24/05	10/24/05	
Total Suspended Solids	EPA 160.2	5J21114	10	10	480	1	10/21/05	10/21/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 003 (IOJ1231-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 10:48	10/18/2005 18:00	10/18/2005 21:30	10/18/2005 22:12

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>										
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>										
Chloride	ND	0.50	0.26	mg/l						
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l						
Sulfate	ND	0.50	0.18	mg/l						
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>										
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110		M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110		
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>										
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120		
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>										
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20
<b>Batch: 5J21114 Extracted: 10/21/05</b>										
<b>Blank Analyzed: 10/21/2005 (5J21114-BLK1)</b>										
Total Suspended Solids	ND	10	10	mg/l						
<b>LCS Analyzed: 10/21/2005 (5J21114-BS1)</b>										
Total Suspended Solids	960	10	10	mg/l	1000		96	85-115		
<b>Duplicate Analyzed: 10/21/2005 (5J21114-DUP1)</b>										
Total Suspended Solids	436	10	10	mg/l		420			4	10
<b>Batch: 5J24050 Extracted: 10/24/05</b>										
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>										
Oil & Grease	ND	5.0	0.94	mg/l						

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 Project Manager

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120			M-NR1
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20	
<b>Batch: 5J24100 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24100-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/24/2005 (5J24100-BS1)</b>											
Total Dissolved Solids	998	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/24/2005 (5J24100-DUP1)</b>											
Total Dissolved Solids	440	10	10	mg/l		Source: IOJ0222-03			0	10	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1231-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.10	4.8	15
IOJ1231-01	Antimony-200.8	Antimony	ug/l	0.31	4.0	6.00
IOJ1231-01	Cadmium-200.8	Cadmium	ug/l	0.34	2.0	4.00
IOJ1231-01	Chloride - 300.0	Chloride	mg/l	100	5.0	150
<b>IOJ1231-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>17</b>	<b>8.0</b>	<b>14</b>
IOJ1231-01	Mercury - 245.1	Mercury	ug/l	0.059	0.20	0.20
IOJ1231-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0	0.26	10.00
IOJ1231-01	Sulfate-300.0	Sulfate	mg/l	80	5.0	250
<b>IOJ1231-01</b>	<b>TDS - SM 2540C</b>	<b>Total Dissolved Solids</b>	<b>mg/l</b>	<b>850</b>	<b>10</b>	<b>850</b>
<b>IOJ1231-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>17</b>	<b>8.0</b>	<b>14</b>

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 Michele Chamberlin  
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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4

Samples: IOJ1231-01

Analysis Performed: Strontium 90

Samples: IOJ1231-01

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR

Samples: IOJ1231-01

### Del Mar Analytical, Irvine

Michele Chamberlin

Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

**CHAIN OF CUSTODY FORM**

Version 02/17/05

<b>Client Name/Address:</b> Del Mar Analytical 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 003 Stormwater at RMHF		<b>Field readings:</b> Temp = 61.5 °C pH = 6.82									
<b>Project Manager:</b> Bronwyn Kelly Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>Sampler:</b> Rick BAJAN		<b>Comments:</b>									
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Botlle #	Total Recoverable Metals: Sp, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	CF, SO4, NO3+NO2-N	TDS, TSS	ANALYSIS REQUIRED	Field readings
Outfall 003	W	1L Poly	1	10-18-05 10:48	HNO3	1A	X					(905.0) Total Combined Total (905.0) Sr-90 Gross Alpha, Gross Beta	
Outfall 003-Dup	W	1L Poly	1	10-18-05 10:48	HNO3	1B	X						
Outfall 003	W	1L Amber	2		None	2A, 2B		X					
Outfall 003	W	1L Amber	2		HCl	3A, 3B		X					
Outfall 003	W	Poly-500 ml	2		None	4A, 4B			X				
Outfall 003	W	Poly-500 ml	2	10-18-05 10:48	None	5A, 5B				X			
Outfall-003	W	Poly-1 gal	2		None				1500	1500			Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15pCi/L
Outfall 003	W	Poly-1 gal	2	10-18-05 10:48	None	6A, 6B							Sr-90 only
Relinquished By: <i>Rick Bajan</i> Date/Time: 10-18-05 15:01 Received By: <i>Bronwyn Kelly</i> Date/Time: 10-18-05 15:01							Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/>						
Relinquished By: <i>Bronwyn Kelly</i> Date/Time: 10-18-05 18:00 Received By: <i>Rick Bajan</i> Date/Time: 10-18-05 18:00													
Relinquished By: <i>Bronwyn Kelly</i> Date/Time: 10-18-05 18:00 Received By: <i>Rick Bajan</i> Date/Time: 10-18-05 18:00													



### ADDITIONAL ANALYSIS REQUEST FORM

Today's Date: 10/20 Del Mar Analytical Project Manager: MHT

Request via:  telephone  chain of custody form  fax transmission  E-mail  other

Client: MWH-Pas/300 Contact: Bromwyn Kelly

Project: Routine outfall 003

Date Sampled: 10/18 Date Received: 10/18

Status:  in progress  completed  received today  received yesterday  on hold  other

SAMPLE NUMBER	SAMPLE DESCRIPTION	ANALYSIS REQUESTED	SPECIAL REQUIREMENTS
---------------	--------------------	--------------------	----------------------

10J1231-01	outfall 003	Strontium-90	Level 4+EDD
------------	-------------	--------------	-------------

- Add-in to orig work order, normal TAT

TURNAROUND STATUS:  Same Day  24hr  48hr  3days  
 5days  Standard  No Rush Charge



# EBERLINE SERVICES

November 21, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOJ1231  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R510124-8615

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on October 21, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analysis was strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analysis, sample duplicate, and matrix spike results for the analysis were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require a matrix spike analysis to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/hjv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

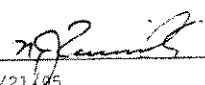
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2635 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8615</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R510124-11</u>	Contract <u>PROJECT# IOJ1231</u>
Received Date <u>10/21/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
IOJ1231-01	1615-001	10/18/05	11/17/05	Sr90	8.44 ± 1.3	pCi/L	0.992

Certified by <u></u>
Report Date <u>11/21/05</u>
Page 1

Eberline Services


QC RESULTS

SDG <u>8615</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS10124-01</u>	Contract <u>PROJECT# IOJ1231</u>
Received Date <u>10/21/05</u>	Matrix <u>WATER</u>

Lab

Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>						
8618-004	Sr90	11.1 ± 0.93	pCi/Smpl	10.9	0.427	102% recovery
<u>BLANK</u>						
8618-005	Sr90	0.121 ± 0.24	pCi/Smpl	NA	0.509	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>RPD (Tot) Eval</u>
8618-006	Sr90	0.003 ± 0.27	0.546	8618-001	0.325 ± 0.44	0.890	- 0 satis.

Certified by 
Report Date <u>11/21/05</u>
Page 2



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9688  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

## SUBCONTRACT ORDER - PROJECT # IOJ1231

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOJ1231-01 Water      Sampled: 10/18/05 10:48</b>		
EDD + Level 4	11/15/05 10:48	Excel EDD email to pm, Include Std logs for Lvl IV 905.0, sub to Eberline
Strontium 90-O	10/18/05 10:48	

**Containers Supplied:**  
 1 gal Poly (IOJ1231-01K)  
 1 gal Poly (IOJ1231-01L)

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			Samples Received at (temp): <b>BROKEN CONTAINER</b>		

	Date	Time		Date	Time
				10/21/05	10:50
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA  
 Date/Time received 10/21/05 10:50 CoC No. IOJ1231  
 Container I.D. No. BOX/STYRO Requested TAT (Days) \_\_\_\_\_ P.O. Received Yes [ ] No [ ]

### INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [X]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [X]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]
5. Packing material is: BROKEN CONTAINER, MELTED ICE Wet [X] Dry [ ]
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: 2 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [X] pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies:  
 \_\_\_\_\_  
 \_\_\_\_\_
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
15. Inspected by MEW Date: 10/21/05 Time: 10:45

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_





**Pace Analytical Services, Inc.**  
1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**DETERMINATION OF PCDD/PCDF LEVELS**

**Prepared for:**  
**Del Mar Analytical, Irvine**  
**Attn: Michele Harper**  
**17461 Derian Avenue, Suite 100**  
**Irvine, CA 92614**



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

**REPORT OF LABORATORY ANALYSIS**

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## REPORT OF: CHEMICAL ANALYSES

Pace Analytical Services, Inc.

1700 Elm Street  
Minneapolis, MN 55414

Phone: 612.607.1700

Fax: 612.607.6444

PROJECT: PCDD/PCDF ANALYSES

DATE: November 17, 2005

ISSUED TO: Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

REPORT NO: 05-1021758,  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

### INTRODUCTION

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

### SAMPLE IDENTIFICATION

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

### RESULTS

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

## REPORT OF LABORATORY ANALYSIS

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1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**REPORT OF: CHEMICAL ANALYSES**

**PROJECT: PCDD/PCDF ANALYSES**

**DATE:** November 17, 2005

**PAGE:** 2

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

**DISCUSSION**

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spike samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

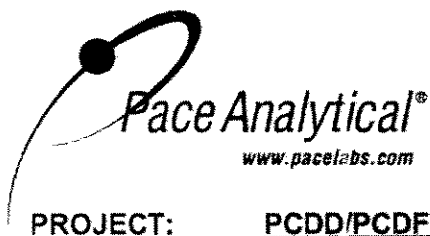
A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

**REPORT OF LABORATORY ANALYSIS**

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Fax: 612.607.6444

**PROJECT:** PCDD/PCDF ANALYSES

**DATE:** November 17, 2005

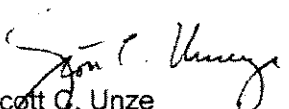
**PAGE:** 3

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

**REMARKS**

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

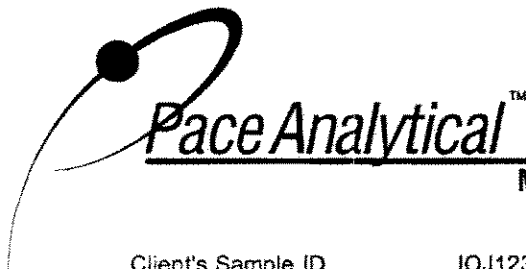
**Pace Analytical Services, Inc.**

  
Scott C. Unze  
Project Manager, HRMS  
(612) 607-6383

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1231-01		
Lab Sample ID	1021910001		
Filename	F51110A_03		
Injected By	SMT		
Total Amount Extracted	1050 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	10/18/2005
ICAL Date	10/22/2005	Received	10/20/2005
CCal Filename(s)	F51109C_18	Extracted	11/08/2005
Method Blank ID	BLANK-8223	Analyzed	11/10/2005 14:37

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	---- 0.0000012		2,3,7,8-TCDF-13C	2.00	57
Total TCDF	ND	---- 0.0000012		2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	---- 0.0000014		2,3,4,7,8-PeCDF-13C	2.00	63
Total TCDD	ND	---- 0.0000014		1,2,3,7,8-PeCDD-13C	2.00	78
				1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	---- 0.0000015		1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	ND	---- 0.0000011		2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	ND	---- 0.0000013		1,2,3,7,8,9-HxCDF-13C	2.00	63
				1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	---- 0.0000017		1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	ND	---- 0.0000017		1,2,3,4,6,7,8-HpCDF-13C	2.00	60
				1,2,3,4,7,8,9-HpCDF-13C	2.00	52
1,2,3,4,7,8-HxCDF	ND	---- 0.0000011		1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	---- 0.0000013		OCDD-13C	4.00	49
2,3,4,6,7,8-HxCDF	ND	---- 0.0000013				
1,2,3,7,8,9-HxCDF	ND	---- 0.0000012		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	---- 0.0000012		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	---- 0.0000013		2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	ND	---- 0.0000015				
1,2,3,7,8,9-HxCDD	ND	---- 0.0000015				
Total HxCDD	0.0000019	---- 0.0000014	J			
1,2,3,4,6,7,8-HpCDF	ND	---- 0.0000015				
1,2,3,4,7,8,9-HpCDF	ND	---- 0.0000018				
Total HpCDF	ND	---- 0.0000016				
1,2,3,4,6,7,8-HpCDD	0.0000085	---- 0.0000025	BJ			
Total HpCDD	0.0000180	---- 0.0000025	BJ			
OCDF	----0.0000089	0.0000016	I			
OCDD	0.0000620	---- 0.0000043	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021910

## REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	---- 0.0000023		2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	----		2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	---- 0.0000021		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	----		1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	---- 0.0000031		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	---- 0.0000013		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND	----		1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	---- 0.0000018		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	----		1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	---- 0.0000016		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	---- 0.0000016		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	---- 0.0000015				
1,2,3,7,8,9-HxCDF	ND	---- 0.0000024		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	---- 0.0000030		2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	---- 0.0000031				
1,2,3,7,8,9-HxCDD	ND	---- 0.0000025				
Total HxCDD	ND	----				
1,2,3,4,6,7,8-HpCDF	ND	---- 0.0000018				
1,2,3,4,7,8,9-HpCDF	ND	---- 0.0000023				
Total HpCDF	ND	----				
1,2,3,4,6,7,8-HpCDD	0.0000041	---- 0.0000026	J			
Total HpCDD	0.0000041	----	J			
OCDF	0.0000068	---- 0.0000027	J			
OCDD	---- 0.000019	0.0000025	I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
A = Limit of Detection based on signal to noise  
P = Recovery outside of method 1613 control limits  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Laboratory Control Spike Results**

Client - Dei Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical Services, Inc.  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

Report No..... 1021758

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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunaet Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3820 Fax (702) 796-3821

**SUBCONTRACT ORDER - PROJECT # IOJ1231** *1021910*

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1231-01 Water	Sampled: 10/18/05 10:48	
1613-Dioxin-HR	10/25/05 10:48	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 10:48	Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOJ1231-01C)		
1 L Amber (IOJ1231-01D)		

*1021910001*

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): *24°C*

Released By: *[Signature]* Date: *10-19-05* Time: *1700* Received By: *[Signature]* Date: *10/20/05* Time: *09:10*

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

## **APPENDIX G**

### **Section 2**

Outfall 003, October 18, 2005  
AMEC Data Validation Reports

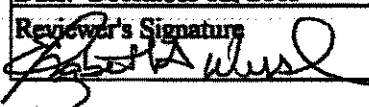
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC178  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Qualifications for "J" values between the RL and MDL.
<b>COMMENTS*</b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
<b>Outfall 003</b>	<b>IOJ1231-01</b>	<b>Water</b>	<b>General Minerals</b>
<b>Outfall 010</b>	<b>IOJ1232-01</b>	<b>Water</b>	<b>General Minerals</b>
<b>Outfall 006</b>	<b>IOJ1180-01</b>	<b>Water</b>	<b>General Minerals</b>
<b>Outfall 007</b>	<b>IOJ1184-01</b>	<b>Water</b>	<b>General Minerals</b>
<b>Outfall 009</b>	<b>IOJ1186-01</b>	<b>Water</b>	<b>General Minerals</b>

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were ≥ 0.995. Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.



## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 9-84 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 783-0043 FAX (480) 783-0821  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003 Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Data Qualifiers	Raw Qval	Code
Sample ID: IOJ1231-01 (Outfall 003 - Water) - cont. Reporting Unit: mg/l											
Chloride	EPA 300.0	SJ18042	2.6	5.0	100	10	10/18/05	10/18/05			
Nitrate/Nitrite-N	EPA 300.0	SJ18042	0.072	0.26	ND	1	10/18/05	10/18/05			
Oil & Grease	EPA 413.1	SJ24050	0.94	5.0	1.1	1	10/24/05	10/24/05	J	J	DNE
Sulfate	EPA 300.0	SJ18042	1.8	5.0	80	10	10/18/05	10/18/05			
Total Dissolved Solids	SM2540C	SJ24100	10	10	850	1	10/24/05	10/24/05			
Total Suspended Solids	EPA 160.2	SJ21114	10	10	480	1	10/21/05	10/21/05			

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1231 <Page 3 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

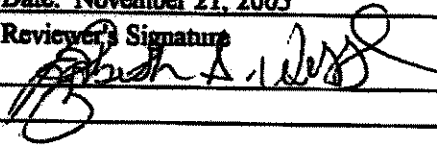
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DE50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis

Reviewer E. Wessling

Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.



## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOJ1231-01  
Lab Sample ID 1021910001  
Filename F51110A\_03  
Injected By SMT  
Total Amount Extracted 1050 mL  
% Moisture NA  
Dry Weight Extracted NA  
ICAL Data 10/22/2005  
CCal Filename(s) F51109C\_18  
Method Blank ID BLANK-8223

*Outfall 003*

Matrx Water  
Dilution NA  
Collected 10/18/2005  
Received 10/20/2005  
Extracted 11/08/2005  
Analyzed 11/10/2005 14:37

Rev	Qual	Code	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery		
u	↓		2,3,7,8-TCDF	ND	—	0.000012	2,3,7,8-TCDF-13C	2.00	57		
			Total TCDF	ND	—	0.000012	2,3,7,8-TCDD-13C	2.00	67		
								1,2,3,7,8-PeCDF-13C	2.00	61	
								2,3,4,7,8-PeCDF-13C	2.00	63	
								1,2,3,7,8-PeCDD-13C	2.00	78	
								1,2,3,4,7,8-HxCDF-13C	2.00	63	
								1,2,3,6,7,8-HxCDF-13C	2.00	65	
								2,3,4,6,7,8-HxCDF-13C	2.00	62	
								1,2,3,7,8,9-HxCDF-13C	2.00	63	
								1,2,3,4,7,8-HxCDD-13C	2.00	68	
J	DNQ		1,2,3,7,8-PeCDD	ND	—	0.000017	1,2,3,6,7,8-HxCDD-13C	2.00	67		
			Total PeCDD	ND	—	0.000017	1,2,3,4,6,7,8-HpCDF-13C	2.00	60		
								1,2,3,4,7,8,9-HpCDF-13C	2.00	52	
								1,2,3,4,6,7,8-HpCDD-13C	2.00	64	
								OCDD-13C	4.00	49	
J	DNQ		1,2,3,4,7,8-HxCDD	ND	—	0.000013	2,3,7,8-TCDD-37Cl4	0.20	80		
			Total HxCDD	0.000019	—	0.000014					
u	u		1,2,3,4,6,7,8-HpCDF	ND	—	0.000015					
			Total HpCDF	ND	—	0.000018					
u	B		1,2,3,4,6,7,8-HpCDD	0.000085	—	0.000025			BJ		
			Total HpCDD	0.000180	—	0.000025				BJ	
J	DNQ		OCDF	—	0.000089	0.000016			I		
			OCDD	0.0000620	—	0.000043			J		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021910

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT93  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine

Date: December 18, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Metals

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
COMMENTS <sup>b</sup>	_____

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 3  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOJ1231-01	Water	200.8/245.1
Outfall 010	IOJ1232-01	Water	200.8/245.1
Outfall 006	IOJ1180-01	Water	200.8/245.1
Outfall 007	IOJ1184-01	Water	200.8/245.1
Outfall 009	IOJ1186-01	Water	200.8/245.1

## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### **2.1.3 Holding Times**

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### **2.2 ICP-MS TUNING**

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### **2.3 CALIBRATION**

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### **2.4 BLANKS**

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 006. No further qualifications were required.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

**2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**



Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

---

of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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 1014 E. Cooley Dr., Suite A, Colton, CA 92334 (909) 370-4667 FAX (909) 370-1046  
 9484 Chatsworth Dr., Suite 202, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9688  
 9830 South 31st St., Suite B-120, Phoenix, AZ 85044 (480) 765-0043 FAX (480) 765-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003 Report Number: IOJ1231	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real Qual	Final Cod
Sample ID: IOJ1231-01 (Outfall 003 - Water) Reporting Units: ug/l											
Antimony	EPA 200.8	5J19098	0.36	4.0	ND	2	10/19/05	10/21/05	RL-1	U	
Cadmium	EPA 200.8	5J19098	0.030	2.0	0.34	2	10/19/05	10/21/05	B, RL-1, J	J	DNR
Copper	EPA 200.8	5J19098	2.0	8.0	17	4	10/19/05	10/20/05			
Lead	EPA 200.8	5J19098	0.16	4.0	11	4	10/19/05	10/20/05			
Mercury	EPA 245.1	5J19052	0.063	0.20	ND	1	10/19/05	10/19/05		U	
Sample ID: IOJ1231-01RE1 (Outfall 003 - Water) Reporting Units: ug/l											
Copper	EPA 200.8	5J19098	2.0	8.0	17	4	10/19/05	10/24/05		R	D

*Level IV Validated*

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1231 <Page 2 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711RA12  
Task Order 313150010  
SDG No. IOJ1231

No. of Analyses 1

Laboratory Eberline

Date: December 15, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Sr-90 by 905.0

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____ _____
3. Analyses Not Conducted	_____ _____
4. Missing Hardcopy Deliverables	_____ _____
5. Incorrect Hardcopy Deliverables	_____ _____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	<b>Qualifications were assigned for the following:</b> -holding times missed _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
<b>COMMENTS<sup>b</sup></b>	
_____	
_____	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUP:  
IOJ1231

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOJ1231  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Method 905.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IOJ1231-01	8615-001	water	905.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 011 Grab for unfiltered reanalyses and cesium analysis of the substrate. No qualifications were required.

#### 2.1.3 Holding Times

The Outfall 003 Unfiltered strontium-90-sample was analyzed beyond the five day holding time for unpreserved samples; therefore, these results were qualified as estimated, "J"

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### 2.3 BLANKS

No measurable activities were detected in the method blank, therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in this SDG. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on a sample other than from the site; therefore, no assessment was made for this criterion. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed for the strontium analysis. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this SDG. The sample result and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in this SDG.



Eberline Services

ANALYSIS RESULTS

SDG <u>8615</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS18124-01</u>	Contract <u>PROJECT# IOJ1231</u>
Received Date <u>10/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MOA
<u>Sample ID</u>	<u>Sample ID</u>						
IOJ1231-01	8615-001	10/18/05	11/17/05	Sr90	8.44 ± 1.3	pCi/L	0.992

Rev. Qual  
Qual. Cdr  
J / 17

Certified by <u>[Signature]</u>
Report Date <u>11/21/05</u>
Page 1

## **APPENDIX G**

### **Section 3**

Outfall 003, November 09, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:27

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOK0900-01	Outfall 003	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05

Received: 11/09/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0900-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.18	2.0	35	1	11/16/05	11/16/05	
Cadmium	EPA 200.8	5K16096	0.015	1.0	0.22	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.49	2.0	7.1	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	1.4	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	
<b>Sample ID: IOK0900-01RE1 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K25104	0.18	2.0	37	1	11/25/05	11/27/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05

Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0900-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	98	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	2.9	1	11/09/05	11/09/05	
Oil & Grease	EPA 413.1	5K14056	0.96	5.1	1.1	1	11/14/05	11/14/05	J
Sulfate	EPA 300.0	5K09130	0.90	2.5	99	5	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	590	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	19	1	11/10/05	11/10/05	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing Project ID: Routine Outfall 003  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101 Report Number: IOK0900  
Attention: Bronwyn Kelly  
Sampled: 11/09/05  
Received: 11/09/05

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 003 (IOK0900-01) - Water EPA 300.0	2	11/09/2005 13:38	11/09/2005 18:00	11/09/2005 23:30	11/09/2005 23:57

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Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOK0900	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0		94	85-115			
Cadmium	85.7	1.0	0.025	ug/l	80.0		107	85-115			
Copper	82.7	2.0	0.25	ug/l	80.0		103	85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103	85-115			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1) Source: IOK0918-02</b>											
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95	70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108	70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2) Source: IOK0922-03</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94	70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108	70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1) Source: IOK0918-02</b>											
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94	70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108	70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	

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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	
<b>Batch: 5K25104 Extracted: 11/25/05</b>											
<b>Blank Analyzed: 11/27/2005 (5K25104-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
<b>LCS Analyzed: 11/27/2005 (5K25104-BS1)</b>											
Antimony	79.6	2.0	0.18	ug/l	80.0		100	85-115			
<b>Matrix Spike Analyzed: 11/27/2005 (5K25104-MS1)</b>											
						<b>Source: IOK2100-01</b>					
Antimony	77.4	2.0	0.18	ug/l	80.0	0.29	96	70-130			
<b>Matrix Spike Dup Analyzed: 11/27/2005 (5K25104-MSD1)</b>											
						<b>Source: IOK2100-01</b>					
Antimony	80.6	2.0	0.18	ug/l	80.0	0.29	100	70-130	4	20	

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 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOK0900	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							J
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1)</b>											
						<b>Source: IOK0875-01</b>					
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1)</b>											
						<b>Source: IOK0875-01</b>					
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1)</b>											
						<b>Source: IOK0617-01</b>					
Total Suspended Solids	440	10	10	mg/l		450			2	10	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NRI
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01			2	10	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003  Report Number: IOK0900	Sampled: 11/09/05 Received: 11/09/05
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## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0900-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.10	5.1	15
IOK0900-01	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>35</b>	<b>2.0</b>	<b>6.00</b>
IOK0900-01	Cadmium-200.8	Cadmium	ug/l	0.22	1.0	4.00
IOK0900-01	Chloride - 300.0	Chloride	mg/l	98	2.5	150
IOK0900-01	Copper-200.8	Copper	ug/l	7.10	2.0	14
IOK0900-01	Mercury - 245.1	Mercury	ug/l	0	0.20	0.20
IOK0900-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	2.90	0.26	10.00
IOK0900-01	Sulfate-300.0	Sulfate	mg/l	99	2.5	250
IOK0900-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	590	10	850
IOK0900-01RE1	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>37</b>	<b>2.0</b>	<b>6.00</b>

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05

Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical *NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOK0900-01

Analysis Performed: EDD + Level 4  
 Samples: IOK0900-01

#### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Level 4 + EDD  
 Samples: IOK0900-01

Analysis Performed: Strontium 90  
 Samples: IOK0900-01

### Del Mar Analytical, Irvine

Michele Chamberlin

Project Manager

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**CHAIN OF CUSTODY FORM**

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:			
Del Mar Analytical Version 10/21/05 MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: <i>Rick Banta</i> <i>PAT POLLOU</i>		Boeing-SSFL NPDES Routine Outfall 003 Stormwater at RMHF Phone Number: (626) 568-8691 Fax Number: (626) 568-8515		TCDD (end all congeners) Oil & Grease (EPA 413.1) CH <sub>4</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N TDS, TSS SI-90 (905.0)		Temp = 59.7 pH = 9.4 Comments			
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg		
Outfall 003	W	1L Poly	1	11-9-05 11:00 AM	HNO3	1A	X		
Outfall 003-Dup	W	1L Poly	1	11-9-05 11:00 AM	HNO3	1B	X		
Outfall 003	W	1L Amber	2		None	2A, 2B			
Outfall 003	W	1L Amber	2		HCl	3A, 3B	X		
Outfall 003	W	Poly-500 ml	2		None	4A, 4B	X		
Outfall 003	W	Poly-500 ml	2		None	5A, 5B	X		
Outfall 003	W	Poly-1 gal	1	11-9-05 PM 13:38	None		X unfiltered analysis		
Relinquished By	<i>[Signature]</i>	Date/Time:	11-9-05	1500	Received By	<i>[Signature]</i>	Date/Time:	11/9/05	1500
Relinquished By	<i>[Signature]</i>	Date/Time:	11/9/05	1800	Received By	<i>[Signature]</i>	Date/Time:	11/9/05	1800
Relinquished By	<i>[Signature]</i>	Date/Time:			Received By	<i>[Signature]</i>	Date/Time:		
				Turn around Time: (check)					
				24 Hours		5 Days			
				48 Hours		10 Days			
				72 Hours		Normal			
				Perchlorate Only 72 Hours					
				Metals Only 72 Hours					
				Sample Integrity (Check)		Intact		On Ice: 5°C	





December 10, 2005

**Alta Project I.D.: 27026**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0900". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27026-001

IOK0900-01



**SECTION II**

Method Blank		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.00000105		79.8	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000893		81.3	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000158		75.1	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000149		77.1	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000154		70.9	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000172		56.0	17 - 157
OCDD	ND	0.00000585		79.9	24 - 169
2,3,7,8-TCDF	ND	0.000000899		73.7	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000135		76.2	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000117		70.8	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000723		74.2	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000682		73.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000824		76.6	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000132		68.4	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000743		72.8	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000947		59.0	17 - 157
OCDF	ND	0.00000230		97.0	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.00000105			
Total PeCDD	ND	0.000000893			
Total HxCDD	ND	0.00000154			
Total HpCDD	ND	0.00000172			
Total TCDF	ND	0.000000899			
Total PeCDF	ND	0.000000593			
Total HxCDF	ND	0.000000861			
Total HpCDF	ND	0.000000833			

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: WJL Approved By: Martha M. Maier 10-Dec-2005 15:23

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No:	7516	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL  
 Approved By: Martha M. Mater  
 Date: 10-Dec-2005 15:23

Sample ID: IOK0900-01			EPA Method 1613				
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	27026-001		
Project:	IOK0900	Sample Size:	1.013 L	QC Batch No.:	7516		
Date Collected:	9-Nov-05			Date Analyzed DB-5:	10-Dec-05		
Time Collected:	1338			Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000101		13C-2,3,7,8-TCDD	87.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000100		13C-1,2,3,7,8-PeCDD	88.0	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000232		13C-1,2,3,4,7,8-HxCDD	74.8	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000226		13C-1,2,3,6,7,8-HxCDD	79.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000229		13C-1,2,3,4,6,7,8-HpCDD	73.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000173			13C-OCDD	56.9	17 - 157	
OCDD	0.000145			13C-2,3,7,8-TCDF	84.9	24 - 169	
2,3,7,8-TCDF	ND		0.00000172	13C-1,2,3,7,8-PeCDF	85.8	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000223		13C-2,3,4,7,8-PeCDF	81.5	21 - 178	
2,3,4,7,8-PeCDF	ND		0.00000181	13C-1,2,3,4,7,8-HxCDF	71.5	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000951		13C-1,2,3,6,7,8-HxCDF	72.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000908		13C-2,3,4,6,7,8-HxCDF	75.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000105		13C-1,2,3,7,8,9-HxCDF	80.4	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000163		13C-1,2,3,4,6,7,8-HpCDF	70.6	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND		0.00000271	13C-1,2,3,4,7,8,9-HpCDF	75.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000188		13C-OCDF	60.0	17 - 157	
OCDF	0.00000510			CBS 37Cl-2,3,7,8-TCDD	103	35 - 197	
<b>Totals</b>							
Total TCDD	0.00000112						
Total PeCDD	0.00000123		0.00000242				
Total HxCDD	0.00000258		0.00000624				
Total HpCDD	0.0000424						
Total TCDF	0.0000203		0.0000296				
Total PeCDF	ND		0.00000130				
Total HxCDF	0.00000224						
Total HpCDF	ND		0.00000503				

Analyst: WJL

Approved By: Martha M. Maier 10-Dec-2005 15:23

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1814 E. Conley Dr., Suite A, Colton, CA 92324 Ph (909) 370-0827 Fax (909) 370-1048  
 9494 Chapparral Drive, Suite 900, San Diego, CA 92123 Ph (619) 565-8888 Fax (619) 565-8888  
 8820 South First Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0801  
 2820 E. Sunset Rd., Suite 80, Las Vegas, NV 89120 Ph (702) 796-8880 Fax (702) 796-8821

**SUBCONTRACT ORDER - PROJECT # IOK0900**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  <i>27026</i> <i>1.7°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0900-01 1613-Dioxin-HR EDD + Level 4	Water 11/16/05 13:38 12/07/05 13:38	Instant Notification J flags, 17 congeners, no TEQ, ug/L, sub=Face-MN Excel EDD email to pm, include Std logs for Lvl IV
Containers Supplied: 1 L Amber (IOK0900-01C) 1 L Amber (IOK0900-01D)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Test:  Yes  No  
 Samples Received at (temp): \_\_\_\_\_

*COC rec'd via email Bettina D. Benedict 12/15*

Released By	Date	Time	Received By	Date	Time



### SAMPLE LOG-IN CHECKLIST

Alta Project #: 27026

Samples Arrival:	Date/Time <u>12/8/05 0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05 1059</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="radio"/> FedEx	<input type="radio"/> UPS	<input type="radio"/> Cal
	<input type="radio"/> DHL	<input type="radio"/> Hand Delivered	<input type="radio"/> Other
Preservation:	<input checked="" type="radio"/> Ice	<input type="radio"/> Blue Ice	<input type="radio"/> Dry Ice
	<input type="radio"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	✓		
Trk # <u>674128023830</u>	✓		
Sample Container Intact?			✓
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?		✓	
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container <u>None</u>
Shipping Container	Alta	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:



**EBERLINE**  
SERVICES

December 8, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOK0900  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R511134-8621

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on November 11, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analysis was strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analysis, and sample duplicate results for the analysis were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require a matrix spike analysis to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCMnjv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8621</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R511134-01</u>	Contract <u>PROJECT# IOK0900</u>
Received Date <u>11/11/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
IOK0900-01	8621-001	11/09/05	12/01/05	Sr-90	0.517 ± 0.26	pCi/L	0.414

Certified by <u><i>[Signature]</i></u>
Report Date <u>12/08/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8621</u> Work Order <u>R511134-01</u> Received Date <u>11/11/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOK0900</u> Matrix <u>WATER</u>
--	---

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8622-004	Sr-90	10.2 ± 0.76	pCi/Smpl	9.90	0.314	103% recovery
<u>BLANK</u>							
	8622-005	Sr-90	0.017 ± 0.11	pCi/Smpl	NA	0.202	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8622-006	Sr-90	0.080 ± 0.17	0.318	8622-001	0.210 ± 0.32	0.665	- 0 satis.

Certified by *[Signature]*  
 Report Date 12/08/05  
 Page 2



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOK0900**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone :(510) 235-2633 Fax: (510) 235-0438 <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 10px auto;">8621</div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0900-01 Water	Sampled: 11/09/05 13:38	Instant Notification
Level 4 + EDD-OUT	12/07/05 13:38	**LEVEL IV QC, ACCESS 7 EDD**
Strontium 90-O	11/09/06 13:38	905.0, sub to Eberline
<b>Containers Supplied:</b>		
1 gal Poly (IOK0900-01K)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: Alamy Amara      Date: 11-10-05      Time: 1700      Received By: MPW      Date: 11/11/05      Time: 9:25

Released By: \_\_\_\_\_      Date: \_\_\_\_\_      Time: \_\_\_\_\_      Received By: \_\_\_\_\_      Date: \_\_\_\_\_      Time: \_\_\_\_\_



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA  
 Date/Time received 11/11/05 9:25 CoC No. FOK0900  
 Container I.D. No. PCK Requested TAT (Days) STD P.O. Received Yes [ ] No [ ]

### INSPECTION

1. Custody seals on shipping container intact? Yes  No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes  No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A
5. Packing material is: Wet [ ] Dry
6. Number of samples in shipping container: 1 Sample Matrix W
7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes  No [ ]
9. Paperwork agrees with samples? Yes  No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels
11. Samples are: In good condition  Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved  pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies:  
\_\_\_\_\_  
\_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date: \_\_\_\_\_  
 15. Inspected by MFW Date: 11/11/05 Time: 3:00

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

## **APPENDIX G**

### **Section 4**

Outfall 003, November 09, 2005

AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Dioxins/Furans by 1613

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	<b>Qualifications were assigned for the following:</b> -- false positive -- estimated values between the RL and MDL -- estimated maximum possible concentrations -- nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS<sup>b</sup></b>	_____
_____	
_____	
_____	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	





# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

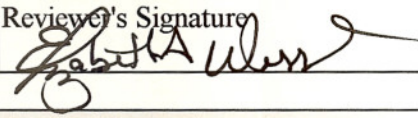


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA13  
 Task Order 313150010  
 SDG No. IOK0900  
 No. of Analyses 1

Laboratory Eberline  
 Reviewer E. Wessling  
 Analysis/Method Sr-90 by 905.0

Date: December 15, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. <b>Case Narrative Deficiencies</b>	_____
2. <b>Out of Scope Analyses</b>	_____ _____
3. <b>Analyses Not Conducted</b>	_____ _____
4. <b>Missing Hardcopy Deliverables</b>	_____ _____
5. <b>Incorrect Hardcopy Deliverables</b>	_____ _____
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were assigned for the following:
Holding Times	--holding times missed
GC/MS Tune/Inst. Performance	_____
Calibration	_____
Method blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification	_____
Quantitation	_____
System Performance	_____
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUP:  
IOK0900

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

**NPDES - 102**

## 1. INTRODUCTION

Task Order Title:	NPDES Monitoring
Contract Task Order #:	313150010
SDG#:	IOK0900
Project Manager:	P. Costa
Matrix:	Water
Analysis:	Radionuclides
QC Level:	Level IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Reviewer:	E. Wessling
Date of Review:	December 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Method 905.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IOK0900-01	8621-001	water	905.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 011 Grab for unfiltered reanalyses and cesium analysis of the substrate. No qualifications were required.

#### 2.1.3 Holding Times

The Outfall 003 Unfiltered strontium-90-sample was analyzed beyond the five day holding time for unpreserved samples; therefore, these results were qualified as estimated, "J"

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### 2.3 BLANKS

No measurable activities were detected in the method blank, therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in this SDG. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on a sample other than from the site; therefore, no assessment was made for this criterion. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed for the strontium analysis. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this SDG. The sample result and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in this SDG.

Eberline Services

ANALYSIS RESULTS

SDG <u>8621</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R511134-01</u>	Contract <u>PROJECT# IOK0900</u>
Received Date <u>11/11/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>Units</u>	<u>MDA</u>
IOK0900-01	8621-001	11/09/05	12/01/05	Sr-90	0.517 ± 0.26	pCi/L	0.414

Rev / Qual  
Qual / Coll  
J / H

Certified by <u><i>n. J. Smith</i></u>
Report Date <u>12/08/05</u>
Page 1


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT95  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals by 200.8/245.1

Date: December 22, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --blank contamination -- estimations between the MDL and RL -- reanalyses rejected in favor of original analyses
COMMENTS*	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: METALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226



## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 4  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Data Validation Procedure for ICP Metals (DVP-5, Rev. 2)*, *US EPA Method 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the USEPA *CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	200.8/245.1
Outfall 003RE1	IOK0900-01RE1	Water	200.8
Outfall 004	IOK0901-01	Water	200.8/245.1
Outfall 005	IOK0902-01	Water	200.8/245.1
Outfall 005RE1	IOK0902-01RE1	Water	200.8
Outfall 006	IOK0903-01	Water	200.8/245.1
Outfall 006RE1	IOK0903-01RE1	Water	200.8/245.1
Outfall 006RE2	IOK0903-01RE2	Water	200.8
Outfall 009	IOK0904-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples in these SDG were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. The laboratory did not append the client IDs with "RE" suffixes; therefore, the reviewer added these to the Form Is. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP-MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP-MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with these SDGs and all recoveries were acceptable. No qualifications were required.

## 2.4 BLANKS

Mercury was reported in method blank 5K17098-BLK1 at  $-0.072 \mu\text{g/L}$ ; therefore, mercury in Outfall 003, Outfall 004, and Outfall 005 was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining method blank and CCB results associated with the retained analyses were nondetects at the reporting limit or were significantly below the sample detects so as not to result in data qualification. No qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were performed in association with the Outfall 003 selenium analysis. The recoveries were within the control limits. No other ICSA or ICSAB analyses were included in the raw data for the ICP-MS analyses. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP-MS and mercury LCS sample results were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. No qualifications were required.

## 2.8 MATRIX SPIKES

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. Evaluation of laboratory accuracy was based on LCS results. No qualifications were required.

## 2.9 ICP-MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.10 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.11 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Some target analytes were reported from dilution analyses due to matrix interference. Reporting limits and MDLs were adjusted accordingly. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. As the original results were all confirmed, the results for Outfall 003RE1, Outfall 005RE1, Outfall 006RE1, and Outfall 006RE2 were rejected, "R," in favor of the original results. No further qualifications were required.

## 2.12 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.12.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.12.2 Field Duplicates

There were no field duplicate analyses performed in association with these samples.



17461 Dolan Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-1297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1946  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 790-3620 FAX (702) 790-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Browyn Kelly	Project ID: Routine Outfall 003 Report Number: IOK0900	Sampled: 11/09/05 Received: 11/09/05
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**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0900-01 (Outfall 003 - Water) Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.18	2.0	35	1	11/16/05	11/16/05	R J D
Cadmium	EPA 200.8	5K16096	0.015	1.0	0.22	1	11/16/05	11/17/05	J J D
Copper	EPA 200.8	5K16096	0.49	2.0	7.1	1	11/16/05	11/16/05	D
Lead	EPA 200.8	5K16096	0.040	1.0	1.4	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.063	0.20	ND	1	11/17/05	11/17/05	(D) B
Sample ID: IOK0900-01RE1 (Outfall 003 - Water) Reporting Units: ug/l									
Antimony	EPA 200.8	5K25104	0.18	2.0	37	1	11/25/05	11/27/05	R J

LEVEL IV

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOK0900 <Page 2 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC181  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method General Minerals

<b>ACTION ITEMS*</b>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	-- estimations between the MDL and RL
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: GENERAL MINERALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226



## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
AMEC Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for General Minerals (DVP-6, Rev. 2)*, *USEPA Methods for Chemical Analysis of Water and Wastes Methods 160.2, 300.0, and 413.1*, *Standard Methods for the Examination of Water and Wastewater Method SM5540-CMOD*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form Is as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOK0900-01	Water	General Minerals
Outfall 004	IOK0901-01	Water	General Minerals
Outfall 005	IOK0902-01	Water	General Minerals
Outfall 006	IOK0903-01	Water	General Minerals
Outfall 009	IOK0904-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times were met and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The blank results associated with the analyses were nondetects at the reporting limit or were significantly less than the sample detects so as not to result in data qualification. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

**DATA VALIDATION REPORT**

---

**2.5 LABORATORY DUPLICATES**

A laboratory duplicate analysis was performed on Outfall 009 for TDS. The %D was less than the laboratory-established control limit of 10%. No qualifications were required.

**2.6 MATRIX SPIKES**

No MS/MSD analyses were performed in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results. No qualifications were required.

**2.7 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit. No further qualifications were required.

**2.8 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

**2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.8.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 003 Report Number: IOK0900	Sampled: 11/09/05 Received: 11/09/05
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0900-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	98	5	11/09/05	11/10/05	Rev Qual
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	2.9	1	11/09/05	11/09/05	Rev Qual
Oil & Grease	EPA 413.1	5K14056	0.96	5.1	1.1	1	11/14/05	11/14/05	J J DKO
Sulfate	EPA 300.0	5K09130	0.90	2.5	99	5	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	590	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	19	1	11/10/05	11/10/05	

# LEVEL IV

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 Project Manager

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## **APPENDIX G**

### **Section 5**

Outfall 004, October 18, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 004

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:12

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1177-01

**CLIENT ID**  
Outfall 004

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOJ1177

Sampled: 10/18/05  
 Received: 10/18/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1177-01 (Outfall 004 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.18	2.0	<b>0.99</b>	1	10/19/05	10/20/05	J
Cadmium	EPA 200.8	5J19098	0.015	1.0	<b>0.20</b>	1	10/19/05	10/20/05	B, J
Copper	EPA 200.8	5J19098	0.49	2.0	<b>7.0</b>	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	<b>2.8</b>	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	<b>0.22</b>	1	10/19/05	10/19/05	
<b>Sample ID: IOJ1177-01RE1 (Outfall 004 - Water)</b>									
Reporting Units: ug/l									
Mercury	EPA 245.1	5J21075	0.050	0.20	<b>0.24</b>	1	10/19/05	10/21/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1177-01 (Outfall 004 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18043	0.26	0.50	6.8	1	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18043	0.072	0.26	1.3	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J21043	0.90	4.8	ND	1	10/21/05	10/21/05	
Sulfate	EPA 300.0	5J18043	0.18	0.50	5.5	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	110	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	75	1	10/20/05	10/20/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOJ1177

Sampled: 10/18/05

Received: 10/18/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 004 (IOJ1177-01) - Water EPA 300.0	2	10/18/2005 08:12	10/18/2005 14:20	10/18/2005 16:30	10/18/2005 17:00

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOJ1177

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>					<b>Source: IOJ1159-01</b>						
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>					<b>Source: IOJ1156-01</b>						
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	
<b>Batch: 5J21075 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 10/21/2005 (5J21075-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/21/2005 (5J21075-BS1)</b>											
Mercury	8.13	0.20	0.050	ug/l	8.00		102	85-115			
<b>Matrix Spike Analyzed: 10/21/2005 (5J21075-MS1)</b>					<b>Source: IOJ1447-01</b>						
Mercury	7.96	0.20	0.050	ug/l	8.00	0.12	98	70-130			
<b>Matrix Spike Dup Analyzed: 10/21/2005 (5J21075-MSD1)</b>					<b>Source: IOJ1447-01</b>						
Mercury	7.97	0.20	0.050	ug/l	8.00	0.12	98	70-130	0	20	

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 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18043 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18043-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18043-BS1)</b>											
Chloride	5.36	0.50	0.26	mg/l	5.00		107	90-110			
Sulfate	9.77	0.50	0.18	mg/l	10.0		98	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18043-MS1)</b>											
						<b>Source: IOJ1136-01</b>					
Chloride	7.31	0.50	0.26	mg/l	5.00	2.2	102	80-120			
Sulfate	14.5	0.50	0.18	mg/l	10.0	4.1	104	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18043-MSD1)</b>											
						<b>Source: IOJ1136-01</b>					
Chloride	7.12	0.50	0.26	mg/l	5.00	2.2	98	80-120	3	20	
Sulfate	14.6	0.50	0.18	mg/l	10.0	4.1	105	80-120	1	20	
<b>Batch: 5J19123 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>											
						<b>Source: IOJ0932-01</b>					
Total Dissolved Solids	289	10	10	mg/l		280			3	10	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
Total Suspended Solids	344	10	10	mg/l		340			1	10	
<b>Batch: 5J21043 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 11/08/2005 (5J21043-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/08/2005 (5J21043-BS1)</b>											
Oil & Grease	14.5	5.0	0.94	mg/l	20.0		72	65-120			M-NR1
<b>LCS Dup Analyzed: 11/08/2005 (5J21043-BSD1)</b>											
Oil & Grease	14.1	5.0	0.94	mg/l	20.0		70	65-120	3	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
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## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1177-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.095	4.8	15
IOJ1177-01	Antimony-200.8	Antimony	ug/l	0.99	2.0	6.00
IOJ1177-01	Cadmium-200.8	Cadmium	ug/l	0.20	1.0	4.00
IOJ1177-01	Chloride - 300.0	Chloride	mg/l	6.80	0.50	150
IOJ1177-01	Copper-200.8	Copper	ug/l	7.00	2.0	14
<b>IOJ1177-01</b>	<b>Mercury - 245.1</b>	<b>Mercury</b>	<b>ug/l</b>	<b>0.22</b>	<b>0.20</b>	<b>0.20</b>
IOJ1177-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	1.30	0.26	10.00
IOJ1177-01	Sulfate-300.0	Sulfate	mg/l	5.50	0.50	250
IOJ1177-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	110	10	850
<b>IOJ1177-01RE1</b>	<b>Mercury - 245.1</b>	<b>Mercury</b>	<b>ug/l</b>	<b>0.24</b>	<b>0.20</b>	<b>0.20</b>

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9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOJ1177

Sampled: 10/18/05  
Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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NPDES - 133





# Del Mar Analytical

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOJ1177-01

Analysis Performed: EDD + Level 4  
 Samples: IOJ1177-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

<b>Client Name/Address:</b> MVH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 004 Stormwater at SRE		<b>ANALYSIS REQUIRED</b>		<b>Field readings:</b> Temp = 60.1 pH = 7.33					
<b>Project Manager:</b> Bronwyn Kelly <b>Sampler:</b> Rick Baraga		<b>Phone Number:</b> (626) 568-6691 <b>Fax Number:</b> (626) 568-6515		Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg		<b>Comments</b>					
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Oil & Grease (EPA 413.1)	TCDD (and all congeners)	Cl-, SO4, NO3+NO2-N	TDS, TSS	
Outfall 004	W	Poly-1L	1	10-18-05 08:12	HNO3	1A	X				
Outfall 004-Dup	W	Poly-1L	1		HNO3	1B	X				
Outfall 004	W	Glass-Amber	2		None	2A, 2B		X			
Outfall 004	W	Glass-Amber	2		HCl	3A, 3B		X			
Outfall 004	W	Poly-500 ml	2		None	4A, 4B			X		
Outfall 004	W	Poly-500 ml	2	10-18-05 08:12	None	5A, 5B				X	
<b>Relinquished By:</b> <i>[Signature]</i> Date/Time: 10-18-05 10:10		<b>Received By:</b> <i>[Signature]</i> Date/Time: 10-18-05 14:20		<b>Relinquished By:</b> <i>[Signature]</i> Date/Time: 10-18-05 14:20		<b>Received By:</b> <i>[Signature]</i> Date/Time: 10-18-05 14:20		Turn around Time: (check) <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> 5 Days <input type="checkbox"/> 10 Days		Perchlorate Only 72 Hours <input type="checkbox"/> <input checked="" type="checkbox"/> Metals Only 72 Hours <input type="checkbox"/> <input checked="" type="checkbox"/>	
<b>Relinquished By:</b> <i>[Signature]</i> Date/Time: 10-18-05 14:20		<b>Received By:</b> <i>[Signature]</i> Date/Time: 10-18-05 14:20		Sample Integrity: (Check) <input checked="" type="checkbox"/> Intact <input type="checkbox"/> On Ice		On Ice: <input checked="" type="checkbox"/> 2°C					



**Pace Analytical Services, Inc.**  
1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**DETERMINATION OF PCDD/PCDF LEVELS**

**Prepared for:**  
**Del Mar Analytical, Irvine**  
**Attn: Michele Harper**  
**17461 Derian Avenue, Suite 100**  
**Irvine, CA 92614**



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

## **REPORT OF LABORATORY ANALYSIS**

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**REPORT OF: CHEMICAL ANALYSES**

**PROJECT:** PCDD/PCDF ANALYSES **DATE:** November 17, 2005

**ISSUED TO:** Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

**INTRODUCTION**

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

**SAMPLE IDENTIFICATION**

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

**RESULTS**

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

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**REPORT OF: CHEMICAL ANALYSES**

**PROJECT: PCDD/PCDF ANALYSES**

**DATE:** November 17, 2005

**PAGE:** 2

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763,  
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1021908, 1021910, 1021911,  
1021912, 1021959

**DISCUSSION**

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spikes samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

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**PROJECT:** PCDD/PCDF ANALYSES

**DATE:** November 17, 2005

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1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

### REMARKS

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

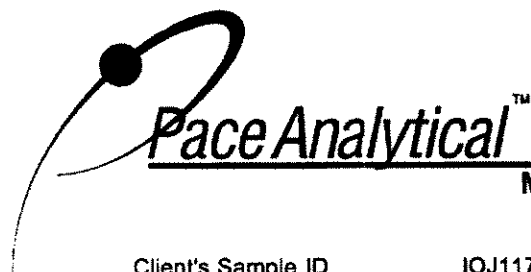
**Pace Analytical Services, Inc.**

Scott C. Unze  
Project Manager, HRMS  
(612) 607-6383

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Minneapolis, MN 55414

Tel: 612-607-1700  
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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1177-01			
Lab Sample ID	1021766001			
Filename	F51109C_12			
Injected By	BAL			
Total Amount Extracted	1040 mL	Matrix	Water	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	10/18/2005	
ICAL Date	10/22/2005	Received	10/19/2005	
CCal Filename(s)	F51109C_02	Extracted	11/08/2005	
Method Blank ID	BLANK-8223	Analyzed	11/10/2005 07:51	

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	---0.00000180		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	---0.00000180		2,3,7,8-TCDD-13C	2.00	78
				1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	---0.00000270		2,3,4,7,8-PeCDF-13C	2.00	77
Total TCDD	ND	---0.00000270		1,2,3,7,8-PeCDD-13C	2.00	102
				1,2,3,4,7,8-HxCDF-13C	2.00	77
1,2,3,7,8-PeCDF	ND	---0.00000390		1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	---0.00000570	0.00000777	I	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	0.0000220	---0.00000230	J	1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	ND	---0.00000130		1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND	---0.00000130		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
				1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	0.0000067	---0.00000210	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	73
1,2,3,6,7,8-HxCDF	ND	---0.00000230		OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	ND	---0.00000210				
1,2,3,7,8,9-HxCDF	---0.00000350	0.00000220	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.0000540	---0.00000210		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	---0.00000380		2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	0.0000290	---0.00000250	J			
1,2,3,7,8,9-HxCDD	ND	---0.00000200				
Total HxCDD	0.0000770	---0.00000280				
1,2,3,4,6,7,8-HpCDF	0.0000580	---0.00000270				
1,2,3,4,7,8,9-HpCDF	ND	---0.00000290				
Total HpCDF	0.0000580	---0.00000280				
1,2,3,4,6,7,8-HpCDD	0.0004900	---0.00000340				
Total HpCDD	0.0007600	---0.00000340				
OCDF	0.0001500	---0.00000270				
OCDD	0.0036000	---0.00000640				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021766

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**Method 1613B Blank Analysis Results**

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	--- 0.0000023		2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	---	---	2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	--- 0.0000021		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	---	---	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	--- 0.0000031		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	--- 0.0000013		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND	---	---	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	--- 0.0000018		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	---	---	1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	--- 0.0000016		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	--- 0.0000016		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	--- 0.0000015				
1,2,3,7,8,9-HxCDF	ND	--- 0.0000024		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	---	---	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	--- 0.0000030		2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	--- 0.0000031				
1,2,3,7,8,9-HxCDD	ND	--- 0.0000025				
Total HxCDD	ND	---	---			
1,2,3,4,6,7,8-HpCDF	ND	--- 0.0000018				
1,2,3,4,7,8,9-HpCDF	ND	--- 0.0000023				
Total HpCDF	ND	---	---			
1,2,3,4,6,7,8-HpCDD	0.0000041	--- 0.0000026	J			
Total HpCDD	0.0000041	---	J			
OCDF	0.0000068	--- 0.0000027	J			
OCDD	---	0.0000019	0.0000025	I		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021758

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Laboratory Control Spike Results**

Client - Del Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical Services, Inc.  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

Report No..... 1021758

### REPORT OF LABORATORY ANALYSIS

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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-8596 Fax (619) 505-8689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOJ1177 1021766**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1177-01 Water	Sampled: 10/18/05 08:12	Instant Notification
1613-Dioxin-HR	10/25/05 08:12	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 08:12	Excel EDD email to pm, include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOJ1177-01C)		
1 L Amber (IOJ1177-01D)		

1021766001

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received at (temp): 2.9

Released By: [Signature] Date: 10-18-05 Time: 1700 Received By: [Signature] Date: 11-19-05 Time: 9:05

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

## **APPENDIX G**

### **Section 6**

Outfall 004, October 18, 2005  
AMEC Data Validation Reports

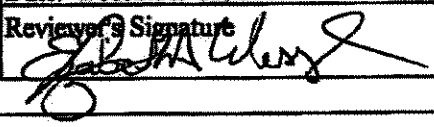
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT94  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 3

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contract Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 2  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
<b>Outfall 005</b>	<b>IOJ1176-01</b>	<b>Water</b>	<b>200.8/245.1</b>
<b>Outfall 004</b>	<b>IOJ1177-01</b>	<b>Water</b>	<b>200.8/245.1</b>
<b>Outfall 008</b>	<b>IOJ1181-01</b>	<b>Water</b>	<b>200.8/245.1</b>

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### 2.3 CALIBRATION

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### 2.4 BLANKS

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 004. No further qualifications were required.

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

**2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Reanalyses were performed for copper and or mercury in some site samples. In all cases the reanalyses confirmed the original analysis. The reanalyses were rejected in favor

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

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of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0837  
 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004  
 Report Number: IOJ1177

Sampled: 10/18/05  
 Received: 10/18/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Obs
Sample ID: IOJ1177-01 (Outfall 004 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	SJ19098	0.18	2.0	0.99	1	10/19/05	10/20/05	J	J	BNC
Cadmium	EPA 200.8	SJ19098	0.015	1.0	0.20	1	10/19/05	10/20/05	B, J	U	B
Copper	EPA 200.8	SJ19098	0.49	2.0	7.0	1	10/19/05	10/20/05			
Lead	EPA 200.8	SJ19098	0.040	1.0	2.8	1	10/19/05	10/20/05			
Mercury	EPA 245.1	SJ19052	0.063	0.20	0.22	1	10/19/05	10/19/05			
Sample ID: IOJ1177-01RE1 (Outfall 004 - Water)											
Reporting Units: ug/l											
Mercury	EPA 245.1	SJ21075	0.063	0.20	0.24	1	10/19/05	10/21/05		R	D

*Level IV Validated*

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

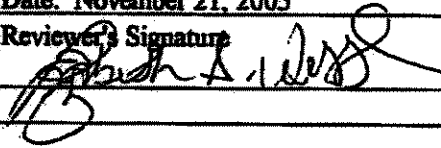
The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1177 <Page 2 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	--EMPCs qualified as estimated nondetects
Holding Times	--IOJ1186-01 and IOJ1232-01 rejected for lab contamination
GC/MS Tune/Inst. Performance	-- method blank contamination
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS*</b>	
<p>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.                  * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1177-01	<i>outfall 004</i>
Lab Sample ID	1021766001	
Filename	F51109C_12	
Injected By	BAL	
Total Amount Extracted	1040 mL	Matrix
% Moisture	NA	Water
Dry Weight Extracted	NA	Dilution
ICAL Date	10/22/2005	Collected
CCal Filename(s)	F51109C_02	Received
Method Blank ID	BLANK-9223	Extracted
		Analyzed

Raw Qual	Qual Code	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	—0.00000180		2,3,7,8-TCDF-13C	2.00	68
u		Total TCDF	ND	—0.00000180		2,3,7,8-TCDD-13C	2.00	78
						1,2,3,7,8-PeCDF-13C	2.00	72
u		2,3,7,8-TCDD	ND	—0.00000270		2,3,4,7,8-PeCDF-13C	2.00	77
u		Total TCDD	ND	—0.00000270		1,2,3,7,8-PeCDD-13C	2.00	102
						1,2,3,4,7,8-HxCDF-13C	2.00	77
u		1,2,3,7,8-PeCDF	ND	—0.00000390		1,2,3,6,7,8-HxCDF-13C	2.00	74
u3	*10	2,3,4,7,8-PeCDF	—0.00000570	0.0000077	I	2,3,4,6,7,8-HxCDF-13C	2.00	73
J	DNQ	Total PeCDF	0.0000220	—0.00000230	J	1,2,3,7,8,9-HxCDF-13C	2.00	74
						1,2,3,4,7,8-HxCDD-13C	2.00	73
u		1,2,3,7,8-PeCDD	ND	—0.00000130		1,2,3,6,7,8-HxCDD-13C	2.00	81
u		Total PeCDD	ND	—0.00000130		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
						1,2,3,4,7,8,9-HpCDF-13C	2.00	81
J	DNQ	1,2,3,4,7,8-HxCDF	0.0000067	—0.00000210	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	73
u		1,2,3,6,7,8-HxCDF	ND	—0.00000230		OCDD-13C	4.00	57
u		2,3,4,6,7,8-HxCDF	ND	—0.00000210				
u3	*10	1,2,3,7,8,9-HxCDF	—0.00000350	0.00000220	I	1,2,3,4-TCDD-13C	2.00	NA
		Total HxCDF	0.0000540	—0.00000210		1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	—0.00000380		2,3,7,8-TCDD-37CM	0.20	81
J	DNQ	1,2,3,6,7,8-HxCDD	0.0000290	—0.00000250	J			
u		1,2,3,7,8,9-HxCDD	ND	—0.00000200				
		Total HxCDD	0.0000770	—0.00000280				
u		1,2,3,4,6,7,8-HpCDF	0.0000580	—0.00000270				
u		1,2,3,4,7,8,9-HpCDF	ND	—0.00000290				
u		Total HpCDF	0.0000580	—0.00000280				
u		1,2,3,4,6,7,8-HpCDD	0.0004900	—0.00000340				
u		Total HpCDD	0.0007600	—0.00000340				
u		OCDF	0.0001500	—0.00000270				
u		OCDD	0.0036000	—0.00000840				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021766

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC179  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 3

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - <u>Acceptable as reviewed</u>
<b>COMMENTS<sup>b</sup></b>	_____

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ 1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 3  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table I was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 005	IOJ1176-01	Water	General Minerals
Outfall 004	IOJ1177-01	Water	General Minerals
Outfall 008	IOJ1181-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 3520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004 Report Number: IOJ1177	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1177-01 (Outfall 004 - Water) - cont. Reporting Units: mg/l									
Chloride	EPA 300.0	5J18043	0.26	0.50	6.8	1	10/18/05	10/18/05	Rev. Qual
Nitrate/Nitrite-N	EPA 300.0	5J18043	0.072	0.26	1.3	1	10/18/05	10/18/05	Qual Code
Oil & Grease	EPA 413.1	5J21043	0.90	4.8	ND	1	10/21/05	10/21/05	u
Sulfate	EPA 300.0	5J18043	0.18	0.50	5.5	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	110	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	75	1	10/20/05	10/20/05	

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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## **APPENDIX G**

### **Section 7**

Outfall 004, November 09, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 004

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:30

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOK0901-01

**CLIENT ID**  
Outfall 004

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004 Report Number: IOK0901	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0901-01 (Outfall 004 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.18	2.0	4.0	1	11/16/05	11/16/05	
Cadmium	EPA 200.8	5K16096	0.015	1.0	0.21	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.49	2.0	11	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	2.7	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	0.065	1	11/17/05	11/17/05	J

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05

Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0901-01 (Outfall 004 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	0.26	0.50	14	1	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	2.4	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.91	4.9	1.7	1	11/14/05	11/14/05	J
Sulfate	EPA 300.0	5K09130	0.18	0.50	11	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	190	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	64	1	11/10/05	11/10/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05

Received: 11/09/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 004 (IOK0901-01) - Water EPA 300.0	2	11/09/2005 13:52	11/09/2005 18:00	11/09/2005 23:30	11/10/2005 00:28

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0	94	85-115				
Cadmium	85.7	1.0	0.025	ug/l	80.0	107	85-115				
Copper	82.7	2.0	0.25	ug/l	80.0	103	85-115				
Lead	82.4	1.0	0.040	ug/l	80.0	103	85-115				
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1) Source: IOK0918-02</b>											
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95	70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108	70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2) Source: IOK0922-03</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94	70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108	70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1) Source: IOK0918-02</b>											
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94	70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108	70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	

Del Mar Analytical, Irvine  
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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOK0901	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05  
 Received: 11/09/05

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							J
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1) Source: IOK0875-01</b>											
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1) Source: IOK0875-01</b>											
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1) Source: IOK0617-01</b>											
Total Suspended Solids	440	10	10	mg/l		450			2	10	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOK0901	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NR1
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01 200			2	10	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05

Received: 11/09/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0901-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.70	4.9	15
IOK0901-01	Antimony-200.8	Antimony	ug/l	4.00	2.0	6.00
IOK0901-01	Cadmium-200.8	Cadmium	ug/l	0.21	1.0	4.00
IOK0901-01	Chloride - 300.0	Chloride	mg/l	14	0.50	150
IOK0901-01	Copper-200.8	Copper	ug/l	11	2.0	14
IOK0901-01	Mercury - 245.1	Mercury	ug/l	0.065	0.20	0.20
IOK0901-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	2.40	0.26	10.00
IOK0901-01	Sulfate-300.0	Sulfate	mg/l	11	0.50	250
IOK0901-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	190	10	850

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOK0901

Sampled: 11/09/05

Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004  Report Number: IOK0901	Sampled: 11/09/05 Received: 11/09/05
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOK0901-01

Analysis Performed: EDD + Level 4

Samples: IOK0901-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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1000901

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: <i>P. Albock</i>		<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 004 Stormwater at SRE Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>ANALYSIS REQUIRED</b>		Field readings: Temp = 61.0 pH = 7.5 Comments					
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cr, SO4, NO3+NO2-N	TDS, TSS
Outfall 004	W	Poly-1L	1	11-9-05 13:15	HNO3	1A	X				
Outfall 004-Dup	W	Poly-1L	1		HNO3	1B	X				
Outfall 004	W	Glass-2	2		None	2A, 2B		X			
Outfall 004	W	Glass-2	2		HCl	3A, 3B		X			
Outfall 004	W	Poly-500 ml	2		None	4A, 4B			X		
Outfall 004	W	Poly-500 ml	2		None	5A, 5B				X	
Relinquished By	<i>[Signature]</i>	Date/Time	11-9-05 1500	Received By	<i>[Signature]</i>	Date/Time	11/9/05 1500	Turn around Time: (check)	24 Hours	5 Days	
Relinquished By	<i>[Signature]</i>	Date/Time	11/9/05 1800	Received By	<i>[Signature]</i>	Date/Time	11/9/05 1800	48 Hours	10 Days		
Relinquished By	<i>[Signature]</i>	Date/Time	11/9/05 1800	Received By	<i>[Signature]</i>	Date/Time	11/9/05 1800	72 Hours	Normal		
								Perchlorate Only 72 Hours			
								Metals Only 72 Hours			
								Sample Integrity: (Check)	Intact		On Ice: <i>4°C</i>

*[Handwritten mark]*



December 10, 2005

**Alta Project I.D.: 27027**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0901". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

An "A" qualifier indicates that the result is greater than the low point in the calibration curve, but lower than the EPA Method 1613 Minimum Level.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

Project 27027

Page 1 of 291

NPDES - 183

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27027-001

IOK0901-01

**SECTION II**

Method Blank		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.00000105		79.8	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000893		81.3	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000158		75.1	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000149		77.1	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000154		70.9	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000172		56.0	17 - 157
OCDD	ND	0.00000585		79.9	24 - 169
2,3,7,8-TCDF	ND	0.000000899		73.7	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000135		76.2	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000117		70.8	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000723		74.2	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000682		73.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000824		76.6	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000132		68.4	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000743		72.8	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000947		59.0	17 - 157
OCDF	ND	0.00000230		97.0	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.00000105			
Total PeCDD	ND	0.000000893			
Total HxCDD	ND	0.00000154			
Total HpCDD	ND	0.00000172			
Total TCDF	ND	0.000000899			
Total PeCDF	ND	0.000000593			
Total HxCDF	ND	0.000000861			
Total HpCDF	ND	0.000000833			

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: WJL

Approved By: Martha M. Maier 10-Dec-2005 14:38

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001	
Sample Size:	1,000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-1CDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL

Approved By: Martha M. Maier 10-Dec-2005 14:38

**EPA Method 1613**

**Sample ID: IOK0901-01**

<b>Client Data</b>		<b>Laboratory Data</b>	
Name: Del Mar Analytical, Irvine	Lab Sample: 27027-001	Date Received: 8-Dec-05	
Project: IOK0901	QC Batch No: 7516	Date Extracted: 8-Dec-05	
Date Collected: 9-Nov-05	Date Analyzed DB-5: 10-Dec-05	Date Analyzed DB-225: N/A	
Time Collected: 1352			

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000119			IS 13C-2,3,7,8-TCDD	80.8	25 - 164	
1,2,3,7,8-PeCDD	0.0000168			J	13C-1,2,3,7,8-PeCDD	76.8	25 - 181	
1,2,3,4,7,8-HxCDD	0.0000248			J	13C-1,2,3,4,7,8-HxCDD	73.6	32 - 141	
1,2,3,6,7,8-HxCDD	0.0000693			J	13C-1,2,3,6,7,8-HxCDD	74.2	28 - 130	
1,2,3,7,8,9-HxCDD	0.0000324			J	13C-1,2,3,4,6,7,8-HpCDD	72.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000209				13C-OCDD	56.3	17 - 157	
OCDD	0.00318				13C-2,3,7,8-TCDF	78.5	24 - 169	
2,3,7,8-TCDF	0.0000742			A	13C-1,2,3,7,8-PeCDF	76.0	24 - 185	
1,2,3,7,8-PeCDF	0.0000724			J	13C-2,3,4,7,8-PeCDF	73.5	21 - 178	
2,3,4,7,8-PeCDF	0.0000957			J	13C-1,2,3,4,7,8-HxCDF	69.0	26 - 152	
1,2,3,4,7,8-HxCDF	0.0000510			J	13C-1,2,3,6,7,8-HxCDF	70.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND		0.00000474		13C-2,3,4,6,7,8-HxCDF	70.4	28 - 136	
2,3,4,6,7,8-HxCDF	0.0000481			J	13C-1,2,3,7,8,9-HxCDF	74.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.0000165			13C-1,2,3,4,6,7,8-HpCDF	65.6	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.000276			A	13C-1,2,3,4,7,8,9-HpCDF	73.7	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.0000299			13C-OCDF	60.4	17 - 157	
OCDF	0.0000764			A	CRS 37C1-2,3,7,8-TCDD	93.7	35 - 197	

Totals	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Footnotes
Total TCDD	0.0000186				a. Sample specific estimated detection limit.
Total PeCDD	0.0000111				b. Estimated maximum possible concentration.
Total HxCDD	0.0000415				c. Method detection limit.
Total HpCDD	0.000398				d. Lower control limit - upper control limit.
Total TCDF	0.000179				
Total PeCDF	0.0000834				
Total HxCDF	0.0000455				
Total HpCDF	0.000123				

Analyst: WJL  
 Approved By: Martha M. Maier  
 10-Dec-2005 14:38

**APPENDIX**



## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Copley Dr., Suite A, Corona, CA 92734 Ph (951) 370-4867 Fax (951) 370-1048  
 9484 Champagne Drive, Suite 800, San Diego, CA 92123 Ph (619) 500-8888 Fax (619) 500-8889  
 8530 South 81st Street, Suite B-126, Phoenix, AZ 85044 Ph (480) 788-8043 Fax (480) 788-8861  
 2020 E. Sunset Rd., Suite 103, Las Vegas, NV 89120 Ph (702) 788-8888 Fax (702) 788-8821

**SUBCONTRACT ORDER - PROJECT # IOK0901**

<p align="center"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Chamberlin</p>	<p align="center"><b>RECEIVING LABORATORY:</b></p> <p>Alta Analytical - SUB          1104 Windfield Way          El Dorado Hills, CA 95762          Phone: (916) 933-1640          Fax: (916) 673-0106</p> <p align="right" style="font-size: 2em;"><i>27027</i> <i>1.7c</i></p>
---	--

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0901-01	Water	Sampled: 11/09/05 13:52
1613-Dioxin-HR	11/16/05 13:52	Instant Notification
EDD + Level 4	12/07/05 13:52	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOK0901-01C)		
1 L Amber (IOK0901-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

*COC rec'd via email Bettina Al Benedict 12/8/05*

Released By	Date	Time	Received By	Date	Time

### SAMPLE LOG-IN CHECKLIST

Alta Project #: 27027

Samples Arrival:	Date/Time <u>12/8/05 0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05 1059</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	✓		
Trk # <u>6741 2902 3830</u>	✓		
Sample Container Intact?			✓
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?		✓	
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container <u>None</u>
Shipping Container	Alta	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:

## **APPENDIX G**

### **Section 8**

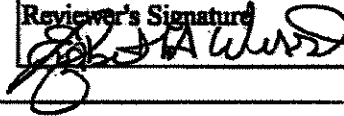
Outfall 004, November 09, 2005

AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8  
 Date: December 22, 2005  
 Reviewer's Signature 

Laboratory Alta  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by 1613

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	  
2. Out of Scope Analyses	  
3. Analyses Not Conducted	  
4. Missing Hardcopy Deliverables	  
5. Incorrect Hardcopy Deliverables	  
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	-- false positive
Holding Times	--estimated values between the RL and MDL
GC/MS Tune/Inst. Performance	--estimated maximum possible concentrations
Calibration	--nonconfirmation of 2,3,7,8-TCDF
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOK0901-01		EPA Method 1613					
Client Data		Laboratory Data					
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 27027-001	Date Received: 8-Dec-05				
Project: IOK0901	Sample Size: 0.996 L	QC Batch No.: 7516	Date Extracted: 8-Dec-05				
Date Collected: 9-Nov-05		Date Analyzed DB-S: 10-Dec-05	Date Analyzed DB-225: NA				
Time Collected: 1:32							
Analyte	Conc. (ng/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000119			80.8	25 - 164	
1,2,3,7,8-PeCDD	0.00000168			J	76.8	25 - 181	
1,2,3,4,7,8-HxCDD	0.00000248			J	73.6	32 - 141	
1,2,3,6,7,8-HxCDD	0.00000693			J	74.2	28 - 130	
1,2,3,7,8,9-HxCDD	0.00000324			J	72.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000209				56.3	17 - 157	
OCDD	0.00318				78.5	24 - 169	
2,3,7,8-TCDF	0.00000742			A	76.0	24 - 185	
1,2,3,7,8-PeCDF	0.00000724			J	73.5	21 - 178	
2,3,4,7,8-PeCDF	0.00000957			J	69.0	26 - 152	
1,2,3,4,7,8-HxCDF	0.00000510		0.00000474	J	70.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND				70.4	28 - 136	
2,3,4,6,7,8-HxCDF	0.00000481			J	74.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000165			65.6	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000276			A	73.7	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000299			60.4	17 - 157	
OCDF	0.0000764			A	93.7	35 - 197	
Totals							
Total TCDD	0.0000186						
Total PeCDD	0.0000111		0.0000261				
Total HxCDD	0.0000415		0.0000175				
Total HpCDD	0.000398		0.0000439				
Total TCDF	0.000179		0.000184				
Total PeCDF	0.0000834		0.0000872				
Total HxCDF	0.0000455		0.0000562				
Total HpCDF	0.000123						

*Handwritten notes:* 004, 004

*Handwritten notes:* 4, 7, 10, 4, 4

**Footnotes**  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Approved By: **Martina M. Maier** 10-Dec-2005 14:38


Project 27027

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT95  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals by 200.8/245.1

Date: December 22, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -blank contamination - estimations between the MDL and RL - reanalyses rejected in favor of original analyses
COMMENTS*	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: METALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

Project: NPDES  
SDG: Multiple  
Analysis: Metals

**DATA VALIDATION REPORT**

---

**1. INTRODUCTION**

Task Order Title: NPDES Sampling  
MEC<sup>X</sup> Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 4  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Data Validation Procedure for ICP Metals (DVP-5, Rev. 2)*, *US EPA Method 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the USEPA *CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	200.8/245.1
Outfall 003RE1	IOK0900-01RE1	Water	200.8
Outfall 004	IOK0901-01	Water	200.8/245.1
Outfall 005	IOK0902-01	Water	200.8/245.1
Outfall 005RE1	IOK0902-01RE1	Water	200.8
Outfall 006	IOK0903-01	Water	200.8/245.1
Outfall 006RE1	IOK0903-01RE1	Water	200.8/245.1
Outfall 006RE2	IOK0903-01RE2	Water	200.8
Outfall 009	IOK0904-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples in these SDG were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. The laboratory did not append the client IDs with "RE" suffices; therefore, the reviewer added these to the Form Is. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP-MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP-MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with these SDGs and all recoveries were acceptable. No qualifications were required.

## 2.4 BLANKS

Mercury was reported in method blank 5K17098-BLK1 at  $-0.072 \mu\text{g/L}$ ; therefore, mercury in Outfall 003, Outfall 004, and Outfall 005 was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining method blank and CCB results associated with the retained analyses were nondetects at the reporting limit or were significantly below the sample detects so as not to result in data qualification. No qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were performed in association with the Outfall 003 selenium analysis. The recoveries were within the control limits. No other ICSA or ICSAB analyses were included in the raw data for the ICP-MS analyses. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP-MS and mercury LCS sample results were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. No qualifications were required.

## 2.8 MATRIX SPIKES

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. Evaluation of laboratory accuracy was based on LCS results. No qualifications were required.

## 2.9 ICP-MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.10 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.11 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Some target analytes were reported from dilution analyses due to matrix interference. Reporting limits and MDLs were adjusted accordingly. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. As the original results were all confirmed, the results for Outfall 003RE1, Outfall 005RE1, Outfall 006RE1, and Outfall 006RE2 were rejected, "R," in favor of the original results. No further qualifications were required.

## 2.12 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.12.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.12.2 Field Duplicates

There were no field duplicate analyses performed in association with these samples.



17461 Dorian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0857  
 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 004 Report Number: IOK0901	Sampled: 11/09/05 Received: 11/09/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0901-01 (Outfall 004 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.18	2.0	4.0	1	11/16/05	11/16/05	
Cadmium	EPA 200.8	5K16096	0.015	1.0	0.21	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.49	2.0	11	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	2.7	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.063	0.20	0.065	1	11/17/05	11/17/05	J J

*See Cert  
 Outfall  
 Data*

**LEVEL IV**

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*


IOK0901 <Page 2 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC181  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 22, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - estimations between the MDL and RL
<b>COMMENTS*</b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: GENERAL MINERALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
AMEC Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for General Minerals (DVP-6, Rev. 2)*, *USEPA Methods for Chemical Analysis of Water and Wastes Methods 160.2, 300.0, and 413.1*, *Standard Methods for the Examination of Water and Wastewater Method SM5540-CMOD*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form Is as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOK0900-01	Water	General Minerals
Outfall 004	IOK0901-01	Water	General Minerals
Outfall 005	IOK0902-01	Water	General Minerals
Outfall 006	IOK0903-01	Water	General Minerals
Outfall 009	IOK0904-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times were met and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The blank results associated with the analyses were nondetects at the reporting limit or were significantly less than the sample detects so as not to result in data qualification. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

## 2.5 LABORATORY DUPLICATES

A laboratory duplicate analysis was performed on Outfall 009 for TDS. The %D was less than the laboratory-established control limit of 10%. No qualifications were required.

## 2.6 MATRIX SPIKES

No MS/MSD analyses were performed in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit. No further qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Bocing Project ID: Routine Outfall 004  
300 North Lake Avenue, Suite 1200 Report Number: IOK0901  
Pasadena, CA 91101 Sampled: 11/09/05  
Attention: Bronwyn Kelly Received: 11/09/05

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0901-01 (Outfall 004 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	0.26	0.50	14	1	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	2.4	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.91	4.9	1.7	1	11/14/05	11/14/05	
Sulfate	EPA 300.0	5K09130	0.18	0.50	11	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	190	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	64	1	11/10/05	11/10/05	

LEVEL IV

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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IOK0901 <Page 3 of 11>

# **APPENDIX G**

## **Section 9**

**Outfall 005, October 18, 2005**

**Del Mar Analytical Laboratory Report**



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 005

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:09

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1176-01

**CLIENT ID**  
Outfall 005

**MATRIX**  
Water

Reviewed By:

**Del Mar Analytical, Irvine**  
Michele Chamberlin  
Project Manager



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1176-01 (Outfall 005 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.36	4.0	ND	2	10/19/05	10/20/05	
Cadmium	EPA 200.8	5J19098	0.030	2.0	1.6	2	10/19/05	10/20/05	J
Copper	EPA 200.8	5J19098	0.98	4.0	30	2	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.080	2.0	34	2	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.41	1	10/19/05	10/19/05	
<b>Sample ID: IOJ1176-01RE1 (Outfall 005 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5J19098	0.98	4.0	31	2	10/19/05	10/24/05	
Mercury	EPA 245.1	5J21075	0.050	0.20	0.46	1	10/19/05	10/21/05	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOJ1176

Sampled: 10/18/05  
 Received: 10/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1176-01 (Outfall 005 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	1.3	2.5	27	5	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	16	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J21043	0.90	4.8	ND	1	10/21/05	10/21/05	
Sulfate	EPA 300.0	5J18042	0.18	0.50	18	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	540	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	3000	1	10/20/05	10/20/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
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## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 005 (IOJ1176-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 08:45	10/18/2005 14:20	10/18/2005 16:00	10/18/2005 17:37

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOJ1176

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: SJ19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (SJ19098-MS2)</b>					<b>Source: IOJ1159-01</b>						
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (SJ19098-MSD1)</b>					<b>Source: IOJ1156-01</b>						
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	
<b>Batch: SJ21075 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 10/21/2005 (SJ21075-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/21/2005 (SJ21075-BS1)</b>											
Mercury	8.13	0.20	0.050	ug/l	8.00		102	85-115			
<b>Matrix Spike Analyzed: 10/21/2005 (SJ21075-MS1)</b>					<b>Source: IOJ1447-01</b>						
Mercury	7.96	0.20	0.050	ug/l	8.00	0.12	98	70-130			
<b>Matrix Spike Dup Analyzed: 10/21/2005 (SJ21075-MSD1)</b>					<b>Source: IOJ1447-01</b>						
Mercury	7.97	0.20	0.050	ug/l	8.00	0.12	98	70-130	0	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>										
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>										
Chloride	ND	0.50	0.26	mg/l						
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l						
Sulfate	ND	0.50	0.18	mg/l						
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>										
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110		M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110		
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>										
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120		
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>										
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20
<b>Batch: 5J19123 Extracted: 10/19/05</b>										
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>										
Total Dissolved Solids	ND	10	10	mg/l						
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>										
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110		
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>										
Total Dissolved Solids	289	10	10	mg/l		280			3	10
<b>Batch: 5J20118 Extracted: 10/20/05</b>										
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>										
Total Suspended Solids	ND	10	10	mg/l						

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
Total Suspended Solids	344	10	10	mg/l		Source: IOJ1175-01 340			1	10	
<b>Batch: 5J21043 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 11/08/2005 (5J21043-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/08/2005 (5J21043-BS1)</b>											
Oil & Grease	14.5	5.0	0.94	mg/l	20.0		72	65-120			M-NRI
<b>LCS Dup Analyzed: 11/08/2005 (5J21043-BSD1)</b>											
Oil & Grease	14.1	5.0	0.94	mg/l	20.0		70	65-120	3	20	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1176-01	413.1 Oil and Grease	Oil & Grease	mg/l	0	4.8	15
IOJ1176-01	Antimony-200.8	Antimony	ug/l	0.33	4.0	6.00
IOJ1176-01	Cadmium-200.8	Cadmium	ug/l	1.60	2.0	4.00
IOJ1176-01	Chloride - 300.0	Chloride	mg/l	27	2.5	150
IOJ1176-01	Copper-200.8	Copper	ug/l	30	4.0	14
IOJ1176-01	Mercury - 245.1	Mercury	ug/l	0.41	0.20	0.20
IOJ1176-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	16	0.26	10.00
IOJ1176-01	Sulfate-300.0	Sulfate	mg/l	18	0.50	250
IOJ1176-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	540	10	850
IOJ1176-01RE1	Copper-200.8	Copper	ug/l	31	4.0	14
IOJ1176-01RE1	Mercury - 245.1	Mercury	ug/l	0.46	0.20	0.20

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**DATA QUALIFIERS AND DEFINITIONS**

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOJ1176-01

Analysis Performed: EDD + Level 4  
 Samples: IOJ1176-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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199 IDJ1176  
Page 1 of 1

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/04

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly		<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 005 Stormwater at FSDF-1		<b>ANALYSIS REQUIRED</b>			Field readings: Temp = 57.0 pH = 7.4 Comments				
<b>Phone Number:</b> (626) 568-6691 <b>Fax Number:</b> (626) 568-6515		<b>Sample:</b> <i>Pollock</i>		Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	Oil & Grease (EPA 413.1)	Cl-, SO4, NO3+NO2-N	TDS, TSS				
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	Sampling Date/Time	SP, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl-, SO4, NO3+NO2-N	TDS, TSS
Outfall 005	W	Poly-1L	1	HNO3	1A	10-18-05 08:20	X				
Outfall 005-Dup	W	Poly-1L	1	HNO3	1B		X				
Outfall 005	W	Glass-Amber	2	None	2A, 2B			X			
Outfall 005	W	Glass-Amber	2	HCl	3A, 3B			X			
Outfall 005	W	Poly-500 ml	2	None	4A, 4B					X	
Outfall 005	W	Poly-500 ml	2	None	5A, 5B						
Relinquished By: <i>[Signature]</i>		Date/Time: 10-18-05 10:00		Received By: <i>[Signature]</i>		Date/Time: 10-18-05 10:00		Turn around Time: (check) <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> Normal			
Relinquished By: <i>[Signature]</i>		Date/Time: 10-18-05 14:20		Received By: <i>[Signature]</i>		Date/Time: 10-18-05 14:20		Perchlorate Only 72 Hours <input type="checkbox"/>			
Relinquished By:		Date/Time:		Received By:		Date/Time:		Metals Only 72 Hours <input type="checkbox"/>			
								Sample Integrity: (Check) <input checked="" type="checkbox"/> Intact <input type="checkbox"/> On Ice: 20			



**Pace Analytical Services, Inc.**  
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Fax: 612.607.6444

## DETERMINATION OF PCDD/PCDF LEVELS

Prepared for:  
**Del Mar Analytical, Irvine**  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

## REPORT OF LABORATORY ANALYSIS

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## REPORT OF: CHEMICAL ANALYSES

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**PROJECT:** PCDD/PCDF ANALYSES

**DATE:** November 17, 2005

**ISSUED TO:** Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

### INTRODUCTION

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

### SAMPLE IDENTIFICATION

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

### RESULTS

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

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**PROJECT:** PCDD/PCDF ANALYSES

**DATE:** November 17, 2005

**PAGE:** 2

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

### DISCUSSION

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spikes samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

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**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**REMARKS**

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

**Pace Analytical Services, Inc.**

Scott C. Unze  
Project Manager, HRMS  
(612) 607-6383

**REPORT OF LABORATORY ANALYSIS**

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1176-01	Matrix	Water
Lab Sample ID	1021760001	Dilution	NA
Filename	F51109C_08	Collected	10/18/2005
Injected By	BAL	Received	10/19/2005
Total Amount Extracted	965 mL	Extracted	11/08/2005
% Moisture	NA	Analyzed	11/10/2005 04:36
Dry Weight Extracted	NA		
ICAL Date	10/22/2005		
CCal Filename(s)	F51109C_02		
Method Blank ID	BLANK-8223		

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000026	0.0000026	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	ND	0.0000026	0.0000026	2,3,7,8-TCDD-13C	2.00	62
				1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	0.0000031	0.0000031	2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	ND	0.0000031	0.0000031	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	62
1,2,3,7,8-PeCDF	ND	0.0000035	0.0000035	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	0.0000017	0.0000017	2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	ND	0.0000026	0.0000026	1,2,3,7,8,9-HxCDF-13C	2.00	62
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	0.0000019	0.0000019	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	0.0000019	0.0000019	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	0.0000018	0.0000018	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	ND	0.0000029	0.0000029	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	ND	0.0000026	0.0000026			
1,2,3,7,8,9-HxCDF	ND	0.0000036	0.0000036	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	0.0000027	0.0000027	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000029	0.0000029	2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	0.0000028	0.0000028	0.0000028			
1,2,3,7,8,9-HxCDD	ND	0.0000028	0.0000028			
Total HxCDD	ND	0.0000029	0.0000029			
1,2,3,4,6,7,8-HpCDF	0.000011	0.0000034	0.0000034	J		
1,2,3,4,7,8,9-HpCDF	ND	0.0000034	0.0000034			
Total HpCDF	0.000011	0.0000034	0.0000034	J		
1,2,3,4,6,7,8-HpCDD	0.000110	0.0000038	0.0000038			
Total HpCDD	0.000210	0.0000038	0.0000038			
OCDF	0.000052	0.0000035	0.0000035	BJ		
OCDD	0.002600	0.0000069	0.0000069			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021760

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### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	— 0.0000023	—	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	—	—	2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	— 0.0000021	—	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	—	—	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	— 0.0000031	—	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	— 0.0000013	—	2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND	—	—	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	— 0.0000018	—	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	—	—	1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	— 0.0000016	—	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	— 0.0000016	—	OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	— 0.0000015	—			
1,2,3,7,8,9-HxCDF	ND	— 0.0000024	—	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	—	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	— 0.0000030	—	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	— 0.0000031	—			
1,2,3,7,8,9-HxCDD	ND	— 0.0000025	—			
Total HxCDD	ND	—	—			
1,2,3,4,6,7,8-HpCDF	ND	— 0.0000018	—			
1,2,3,4,7,8,9-HpCDF	ND	— 0.0000023	—			
Total HpCDF	ND	—	—			
1,2,3,4,6,7,8-HpCDD	0.0000041	— 0.0000026	J			
Total HpCDD	0.0000041	—	J			
OCDF	0.0000068	— 0.0000027	J			
OCDD	— 0.000019	0.0000025	I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021758

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

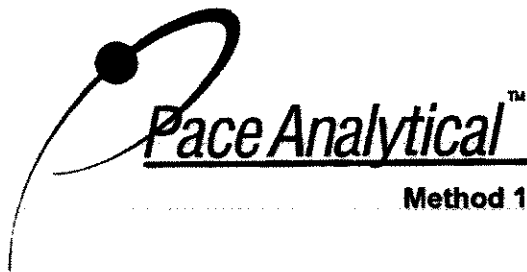
Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client: ..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

Report No..... 1021758

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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 788-3820 Fax (702) 788-3821

**SUBCONTRACT ORDER - PROJECT # IOJ1176 1021760**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone: (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1176-01 Water	Sampled: 10/18/05 08:45	Instant Notification
1613-Dioxin-HR	10/25/05 08:45	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 08:45	Excel EDD email to pm, Include Std logs for Lvl IV
Containers Supplied: 1 L Amber (IOJ1176-01C) 1 L Amber (IOJ1176-01D)		

1021760001

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received at (temp): 05

Released By: [Signature] Date: 10-18-05 Time: 1700 Received By: J Richardson Date: 10/19/05 Time: 9:05

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

## **APPENDIX G**

### **Section 10**

Outfall 005, October 18, 2005

AMEC Data Validation Reports

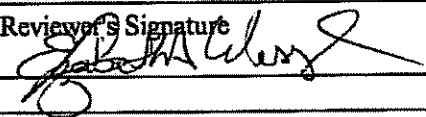
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT94  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 3

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 2  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 005	IOJ1176-01	Water	200.8/245.1
Outfall 004	IOJ1177-01	Water	200.8/245.1
Outfall 008	IOJ1181-01	Water	200.8/245.1



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### 2.3 CALIBRATION

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### 2.4 BLANKS

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 004. No further qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Reanalyses were performed for copper and or mercury in some site samples. In all cases the reanalyses confirmed the original analysis. The reanalyses were rejected in favor

**DATA VALIDATION REPORT**

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of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-8689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real	Real
Sample ID: IOJ1176-01 (Outfall 005 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	5J19098	0.36	4.0	ND	2	10/19/05	10/20/05	J	u	
Cadmium	EPA 200.8	5J19098	0.030	2.0	1.6	2	10/19/05	10/20/05		J	DWQ
Copper	EPA 200.8	5J19098	0.98	4.0	30	2	10/19/05	10/20/05			
Lead	EPA 200.8	5J19098	0.080	2.0	34	2	10/19/05	10/20/05			
Mercury	EPA 245.1	5J19052	0.063	0.20	0.41	1	10/19/05	10/19/05			
Sample ID: IOJ1176-01RE1 (Outfall 005 - Water)											
Reporting Units: ug/l											
Copper	EPA 200.8	5J19098	0.98	4.0	31	2	10/19/05	10/24/05		R	D
Mercury	EPA 245.1	5J21075	0.063	0.20	0.46	1	10/19/05	10/21/05		R	D

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1176 <Page 2 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Pace - Minneapolis

Date: November 21, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Dioxins/Furans by Method 1613B

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOJ1176-01 *Outfall 005*  
 Lab Sample ID 1021760001  
 Filename F51109C\_08  
 Injected By BAL  
 Total Amount Extracted 985 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 10/22/2005  
 CCal Filename(s) F51109C\_02  
 Method Blank ID BLANK-8223  
 Matrix Water  
 Dilution NA  
 Collected 10/18/2005  
 Received 10/19/2005  
 Extracted 11/08/2005  
 Analyzed 11/10/2005 04:38

Raw Qual	Qual Code	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	—	0.000026	2,3,7,8-TCDF-13C	2.00	58
		Total TCDF	ND	—	0.000026	2,3,7,8-TCDD-13C	2.00	62
						1,2,3,7,8-PeCDF-13C	2.00	61
		2,3,7,8-TCDD	ND	—	0.000031	2,3,4,7,8-PeCDF-13C	2.00	64
		Total TCDD	ND	—	0.000031	1,2,3,7,8-PeCDD-13C	2.00	80
						1,2,3,4,7,8-HxCDF-13C	2.00	62
		1,2,3,7,8-PeCDF	ND	—	0.000035	1,2,3,6,7,8-HxCDF-13C	2.00	62
		2,3,4,7,8-PeCDF	ND	—	0.000017	2,3,4,6,7,8-HxCDF-13C	2.00	61
		Total PeCDF	ND	—	0.000026	1,2,3,7,8,9-HxCDF-13C	2.00	62
						1,2,3,4,7,8-HxCDD-13C	2.00	58
		1,2,3,7,8-PeCDD	ND	—	0.000019	1,2,3,6,7,8-HxCDD-13C	2.00	86
		Total PeCDD	ND	—	0.000019	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
						1,2,3,4,7,8,9-HpCDF-13C	2.00	54
		1,2,3,4,7,8-HxCDF	ND	—	0.000018	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
		1,2,3,6,7,8-HxCDF	ND	—	0.000029	OCDD-13C	4.00	55
	2,3,4,6,7,8-HxCDF	ND	—	0.000026				
	1,2,3,7,8,9-HxCDF	ND	—	0.000036	1,2,3,4-TCDD-13C	2.00	NA	
	Total HxCDF	ND	—	0.000027	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
u		1,2,3,4,7,8-HxCDD	ND	—	0.000029	2,3,7,8-TCDD-37Cl4	0.20	70
u	*10	1,2,3,6,7,8-HxCDD	—	0.000028	0.000028			
u		1,2,3,7,8,9-HxCDD	ND	—	0.000028			
u		Total HxCDD	ND	—	0.000029			
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.000011	—	0.000034	J		
u		1,2,3,4,7,8,9-HpCDF	ND	—	0.000034			
J	DNQ	Total HpCDF	0.000011	—	0.000034	J		
		1,2,3,4,6,7,8-HpCDD	0.000110	—	0.000038			
		Total HpCDD	0.000210	—	0.000038			
u	B	OCDF	0.000052	—	0.000035	BJ		
		OCDD	0.002600	—	0.000069			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021760

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC179  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 3

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Acceptable as reviewed
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ 1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 3  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2*, USEPA *Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1*, *Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 005	IOJ1176-01	Water	General Minerals
Outfall 004	IOJ1177-01	Water	General Minerals
Outfall 008	IOJ1181-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOJ1176	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOJ1176-01 (Outfall 005 - Water) - cont. Reporting Units: mg/l										
Chloride	EPA 300.0	5J18042	1.3	2.5	27	5	10/18/05	10/18/05		
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	16	1	10/18/05	10/18/05		
Oil & Grease	EPA 413.1	5J21043	0.90	4.8	ND	1	10/21/05	10/21/05	u	
Sulfate	EPA 300.0	5J18042	0.18	0.50	18	1	10/18/05	10/18/05		
Total Dissolved Solids	SM2540C	5J19123	10	10	540	1	10/19/05	10/19/05		
Total Suspended Solids	EPA 160.2	5J20118	10	10	3000	1	10/20/05	10/20/05		

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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## **APPENDIX G**

### **Section 11**

Outfall 005, November 09, 2005

Del Mar Analytical Laboratory Report



Del Mar Analytical

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### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 005

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:34

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

### SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**

IOK0902-01

**CLIENT ID**

Outfall 005

**MATRIX**

Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOK0902

Sampled: 11/09/05

Received: 11/09/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0902-01 (Outfall 005 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.36	4.0	3.4	2	11/16/05	11/16/05	RL-1, J
Cadmium	EPA 200.8	5K16096	0.030	2.0	0.51	2	11/16/05	11/17/05	RL-1, J
Copper	EPA 200.8	5K16096	0.98	4.0	20	2	11/16/05	11/16/05	
Lead	EPA 200.8	5K16096	0.080	2.0	10	2	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	
<b>Sample ID: IOK0902-01RE1 (Outfall 005 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5K19049	0.49	2.0	18	1	11/16/05	11/21/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0902-01 (Outfall 005 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	62	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	6.6	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.90	4.8	0.96	1	11/14/05	11/14/05	J
Sulfate	EPA 300.0	5K09130	0.18	0.50	25	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	370	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	540	1	11/10/05	11/10/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
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**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 005 (IOK0902-01) - Water EPA 300.0	2	11/09/2005 12:40	11/09/2005 18:00	11/09/2005 23:30	11/10/2005 00:59

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0		94	85-115			
Cadmium	85.7	1.0	0.025	ug/l	80.0		107	85-115			
Copper	82.7	2.0	0.25	ug/l	80.0		103	85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103	85-115			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1) Source: IOK0918-02</b>											
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95	70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108	70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2) Source: IOK0922-03</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94	70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108	70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1) Source: IOK0918-02</b>											
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94	70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108	70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOK0902

Sampled: 11/09/05

Received: 11/09/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	
<b>Batch: 5K19049 Extracted: 11/19/05</b>											
<b>Blank Analyzed: 11/20/2005 (5K19049-BLK1)</b>											
Copper	ND	2.0	0.49	ug/l							
<b>LCS Analyzed: 11/20/2005 (5K19049-BS1)</b>											
Copper	77.3	2.0	0.49	ug/l	80.0		97	85-115			
<b>Matrix Spike Analyzed: 11/20/2005 (5K19049-MS1)</b>											
Copper	73.5	2.0	0.49	ug/l	80.0	2.3	89	70-130			
<b>Matrix Spike Dup Analyzed: 11/20/2005 (5K19049-MSD1)</b>											
Copper	72.6	2.0	0.49	ug/l	80.0	2.3	88	70-130	1	20	
<b>Batch: 5K28055 Extracted: 11/28/05</b>											
<b>Blank Analyzed: 11/28/2005 (5K28055-BLK1)</b>											
Copper	ND	2.0	0.49	ug/l							

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K28055 Extracted: 11/28/05</b>											
<b>LCS Analyzed: 11/28/2005 (5K28055-BS1)</b>											
Copper	77.6	2.0	0.49	ug/l	80.0		97	85-115			
<b>Matrix Spike Analyzed: 11/28/2005 (5K28055-MS1)</b>											
						<b>Source: IOK2020-01</b>					
Copper	84.7	2.0	0.49	ug/l	80.0	4.7	100	70-130			
<b>Matrix Spike Dup Analyzed: 11/28/2005 (5K28055-MSD1)</b>											
						<b>Source: IOK2020-01</b>					
Copper	82.9	2.0	0.49	ug/l	80.0	4.7	98	70-130	2	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							J
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1)</b>											
						<b>Source: IOK0875-01</b>					
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1)</b>											
						<b>Source: IOK0875-01</b>					
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1)</b>											
						<b>Source: IOK0617-01</b>					
Total Suspended Solids	440	10	10	mg/l		450			2	10	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOK0902

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NRI
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01 200			2	10	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005  Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
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## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0902-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.96	4.8	15
IOK0902-01	Antimony-200.8	Antimony	ug/l	3.40	4.0	6.00
IOK0902-01	Cadmium-200.8	Cadmium	ug/l	0.51	2.0	4.00
IOK0902-01	Chloride - 300.0	Chloride	mg/l	62	2.5	150
<b>IOK0902-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>20</b>	<b>4.0</b>	<b>14</b>
IOK0902-01	Mercury - 245.1	Mercury	ug/l	0.012	0.20	0.20
IOK0902-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	6.60	0.26	10.00
IOK0902-01	Sulfate-300.0	Sulfate	mg/l	25	0.50	250
IOK0902-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	370	10	850
<b>IOK0902-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>18</b>	<b>2.0</b>	<b>14</b>

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOK0902

Sampled: 11/09/05

Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOK0902

Sampled: 11/09/05

Received: 11/09/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOK0902-01

Analysis Performed: EDD + Level 4

Samples: IOK0902-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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**CHAIN OF CUSTODY FORM**

Version 02/17/04

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:					
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: <i>POLLOCA</i>		Boeing-SSFL NPDES Routine Outfall 005 Stormwater at FSDF-1 Phone Number: (626) 568-8691 Fax Number: (626) 568-6515		TCDD (and all congeners) Cl, SO4, NO3+NO2-N TDS, TSS	Temp = <i>77</i> pH = <i>7.7</i> Comments	Temp = <i>77</i> pH = <i>7.7</i> Comments					
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: SF, Cd, Cu, Pb, Hg	Cl & Grease (EPA 413.1)	Cl, SO4, NO3+NO2-N	TDS, TSS	Turn around Time: (check)
Outfall 005	W	Poly-1L	1	<i>11-9-05 12:45</i>	HNO3	1A	X				24 Hours _____
Outfall 005-Dup	W	Poly-1L	1		HNO3	1B	X				48 Hours _____
Outfall 005	W	Glass-Amber	2		None	2A, 2B		X			72 Hours _____
Outfall 005	W	Glass-Amber	2		HCl	3A, 3B		X			Perchlorate Only 72 Hours _____
Outfall 005	W	Poly-500 ml	2		None	4A, 4B			X		Metals Only 72 Hours _____
Outfall 005	W	Poly-500 ml	2		None	5A, 5B			X		Sample Integrity (Check) Intact _____
Relinquished By				Date/Time:	Received By			Date/Time:			On Ice: <i>5°C</i>
<i>[Signature]</i>				<i>11-9-05 1800</i>	<i>[Signature]</i>			<i>11/9/05 1500</i>			
Relinquished By				Date/Time:	Received By			Date/Time:			
<i>[Signature]</i>				<i>11/9/05 1800</i>	<i>[Signature]</i>			<i>11/9/05 1800</i>			
Relinquished By				Date/Time:	Received By			Date/Time:			
<i>[Signature]</i>				<i>11/9/05 1800</i>	<i>[Signature]</i>			<i>11/9/05 1800</i>			





December 12, 2005

**Alta Project ID.: 27028**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0902". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

Project 27028

Page 1 of 308

NPDES - 279

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27028-001

IOK0902-01

**SECTION II**

Method Blank		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MIB001
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.00000105		79.8	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000893		81.3	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000158		75.1	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000149		77.1	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000154		70.9	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000172		56.0	17 - 157
OCDD	ND	0.00000585		79.9	24 - 169
2,3,7,8-TCDF	ND	0.000000899		73.7	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000135		76.2	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000117		70.8	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000723		74.2	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000682		73.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000824		76.6	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000132		68.4	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000743		72.8	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000947		59.0	17 - 157
OCDF	ND	0.00000230		97.0	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.00000105			
Total PeCDD	ND	0.000000893			
Total HxCDD	ND	0.00000154			
Total HpCDD	ND	0.00000172			
Total TCDF	ND	0.000000899			
Total PeCDF	ND	0.000000593			
Total HxCDF	ND	0.000000861			
Total HpCDF	ND	0.000000833			

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: W/JL Approved By: Martha M. Maier 10-Dec-2005 15:07

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL

Approved By: Martha M. Maier 10-Dec-2005 15:07

**EPA Method 1613**

**Sample ID: IOK0902-01**

<b>Client Data</b>		<b>Sample Data</b>		<b>Laboratory Data</b>	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	27028-001
Project:	IOK0902	Sample Size:	1.018 L	QC Batch No.:	7516
Date Collected:	9-Nov-05			Date Analyzed DB-S:	10-Dec-05
Time Collected:	12:40			Date Analyzed DB-225:	NA

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UC <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000128			13C-2,3,7,8-TCDD	83.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000986			13C-1,2,3,7,8-PeCDD	84.8	25 - 181	
1,2,3,4,7,8-HxCDD	0.00000243			J	13C-1,2,3,4,7,8-HxCDD	78.7	32 - 141	
1,2,3,6,7,8-HxCDD	0.00000224			J	13C-1,2,3,6,7,8-HxCDD	78.3	28 - 130	
1,2,3,7,8,9-HxCDD	0.00000168			J	13C-1,2,3,4,6,7,8-HpCDD	73.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000137				13C-OCDD	57.4	17 - 157	
OCDD	0.00392				13C-2,3,7,8-TCDF	84.1	24 - 169	
2,3,7,8-TCDF	0.00000148			J	13C-1,2,3,7,8-PeCDF	80.7	24 - 185	
1,2,3,7,8-PeCDF	ND		0.00000105		13C-2,3,4,7,8-PeCDF	77.1	21 - 178	
2,3,4,7,8-PeCDF	0.00000181			J	13C-1,2,3,4,7,8-HxCDF	75.2	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000119			13C-1,2,3,6,7,8-HxCDF	76.9	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000119			13C-2,3,4,6,7,8-HxCDF	76.2	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000134			13C-1,2,3,7,8,9-HxCDF	79.3	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000213			13C-1,2,3,4,6,7,8-HpCDF	69.5	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00000611			J	13C-1,2,3,4,7,8,9-HpCDF	75.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000144			13C-OCDF	62.4	17 - 157	
OCDF	0.0000159			J	CRS 37Cl-2,3,7,8-TCDD	94.3	35 - 197	

<b>Totals</b>				<b>Footnotes</b>	
Total TCDD	ND	0.00000128		a. Sample specific estimated detection limit.	
Total PeCDD	ND	0.000000986		b. Estimated maximum possible concentration.	
Total HxCDD	0.00000984		0.0000130	c. Method detection limit.	
Total HpCDD	0.000281			d. Lower control limit - upper control limit.	
Total TCDF	0.0000107		0.0000116		
Total PeCDF	0.00000515		0.0000102		
Total HxCDF	0.00000752				
Total HpCDF	0.0000205				

Analyst: WJL  
 Approved By: Martha M. Maier  
 Date: 10-Dec-2005 15:07

**APPENDIX**



## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Darian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cowley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4887 Fax (909) 370-1048  
 8484 Chesapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-8888 Fax (619) 505-8888  
 8830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2530 E. Sunset Rd., Suite 45, Las Vegas, NV 89120 Ph (702) 798-9820 Fax (702) 798-9821

**SUBCONTRACT ORDER - PROJECT # IOK0902**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Darian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 673-0106  <i>27028</i> <i>1.7°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0902-01    Water    Sampled: 11/09/05 12:40 1613-Dioxin-HR    11/16/05 12:40 EDD + Level 4    12/07/05 12:40		Instant Notification J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
Containers Supplied: 1 L Amber (IOK0902-01C) 1 L Amber (IOK0902-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

*COC rec'd via email Bettina J. Benedict 11/15*

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27028

Samples Arrival:	Date/Time <u>12/8/05</u> <u>0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05</u> <u>1059</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	<input checked="" type="checkbox"/>		
Holding Time Acceptable?	<input checked="" type="checkbox"/>		
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>		
Shipping Custody Seals Intact?			<input checked="" type="checkbox"/>
Shipping Documentation Present?	<input checked="" type="checkbox"/>		
Airbill	<input checked="" type="checkbox"/>		
Trk # <u>6741 2702 3830</u>	<input checked="" type="checkbox"/>		
Sample Container Intact?			<input checked="" type="checkbox"/>
Sample Custody Seals Intact?			<input checked="" type="checkbox"/>
Chain of Custody / Sample Documentation Present?		<input checked="" type="checkbox"/>	
COC Anomaly/Sample Acceptance Form completed?	<input checked="" type="checkbox"/>		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			<input checked="" type="checkbox"/>
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container <u>None</u>
Shipping Container	Alta	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:

## **APPENDIX G**

### **Section 12**

Outfall 005, November 09, 2005

AMEC Data Validation Reports


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by 1613

Date: December 22, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -- false positive --estimated values between the RL and MDL --estimated maximum possible concentrations --nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOK0902-01		outfall 005		EPA Method 1613			
Client Data		Sample Data		Laboratory Data		Qualifiers	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	Date Received:	%R	LCL-UCL <sup>d</sup>
Project:	IOK0902	Sample Size:	1.018 L	QC Batch No.:	Date Estimated:		
Date Collected:	9-Nov-05			Date Analyzed DB-S:	10-Dec-05		
Time Collected:	1240						
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	Date Analyzed DB-223: <th></th> <th>Qualifiers</th>		Qualifiers
2,3,7,8-TCDD	ND	0.00000128		IS 13C-2,3,7,8-TCDD	10-Dec-05	83.8	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000986		13C-1,2,3,7,8-PeCDD		84.8	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000243	0.00000243	13C-1,2,3,4,7,8-HxCDD		78.7	32 - 141
1,2,3,6,7,8-HxCDD	0.00000224			13C-1,2,3,6,7,8-HxCDD		78.3	28 - 130
1,2,3,7,8,9-HxCDD	0.00000168			13C-1,2,3,4,6,7,8-HpCDD		73.7	23 - 140
1,2,3,4,6,7,8-HpCDD	0.000137			13C-OCDD		57.4	17 - 157
OCDD	0.00392			13C-2,3,7,8-TCDF		84.1	24 - 169
2,3,7,8-TCDF	0.00000148			13C-1,2,3,7,8-PeCDF		80.7	24 - 185
1,2,3,7,8-PeCDF	ND		0.00000105	13C-2,3,4,7,8-PeCDF		77.1	21 - 178
2,3,4,7,8-PeCDF	0.00000181			13C-1,2,3,4,7,8-HxCDF		75.2	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.00000119		13C-1,2,3,6,7,8-HxCDF		76.9	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.00000119		13C-2,3,4,6,7,8-HxCDF		76.2	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.00000134		13C-1,2,3,7,8,9-HxCDF		79.3	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000213		13C-1,2,3,4,6,7,8-HpCDF		69.5	28 - 143
1,2,3,4,6,7,8,9-HpCDF	0.00000611			13C-1,2,3,4,7,8,9-HpCDF		75.0	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.00000144		13C-OCDF		62.4	17 - 157
OCDF	0.0000159			CRS 37Cl-2,3,7,8-TCDD		94.3	35 - 197
Totals							
Total TCDD	ND	0.00000128					
Total PeCDD	ND	0.000000986					
Total HxCDD	0.00000984		0.0000130				
Total HpCDD	0.000281						
Total TCDF	0.0000107		0.00000116				
Total PeCDF	0.00000515		0.0000102				
Total HxCDF	0.00000752						
Total HpCDF	0.0000205						

*Raw*  
*Guid*  
*Qual*  
*Coag*

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 u

Approved By: **Martha M. Maier** 10-Dec-2005 15:07

Project 27028

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT95  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

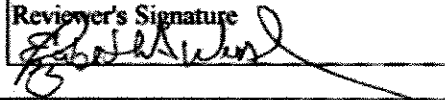
Laboratory Del Mar -Irvine

Reviewer E. Wessling

Analysis/Method Metals by 200.8/245.1

Date: December 22, 2005

Reviewer's Signature



<b>ACTION ITEMS*</b>	
Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	--blank contamination
Holding Times	-- estimations between the MDL and RL
GC/MS Tune/Inst. Performance	-- reanalyses rejected in favor of original analyses
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS*</b>	
<p>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p>* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Sampling

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 4  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Data Validation Procedure for ICP Metals (DVP-5, Rev. 2)*, *US EPA Method 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the USEPA *CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



Table 1. Sample Identification

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	200.8/245.1
Outfall 003RE1	IOK0900-01RE1	Water	200.8
Outfall 004	IOK0901-01	Water	200.8/245.1
Outfall 005	IOK0902-01	Water	200.8/245.1
Outfall 005RE1	IOK0902-01RE1	Water	200.8
Outfall 006	IOK0903-01	Water	200.8/245.1
Outfall 006RE1	IOK0903-01RE1	Water	200.8/245.1
Outfall 006RE2	IOK0903-01RE2	Water	200.8
Outfall 009	IOK0904-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples in these SDG were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. The laboratory did not append the client IDs with "RE" suffices; therefore, the reviewer added these to the Form Is. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP-MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP-MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with these SDGs and all recoveries were acceptable. No qualifications were required.

## 2.4 BLANKS

Mercury was reported in method blank 5K17098-BLK1 at  $-0.072 \mu\text{g/L}$ ; therefore, mercury in Outfall 003, Outfall 004, and Outfall 005 was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining method blank and CCB results associated with the retained analyses were nondetects at the reporting limit or were significantly below the sample detects so as not to result in data qualification. No qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were performed in association with the Outfall 003 selenium analysis. The recoveries were within the control limits. No other ICSA or ICSAB analyses were included in the raw data for the ICP-MS analyses. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP-MS and mercury LCS sample results were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. No qualifications were required.

## 2.8 MATRIX SPIKES

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. Evaluation of laboratory accuracy was based on LCS results. No qualifications were required.

## 2.9 ICP-MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.10 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.11 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Some target analytes were reported from dilution analyses due to matrix interference. Reporting limits and MDLs were adjusted accordingly. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. As the original results were all confirmed, the results for Outfall 003RE1, Outfall 005RE1, Outfall 006RE1, and Outfall 006RE2 were rejected, "R," in favor of the original results. No further qualifications were required.

## 2.12 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.12.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.12.2 Field Duplicates

There were no field duplicate analyses performed in association with these samples.



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MWH-Pasadena/Boeing Project ID: Routine Outfall 005  
300 North Lake Avenue, Suite 1200 Report Number: IOK0902  
Pasadena, CA 91101  
Attention: Bronwyn Kelly  
Sampled: 11/09/05  
Received: 11/09/05

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0902-01 (Outfall 005 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.36	4.0	3.4	2	11/16/05	11/16/05	RL-1, J T
Cadmium	EPA 200.8	5K16096	0.030	2.0	0.51	2	11/16/05	11/17/05	RL-1, J T
Copper	EPA 200.8	5K16096	0.98	4.0	20	2	11/16/05	11/16/05	
Lead	EPA 200.8	5K16096	0.080	2.0	10	2	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.063	0.20	ND	1	11/17/05	11/17/05	
Sample ID: IOK0902-01RE1 (Outfall 005 - Water)									
Reporting Units: ug/l									
Copper	EPA 200.8	5K19049	0.49	2.0	18	1	11/16/05	11/21/05	

LEVEL IV

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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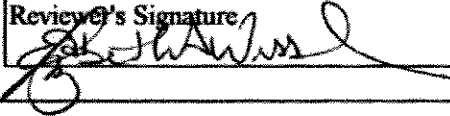
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC181  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 22, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS*</b>	
1. Case Narrative	_____
Deficiencies	_____
2. Out of Scope	_____
Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy	_____
Deliverables	_____
5. Incorrect Hardcopy	_____
Deliverables	_____
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	- estimations between the MDL and RL
Holding Times	_____
GC/MS Tune/Inst. Performance	_____
Calibration	_____
Method blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification	_____
Quantitation	_____
System Performance	_____
<b>COMMENTS*</b>	
<small>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.                  * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</small>	



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: GENERAL MINERALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
AMEC Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for General Minerals (DVP-6, Rev. 2)*, *USEPA Methods for Chemical Analysis of Water and Wastes Methods 160.2, 300.0, and 413.1*, *Standard Methods for the Examination of Water and Wastewater Method SM5540-CMOD*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form Is as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	General Minerals
Outfall 004	IOK0901-01	Water	General Minerals
Outfall 005	IOK0902-01	Water	General Minerals
Outfall 006	IOK0903-01	Water	General Minerals
Outfall 009	IOK0904-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times were met and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The blank results associated with the analyses were nondetects at the reporting limit or were significantly less than the sample detects so as not to result in data qualification. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

DATA VALIDATION REPORT

## 2.5 LABORATORY DUPLICATES

A laboratory duplicate analysis was performed on Outfall 009 for TDS. The %D was less than the laboratory-established control limit of 10%. No qualifications were required.

## 2.6 MATRIX SPIKES

No MS/MSD analyses were performed in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit. No further qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 005 Report Number: IOK0902	Sampled: 11/09/05 Received: 11/09/05
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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0902-01 (Outfall 005 - Water) - cont. Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	62	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	6.6	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.90	4.8	0.96	1	11/14/05	11/14/05	J S DDC
Sulfate	EPA 300.0	5K09130	0.18	0.50	25	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	370	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	540	1	11/10/05	11/10/05	

LEVEL IV

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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## **APPENDIX G**

### **Section 13**

Outfall 006, October 18, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 006

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:13

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1180-01

**CLIENT ID**  
Outfall 006

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1180-01 (Outfall 006 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.18	2.0	0.42	1	10/19/05	10/20/05	J
Cadmium	EPA 200.8	5J19098	0.015	1.0	0.47	1	10/19/05	10/20/05	B, J
Copper	EPA 200.8	5J19098	0.49	2.0	16	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	12	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.13	1	10/19/05	10/19/05	J
<b>Sample ID: IOJ1180-01RE1 (Outfall 006 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5J19098	0.49	2.0	16	1	10/19/05	10/24/05	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOJ1180

Sampled: 10/18/05

Received: 10/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1180-01 (Outfall 006 - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Chloride	EPA 300.0	5J18042	0.52	1.0	41	2	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.14	0.52	7.9	2	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.90	4.8	ND	1	10/24/05	10/24/05	
Sulfate	EPA 300.0	5J18042	0.36	1.0	23	2	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	480	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	520	1	10/20/05	10/20/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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### SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 006 (IOJ1180-01) - Water EPA 300.0	2	10/18/2005 09:19	10/18/2005 14:20	10/18/2005 16:30	10/18/2005 17:52

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Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOJ1180

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>											
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110			M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>											
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>											
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20	
<b>Batch: 5J19123 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>											
Total Dissolved Solids	289	10	10	mg/l		280			3	10	
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

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 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
						<b>Source: IOJ1175-01</b>					
Total Suspended Solids	344	10	10	mg/l		340			1	10	
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120			M-NR1
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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**Compliance Check**

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1180-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.29	4.8	15
IOJ1180-01	Antimony-200.8	Antimony	ug/l	0.42	2.0	6.00
IOJ1180-01	Cadmium-200.8	Cadmium	ug/l	0.47	1.0	4.00
IOJ1180-01	Chloride - 300.0	Chloride	mg/l	41	1.0	150
<b>IOJ1180-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>16</b>	<b>2.0</b>	<b>14</b>
IOJ1180-01	Mercury - 245.1	Mercury	ug/l	0.13	0.20	0.20
IOJ1180-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	7.90	0.52	10.00
IOJ1180-01	Sulfate-300.0	Sulfate	mg/l	23	1.0	250
IOJ1180-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	480	10	850
<b>IOJ1180-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>16</b>	<b>2.0</b>	<b>14</b>

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Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOJ1180

Sampled: 10/18/05

Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOJ1180-01

Analysis Performed: EDD + Level 4  
 Samples: IOJ1180-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

Client Name/Address:

MWH-Pasadena  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Project:  
Boeing-SSFL NPDES  
Routine Outfall 006  
Stormwater at FSDP-2

Project Manager: Bronwyn Kelly  
Phone Number:  
(626) 568-6691  
Fax Number:  
(626) 568-6515

Sampler: *Pollock*

## ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	C-, SO4, NO3+NO2-N	TSS, TSS	Field readings: Temp = 59.2 pH = 7.3 707186 Comments
Outfall 006	W	Poly-1L	1	10-18-05 09:00	HNO3	1A	X					
Outfall 006-Dup	W	Poly-1L	1		HNO3	1B	X					
Outfall 006	W	Glass-Amber	2		None	2A, 2B		X				
Outfall 006	W	Glass-Amber	2		HCl	3A, 3B		X				
Outfall 006	W	Poly-500 ml	2		None	4A, 4B			X			
Outfall 006	W	Poly-500 ml	2		None	5A, 5B				X		

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check) On Ice: \_\_\_\_\_  
 Intact \_\_\_\_\_ 20

Relinquished By: *[Signature]* Date/Time: 10-18-05 10:00  
 Received By: *[Signature]* Date/Time: 10-18-05 10:00  
 Relinquished By: *[Signature]* Date/Time: 10-18-05 14:20  
 Received By: *[Signature]* Date/Time: 10-18-05 14:20



**Pace Analytical Services, Inc.**  
1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

## DETERMINATION OF PCDD/PCDF LEVELS

Prepared for:  
Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

## REPORT OF LABORATORY ANALYSIS

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**REPORT OF: CHEMICAL ANALYSES**

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**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

**ISSUED TO: Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614**

**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**INTRODUCTION**

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

**SAMPLE IDENTIFICATION**

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

**RESULTS**

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

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PROJECT: PCDD/PCDF ANALYSES

DATE: November 17, 2005

PAGE: 2

REPORT NO: 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

### DISCUSSION

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spikes samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

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**PROJECT:** PCDD/PCDF ANALYSES

**DATE:** November 17, 2005

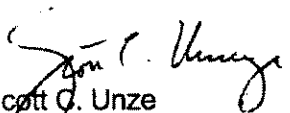
**PAGE:** 3

**REPORT NO:** 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

**REMARKS**

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

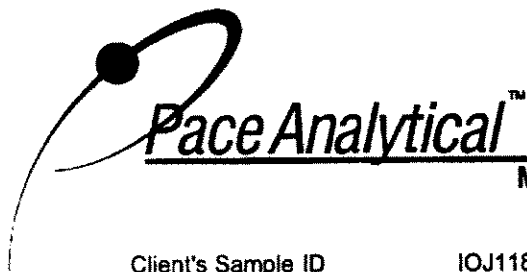
**Pace Analytical Services, Inc.**

  
Scott C. Unze  
Project Manager, HRMS  
(612) 607-6383

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Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1180-01		
Lab Sample ID	1021763001		
Filename	F51109C_10		
Injected By	BAL		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	10/18/2005
ICAL Date	10/22/2005	Received	10/19/2005
CCal Filename(s)	F51109C_02	Extracted	11/08/2005
Method Blank ID	BLANK-8223	Analyzed	11/10/2005 06:13

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	---- 0.0000031		2,3,7,8-TCDF-13C	2.00	49
Total TCDF	ND	---- 0.0000031		2,3,7,8-TCDD-13C	2.00	56
				1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	---- 0.0000048		2,3,4,7,8-PeCDF-13C	2.00	58
Total TCDD	ND	---- 0.0000048		1,2,3,7,8-PeCDD-13C	2.00	73
				1,2,3,4,7,8-HxCDF-13C	2.00	55
1,2,3,7,8-PeCDF	ND	---- 0.0000033		1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	ND	---- 0.0000025		2,3,4,6,7,8-HxCDF-13C	2.00	53
Total PeCDF	ND	---- 0.0000029		1,2,3,7,8,9-HxCDF-13C	2.00	55
				1,2,3,4,7,8-HxCDD-13C	2.00	52
1,2,3,7,8-PeCDD	ND	---- 0.0000030		1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	ND	---- 0.0000030		1,2,3,4,6,7,8-HpCDF-13C	2.00	52
				1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	ND	---- 0.0000028		1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	ND	---- 0.0000031		OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	ND	---- 0.0000021				
1,2,3,7,8,9-HxCDF	ND	---- 0.0000026		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	---- 0.0000026		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	---- 0.0000035		2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	ND	---- 0.0000032				
1,2,3,7,8,9-HxCDD	ND	---- 0.0000028				
Total HxCDD	ND	---- 0.0000032				
1,2,3,4,6,7,8-HpCDF	0.0000065	---- 0.0000032	J			
1,2,3,4,7,8,9-HpCDF	0.0000042	---- 0.0000031	J			
Total HpCDF	0.0000110	---- 0.0000031	J			
1,2,3,4,6,7,8-HpCDD	0.0000300	---- 0.0000044	BJ			
Total HpCDD	0.0000730	---- 0.0000044				
OCDF	0.0000260	---- 0.0000039	BJ			
OCDD	0.0003400	---- 0.0000100				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021763

## REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000023		2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND			2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	0.0000021		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND			1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	0.0000031		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	0.0000013		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND			1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	0.0000018		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND			1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	0.0000016		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	0.0000016		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	0.0000015				
1,2,3,7,8,9-HxCDF	ND	0.0000024		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND			1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000030		2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	0.0000031				
1,2,3,7,8,9-HxCDD	ND	0.0000025				
Total HxCDD	ND					
1,2,3,4,6,7,8-HpCDF	ND	0.0000018				
1,2,3,4,7,8,9-HpCDF	ND	0.0000023				
Total HpCDF	ND					
1,2,3,4,6,7,8-HpCDD	0.0000041	0.0000026	J			
Total HpCDD	0.0000041		J			
OCDF	0.0000068	0.0000027	J			
OCDD	0.0000019	0.0000025	I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021758

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Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-6444

### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

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 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client: ..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph: (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOJ1180** 1021763

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1180-01 Water	Sampled: 10/18/05 09:19	Instant Notification
1613-Dioxin-HR	10/25/05 09:19	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 09:19	Excel EDD email to pm, include Std logs for Lvl IV

1021763001

**Containers Supplied:**  
 1 L Amber (IOJ1180-01C)  
 1 L Amber (IOJ1180-01D)

**SAMPLE INTEGRITY:**

All containers intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): <u>2.9</u>

Released By: [Signature] Date: 10-18-05 Time: 1700 Received By: [Signature] Date: 10-19-05 Time: 9:05

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

# **APPENDIX G**

## **Section 14**

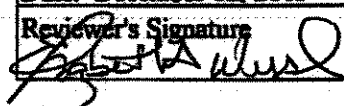
Outfall 006, October 18, 2005

AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC178  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5  
 Date: December 12, 2005  
 Reviewer's Signature 

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Qualifications for "J" values between the RL and MDL.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOJ1231-01	Water	General Minerals
Outfall 010	IOJ1232-01	Water	General Minerals
Outfall 006	IOJ1180-01	Water	General Minerals
Outfall 007	IOJ1184-01	Water	General Minerals
Outfall 009	IOJ1186-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8396 FAX (619) 505-0688  
 8830 South 51st St., Suite B-128, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3628 FAX (702) 798-3621

MWH-Pasadena/Bocing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006 Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOJ1180-01 (Outfall 006 - Water) - cont. Reporting Units: mg/l										
Chloride	EPA 300.0	5J18042	0.52	1.0	41	2	10/18/05	10/18/05	u	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.14	0.52	7.9	2	10/18/05	10/18/05		
Oil & Grease	EPA 413.1	5J24050	0.94	5.0	ND	1	10/24/05	10/24/05		
Sulfate	EPA 300.0	5J18042	0.36	1.0	23	2	10/18/05	10/18/05		
Total Dissolved Solids	SM2540C	5J19123	10	10	480	1	10/19/05	10/19/05		
Total Suspended Solids	EPA 160.2	5J20118	10	10	520	1	10/20/05	10/20/05		

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1180 <Page 3 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

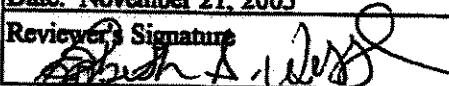
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis

Reviewer E. Wessling

Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.



## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1180-01  
Lab Sample ID 1021763001  
Filename F51109C\_10  
Injected By BAL  
Total Amount Extracted 1030 mL  
% Moisture NA  
Dry Weight Extracted NA  
ICAL Date 10/22/2005  
CCal Filename(s) F51109C\_02  
Method Blank ID BLANK-8223

*Outfall 206*

Matrix Water  
Dilution NA  
Collected 10/18/2005  
Received 10/19/2005  
Extracted 11/08/2005  
Analyzed 11/10/2005 08:13

*Rec  
Qual*

*Qual  
Code*

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000031	0.0000031	2,3,7,8-TCDF-13C	2.00	49
Total TCDF	ND	0.0000031	0.0000031	2,3,7,8-TCDD-13C	2.00	58
				1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	0.0000048	0.0000048	2,3,4,7,8-PeCDF-13C	2.00	58
Total TCDD	ND	0.0000048	0.0000048	1,2,3,7,8-PeCDD-13C	2.00	73
				1,2,3,4,7,8-HxCDF-13C	2.00	55
1,2,3,7,8-PeCDF	ND	0.0000033	0.0000033	1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	ND	0.0000025	0.0000025	2,3,4,6,7,8-HxCDF-13C	2.00	53
Total PeCDF	ND	0.0000029	0.0000029	1,2,3,7,8,9-HxCDF-13C	2.00	55
				1,2,3,4,7,8-HxCDD-13C	2.00	52
1,2,3,7,8-PeCDD	ND	0.0000030	0.0000030	1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	ND	0.0000030	0.0000030	1,2,3,4,6,7,8-HpCDF-13C	2.00	52
				1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	ND	0.0000028	0.0000028	1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	ND	0.0000031	0.0000031	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	ND	0.0000021	0.0000021			
1,2,3,7,8,9-HxCDF	ND	0.0000028	0.0000028	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	0.0000028	0.0000028	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000035	0.0000035	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	ND	0.0000032	0.0000032			
1,2,3,7,8,9-HxCDD	ND	0.0000028	0.0000028			
Total HxCDD	ND	0.0000032	0.0000032			
1,2,3,4,6,7,8-HpCDF	0.0000085	0.0000032	0.0000032	J		
1,2,3,4,7,8,9-HpCDF	0.0000042	0.0000031	0.0000031	J		
Total HpCDF	0.0000110	0.0000031	0.0000031	J		
1,2,3,4,6,7,8-HpCDD	0.0000300	0.0000044	0.0000044	BJ		
Total HpCDD	0.0000730	0.0000044	0.0000044			
OCDF	0.0000280	0.0000039	0.0000039	BJ		
OCDD	0.0003400	0.0000100	0.0000100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021763

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT93  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature 

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Time/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
COMMENTS <sup>b</sup>	
<small> <sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.                     </small>	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 3  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOJ1231-01	Water	200.8/245.1
Outfall 010	IOJ1232-01	Water	200.8/245.1
Outfall 006	IOJ1180-01	Water	200.8/245.1
Outfall 007	IOJ1184-01	Water	200.8/245.1
Outfall 009	IOJ1186-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### 2.3 CALIBRATION

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### 2.4 BLANKS

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 006. No further qualifications were required.



**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

**2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

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of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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 1014 E. Cooley Dr., Suite A, Colton, CA 92334 (909) 370-4667 FAX (909) 370-1046  
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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006 Report Number: IOJ1180	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Qual	Ref Col
Sample ID: IOJ1180-01 (Outfall 006 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	5J19098	0.18	2.0	0.42	1	10/19/05	10/20/05	J	J	AWA
Cadmium	EPA 200.8	5J19098	0.015	1.0	0.47	1	10/19/05	10/20/05	B, J	u	B
Copper	EPA 200.8	5J19098	0.49	2.0	16	1	10/19/05	10/20/05			
Lead	EPA 200.8	5J19098	0.040	1.0	12	1	10/19/05	10/20/05			
Mercury	EPA 245.1	5J19052	0.063	0.20	0.13	1	10/19/05	10/19/05	J	J	DNC
Sample ID: IOJ1180-01RE1 (Outfall 006 - Water)											
Reporting Units: ug/l											
Copper	EPA 200.8	5J19098	0.49	2.0	16	1	10/19/05	10/24/05		R	D

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1180 <Page 2 of 11>  
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## **APPENDIX G**

### **Section 15**

Outfall 006, November 09, 2005

Del Mar Analytical Laboratory Report



Del Mar Analytical

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9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 006

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:37

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOK0903-01	Outfall 006	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05

Received: 11/09/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0903-01 (Outfall 006 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.36	4.0	1.3	2	11/16/05	11/16/05	RL-1, J
Cadmium	EPA 200.8	5K16096	0.030	2.0	0.91	2	11/16/05	11/17/05	RL-1, J
Copper	EPA 200.8	5K16096	0.98	4.0	34	2	11/16/05	11/16/05	
Lead	EPA 200.8	5K16096	0.080	2.0	29	2	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	0.89	1	11/17/05	11/17/05	
<b>Sample ID: IOK0903-01RE1 (Outfall 006 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5K19049	0.49	2.0	28	1	11/16/05	11/21/05	
Mercury	EPA 245.1	5K22081	0.050	0.20	0.90	1	11/17/05	11/22/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05

Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0903-01 (Outfall 006 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	49	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	4.9	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.99	5.3	ND	1	11/14/05	11/14/05	
Sulfate	EPA 300.0	5K09130	0.18	0.50	31	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	550	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	710	1	11/10/05	11/10/05	

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Pasadena, CA 91101  
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Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05  
Received: 11/09/05

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 006 (IOK0903-01) - Water EPA 300.0	2	11/09/2005 13:06	11/09/2005 18:00	11/09/2005 23:30	11/10/2005 01:30

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05  
 Received: 11/09/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0		94	85-115			
Cadmium	85.7	1.0	0.025	ug/l	80.0		107	85-115			
Copper	82.7	2.0	0.25	ug/l	80.0		103	85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103	85-115			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1) Source: IOK0918-02</b>											
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95	70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108	70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2) Source: IOK0922-03</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94	70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108	70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1) Source: IOK0918-02</b>											
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94	70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108	70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	
<b>Batch: 5K19049 Extracted: 11/19/05</b>											
<b>Blank Analyzed: 11/20/2005 (5K19049-BLK1)</b>											
Copper	ND	2.0	0.49	ug/l							
<b>LCS Analyzed: 11/20/2005 (5K19049-BS1)</b>											
Copper	77.3	2.0	0.49	ug/l	80.0		97	85-115			
<b>Matrix Spike Analyzed: 11/20/2005 (5K19049-MS1)</b>											
						<b>Source: IOK1053-02</b>					
Copper	73.5	2.0	0.49	ug/l	80.0	2.3	89	70-130			
<b>Matrix Spike Dup Analyzed: 11/20/2005 (5K19049-MSD1)</b>											
						<b>Source: IOK1053-02</b>					
Copper	72.6	2.0	0.49	ug/l	80.0	2.3	88	70-130	1	20	
<b>Batch: 5K22081 Extracted: 11/22/05</b>											
<b>Blank Analyzed: 11/22/2005 (5K22081-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K22081 Extracted: 11/22/05</b>											
<b>LCS Analyzed: 11/22/2005 (5K22081-BS1)</b>											
Mercury	8.20	0.20	0.050	ug/l	8.00		102	85-115			
<b>Matrix Spike Analyzed: 11/22/2005 (5K22081-MS1)</b>											
						<b>Source: IOK1505-01</b>					
Mercury	7.80	0.20	0.050	ug/l	8.00	ND	98	70-130			
<b>Matrix Spike Dup Analyzed: 11/22/2005 (5K22081-MSD1)</b>											
						<b>Source: IOK1505-01</b>					
Mercury	7.89	0.20	0.050	ug/l	8.00	ND	99	70-130	1	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							J
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1) Source: IOK0875-01</b>											
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1) Source: IOK0875-01</b>											
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1) Source: IOK0617-01</b>											
Total Suspended Solids	440	10	10	mg/l		450			2	10	

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOK0903

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NR1
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01			2	10	

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## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0903-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.74	5.3	15
IOK0903-01	Antimony-200.8	Antimony	ug/l	1.30	4.0	6.00
IOK0903-01	Cadmium-200.8	Cadmium	ug/l	0.91	2.0	4.00
IOK0903-01	Chloride - 300.0	Chloride	mg/l	49	2.5	150
<b>IOK0903-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>34</b>	<b>4.0</b>	<b>14</b>
<b>IOK0903-01</b>	<b>Mercury - 245.1</b>	<b>Mercury</b>	<b>ug/l</b>	<b>0.89</b>	<b>0.20</b>	<b>0.20</b>
IOK0903-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	4.90	0.26	10.00
IOK0903-01	Sulfate-300.0	Sulfate	mg/l	31	0.50	250
IOK0903-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	550	10	850
<b>IOK0903-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>28</b>	<b>2.0</b>	<b>14</b>
<b>IOK0903-01RE1</b>	<b>Mercury - 245.1</b>	<b>Mercury</b>	<b>ug/l</b>	<b>0.90</b>	<b>0.20</b>	<b>0.20</b>

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Sampled: 11/09/05  
Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006  Report Number: IOK0903	Sampled: 11/09/05 Received: 11/09/05
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413  
 1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOK0903-01  
 Analysis Performed: EDD + Level 4  
 Samples: IOK0903-01

**Del Mar Analytical, Irvine**  
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1080903

# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 <b>Project Manager:</b> Bronwyn Kelly <b>Sampler:</b> P. LLOYD		<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 006 Stormwater at FSDF-2  Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>ANALYSIS REQUIRED</b> TCDD (and all congeners) _____ Oil & Grease (EPA 413.1) _____ CH <sub>2</sub> SO <sub>4</sub> NO <sub>3</sub> +NO <sub>2</sub> -N _____ TDS, TSS _____ Field readings: Temp = 62.2 pH = 7.9 Comments _____							
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	Oil & Grease (EPA 413.1)	CH <sub>2</sub> SO <sub>4</sub> NO <sub>3</sub> +NO <sub>2</sub> -N	TDS, TSS	Field readings: Temp = 62.2 pH = 7.9 Comments
Outfall 006	W	Poly-1L	1	11-9-05 17:06	HNO3	1A	X				
Outfall 006-Dup	W	Poly-1L	1		HNO3	1B	X				
Outfall 006	W	Glass-Amber	2		None	2A, 2B		X			
Outfall 006	W	Glass-Amber	2		HCl	3A, 3B		X			
Outfall 006	W	Poly-500 ml	2		None	4A, 4B		X			
Outfall 006	W	Poly-500 ml	2		None	5A, 5B			X		
Relinquished By				Date/Time: 11-9-05 1500							Turn around Time: (check) 24 Hours _____ 5 Days _____
Relinquished By				Date/Time: 11/9/05 1800							48 Hours _____ 10 Days _____
Relinquished By				Date/Time: 11/9/05 1800							72 Hours _____ Normal _____
											Perchlorate Only 72 Hours _____
											Metals Only 72 Hours _____
											Sample Integrity: (Check) Intact _____ On Ice: 4°C



December 11, 2005

**Alta Project I.D.: 27029**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0903". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27029-001

IOK0903-01

**SECTION II**

Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000105			13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000893			13C-1,2,3,7,8-PeCDD	81.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000158			13C-1,2,3,4,7,8-HxCDD	75.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000149			13C-1,2,3,6,7,8-HxCDD	77.1	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000154			13C-1,2,3,4,6,7,8-HpCDD	70.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000172			13C-OCDD	56.0	17 - 157	
OCDD	ND	0.00000585			13C-2,3,7,8-TCDF	79.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000899			13C-1,2,3,7,8-PeCDF	73.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000135			13C-2,3,4,7,8-PeCDF	76.2	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000117			13C-1,2,3,4,7,8-HxCDF	70.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000723			13C-1,2,3,6,7,8-HxCDF	74.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000682			13C-2,3,4,6,7,8-HxCDF	73.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000824			13C-1,2,3,7,8,9-HxCDF	76.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000132			13C-1,2,3,4,6,7,8-HpCDF	68.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000743			13C-1,2,3,4,7,8,9-HpCDF	72.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000947			13C-OCDF	59.0	17 - 157	
OCDF	ND	0.00000230			CRS 37Cl-2,3,7,8-TCDD	97.0	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.00000105						
Total PeCDD	ND	0.000000893						
Total HxCDD	ND	0.00000154						
Total HpCDD	ND	0.00000172						
Total TCDF	ND	0.000000899						
Total PeCDF	ND	0.000000593						
Total HxCDF	ND	0.000000861						
Total HpCDF	ND	0.000000833						

Footnotes  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: WJL  
Approved By: Martha M. Maier 11-Dec-2005 10:45

OPR Results						EPA Method 1613		
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001			
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL		
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 164		
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181		
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141		
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130		
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140		
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157		
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169		
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185		
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178		
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152		
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123		
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136		
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147		
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143		
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138		
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157		
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197		

Analyst: WJL  
 Approved By: Martha M. Maier  
 Date: 11-Dec-2005 10:45

**Sample ID: IOK0903-01** **EPA Method 1613**

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOK0903  
 Date Collected: 9-Nov-05  
 Time Collected: 1306

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 0.958 L

**Laboratory Data**  
 Lab Sample: 27029-001  
 QC Batch No.: 7516  
 Date Analyzed DB-5: 10-Dec-05  
 Date Received: 8-Dec-05  
 Date Extracted: 8-Dec-05  
 Date Analyzed DB-225: NA

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000966			13C-2,3,7,8-TCDD	91.9	25 - 164	
1,2,3,7,8-PeCDD	ND		0.00000148		13C-1,2,3,7,8-PeCDD	89.7	25 - 181	
1,2,3,4,7,8-HxCDD	0.00000394			J	13C-1,2,3,4,7,8-HxCDD	83.8	32 - 141	
1,2,3,6,7,8-HxCDD	0.00000707			J	13C-1,2,3,6,7,8-HxCDD	86.2	28 - 130	
1,2,3,7,8,9-HxCDD	0.00000534			J	13C-1,2,3,4,6,7,8-HpCDD	83.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000171				13C-OCDD	71.9	17 - 157	
OCDD	0.00180				13C-2,3,7,8-TCDF	91.7	24 - 169	
2,3,7,8-TCDF	0.00000172			J	13C-1,2,3,7,8-PeCDF	87.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000118			13C-2,3,4,7,8-PeCDF	88.0	21 - 178	
2,3,4,7,8-PeCDF	0.00000169			J	13C-1,2,3,4,7,8-HxCDF	78.3	26 - 152	
1,2,3,4,7,8-HxCDF	0.00000269			J	13C-1,2,3,6,7,8-HxCDF	79.7	26 - 123	
1,2,3,6,7,8-HxCDF	0.00000171			J	13C-2,3,4,6,7,8-HxCDF	82.8	28 - 136	
2,3,4,6,7,8-HxCDF	0.00000200			J	13C-1,2,3,7,8,9-HxCDF	89.7	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000147			13C-1,2,3,4,6,7,8-HpCDF	80.5	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000232			J	13C-1,2,3,4,7,8,9-HpCDF	87.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	0.00000336			J	13C-OCDF	76.1	17 - 157	
OCDF	0.0000469			J	CRS 37Cl-2,3,7,8-TCDD	97.0	35 - 197	

**Totals**

Total TCDD	ND	0.000000966		
Total PeCDD	0.00000526		0.0000144	
Total HxCDD	0.0000702			
Total HpCDD	0.0000431			
Total TCDF	0.00000456			
Total PeCDF	0.0000102		0.0000133	
Total HxCDF	0.0000321			
Total HpCDF	0.0000761			

**Footnotes**  
 a. Sample specific estimated detection limit  
 b. Estimated maximum possible concentration  
 c. Method detection limit  
 d. Lower control limit - upper control limit

Analyst: DMS  
 Approved By: Martha M. Maier  
 11-Dec-2005 13:22

**APPENDIX**



## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit -- concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave, Suite 100, Irvine, CA 92614 Ph: (949) 261-1022 Fax: (949) 261-1228  
 1014 E. Copley Dr., Suite A, Colton, CA 92324 Ph: (909) 370-0857 Fax: (909) 370-1040  
 9494 Champagne Drive, Suite 600, San Diego, CA 92128 Ph: (619) 605-0900 Fax: (619) 605-0900  
 8830 South 61st Street, Suite B-120, Phoenix, AZ 85044 Ph: (480) 785-0043 Fax: (480) 785-0851  
 2830 E. Sunset Rd., Suite 60, Las Vegas, NV 89126 Ph: (702) 798-9820 Fax: (702) 798-9821

**SUBCONTRACT ORDER - PROJECT # IOK0903**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  <i>27029</i> <i>1.7C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0903-01	Water	Sampled: 11/09/05 13:06
1613-Dioxin-HR	11/16/05 13:06	Instant Notification
EDD + Level 4	12/07/05 13:06	J flags, 17 congeners, no TEQ, ug/L, sub=Face-MN Excel EDD email to pm, include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IOK0903-01C)		
1 L Amber (IOK0903-01D)		

**SAMPLE INTEGRITY:**

All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

*COC rec'd via email Bettina of Biomed 10/30/05*

Released By	Date	Time	Received By	Date	Time

Released By	Date	Time	Received By	Date	Time

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27029

Samples Arrival:	Date/Time <u>12/8/05 0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05 1054</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="radio"/> FedEx	<input type="radio"/> UPS	<input type="radio"/> Cal
	<input type="radio"/> DHL	<input type="radio"/> Hand Delivered	<input type="radio"/> Other
Preservation:	<input checked="" type="radio"/> Ice	<input type="radio"/> Blue Ice	<input type="radio"/> Dry Ice
	<input type="radio"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	✓		
Trk # <u>67412902 3830</u>	✓		
Sample Container Intact?			✓
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?		✓	
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container <u>None</u>
Shipping Container	Alta	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:

## **APPENDIX G**

### **Section 16**

Outfall 006, November 09, 2005

AMEC Data Validation Reports


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DE51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by 1613

Date: December 22, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -- false positive -- estimated values between the RL and MDL -- estimated maximum possible concentrations -- nonconfirmation of 2,3,7,8-TCDF
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "I," by the laboratory. These "I" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOK0903-01		Outfall 000		EPA Method 1613			
Client Data		Sample Data		Laboratory Data		Date	
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Matrix: Aqueous	Lab Sample: 27029-001	Date Received: 8-Dec-05			
Project: IOK0903	Sample Size: 0.958 L	QC Batch No: 7516	Date Analyzed: 10-Dec-05	Date Estimated: 8-Dec-05			
Date Collected: 9-Nov-05	Time Collected: 1306	Date Analyzed DB-5: 10-Dec-05	Date Analyzed DB-225: NA				
Analyte	Conc. (ng/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000966			91.9	25 - 164	
1,2,3,7,8-PeCDD	ND		0.00000148		89.7	25 - 181	
1,2,3,4,7,8-HxCDD	0.00000394			J	83.8	32 - 141	
1,2,3,6,7,8-HxCDD	0.00000707			J	86.2	28 - 130	
1,2,3,7,8,9-HxCDD	0.00000534			J	83.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000171				71.9	17 - 157	
OCDD	0.00180				91.7	24 - 169	
2,3,7,8-TCDF	0.00000172			J	87.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000118			88.0	21 - 178	
2,3,4,7,8-PeCDF	0.00000169			J	78.3	26 - 152	
1,2,3,4,7,8-HxCDF	0.00000269			J	79.7	26 - 123	
1,2,3,6,7,8-HxCDF	0.00000171			J	82.8	28 - 136	
2,3,4,6,7,8-HxCDF	0.00000200			J	89.7	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000147			80.5	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000232			J	87.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	0.00000336			J	76.1	17 - 157	
OCDF	0.0000469			J	97.0	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.000000966					
Total PeCDD	0.00000526		0.0000144				
Total HxCDD	0.0000702						
Total HpCDD	0.000431						
Total TCDF	0.00000456						
Total PeCDF	0.0000102		0.0000133				
Total HxCDF	0.0000321						
Total HpCDF	0.0000761						

a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.


Approved By: Martha M. Maier 11-Dec-2005 13:22

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT95  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals by 200.8/245.1

Date: December 22, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -blank contamination - estimations between the MDL and RL. - reanalyses rejected in favor of original analyses
<b>COMMENTS*</b>	
<p>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.                      * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Sampling

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>X</sup> Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 4  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Data Validation Procedure for ICP Metals (DVP-5, Rev. 2)*, *US EPA Method 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the USEPA CLP *National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	200.8/245.1
Outfall 003RE1	IOK0900-01RE1	Water	200.8
Outfall 004	IOK0901-01	Water	200.8/245.1
Outfall 005	IOK0902-01	Water	200.8/245.1
Outfall 005RE1	IOK0902-01RE1	Water	200.8
Outfall 006	IOK0903-01	Water	200.8/245.1
Outfall 006RE1	IOK0903-01RE1	Water	200.8/245.1
Outfall 006RE2	IOK0903-01RE2	Water	200.8
Outfall 009	IOK0904-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples in these SDG were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. The laboratory did not append the client IDs with "RE" suffices; therefore, the reviewer added these to the Form is. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP-MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP-MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with these SDGs and all recoveries were acceptable. No qualifications were required.

## 2.4 BLANKS

Mercury was reported in method blank 5K17098-BLK1 at  $-0.072 \mu\text{g/L}$ ; therefore, mercury in Outfall 003, Outfall 004, and Outfall 005 was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining method blank and CCB results associated with the retained analyses were nondetects at the reporting limit or were significantly below the sample detects so as not to result in data qualification. No qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were performed in association with the Outfall 003 selenium analysis. The recoveries were within the control limits. No other ICSA or ICSAB analyses were included in the raw data for the ICP-MS analyses. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP-MS and mercury LCS sample results were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. No qualifications were required.

## 2.8 MATRIX SPIKES

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. Evaluation of laboratory accuracy was based on LCS results. No qualifications were required.

## 2.9 ICP-MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.10 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.11 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Some target analytes were reported from dilution analyses due to matrix interference. Reporting limits and MDLs were adjusted accordingly. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. As the original results were all confirmed, the results for Outfall 003RE1, Outfall 005RE1, Outfall 006RE1, and Outfall 006RE2 were rejected, "R," in favor of the original results. No further qualifications were required.

## 2.12 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.12.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.12.2 Field Duplicates

There were no field duplicate analyses performed in association with these samples.



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 9486 Chesapeake Dr., Suite 203, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9810 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
 2320 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 006 Report Number: IOK0903	Sampled: 11/09/05 Received: 11/09/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0903-01 (Outfall 006 - Water) Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.36	4.0	1.3	2	11/16/05	11/16/05	RL-1, J
Cadmium	EPA 200.8	5K16096	0.030	2.0	0.91	2	11/16/05	11/17/05	RL-1, J
Copper	EPA 200.8	5K16096	0.98	4.0	34	2	11/16/05	11/16/05	
Lead	EPA 200.8	5K16096	0.080	2.0	29	2	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.063	0.20	0.89	1	11/17/05	11/17/05	
Sample ID: IOK0903-01RE1 (Outfall 006 - Water) Reporting Units: ug/l									
Copper	EPA 200.8	5K19049	0.49	2.0	28	1	11/16/05	11/21/05	R D
Mercury	EPA 245.1	5K22081	0.063	0.20	0.90	1	11/17/05	11/22/05	R D
Sample ID: IOK0903-01RE2 (Outfall 006 - Water) Reporting Units: ug/l									
Copper	EPA 200.8	5K28055	2.0	8.0	36	4	11/16/05	11/28/05	R D

*Handwritten notes:*  
 RL-1, J  
 RL-1, J  
 R D  
 R D

**LEVEL IV**

Del Mar Analytical, Irvine.  
 Michele Chamberlin  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

IOK0903 <Page 2 of 12>


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC181  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 22, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - estimations between the MDL and RL. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
COMMENTS*	_____
	_____
	_____
	_____

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \*\* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: GENERAL MINERALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
AMEC Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for General Minerals (DVP-6, Rev. 2)*, *USEPA Methods for Chemical Analysis of Water and Wastes Methods 160.2, 300.0, and 413.1*, *Standard Methods for the Examination of Water and Wastewater Method SM5540-CMOD*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form Is as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOK0900-01	Water	General Minerals
Outfall 004	IOK0901-01	Water	General Minerals
Outfall 005	IOK0902-01	Water	General Minerals
Outfall 006	IOK0903-01	Water	General Minerals
Outfall 009	IOK0904-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times were met and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The blank results associated with the analyses were nondetects at the reporting limit or were significantly less than the sample detects so as not to result in data qualification. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

Project: NPDES  
 SDG: Multiple  
 Analysis: Gen. Min.

DATA VALIDATION REPORT

**2.5 LABORATORY DUPLICATES**

A laboratory duplicate analysis was performed on Outfall 009 for TDS. The %D was less than the laboratory-established control limit of 10%. No qualifications were required.

**2.6 MATRIX SPIKES**

No MS/MSD analyses were performed in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results. No qualifications were required.

**2.7 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit. No further qualifications were required.

**2.8 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

**2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.8.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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9830 South 57th St., Suite B-120, Phoenix, AZ 85044 (602) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing Project ID: Routine Outfall 006  
300 North Lake Avenue, Suite 1200 Report Number: IOK0903  
Pasadena, CA 91101 Attention: Bronwyn Kelly  
Sampled: 11/09/05  
Received: 11/09/05

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0903-01 (Outfall 006 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	49	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	4.9	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.99	5.3	ND	1	11/14/05	11/14/05	
Sulfate	EPA 300.0	5K09130	0.18	0.50	31	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	550	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	710	1	11/10/05	11/10/05	

LEVEL IV

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOK0903 <Page 3 of 12>

## **APPENDIX G**

### **Section 17**

Outfall 007, October 18, 2005

Del Mar Analytical Laboratory Report



Del Mar Analytical

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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 007

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:33

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1184-01

**CLIENT ID**  
Outfall 007

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007 Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1184-01 (Outfall 007 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.050	2.0	6.2	1	10/19/05	10/20/05	
Cadmium	EPA 200.8	5J19098	0.025	1.0	0.80	1	10/19/05	10/20/05	B, J
Copper	EPA 200.8	5J19098	0.25	2.0	19	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	20	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.10	1	10/19/05	10/19/05	J
<b>Sample ID: IOJ1184-01RE1 (Outfall 007 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.050	2.0	6.2	1	10/19/05	11/07/05	
Copper	EPA 200.8	5J19098	0.25	2.0	20	1	10/19/05	11/07/05	

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 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007 Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1184-01 (Outfall 007 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18043	0.75	2.5	51	5	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18043	0.080	0.15	7.4	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.89	4.7	ND	1	10/24/05	10/24/05	
Sulfate	EPA 300.0	5J18043	0.45	0.50	33	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	430	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	670	1	10/20/05	10/20/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007  Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 007 (IOJ1184-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 08:56	10/18/2005 14:20	10/18/2005 16:30	10/18/2005 17:18

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007  Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 007

Report Number: IOJ1184

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 007

Report Number: IOJ1184

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18043 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18043-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18043-BS1)</b>											
Chloride	5.36	0.50	0.26	mg/l	5.00		107	90-110			
Sulfate	9.77	0.50	0.18	mg/l	10.0		98	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18043-MS1)</b>											
						<b>Source: IOJ1136-01</b>					
Chloride	7.31	0.50	0.26	mg/l	5.00	2.2	102	80-120			
Sulfate	14.5	0.50	0.18	mg/l	10.0	4.1	104	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18043-MSD1)</b>											
						<b>Source: IOJ1136-01</b>					
Chloride	7.12	0.50	0.26	mg/l	5.00	2.2	98	80-120	3	20	
Sulfate	14.6	0.50	0.18	mg/l	10.0	4.1	105	80-120	1	20	
<b>Batch: 5J19123 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>											
						<b>Source: IOJ0932-01</b>					
Total Dissolved Solids	289	10	10	mg/l		280			3	10	

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 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007  Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
Total Suspended Solids	344	10	10	mg/l		Source: IOJ1175-01 340			1	10	
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120			M-NR1
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007  Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1184-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.38	4.7	15
<b>IOJ1184-01</b>	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>6.20</b>	<b>2.0</b>	<b>6.00</b>
IOJ1184-01	Cadmium-200.8	Cadmium	ug/l	0.80	1.0	4.00
IOJ1184-01	Chloride - 300.0	Chloride	mg/l	51	2.5	150
<b>IOJ1184-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>19</b>	<b>2.0</b>	<b>14</b>
IOJ1184-01	Mercury - 245.1	Mercury	ug/l	0.100	0.20	0.20
IOJ1184-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	7.40	0.15	10.00
IOJ1184-01	Sulfate-300.0	Sulfate	mg/l	33	0.50	250
IOJ1184-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	430	10	850
<b>IOJ1184-01RE1</b>	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>6.20</b>	<b>2.0</b>	<b>6.00</b>
<b>IOJ1184-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>20</b>	<b>2.0</b>	<b>14</b>

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 007

Report Number: IOJ1184

Sampled: 10/18/05

Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007  Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOJ1184-01

Analysis Performed: EDD + Level 4  
 Samples: IOJ1184-01

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 Michele Chamberlin  
 Project Manager

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# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

Client Name/Address:		Project:		ANALYSIS REQUIRED										Field readings:				
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Routine Outfall 007 Stormwater at Building 100		Total Recoverable Metals: Sp, Cd, Cu, Pb, Hg		TCDD (and all congeners)		Oil & Grease (EPA 413.1)		Cl-, SO4, NO3+NO2-N		TDS, TSS		Temp = 62.1 °C pH = 6.93				
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #											Comments	
Outfall 007	W	Poly-1L	1	10-18-05 08:56	HNO3	1A	X											
Outfall 007-Dup	W	Poly-1L	1		HNO3	1B	X											
Outfall 007	W	Glass-Amber	2		None	2A, 2B		X										
Outfall 007	W	Glass-Amber	2		HCl	3A, 3B			X									
Outfall 007	W	Poly-500 ml	2		None	4A, 4B				X								
Outfall 007	W	Poly-500 ml	2	10-18-05 08:56	None	5A, 5B					X							
Relinquished By: <i>Eric Burg</i>		Date/Time: 10-18-05 10:10		Received By: <i>Greg Lopez</i>		Date/Time: 10-18-05 10:10		Turn around Time: (Check) 24 Hours <input type="checkbox"/> 48 Hours <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>		Perchlorate Only 72 Hours <input type="checkbox"/> Metals Only 72 Hours <input type="checkbox"/>		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/>						
Relinquished By: <i>Greg Lopez</i>		Date/Time: 10-18-05 14:20		Received By: <i>Field Office</i>		Date/Time: 10-18-05 14:20												



**Pace Analytical Services, Inc.**  
1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**DETERMINATION OF PCDD/PCDF LEVELS**

Prepared for:  
**Del Mar Analytical, Irvine**  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

**REPORT OF LABORATORY ANALYSIS**

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**REPORT OF: CHEMICAL ANALYSES**

**Pace Analytical Services, Inc.**  
1700 Elm Street  
Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

**ISSUED TO: Del Mar Analytical, Irvine**  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**REPORT NO: 05-1021758,**  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959

**INTRODUCTION**

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

**SAMPLE IDENTIFICATION**

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

**RESULTS**

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

**REPORT OF LABORATORY ANALYSIS**

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Minneapolis, MN 55414  
Phone: 612.607.1700  
Fax: 612.607.6444

**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

**PAGE: 2**

**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

### **DISCUSSION**

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spikes samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

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**DATE: November 17, 2005**

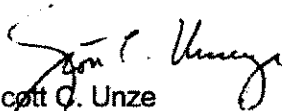
**PAGE: 3**

**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**REMARKS**

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

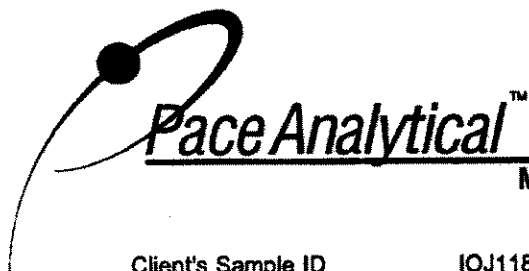
**Pace Analytical Services, Inc.**

  
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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1184-01		
Lab Sample ID	1021765001		
Filename	F51109C_11		
Injected By	BAL		
Total Amount Extracted	1050 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	10/18/2005
ICAL Date	10/22/2005	Received	10/19/2005
CCal Filename(s)	F51109C_02	Extracted	11/08/2005
Method Blank ID	BLANK-8223	Analyzed	11/10/2005 07:03

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	0.0000020	2,3,7,8-TCDF-13C	2.00	52
Total TCDF	ND	—	0.0000020	2,3,7,8-TCDD-13C	2.00	56
				1,2,3,7,8-PeCDF-13C	2.00	47
2,3,7,8-TCDD	ND	—	0.0000023	2,3,4,7,8-PeCDF-13C	2.00	63
Total TCDD	ND	—	0.0000023	1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	—	0.0000041	1,2,3,6,7,8-HxCDF-13C	2.00	52
2,3,4,7,8-PeCDF	ND	—	0.0000015	2,3,4,6,7,8-HxCDF-13C	2.00	58
Total PeCDF	0.0000030	—	0.0000028 J	1,2,3,7,8,9-HxCDF-13C	2.00	45
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	—	0.0000028	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	ND	—	0.0000028	1,2,3,4,6,7,8-HpCDF-13C	2.00	53
				1,2,3,4,7,8,9-HpCDF-13C	2.00	35
1,2,3,4,7,8-HxCDF	ND	—	0.0000028	1,2,3,4,6,7,8-HpCDD-13C	2.00	45
1,2,3,6,7,8-HxCDF	ND	—	0.0000035	OCDD-13C	4.00	34
2,3,4,6,7,8-HxCDF	ND	—	0.0000024			
1,2,3,7,8,9-HxCDF	ND	—	0.0000040	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	0.0000032	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	0.0000039	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	ND	—	0.0000042			
1,2,3,7,8,9-HxCDD	ND	—	0.0000030			
Total HxCDD	0.0000065	—	0.0000037 J			
1,2,3,4,6,7,8-HpCDF	0.0000069	—	0.0000036 J			
1,2,3,4,7,8,9-HpCDF	ND	—	0.0000045			
Total HpCDF	0.0000069	—	0.0000040 J			
1,2,3,4,6,7,8-HpCDD	0.0000280	—	0.0000092 BJ			
Total HpCDD	0.0000610	—	0.0000092			
OCDF	0.0000300	—	0.0000077 BJ			
OCDD	0.0003700	—	0.0000110			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021765

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### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000023		2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND			2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	0.0000021		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND			1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	0.0000031		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	0.0000013		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND			1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	0.0000018		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND			1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	0.0000016		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	0.0000016		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	0.0000015				
1,2,3,7,8,9-HxCDF	ND	0.0000024		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND			1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000030		2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	0.0000031				
1,2,3,7,8,9-HxCDD	ND	0.0000025				
Total HxCDD	ND					
1,2,3,4,6,7,8-HpCDF	ND	0.0000018				
1,2,3,4,7,8,9-HpCDF	ND	0.0000023				
Total HpCDF	ND					
1,2,3,4,6,7,8-HpCDD	0.0000041	0.0000026	J			
Total HpCDD	0.0000041		J			
OCDF	0.0000068	0.0000027	J			
OCDD	0.0000019	0.0000025	I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Laboratory Control Spike Results**

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

Cs = Concentration Spiked (ng/mL)  
 Cr = Concentration Recovered (ng/mL)  
 Rec. = Recovery (Expressed as Percent)  
 Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
 X = Background subtracted value  
 P = Recovery outside of control limits  
 Nn = Value obtained from additional analysis  
 \* = See Discussion

Report No.....1021758

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extrac:ed	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

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Client ..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

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**SUBCONTRACT ORDER - PROJECT # IOJ1184 1021765**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1184-01 Water	Sampled: 10/18/05 08:56	Instant Notification
1613-Dioxin-HR	10/25/05 08:56	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 08:56	Excel EDD email to pm, Include Std logs for Lvl IV

1021765001

**Containers Supplied:**  
 1 L Amber (IOJ1184-01C)  
 1 L Amber (IOJ1184-01D)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 2.4

Released By: [Signature]      Date: 10-18-05      Time: 1700      Received By: [Signature]      Date: 10-19-05      Time: 9:05

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

## **APPENDIX G**

### **Section 18**

Outfall 007, October 18, 2005


AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC178  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS*</b>	
<b>1. Case Narrative</b>	_____
<b>Deficiencies</b>	_____
<b>2. Out of Scope</b>	_____
<b>Analyses</b>	_____
<b>3. Analyses Not Conducted</b>	_____
<b>4. Missing Hardcopy</b>	_____
<b>Deliverables</b>	_____
<b>5. Incorrect Hardcopy</b>	_____
<b>Deliverables</b>	_____
<b>6. Deviations from Analysis</b>	<b>Qualifications were assigned for the following:</b>
<b>Protocol, e.g.,</b>	<b>- Qualifications for "J" values between the RL and MDL.</b>
<b>Holding Times</b>	_____
<b>GC/MS Tune/Inst. Performance</b>	_____
<b>Calibration</b>	_____
<b>Method blanks</b>	_____
<b>Surrogates</b>	_____
<b>Matrix Spike/Dup LCS</b>	_____
<b>Field QC</b>	_____
<b>Internal Standard Performance</b>	_____
<b>Compound Identification</b>	_____
<b>Quantitation</b>	_____
<b>System Performance</b>	_____
<b>COMMENTS*</b>	_____

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1: Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOJ1231-01	Water	General Minerals
Outfall 010	IOJ1232-01	Water	General Minerals
Outfall 006	IOJ1180-01	Water	General Minerals
Outfall 007	IOJ1184-01	Water	General Minerals
Outfall 009	IOJ1186-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



17461 Dorian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3287  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 783-0043 FAX (480) 783-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007 Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1184-01 (Outfall 007 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18043	0.75	2.5	51	5	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18043	0.080	0.15	7.4	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.89	4.7	ND	1	10/24/05	10/24/05	u
Sulfate	EPA 300.0	5J18043	0.45	0.50	33	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	430	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	670	1	10/20/05	10/20/05	

*Real Qual*  
*Code*

*Level IV Validated*

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1184 <Page 3 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

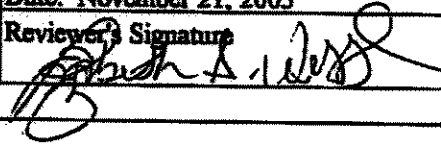
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis

Reviewer E. Wessling

Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.



## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.000041 and 0.000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## **2.7 FIELD QC SAMPLES**

Following are findings associated with field QC:

### **2.7.1 Field Blanks and Equipment Rinsates**

The samples in this SDG had no identified field QC samples. No qualifications were required.

### **2.7.2 Field Duplicates**

No field duplicate samples were identified for this SDG.

## **2.8 INTERNAL STANDARDS**

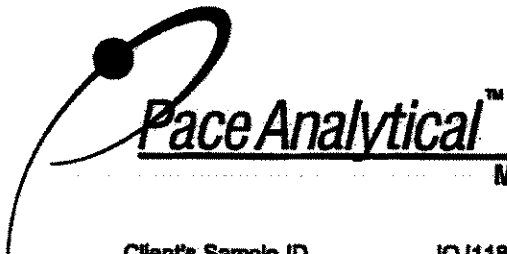
The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## **2.9 COMPOUND IDENTIFICATION**

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## **2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-807-1700  
Fax: 612-807-8444

Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1184-01  
Lab Sample ID 1021765001  
Filename F51109C\_11  
Injected By BAL  
Total Amount Extracted 1050 mL  
% Moisture NA  
Dry Weight Extracted NA  
ICAL Date 10/22/2005  
CCal Filename(s) F51109C\_02  
Method Blank ID BLANK-8223

*Outfall 007*

Matrix Water  
Dilution NA  
Collected 10/18/2005  
Received 10/19/2005  
Extracted 11/08/2005  
Analyzed 11/10/2005 07:03

*Rev*  
*Anal*  
*Code*  
*u*  
*u*  
*u*  
*u*  
*u*  
*J*  
*u*  
*u*  
*u*  
*J*  
*J*  
*u*  
*J*  
*J*  
*J*  
*u*  
*J*

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.000020	0.000020	2,3,7,8-TCDF-13C	2.00	52
Total TCDF	ND	0.000020	0.000020	2,3,7,8-TCDD-13C	2.00	58
				1,2,3,7,8-PeCDF-13C	2.00	47
2,3,7,8-TCDD	ND	0.000023	0.000023	2,3,4,7,8-PeCDF-13C	2.00	63
Total TCDD	ND	0.000023	0.000023	1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	0.000041	0.000041	1,2,3,6,7,8-HxCDF-13C	2.00	52
2,3,4,7,8-PeCDF	ND	0.000015	0.000015	2,3,4,6,7,8-HxCDF-13C	2.00	58
Total PeCDF	0.000030	0.000028	0.000028	1,2,3,7,8,9-HxCDF-13C	2.00	45
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	0.000028	0.000028	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	ND	0.000028	0.000028	1,2,3,4,6,7,8-HpCDF-13C	2.00	53
				1,2,3,4,7,8,9-HpCDF-13C	2.00	35
1,2,3,4,7,8-HxCDF	ND	0.000028	0.000028	1,2,3,4,6,7,8-HpCDD-13C	2.00	46
1,2,3,6,7,8-HxCDF	ND	0.000036	0.000036	OCDD-13C	4.00	34
2,3,4,6,7,8-HxCDF	ND	0.000024	0.000024			
1,2,3,7,8,9-HxCDF	ND	0.000040	0.000040	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	0.000032	0.000032	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.000039	0.000039	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	ND	0.000042	0.000042			
1,2,3,7,8,9-HxCDD	ND	0.000030	0.000030			
Total HxCDD	0.000065	0.000037	0.000037			
1,2,3,4,6,7,8-HpCDF	0.000069	0.000036	0.000036			
1,2,3,4,7,8,9-HpCDF	ND	0.000045	0.000045			
Total HpCDF	0.000069	0.000040	0.000040			
1,2,3,4,6,7,8-HpCDD	0.0000280	0.000092	0.000092			
Total HpCDD	0.000010	0.000092	0.000092			
OCDF	0.0000300	0.000077	0.000077			
OCDD	0.0003700	0.000110	0.000110			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021765

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT93  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature 

ACTION ITEMS*	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	<p>Qualifications were assigned for the following:</p> <ul style="list-style-type: none"> <li>- Blank contamination</li> <li>- Sample results between the MDL and RL were estimated</li> <li>- Reanalyses were rejected in favor of the original analyses</li> </ul>
<b>COMMENTS*</b>	_____
<small>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.            * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</small>	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 3  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOJ1231-01	Water	200.8/245.1
Outfall 010	IOJ1232-01	Water	200.8/245.1
Outfall 006	IOJ1180-01	Water	200.8/245.1
Outfall 007	IOJ1184-01	Water	200.8/245.1
Outfall 009	IOJ1186-01	Water	200.8/245.1

## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### **2.1.3 Holding Times**

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### **2.2 ICP-MS TUNING**

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### **2.3 CALIBRATION**

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### **2.4 BLANKS**

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 006. No further qualifications were required.



**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

**2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

*A Level IV review was performed for the samples in this data package. Calculations were verified.*

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

---

of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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MWE-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 007 Report Number: IOJ1184	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Res	Qual
Sample ID: IOJ1184-01 (Outfall 007 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	SJ19098	0.050	2.0	6.2	1	10/19/05	10/20/05	B, J	J	DNG
Cadmium	EPA 200.8	SJ19098	0.025	1.0	0.80	1	10/19/05	10/20/05			
Copper	EPA 200.8	SJ19098	0.25	2.0	19	1	10/19/05	10/20/05			
Lead	EPA 200.8	SJ19098	0.040	1.0	20	1	10/19/05	10/20/05			
Mercury	EPA 245.1	SJ19052	0.050	0.20	0.10	1	10/19/05	10/19/05	J	J	DNG
Sample ID: IOJ1184-01RE1 (Outfall 007 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	SJ19098	0.050	2.0	6.2	1	10/19/05	11/07/05		R	D
Copper	EPA 200.8	SJ19098	0.25	2.0	20	1	10/19/05	11/07/05		R	D

*Level IV Validated*

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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# **APPENDIX G**

## **Section 19**

Outfall 008, October 18, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 008

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:17

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1181-01

**CLIENT ID**  
Outfall 008

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008 Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1181-01 (Outfall 008 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.050	2.0	0.54	1	10/19/05	10/20/05	J
Cadmium	EPA 200.8	5J19098	0.025	1.0	1.5	1	10/19/05	10/20/05	
Copper	EPA 200.8	5J19098	0.25	2.0	14	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	120	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.14	1	10/19/05	10/19/05	J

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1181-01 (Outfall 008 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	0.15	0.50	4.6	1	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	0.95	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J21043	0.89	4.7	ND	1	10/21/05	10/21/05	
Sulfate	EPA 300.0	5J18042	0.45	0.50	14	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	270	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	1300	1	10/20/05	10/20/05	
<b>Sample ID: IOJ1181-01 (Outfall 008 - Water)</b>									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5J19053	0.80	4.0	ND	1	10/19/05	10/19/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 008 (IOJ1181-01) - Water EPA 300.0	2	10/18/2005 09:41	10/18/2005 14:20	10/18/2005 16:30	10/18/2005 17:06

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 008

Report Number: IOJ1181

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>										
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>										
Chloride	ND	0.50	0.26	mg/l						
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l						
Sulfate	ND	0.50	0.18	mg/l						
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>										
Chloride	4.98	0.50	0.26	mg/l	5.00		100 90-110			M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100 90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>										
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113 80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>										
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108 80-120	2	20	
<b>Batch: 5J19053 Extracted: 10/19/05</b>										
<b>Blank Analyzed: 10/19/2005 (5J19053-BLK1)</b>										
Perchlorate	ND	4.0	0.80	ug/l						
<b>LCS Analyzed: 10/19/2005 (5J19053-BS1)</b>										
Perchlorate	44.1	4.0	0.80	ug/l	50.0		88 85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19053-MS1)</b>										
Perchlorate	45.8	4.0	0.80	ug/l	50.0	ND	92 80-120			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19053-MSD1)</b>										
Perchlorate	45.3	4.0	0.80	ug/l	50.0	ND	91 80-120	1	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19123 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>											
Total Dissolved Solids	289	10	10	mg/l		Source: IOJ0932-01 280			3	10	
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
Total Suspended Solids	344	10	10	mg/l		Source: IOJ1175-01 340			1	10	
<b>Batch: 5J21043 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 11/08/2005 (5J21043-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/08/2005 (5J21043-BS1)</b>											
Oil & Grease	14.5	5.0	0.94	mg/l	20.0		72	65-120			M-NR1

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 Project Manager

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J21043 Extracted: 10/21/05</b>											
<b>LCS Dup Analyzed: 11/08/2005 (5J21043-BSD1)</b>											
Oil & Grease	14.1	5.0	0.94	mg/l	20.0		70	65-120	3	20	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008 Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1181-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.47	4.7	15
IOJ1181-01	Chloride - 300.0	Chloride	mg/l	4.60	0.50	150
IOJ1181-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.95	0.26	8.00
IOJ1181-01	Perchlorate 314.0	Perchlorate	ug/l	0	4.0	6.00
IOJ1181-01	Sulfate-300.0	Sulfate	mg/l	14	0.50	300
IOJ1181-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	270	10	950

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Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008  Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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**DATA QUALIFIERS AND DEFINITIONS**

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 008

Report Number: IOJ1181

Sampled: 10/18/05

Received: 10/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	N/A	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).

### Subcontracted Laboratories

#### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR

Samples: IOJ1181-01

Analysis Performed: EDD + Level 4

Samples: IOJ1181-01

### Del Mar Analytical, Irvine

Michele Chamberlin

Project Manager

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**CHAIN OF CUSTODY FORM**

<b>Del Mar Analytical</b> Version 02/17/05 Client Name/Address: <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: <i>Rick Baringer</i>		Project: <b>Boeing-SSFL NPDES          Routine Outfall 008</b> Stormwater at Happy Valley Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>ANALYSIS REQUIRED</b>						Field readings: Temp = <b>59.9</b> pH = <b>7.75</b> <b>10/18/05</b> Comments	
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	Oil & Grease (EPA 413.1)	Chloride, Sulfate, Nitrate, Nitrite Cl-, SO4, NO3+NO2-N	TDS, TSS	TCDD (and all congeners)	
Outfall 008	W	Poly-1L	1	HNO3	1A	X					
Outfall 008-Dup	W	Poly-1L	1	HNO3	1B	X					
Outfall 008	W	Glass-Amber	2	HCl	3A, 3B		X				
Outfall 008	W	Poly-500 ml	2	None	4A, 4B		X				
Outfall 008	W	Poly-500 ml	2	None	5A, 5B			X			
Outfall 008	W	Glass-Amber	2	None	6A, 6B				X		
Relinquished By: <i>Rick Baringer</i> Date/Time: <b>10-18-05 10:10</b> Relinquished By: <i>Bronwyn Kelly</i> Date/Time: <b>10-18-05 10:10</b> Relinquished By: <i>Bronwyn Kelly</i> Date/Time: <b>10-18-05 14:20</b>						Received By: <i>Bronwyn Kelly</i> Date/Time: <b>10-18-05 10:10</b> Received By: <i>Bronwyn Kelly</i> Date/Time: <b>10-18-05 14:20</b> Received By: <i>Bronwyn Kelly</i> Date/Time: <b>10-18-05 14:20</b>					Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) <input checked="" type="checkbox"/> Intact <input type="checkbox"/> On Ice: <b>120C</b>



**Pace Analytical Services, Inc.**  
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Minneapolis, MN 55414  
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Fax: 612.607.6444

**DETERMINATION OF PCDD/PCDF LEVELS**

Prepared for:  
Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614



The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

**Project: Chemical Analysis**

**Client Project Number: IOJ1181, IOJ1176, IOJ1186, IOJ1180, IOJ1184,  
IOJ1177, IOJ1234, IOJ1232, IOJ1231, IOJ1235, IOJ1236 and IOJ1337**

**REPORT OF LABORATORY ANALYSIS**

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**REPORT OF: CHEMICAL ANALYSES**

**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

**ISSUED TO: Del Mar Analytical, Irvine  
Attn: Michele Harper  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614**

**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**INTRODUCTION**

This report presents the results from the analyses performed on twelve samples submitted by a representative of Del Mar Analytical, Irvine. The samples were analyzed for the presence or absence of polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of USEPA Method 1613B

**SAMPLE IDENTIFICATION**

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
IOJ1181-01	Water	10/19/05	1021758001
IOJ1176-01	Water	10/19/05	1021760001
IOJ1186-01	Water	10/19/05	1021761001
IOJ1180-01	Water	10/19/05	1021763001
IOJ1184-01	Water	10/19/05	1021765001
IOJ1177-01	Water	10/19/05	1021766001
IOJ1234-01	Water	10/20/05	1021907001
IOJ1232-01	Water	10/20/05	1021908001
IOJ1231-01	Water	10/20/05	1021910001
IOJ1235-01	Water	10/20/05	1021911001
IOJ1236-01	Water	10/20/05	1021912001
IOJ1337-01	Water	10/21/05	1021959001

**RESULTS**

The results are included in the following:

- Appendix A – Documentation
- Appendix B – Sample Analysis Results
- Appendix C – QC and Calibration Results
- Appendix D – Sample Chromatograms and Raw Data
- Appendix E – Calibration Chromatograms and Raw Data
- Appendix F – QC Chromatograms and Raw Data

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**REPORT OF: CHEMICAL ANALYSES**

**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

**PAGE: 2**

**REPORT NO: 05-1021758,  
1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**DISCUSSION**

Two sets of results were provided, at the request of Del Mar Analytical, for sample IOJ1337-01. In the initial (11/03/2005) extraction batch for this sample, elevated recoveries were obtained for selected native congeners in the associated lab spike samples, most likely due to contamination. The second (11/08/2005) extraction batch showed good recoveries for the native congeners in the lab spikes. However, the results obtained from the analyses of the two extracts of the field sample were dissimilar. The initial sample results, associated with the contaminated lab spikes, were significantly lower than the repeat sample results, those associated with the compliant lab spikes samples.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-108%. All of the labeled standard recoveries obtained for these projects were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, the presence of interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blanks to contain trace levels of selected PCDD and PCDF congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean water that had been fortified with native standard materials. The results show the spiked native compounds in LCS-8224 and LCSD-8225 were recovered at 88-109%, with relative percent differences of 0.0-12.2%. These results indicate high degrees of accuracy and precision for these determinations. Four native recovery values LCS-8209 and LCSD-8210 were above the target ranges; the affected values were flagged "P" on the results tables and may indicate high biases for these congeners in the associated sample (the initial extract of IOJ1337-01).

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**REPORT OF: CHEMICAL ANALYSES**

**PROJECT: PCDD/PCDF ANALYSES**

**DATE: November 17, 2005**

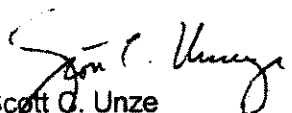
**PAGE: 3**

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1021760, 1021761, 1021763,  
1021765, 1021766, 1021907,  
1021908, 1021910, 1021911,  
1021912, 1021959**

**REMARKS**

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

**Pace Analytical Services, Inc.**

  
Scott G. Unze  
Project Manager, HRMS  
(612) 607-6383

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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1181-01	Matrix	Water
Lab Sample ID	1021758001	Dilution	NA
Filename	F51109C_07	Collected	10/18/2005
Injected By	BAL	Received	10/19/2005
Total Amount Extracted	1020 mL	Extracted	11/08/2005
% Moisture	NA	Analyzed	11/10/2005 03:47
Dry Weight Extracted	NA		
ICAL Date	10/22/2005		
CCal Filename(s)	F51109C_02		
Method Blank ID	BLANK-8223		

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000030		2,3,7,8-TCDF-13C	2.00	65
Total TCDF	ND	0.0000030		2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	ND	0.0000029		2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	ND	0.0000029		1,2,3,7,8-PeCDD-13C	2.00	96
				1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	0.0000036		1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	ND	0.0000015		2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF	ND	0.0000026		1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	ND	0.0000017		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	0.0000017		1,2,3,4,6,7,8-HpCDF-13C	2.00	70
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	0.0000027	0.0000021	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	0.0000016		OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	ND	0.0000017				
1,2,3,7,8,9-HxCDF	ND	0.0000023		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	0.0000019		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000032		2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	ND	0.0000034				
1,2,3,7,8,9-HxCDD	ND	0.0000031				
Total HxCDD	0.0000046	0.0000032	J			
1,2,3,4,6,7,8-HpCDF	0.0000110	0.0000023	J			
1,2,3,4,7,8,9-HpCDF	ND	0.0000036				
Total HpCDF	0.0000200	0.0000030	J			
1,2,3,4,6,7,8-HpCDD	0.0000260	0.0000032	BJ			
Total HpCDD	0.0000530	0.0000032				
OCDF	0.0000300	0.0000020	BJ			
OCDD	0.0002300	0.0000043				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = interference  
E = PCDE interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021758

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### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-8223	Matrix	Water
Filename	F51109C_06	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 02:58
CCal Filename(s)	F51109C_02	Injected By	BAL

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000023	0.0000023	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	0.0000023	0.0000023	2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	0.0000021	0.0000021	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	0.0000021	0.0000021	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	0.0000031	0.0000031	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	0.0000013	0.0000013	2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND	0.0000013	0.0000013	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	0.0000018	0.0000018	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	0.0000018	0.0000018	1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	0.0000016	0.0000016	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	0.0000016	0.0000016	OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	0.0000015	0.0000015			
1,2,3,7,8,9-HxCDF	ND	0.0000024	0.0000024	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	0.0000024	0.0000024	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	0.0000030	0.0000030	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	0.0000031	0.0000031			
1,2,3,7,8,9-HxCDD	ND	0.0000025	0.0000025			
Total HxCDD	ND	0.0000025	0.0000025			
1,2,3,4,6,7,8-HpCDF	ND	0.0000018	0.0000018			
1,2,3,4,7,8,9-HpCDF	ND	0.0000023	0.0000023			
Total HpCDF	ND	0.0000023	0.0000023			
1,2,3,4,6,7,8-HpCDD	0.0000041	0.0000026	0.0000026			J
Total HpCDD	0.0000041	0.0000026	0.0000026			J
OCDF	0.0000068	0.0000027	0.0000027			J
OCDD	0.0000019	0.0000025	0.0000025			I

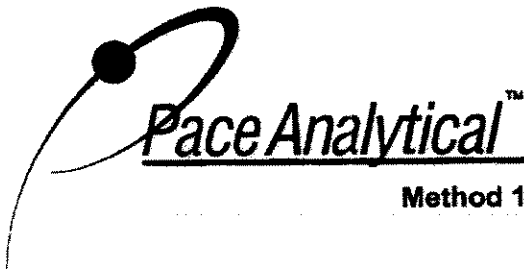
Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
A = Limit of Detection based on signal to noise  
P = Recovery outside of method 1613 control limits  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021758

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-8224	Matrix	Water
Filename	F51109C_03	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 00:34
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	50.6	40.0	67.0	101
2,3,4,7,8-PeCDF	50	45.9	34.0	80.0	92
1,2,3,7,8-PeCDD	50	43.9	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47.2	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	47.2	42.0	65.0	94
2,3,4,6,7,8-HxCDF	50	48.1	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	48.2	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	48.5	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	48.3	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	46.2	32.0	81.0	92
1,2,3,4,6,7,8-HpCDF	50	50.2	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	52.6	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	44.9	35.0	70.0	90
OCDF	100	92.1	63.0	170.0	92
OCDD	100	93.3	78.0	144.0	93
2,3,7,8-TCDD-37Cl4	10	7.1	3.1	19.1	71
2,3,7,8-TCDF-13C	100	60.6	22.0	152.0	61
2,3,7,8-TCDD-13C	100	68.3	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	64.1	21.0	192.0	64
2,3,4,7,8-PeCDF-13C	100	62.8	13.0	328.0	63
1,2,3,7,8-PeCDD-13C	100	81.7	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	63.6	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	63.7	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	60.8	22.0	176.0	61
1,2,3,7,8,9-HxCDF-13C	100	60.7	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	65.7	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	67.5	25.0	163.0	68
1,2,3,4,6,7,8-HpCDF-13C	100	68.4	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62.9	20.0	186.0	63
1,2,3,4,6,7,8-HpCDD-13C	100	76.3	26.0	166.0	76
OCDD-13C	200	117.9	26.0	397.0	59

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....1021758

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Laboratory Control Spike Results**

Client - Del Mar Analytical

Lab Sample ID	LCSD-8225	Matrix	Water
Filename	F51109C_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	11/08/2005
ICAL Date	10/22/2005	Analyzed	11/10/2005 01:21
CCal Filename	F51109C_02	Injected By	BAL
Method Blank ID	BLANK-8223		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.1	7.5	15.8	91
2,3,7,8-TCDD	10	10.1	6.7	15.8	101
1,2,3,7,8-PeCDF	50	51.1	40.0	67.0	102
2,3,4,7,8-PeCDF	50	51.8	34.0	80.0	104
1,2,3,7,8-PeCDD	50	46.1	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49.5	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	49.5	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	50.6	35.0	78.0	101
1,2,3,7,8,9-HxCDF	50	48.0	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52.0	35.0	82.0	104
1,2,3,6,7,8-HxCDD	50	54.3	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	51.8	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51.9	41.0	61.0	104
1,2,3,4,7,8,9-HpCDF	50	54.5	39.0	69.0	109
1,2,3,4,6,7,8-HpCDD	50	47.3	35.0	70.0	95
OCDF	100	93.1	63.0	170.0	93
OCDD	100	97.2	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	55.7	22.0	152.0	56
2,3,7,8-TCDD-13C	100	62.3	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	57.8	21.0	192.0	58
2,3,4,7,8-PeCDF-13C	100	54.6	13.0	328.0	55
1,2,3,7,8-PeCDD-13C	100	68.6	21.0	227.0	69
1,2,3,4,7,8-HxCDF-13C	100	61.8	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	63.8	21.0	159.0	64
2,3,4,6,7,8-HxCDF-13C	100	59.4	22.0	176.0	59
1,2,3,7,8,9-HxCDF-13C	100	61.4	17.0	205.0	61
1,2,3,4,7,8-HxCDD-13C	100	58.6	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	67.0	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	66.7	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	62.2	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	74.8	26.0	166.0	75
OCDD-13C	200	122.3	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)  
 Cr = Concentration Recovered (ng/mL)  
 Rec. = Recovery (Expressed as Percent)  
 Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
 X = Background subtracted value  
 P = Recovery outside of control limits  
 Nn = Value obtained from additional analysis  
 \* = See Discussion

Report No.....1021758

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical Services, Inc.  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

**SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS**

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-8224  
 SPIKE 1 Filename..... F51109C\_03  
 SPIKE 2 ID..... LCSD-8225  
 SPIKE 2 Filename..... F51109C\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	95	91	4.3
2378-TCDD	95	101	6.1
12378-PeCDF	101	102	1.0
23478-PeCDF	92	104	12.2
12378-PeCDD	88	92	4.4
123478-HxCDF	94	99	5.2
123678-HxCDF	94	99	5.2
234678-HxCDF	96	101	5.1
123789-HxCDF	96	96	0.0
123478-HxCDD	97	104	7.0
123678-HxCDD	97	109	11.7
123789-HxCDD	92	104	12.2
1234678-HpCDF	100	104	3.9
1234789-HpCDF	105	109	3.7
1234678-HpCDD	90	95	5.4
OCDF	92	93	1.1
OCDD	93	97	4.2

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

Report No..... 1021758

**REPORT OF LABORATORY ANALYSIS**

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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite 45, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOJ1181**

1021758

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1181-01 Water	Sampled: 10/18/05 09:41	Instant Notification
1613-Dioxin-HR	10/25/05 09:41	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
EDD + Level 4	11/15/05 09:41	Excel EDD email to pm, Include Std logs for Lvl IV

1021758001

**Containers Supplied:**  
 1 L Amber (IOJ1181-01C)  
 1 L Amber (IOJ1181-01D)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received at (temp): 25

Released By: [Signature] Date: 10-18-05 Time: 1700 Received By: J Richardson Date: 10/19/05 Time: 9:05

## **APPENDIX G**

### **Section 20**

Outfall 008, October 18, 2005

AMEC Data Validation Reports


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT94  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 3

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spikes/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contract Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 2  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

**Project:** NPDES Monitoring  
**SDG No.:** Multiple  
**Analysis:** METALS

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 005	IOJ1176-01	Water	200.8/245.1
Outfall 004	IOJ1177-01	Water	200.8/245.1
Outfall 008	IOJ1181-01	Water	200.8/245.1



## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### **2.1.3 Holding Times**

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### **2.2 ICP-MS TUNING**

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### **2.3 CALIBRATION**

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### **2.4 BLANKS**

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 004. No further qualifications were required.

## **2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

## **2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

## **2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

## **2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

## **2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Reanalyses were performed for copper and or mercury in some site samples. In all cases the reanalyses confirmed the original analysis. The reanalyses were rejected in favor

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92133 (619) 503-8396 FAX (619) 503-9689  
 9830 South 37th St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 008  
 Report Number: IOJ1181

Sampled: 10/18/05  
 Received: 10/18/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Qual	Anal Case
Sample ID: IOJ1181-01 (Outfall 008 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	5J19098	0.050	2.0	0.54	1	10/19/05	10/20/05	J	J	DNQ
Cadmium	EPA 200.8	5J19098	0.025	1.0	1.5	1	10/19/05	10/20/05			
Copper	EPA 200.8	5J19098	0.25	2.0	14	1	10/19/05	10/20/05			
Lead	EPA 200.8	5J19098	0.040	1.0	120	1	10/19/05	10/20/05	J	J	DNQ
Mercury	EPA 245.1	5J19052	0.050	0.20	0.14	1	10/19/05	10/19/05			

*Level III Validated*

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1181 <Page 2 of 12>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711WC180  
 Task Order 313150010  
 SDG No. IOJ1181

No. of Analyses 1

Laboratory Del Mar - Irvine

Date: December 12, 2005

Reviewer E. Wessling

Reviewer's Signature  


Analysis/Method Perchlorate

<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Acceptable as reviewed
<b>COMMENTS*</b>	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. † Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOJ1181  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 3  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2*, USEPA *Methods for Chemical Analysis of Water and Wastes Method 314.0*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 008	IOJ1181-01	Water	Perchlorate



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the sample and analysis presented in this SDG. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The 28-day analytical holding time was met for the perchlorate analysis. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Perchlorate was not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in this SDG.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on the sample in association with this SDG; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on the sample in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results since there was no MS/MSD analyses. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample result reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with this SDG.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9669  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2530 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008 Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1181-01 (Outfall 008 - Water) - cont. Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	0.15	0.50	4.6	1	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	0.95	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J21043	0.89	4.7	ND	1	10/21/05	10/21/05	
Sulfate	EPA 300.0	5J18042	0.45	0.50	14	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	270	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	1300	1	10/20/05	10/20/05	
Sample ID: IOJ1181-01 (Outfall 008 - Water) Reporting Units: ug/l									
Perchlorate	EPA 314.0	5J19053	0.80	4.0	ND	1	10/19/05	10/19/05	

Res  
Qual  
Code

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Level IV validated  
 \* analysis not validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Pacc - Minneapolis

Date: November 21, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Dioxins/Furans by Method 1613B

<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
<b>COMMENTS*</b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.



## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Pace Analytical Services, Inc.  
1700 Elm Street - Suite 200  
Minneapolis, MN 55414

Tel: 612-607-1700  
Fax: 612-607-8444

### Method 1613B Analysis Results

Client - Del Mar Analytical

*Outfall 009*

Client's Sample ID  
Lab Sample ID  
Filename  
Injected By  
Total Amount Extracted  
% Moisture  
Dry Weight Extracted  
ICAL Date  
CCal Filename(s)  
Method Blank ID

IQJ1181-01  
1021758001  
F51109C\_07  
BAL  
1020 mL  
NA  
NA  
10/22/2005  
F51109C\_02  
BLANK-8223

Matrix  
Dilution  
Collected  
Received  
Extracted  
Analyzed  
Water  
NA  
10/18/2005  
10/19/2005  
11/08/2005  
11/10/2005 03:47

Raw Qual	Dual Code	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	—	0.0000030	2,3,7,8-TCDF-13C	2.00	65
		Total TCDF	ND	—	0.0000030	2,3,7,8-TCDD-13C	2.00	75
		2,3,7,8-TCDD	ND	—	0.0000029	1,2,3,7,8-PeCDF-13C	2.00	71
		Total TCDD	ND	—	0.0000029	2,3,4,7,8-PeCDF-13C	2.00	78
		1,2,3,7,8-PeCDF	ND	—	0.0000036	1,2,3,7,8-PeCDD-13C	2.00	98
		2,3,4,7,8-PeCDF	ND	—	0.0000015	1,2,3,4,7,8-HxCDF-13C	2.00	71
		Total PeCDF	ND	—	0.0000026	1,2,3,6,7,8-HxCDF-13C	2.00	87
		1,2,3,7,8-PeCDD	ND	—	0.0000017	2,3,4,6,7,8-HxCDF-13C	2.00	69
		Total PeCDD	ND	—	0.0000017	1,2,3,7,8,9-HxCDF-13C	2.00	72
U3	* 10	1,2,3,4,7,8-HxCDF	—	0.0000027	0.0000021	1,2,3,4,7,8-HxCDF-13C	2.00	70
		1,2,3,6,7,8-HxCDF	ND	—	0.0000016	1,2,3,4,7,8,9-HpCDF-13C	2.00	60
		2,3,4,6,7,8-HxCDF	ND	—	0.0000017	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
		1,2,3,7,8,9-HxCDF	ND	—	0.0000023	OCDD-13C	4.00	59
		Total HxCDF	ND	—	0.0000019	1,2,3,4-TCDD-13C	2.00	NA
		1,2,3,4,7,8-HxCDD	ND	—	0.0000032	1,2,3,7,8,9-HxCDD-13C	2.00	NA
		1,2,3,6,7,8-HxCDD	ND	—	0.0000034			
		1,2,3,7,8,9-HxCDD	ND	—	0.0000031	2,3,7,8-TCDD-37Cl4	0.20	82
		Total HxCDD	0.0000046	—	0.0000032			
J	DNR	1,2,3,4,6,7,8-HpCDF	0.0000110	—	0.0000023			J
		1,2,3,4,7,8,9-HpCDF	ND	—	0.0000036			J
U	DNR	Total HpCDF	0.0000200	—	0.0000030			J
U3	B	1,2,3,4,6,7,8-HpCDD	0.0000260	—	0.0000032			BJ
		Total HpCDD	0.0000530	—	0.0000032			
U3	B	OCDE	0.0000300	—	0.0000020			BJ
		OCDD	0.0002300	—	0.0000043			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021758

## Level IV Validated REPORT OF LABORATORY ANALYSIS

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC179  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 3

Laboratory Del Mar - Irvine

Reviewer E. Wessling

Analysis/Method General Minerals

Date: <u>December 12, 2005</u>
Reviewer's Signature <i>E. Wessling</i>

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Acceptable as reviewed _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
<b>COMMENTS<sup>b</sup></b>	_____

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ 1176, IOJ1177, IOJ1181

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 3  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 005	IOJ1176-01	Water	General Minerals
Outfall 004	IOJ1177-01	Water	General Minerals
Outfall 008	IOJ1181-01	Water	General Minerals

## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### **2.1.3 Holding Times**

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### **2.2 CALIBRATION**

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### **2.3 BLANKS**

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.



## **2.6 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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 9484 Champeake Dr., Suite 803, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9688  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 008 Report Number: IOJ1181	Sampled: 10/18/05 Received: 10/18/05
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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual
Sample ID: IOJ1181-01 (Outfall 008 - Water) - cont. Reporting Units: mg/l										
Chloride	EPA 300.0	5J18042	0.15	0.50	4.6	1	10/18/05	10/18/05		
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	0.95	1	10/18/05	10/18/05		
Oil & Grease	EPA 413.1	5J21043	0.89	4.7	ND	1	10/21/05	10/21/05	U	
Sulfate	EPA 300.0	5J18042	0.45	0.50	14	1	10/18/05	10/18/05		
Total Dissolved Solids	SM2540C	5J19123	10	10	270	1	10/19/05	10/19/05		
Total Suspended Solids	EPA 160.2	5J20118	10	10	1300	1	10/20/05	10/20/05		
Sample ID: IOJ1181-01 (Outfall 008 - Water) Reporting Units: ug/l										
* Perchlorate	EPA 314.0	5J19053	0.80	4.0	ND	1	10/19/05	10/19/05		

\* analysis not validated

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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## **APPENDIX G**

### **Section 21**

Outfall 009, October 17, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 009

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:53

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**  
IOJ1186-01

**CLIENT ID**  
Outfall 009

**MATRIX**  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009  Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1186-01 (Outfall 009 - Water)</b>									
<b>Reporting Units: ug/l</b>									
Antimony	EPA 200.8	5J19098	0.050	2.0	4.2	1	10/19/05	10/20/05	
Cadmium	EPA 200.8	5J19098	0.025	1.0	9.2	1	10/19/05	10/20/05	
Copper	EPA 200.8	5J19098	0.25	2.0	39	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	260	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.21	1	10/19/05	10/19/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOJ1186

Sampled: 10/18/05  
 Received: 10/18/05

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1186-01 (Outfall 009 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	0.15	0.50	7.5	1	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.080	0.15	1.1	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.89	4.7	ND	1	10/24/05	10/24/05	
Sulfate	EPA 300.0	5J18042	0.45	0.50	41	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J19123	10	10	260	1	10/19/05	10/19/05	
Total Suspended Solids	EPA 160.2	5J20118	10	10	4000	1	10/20/05	10/20/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 009 (IOJ1186-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 13:17	10/18/2005 14:20	10/18/2005 16:30	10/18/2005 17:21

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 Michele Chamberlin  
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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>										
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>										
Mercury	ND	0.20	0.050	ug/l						
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>										
Mercury	8.06	0.20	0.050	ug/l	8.00		101 85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>										
					<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100 70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>										
					<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101 70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>										
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>										
Antimony	ND	2.0	0.18	ug/l						
Cadmium	0.109	1.0	0.015	ug/l						J
Copper	ND	2.0	0.49	ug/l						
Lead	0.0450	1.0	0.040	ug/l						J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>										
Antimony	77.4	2.0	0.18	ug/l	80.0		97 85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102 85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97 85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102 85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>										
					<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106 70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105 70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99 70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98 70-130			

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009  Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>											
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110			M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>					<b>Source: IOJ1153-01</b>						
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>					<b>Source: IOJ1153-01</b>						
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20	
<b>Batch: 5J19123 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19123-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/19/2005 (5J19123-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/19/2005 (5J19123-DUP1)</b>					<b>Source: IOJ0932-01</b>						
Total Dissolved Solids	289	10	10	mg/l		280			3	10	
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J20118-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOJ1186

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J20118 Extracted: 10/20/05</b>											
<b>LCS Analyzed: 10/20/2005 (5J20118-BS1)</b>											
Total Suspended Solids	993	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 10/20/2005 (5J20118-DUP1)</b>											
						<b>Source: IOJ1175-01</b>					
Total Suspended Solids	344	10	10	mg/l		340			1	10	
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120			M-NRI
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20	

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MWH-Pasadena/Boeing	Project ID: Routine Outfall 009	Sampled: 10/18/05
300 North Lake Avenue, Suite 1200	Report Number: IOJ1186	Received: 10/18/05
Pasadena, CA 91101		
Attention: Bronwyn Kelly		

**Compliance Check**

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1186-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.38	4.7	15
IOJ1186-01	Chloride - 300.0	Chloride	mg/l	7.50	0.50	150
IOJ1186-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	1.10	0.15	10.00
IOJ1186-01	Sulfate-300.0	Sulfate	mg/l	41	0.50	250
IOJ1186-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	260	10	850

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOJ1186

Sampled: 10/18/05  
Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOJ1186

Sampled: 10/18/05

Received: 10/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413  
 1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta  
 Samples: IOJ1186-01

Analysis Performed: Level 4 + EDD  
 Samples: IOJ1186-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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**ADDITIONAL ANALYSIS REQUEST FORM**

Today's Date: 11/29 Del Mar Analytical Project Manager: MC

Request via:  telephone  chain of custody form  fax transmission  E-mail  other

Client: MWH - Pasadena/Boeing Contact: Bronwyn Kelly

Project: Frontline outfall 009

Date Sampled: 10/18/05 Date Received: 10/18/05

Status:  in progress  completed  received today  received yesterday  on hold  other

SAMPLE NUMBER	SAMPLE DESCRIPTION	ANALYSIS REQUESTED	SPECIAL REQUIREMENTS
121186-01	outfall 009	1613-HR to AITA	Subcontract 16 amber presented w/HCI, send "129105" normal TAT

TURNAROUND STATUS:  Same Day  24hr  48hr  3days  
 5days  Standard  No Rush Charge

# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:												
<b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Boeing-SSFL NPDES          Routine Outfall 009          Stormwater at WS-13</b>		TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Temp = <b>66.2</b>												
<b>Project Manager: Bronwyn Kelly</b> <i>RICK BONABO</i> <b>Sampler: PAT BLOCK</b>		Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		C-, SO4, NO3+NO2-N		pH = <b>8.8</b>												
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg						Comments					
Outfall 009	W	Poly-1L	1	<b>10-17-05 13:17</b>	HNO3	1A	X						<b>10/18/05</b>					
Outfall 009-Dup	W	Poly-1L	1		HNO3	1B	X					<b>10/18/05</b>						
Outfall 009	W	Glass-Amber	2		None	2A, 2B		X						<b>10/18/05</b>				
Outfall 009	W	Glass-Amber	2		HCl	3A, 3B			X						<b>10/18/05</b>			
Outfall 009	W	Poly-500 ml	2	<b>10-17-05 13:17</b>	None	4A, 4B				X						<b>10/18/05</b>		
Outfall 009	W	Poly-500 ml	2		None	5A, 5B					X						<b>10/18/05</b>	
Relinquished By			Date/Time: <b>10-17-05 10:10</b>		Received By: <i>[Signature]</i>		Date/Time: <b>10/18/05 10:10</b>		Turn around Time: (check) 24 Hours <input type="checkbox"/> 5 Days <input type="checkbox"/>		48 Hours <input checked="" type="checkbox"/> 10 Days <input type="checkbox"/>		72-Hours <input checked="" type="checkbox"/> Normal <input type="checkbox"/>					
Relinquished By			Date/Time: <b>10/18/05 14:20</b>		Received By: <i>[Signature]</i>		Date/Time: <b>10-18-05 14:20</b>		Perchlorate Only 72 Hours <input type="checkbox"/>		Metals Only 72 Hours <input type="checkbox"/>		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input type="checkbox"/>					
Relinquished By			Date/Time: <b>10/18/05 14:20</b>		Received By: <i>[Signature]</i>		Date/Time: <b>10-18-05 14:20</b>		Perchlorate Only 72 Hours <input type="checkbox"/>		Metals Only 72 Hours <input type="checkbox"/>		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input type="checkbox"/>					





December 12, 2005

**Alta Project LD.: 26994**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on November 30, 2005 under your Project Name "IOJ1186". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was requested on December 06, 2005.

The results flagged with an asterisk were taken from a 1:10 dilution of the extract.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*

**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

Project 26994

Page 1 of 418

NPDES - 526

**Section I: Sample Inventory Report**

**Date Received: 11/30/2005**

Alta Lab. ID

Client Sample ID

26994-001

IOJ1186-01

**SECTION II**

Method Blank		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001
Sample Size:	1,000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.00000105		79.8	25 - 161
1,2,3,7,8-PeCDD	ND	0.000000893		81.3	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000158		75.1	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000149		77.1	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000154		70.9	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000172		56.0	17 - 157
OCDD	ND	0.00000585		79.9	24 - 169
2,3,7,8-TCDF	ND	0.000000899		73.7	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000135		76.2	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000117		70.8	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000723		74.2	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000682		73.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000824		76.6	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000132		68.4	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000743		72.8	26 - 138
OCDF	ND	0.000000947		59.0	17 - 157
<b>Totals</b>		<b>0.00000230</b>		<b>97.0</b>	<b>35 - 197</b>

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: WJL      Approved By: Martha M. Maier      12-Dec-2005 12:21

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 161
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL  
 Approved By: Martha M. Maier  
 12-Dec-2005 12:21

Client Data		Sample Data		Laboratory Data		EPA Method 1613	
Sample ID: IOJ1186-01	Del Mar Analytical, Irvine IOJ1186 18-Oct-05 1317	Matrix: Aqueous Sample Size: 1.016 L	Lab Sample: 26994-001 QC Batch No: 7516 Date Analyzed DB-5: 10-Dec-05	Date Received: 30-Nov-05 Date Extracted: 8-Dec-05 Dates Analyzed DB-225: 10-Dec-05			
Analyte	Conc. (ng/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	0.0000343			13C-2,3,7,8-TCDD	93.5	25 - 164	
1,2,3,7,8-PeCDD	0.000162			13C-1,2,3,7,8-PeCDD	89.8	25 - 181	
1,2,3,4,7,8-HxCDD	0.000266			13C-1,2,3,4,7,8-HxCDD	84.6	32 - 141	
1,2,3,6,7,8-HxCDD	0.000756			13C-1,2,3,6,7,8-HxCDD	83.1	28 - 130	
1,2,3,7,8,9-HxCDD	0.000567			13C-1,2,3,4,6,7,8-HpCDD	87.2	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0162			13C-OCDD	72.7	17 - 157	*
OCDD	0.251			13C-2,3,7,8-TCDF	94.5	24 - 169	
2,3,7,8-TCDF	0.000419			13C-1,2,3,7,8-PeCDF	90.0	24 - 185	
1,2,3,7,8-PeCDF	0.000571			13C-2,3,4,7,8-PeCDF	86.8	21 - 178	
2,3,4,7,8-PeCDF	0.000369			13C-1,2,3,4,7,8-HxCDF	77.4	26 - 152	
1,2,3,4,7,8-HxCDF	0.000330			13C-1,2,3,6,7,8-HxCDF	75.6	26 - 123	
1,2,3,6,7,8-HxCDF	0.000320			13C-2,3,4,6,7,8-HxCDF	79.4	28 - 136	
2,3,4,6,7,8-HxCDF	0.000178			13C-1,2,3,7,8,9-HxCDF	88.4	29 - 147	
1,2,3,7,8,9-HxCDF	0.0000547		D	13C-1,2,3,4,6,7,8-HpCDF	76.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00212			13C-1,2,3,4,7,8,9-HpCDF	86.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	0.000150			13C-OCDF	78.7	17 - 157	
OCDF	0.00915			CRS 37Cl-2,3,7,8-TCDD	95.5	35 - 197	
<b>Totals</b>							
Total TCDD	0.000923						
Total PeCDD	0.00175						
Total HxCDD	0.00695						
Total HpCDD	0.0506						
Total TCDF	0.00598		0.00603				D
Total PeCDF	0.00634		0.00635				D
Total HxCDF	0.00400						D
Total HpCDF	0.00718						

**Footnotes**  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: WJL  
Approved By: Martha M. Maier 12-Dec-2005 15:11

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.



**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4867 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-6596 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85244 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite 80, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOJ1186

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106 <div style="font-size: 2em; margin-left: 20px;">26994</div> <div style="font-size: 2em; margin-left: 20px;">0.7°C</div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1186-01 Water 1613-Dioxin-HR-Alta Level 4 + EDD-OUT	Sampled: 10/18/05 13:17 10/5/05 13:17 11/5/05 13:17	Instant Notification J flags, 17 congeners, no TEQ, ug/L, sub=Alta Excel EDD email to pm, Include Std logs for Lvl IV
Containers Supplied: 1 L Amber w/HCl (IOJ1186-01F)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

Released By: [Signature] Date: 11-29-05 Time: 1700 Received By: [Signature] Date: 11/30/05 Time: 0900  
 Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 26994

Samples Arrival:	Date/Time 11/30/05 0900	Initials: AB	Location: WR-2
Logged In:	Date/Time 11/30/05 1630	Initials: AB	Location: WR-2
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	0.7	Time: 0945	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill			
Trk #	7912 8741 3230		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
Drinking Water Sample?		✓	
Acceptable Preservation?	✓		

Preservation Info	<input checked="" type="checkbox"/> COC	Sample Container	None
Shipping Container	Alta	<input checked="" type="checkbox"/> Client	Retain
		Return	<input checked="" type="checkbox"/> Dispose

Comments:

## **Section 22**

Outfall 009, October 17, 2005

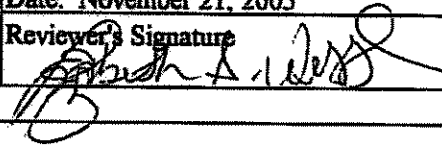
AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --EMPCs qualified as estimated nondetects --IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

**Pace Analytical™**

**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOJ1188-01  
Lab Sample ID 1021761001  
Filename F51109C\_09  
Injected By BAL  
Total Amount Extracted 983 mL  
% Moisture NA  
Dry Weight Extracted NA  
ICAL Date 10/22/2005  
CCal Filename(s) F51109C\_02  
Method Blank ID BLANK-8223

*Outfall 009*

Matrix Water  
Dilution NA  
Collected 10/18/2005  
Received 10/19/2005  
Extracted 11/08/2005  
Analyzed 11/10/2005 05:25

Per Qual	Conc	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery		
<i>R</i>	<i>D</i>	2,3,7,8-TCDF	0.000042	—	0.000031	2,3,7,8-TCDF-13C	2.00	86		
		Total TCDF	0.000460	—	0.000031	2,3,7,8-TCDD-13C	2.00	76		
			2,3,7,8-TCDD	0.000010	—	0.000055	J	2,3,7,8-PeCDF-13C	2.00	72
			Total TCDD	0.000190	—	0.000055		2,3,4,7,8-PeCDF-13C	2.00	74
			1,2,3,7,8-PeCDF	0.000024	—	0.000052	J	1,2,3,7,8-PeCDD-13C	2.00	92
			2,3,4,7,8-PeCDF	0.000039	—	0.000061	J	1,2,3,4,7,8-HxCDF-13C	2.00	74
			Total PeCDF	0.000680	—	0.000056		1,2,3,6,7,8-HxCDF-13C	2.00	69
			1,2,3,7,8-PeCDD	0.000088	—	0.000034		2,3,4,6,7,8-HxCDF-13C	2.00	69
			Total PeCDD	0.000550	—	0.000034		1,2,3,7,8,9-HxCDF-13C	2.00	72
			1,2,3,4,7,8-HxCDF	0.000079	—	0.000034		1,2,3,4,7,8-HxCDD-13C	2.00	69
			1,2,3,6,7,8-HxCDF	0.000053	—	0.000037		1,2,3,6,7,8-HxCDD-13C	2.00	74
			2,3,4,6,7,8-HxCDF	0.000043	—	0.000046	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
			1,2,3,7,8,9-HxCDF	0.000021	—	0.000049	J	1,2,3,4,7,8,9-HpCDF-13C	2.00	50
			Total HxCDF	0.000970	—	0.000041		1,2,3,4,7,8,9-HpCDD-13C	2.00	63
			1,2,3,4,7,8-HxCDD	0.000120	—	0.000054		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
			1,2,3,6,7,8-HxCDD	0.000400	—	0.000067		OCDD-13C	4.00	59
			1,2,3,7,8,9-HxCDD	0.000250	—	0.000056		1,2,3,4-TCDD-13C	2.00	NA
			Total HxCDD	0.003300	—	0.000059		1,2,3,7,8,9-HxCDD-13C	2.00	NA
			1,2,3,4,6,7,8-HpCDF	0.001200	—	0.000110		2,3,7,8-TCDD-37Cl4	0.20	97
			1,2,3,4,7,8,9-HpCDF	0.000092	—	0.0000140				
		Total HpCDF	0.001300	—	0.0000120					
		1,2,3,4,6,7,8-HpCDD	0.008500	—	0.0000190					
		Total HpCDD	0.023000	—	0.0000190					
		OCDF	0.005700	—	0.0000076					
		OCDD	0.160000	—	0.0000440					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021781

*Level IV Validated*  
**REPORT OF LABORATORY ANALYSIS**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

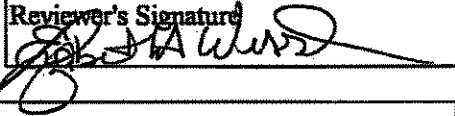
Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Dioxins/Furans by 1613

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - false positive - estimated values between the RL and MDL - estimated maximum possible concentrations - nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOJ1186-01		EPA Method 1613					
Client Data		Laboratory Data					
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 26994-001	Date Received: 30-Nov-05				
Project: IOJ1186	Sample Size: 1.016 L	QC Batch No.: 7516	Date Extracted: 8-Dec-05				
Date Collected: 18-Oct-05		Date Analyzed DB-5: 10-Dec-05	Date Analyzed DB-225: 10-Dec-05				
Time Collected: 1317							
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	0.0000343				93.5	25 - 164	
1,2,3,7,8-PeCDD	0.000162				89.8	25 - 181	
1,2,3,4,7,8-HxCDD	0.000266				84.6	32 - 141	
1,2,3,6,7,8-HxCDD	0.000756				83.1	28 - 130	
1,2,3,7,8,9-HxCDD	0.000567				87.2	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0162				72.7	17 - 157	*
OCDD	0.251			*	94.5	24 - 169	
2,3,7,8-TCDF	0.000419				90.0	24 - 185	
1,2,3,7,8-PeCDF	0.000571				86.8	21 - 178	
2,3,4,7,8-PeCDF	0.000369				77.4	26 - 152	
1,2,3,4,7,8-HxCDF	0.000330				75.6	26 - 123	
1,2,3,6,7,8-HxCDF	0.000320				79.4	28 - 136	
2,3,4,6,7,8-HxCDF	0.000178				88.4	29 - 147	
1,2,3,7,8,9-HxCDF	0.000547			D	76.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00212				86.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	0.000150				78.7	17 - 157	
OCDF	0.00915				95.5	35 - 197	
<b>Totals</b>							
Total TCDD	0.000923						
Total PeCDD	0.00175						
Total HxCDD	0.00695						
Total HpCDD	0.0506						
Total TCDF	0.00598		0.00603	D			
Total PeCDF	0.00634		0.00635	D			
Total HxCDF	0.00400			D			
Total HpCDF	0.00718						
<b>Footnotes</b>							
a. Sample specific estimated detection limit.							
b. Estimated maximum possible concentration.							
c. Method detection limit.							
d. Lower control limit - upper control limit.							

*Handwritten:* 0.16 L 009

*Handwritten:* Anal, Qual, Cor

*Handwritten:* \* 10

Approved by: Martha M. Maier 12-Dec-2005 15:11

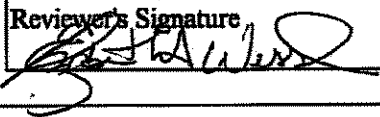
Analyst: WJL

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT93  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals

Date: December 18, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____ _____
3. Analyses Not Conducted	_____ _____
4. Missing Hardcopy Deliverables	_____ _____
5. Incorrect Hardcopy Deliverables	_____ _____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	<p><b>Qualifications were assigned for the following:</b></p> <ul style="list-style-type: none"> <li>- Blank contamination</li> <li>- Sample results between the MDL and RL were estimated</li> <li>- Reanalyses were rejected in favor of the original analyses</li> </ul>
<b>COMMENTS<sup>b</sup></b>	_____
	_____
	_____
<p><sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p><sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 3  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOJ1231-01	Water	200.8/245.1
Outfall 010	IOJ1232-01	Water	200.8/245.1
Outfall 006	IOJ1180-01	Water	200.8/245.1
Outfall 007	IOJ1184-01	Water	200.8/245.1
Outfall 009	IOJ1186-01	Water	200.8/245.1



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### 2.3 CALIBRATION

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### 2.4 BLANKS

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 006. No further qualifications were required.

## **2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

## **2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

## **2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

## **2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

## **2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

**DATA VALIDATION REPORT**

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of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1023 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8598 FAX (858) 505-9688  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1186-01 (Outfall 009 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.050	2.0	4.2	1	10/19/05	10/20/05	
Cadmium	EPA 200.8	5J19098	0.025	1.0	9.2	1	10/19/05	10/20/05	
Copper	EPA 200.8	5J19098	0.25	2.0	39	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	260	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.21	1	10/19/05	10/19/05	

*Real Qual*  
*Qual Code*

*Level IV Validated*

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1186 <Page 2 of 11>

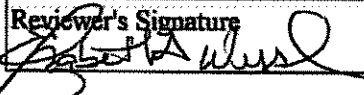
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC178  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Qualifications for "J" values between the RL and MDL.
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOJ1231-01	Water	General Minerals
Outfall 010	IOJ1232-01	Water	General Minerals
Outfall 006	IOJ1180-01	Water	General Minerals
Outfall 007	IOJ1184-01	Water	General Minerals
Outfall 009	IOJ1186-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOJ1186	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Data Qual	Qual code
Sample ID: IOJ1186-01 (Outfall 009 - Water) - cont.											
Reporting Units: mg/l											
Chloride	EPA 300.0	SJ18042	0.15	0.50	7.5	1	10/18/05	10/18/05			
Nitrate/Nitrite-N	EPA 300.0	SJ18042	0.080	0.15	1.1	1	10/18/05	10/18/05			
Oil & Grease	EPA 413.1	SJ24050	0.94	5.0	ND	1	10/24/05	10/24/05	U		
Sulfate	EPA 300.0	SJ18042	0.45	0.50	41	1	10/18/05	10/18/05			
Total Dissolved Solids	SM2540C	SJ19123	10	10	260	1	10/19/05	10/19/05			
Total Suspended Solids	EPA 160.2	SJ20118	10	10	4000	1	10/20/05	10/20/05			

*Level IV Validated*

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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## **APPENDIX G**

### **Section 23**

Outfall 009, November 09, 2005

Del Mar Analytical Laboratory Report



Del Mar Analytical

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**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 009

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 12/07/05 20:03

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOK0904-01	Outfall 009	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05

Received: 11/09/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0904-01 (Outfall 009 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.050	2.0	0.74	1	11/16/05	11/16/05	J
Cadmium	EPA 200.8	5K16096	0.025	1.0	0.071	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.25	2.0	6.4	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	3.3	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009  
 Report Number: IOK0904

Sampled: 11/09/05  
 Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0904-01 (Outfall 009 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	0.15	0.50	11	1	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.080	0.15	0.90	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.89	4.7	1.1	1	11/14/05	11/14/05	J
Sulfate	EPA 300.0	5K09130	0.45	0.50	38	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	200	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	19	1	11/10/05	11/10/05	

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05

Received: 11/09/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 009 (IOK0904-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	11/09/2005 13:46	11/09/2005 18:00	11/09/2005 23:30	11/10/2005 02:00

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05  
 Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>										
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>										
Antimony	ND	2.0	0.050	ug/l						
Cadmium	ND	1.0	0.025	ug/l						
Copper	1.20	2.0	0.25	ug/l						J
Lead	0.129	1.0	0.040	ug/l						J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>										
Antimony	75.0	2.0	0.050	ug/l	80.0		94 85-115			
Cadmium	85.7	1.0	0.025	ug/l	80.0		107 85-115			
Copper	82.7	2.0	0.25	ug/l	80.0		103 85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103 85-115			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1) Source: IOK0918-02</b>										
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95 70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108 70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96 70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100 70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2) Source: IOK0922-03</b>										
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94 70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108 70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91 70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97 70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1) Source: IOK0918-02</b>										
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94 70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108 70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94 70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100 70-130	0	20	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOK0904	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009  
 Report Number: IOK0904

Sampled: 11/09/05  
 Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1) Source: IOK0875-01</b>											
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1) Source: IOK0875-01</b>											
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1) Source: IOK0617-01</b>											
Total Suspended Solids	440	10	10	mg/l		450			2	10	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NR1
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01			2	10	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05

Received: 11/09/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0904-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.10	4.7	15
IOK0904-01	Chloride - 300.0	Chloride	mg/l	11	0.50	150
IOK0904-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.90	0.15	10.00
IOK0904-01	Sulfate-300.0	Sulfate	mg/l	38	0.50	250
IOK0904-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	200	10	850

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 Michele Chamberlin  
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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05  
Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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Michele Chamberlin  
Project Manager

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NPDES - 579



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOK0904

Sampled: 11/09/05  
 Received: 11/09/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413  
 1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOK0904-01

Analysis Performed: EDD + Level 4  
 Samples: IOK0904-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/05

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:	
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: Rick Banao		Boeing-SSFL NPDES Routine Outfall 009 Stormwater at WS-13  Phone Number: (626) 568-6891 Fax Number: (626) 568-6515		TCDD (and all congeners) Oil & Grease (EPA 413.1) Cr, SO4, NO3+NO2-N TDS, TSS	Temp = 66.2 pH = 7.25	Comments	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg
Outfall 009	W	Poly-1L	1	11-9-05 1:30	HNO3	1A	X
Outfall 009-Dup	W	Poly-1L	1	11-9-05 1:30	HNO3	1B	X
Outfall 009	W	Glass-Amber	2		None	2A, 2B	X
Outfall 009	W	Glass-Amber	2		HCl	3A, 3B	X
Outfall 009	W	Poly-500 ml	2		None	4A, 4B	X
Outfall 009	W	Poly-500 ml	2	11-9-05 1:30	None	5A, 5B	X
Requisitioned By: Rick Banao Date/Time: 11-9-05 1:30 Received By: Bronwyn Kelly Date/Time: 11/9/05 1500 Requisitioned By: Rick Banao Date/Time: 11/9/05 1800 Received By: Bronwyn Kelly Date/Time: 11/9/05 1800							
Turn around Time: 24 Hours <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Perchlorate Only 72 Hours <input type="checkbox"/> Metals Only 72 Hours <input type="checkbox"/> Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice <input type="checkbox"/>							







December 11, 2005

**Alta Project I.D.: 27030**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0904". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

An "A" qualifier indicates that the result is greater than the low point in the calibration curve, but lower than the EPA Method 1613 Minimum Level.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

Project 27030

Page 1 of 303

NPDES - 582

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27030-001

IOK0904-01

**SECTION II**

Method Blank		EPA Method 1613					
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001		
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05		
				Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000105		13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000893		13C-1,2,3,7,8-PeCDD	81.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000158		13C-1,2,3,4,7,8-HxCDD	75.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000149		13C-1,2,3,6,7,8-HxCDD	77.1	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000154		13C-1,2,3,4,6,7,8-HpCDD	70.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000172		13C-OCDD	56.0	17 - 157	
OCDD	ND	0.00000585		13C-2,3,7,8-TCDF	79.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000899		13C-1,2,3,7,8-PeCDF	73.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000135		13C-2,3,4,7,8-PeCDF	76.2	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000117		13C-1,2,3,4,7,8-HxCDF	70.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000723		13C-1,2,3,6,7,8-HxCDF	74.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000682		13C-2,3,4,6,7,8-HxCDF	73.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000824		13C-1,2,3,7,8,9-HxCDF	76.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000132		13C-1,2,3,4,6,7,8-HpCDF	68.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000743		13C-1,2,3,4,7,8,9-HpCDF	72.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000947		13C-OCDF	59.0	17 - 157	
OCDF	ND	0.00000230		<u>CRS</u> 37C1-2,3,7,8-TCDD	97.0	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.00000105					
Total PeCDD	ND	0.000000893					
Total HxCDD	ND	0.00000154					
Total HpCDD	ND	0.00000172					
Total TCDF	ND	0.000000899					
Total PeCDF	ND	0.000000593					
Total HxCDF	ND	0.000000861					
Total HpCDF	ND	0.000000833					

Footnotes  
a. Sample specific estimated detection limit  
b. Estimated maximum possible concentration  
c. Method detection limit  
d. Lower control limit - upper control limit

Analyst: DMS  
Approved By: Martha M. Maier 11-Dec-2005 10:41

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001	
Sample Size:	1,000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: DMS

Approved By: Martha M. Maier 11-Dec-2005 10:41

**EPA Method 1613**

**Sample ID: IOK0904-01**

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	27030-001		
Project:	IOK0904	Sample Size:	1.008 L	QC Batch No.:	7516		
Date Collected:	9-Nov-05			Date Analyzed DB-5:	10-Dec-05		
Time Collected:	1346			Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000703		IS 13C-2,3,7,8-TCDD	82.2	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000656		13C-1,2,3,7,8-PeCDD	81.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000115		13C-1,2,3,4,7,8-HxCDD	78.7	32 - 141	
1,2,3,6,7,8-HxCDD	0.00000302		J	13C-1,2,3,6,7,8-HxCDD	79.0	28 - 130	
1,2,3,7,8,9-HxCDD	0.00000270		J	13C-1,2,3,4,6,7,8-HpCDD	75.3	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000537			13C-OCDD	63.3	17 - 157	
OCDD	0.000688			13C-2,3,7,8-TCDF	85.7	24 - 169	
2,3,7,8-TCDF	ND	0.000000779		13C-1,2,3,7,8-PeCDF	80.5	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000111		13C-2,3,4,7,8-PeCDF	79.9	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000986		13C-1,2,3,4,7,8-HxCDF	76.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000589		13C-1,2,3,6,7,8-HxCDF	78.7	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000559		13C-2,3,4,6,7,8-HxCDF	78.3	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000667		13C-1,2,3,7,8,9-HxCDF	82.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000109		13C-1,2,3,4,6,7,8-HpCDF	71.9	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000174		J	13C-1,2,3,4,7,8,9-HpCDF	78.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	0.00000195		J	13C-OCDF	66.8	17 - 157	
OCDF	0.0000855		A	<b>CRS</b> 37Cl-2,3,7,8-TCDD	98.8	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.000000703					
Total PeCDD	ND	0.000000656					
Total HxCDD	0.0000171						
Total HpCDD	0.000113						
Total TCDF	ND	0.000000779					
Total PeCDF	ND	0.00000105					
Total HxCDF	0.0000114						
Total HpCDF	0.0000567						

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: DMS  
Approved By: Martha M. Maier 11-Dec-2005 10:41

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.



**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



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 8484 Chapparral Drive, Suite 805, San Diego, CA 92123 Ph (619) 595-0988 Fax (619) 595-0989  
 8630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0943 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite 43, Las Vegas, NV 89130 Ph (702) 798-3888 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOK0904**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  <i>27030</i> <i>1.7c</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0904-01	Water	Sampled: 11/09/05 13:46
1613-Dioxin-HR	11/16/05 13:46	Instant Notification
EDD + Level 4	12/07/05 13:46	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN
		Excel EDD email to pm, include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IOK0904-01C)		
1 L Amber (IOK0904-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample Labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By *CCO rec'd via email* Date \_\_\_\_\_ Time *12/10/05*

Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

### SAMPLE LOG-IN CHECKLIST

Alta Project #: 27030

Samples Arrival:	Date/Time <u>12/8/05 0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05 1059</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	✓		
Trk # <u>6741 2902 3830</u>	✓		
Sample Container Intact?			✓
Sample Custody Seals Intact?		✓	
Chain of Custody / Sample Documentation Present?		✓	
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?	COC	Sample Container	<input checked="" type="radio"/> None
Shipping Container	Alta <input checked="" type="radio"/> Client	Retain	<input checked="" type="radio"/> Return <input type="radio"/> Dispose

Comments:

## **APPENDIX G**

### **Section 24**

**Outfall 009, November 09, 2005**

**AMEC Data Validation Reports**

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature  


Analysis/Method Dioxins/Furans by 1613

<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -- false positive --estimated values between the RL and MDL --estimated maximum possible concentrations --nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS*</b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOK0904-01		Client Data		Sample Data		Laboratory Data		EPA Method 1613	
Del Mar Analytical, Irvine IOK0904 9-Nov-05 1946		Name: Del Mar Analytical, Irvine Project: IOK0904 Date Collected: 9-Nov-05 Time Collected: 1946		Matrix: Aqueous Sample Size: 1.008 L		Lab Sample: 27030-001 QC Batch No.: 7516 Date Analyzed DB-S: 10-Dec-05		Date Received: 8-Dec-05 Date Extracted: 8-Dec-05 Date Analyzed DB-223: NA	
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers	
2,3,7,8-TCDD	ND	0.000000703			IS 13C-2,3,7,8-TCDD	82.2	25 - 164		
1,2,3,7,8-PeCDD	ND	0.000000656			13C-1,2,3,7,8-PeCDD	81.4	25 - 181		
1,2,3,4,7,8-HxCDD	ND	0.00000115			13C-1,2,3,4,7,8-HxCDD	78.7	32 - 141		
1,2,3,6,7,8-HxCDD	0.00000302			J	13C-1,2,3,6,7,8-HxCDD	79.0	28 - 130		
1,2,3,7,8,9-HxCDD	0.00000270			J	13C-1,2,3,4,6,7,8-HpCDD	75.3	23 - 140		
1,2,3,4,6,7,8-HpCDD	0.00000337				13C-OCDD	63.3	17 - 157		
OCDD	0.000588				13C-2,3,7,8-TCDF	85.7	24 - 169		
2,3,7,8-TCDF	ND	0.000000779			13C-1,2,3,7,8-PeCDF	80.5	24 - 185		
1,2,3,7,8-PeCDF	ND	0.00000111			13C-2,3,4,7,8-PeCDF	79.9	21 - 178		
2,3,4,7,8-PeCDF	ND	0.000000986			13C-1,2,3,4,7,8-HxCDF	76.8	26 - 152		
1,2,3,4,7,8-HxCDF	ND	0.000000589			13C-1,2,3,6,7,8-HxCDF	78.7	26 - 123		
1,2,3,6,7,8-HxCDF	ND	0.000000559			13C-2,3,4,6,7,8-HxCDF	78.3	28 - 136		
2,3,4,6,7,8-HxCDF	ND	0.000000667			13C-1,2,3,7,8,9-HxCDF	82.5	29 - 147		
1,2,3,7,8,9-HxCDF	ND	0.00000109			13C-1,2,3,4,6,7,8-HpCDF	71.9	28 - 143		
1,2,3,4,6,7,8-HpCDF	0.0000174			J	13C-1,2,3,4,7,8,9-HpCDF	78.3	26 - 138		
1,2,3,4,7,8,9-HpCDF	0.00000195			J	13C-OCDF	66.8	17 - 157		
OCDF	0.0000855			A	CRS 37C1-2,3,7,8-TCDD	98.8	35 - 197		
Totals					Footnotes				
Total TCDD	ND	0.000000703			a. Sample specific estimated detection limit.				
Total PeCDD	ND	0.000000656			b. Estimated maximum possible concentration.				
Total HxCDD	0.0000171				c. Method detection limit.				
Total HpCDD	0.000113				d. Lower control limit - upper control limit.				
Total TCDF	ND	0.000000779							
Total PeCDF	ND	0.00000105							
Total HxCDF	0.0000114								
Total HpCDF	0.0000567								

Approved By: Martha M. Maier 11-Dec-2005 10:41

Project 27030


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT95  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method Metals by 200.8/245.1

Date: December 22, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -blank contamination - estimations between the MDL and RL - reanalyses rejected in favor of original analyses
COMMENTS*	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: METALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 4  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Data Validation Procedure for ICP Metals (DVP-5, Rev. 2)*, *US EPA Method 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the USEPA *CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	200.8/245.1
Outfall 003RE1	IOK0900-01RE1	Water	200.8
Outfall 004	IOK0901-01	Water	200.8/245.1
Outfall 005	IOK0902-01	Water	200.8/245.1
Outfall 005RE1	IOK0902-01RE1	Water	200.8
Outfall 006	IOK0903-01	Water	200.8/245.1
Outfall 006RE1	IOK0903-01RE1	Water	200.8/245.1
Outfall 006RE2	IOK0903-01RE2	Water	200.8
Outfall 009	IOK0904-01	Water	200.8/245.1



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples in these SDG were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. The laboratory did not append the client IDs with "RE" suffices; therefore, the reviewer added these to the Form Is. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP-MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP-MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with these SDGs and all recoveries were acceptable. No qualifications were required.

## 2.4 BLANKS

Mercury was reported in method blank 5K17098-BLK1 at  $-0.072 \mu\text{g/L}$ ; therefore, mercury in Outfall 003, Outfall 004, and Outfall 005 was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining method blank and CCB results associated with the retained analyses were nondetects at the reporting limit or were significantly below the sample detects so as not to result in data qualification. No qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were performed in association with the Outfall 003 selenium analysis. The recoveries were within the control limits. No other ICSA or ICSAB analyses were included in the raw data for the ICP-MS analyses. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP-MS and mercury LCS sample results were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. No qualifications were required.

## 2.8 MATRIX SPIKES

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore no assessment was made with respect to this criterion. Evaluation of laboratory accuracy was based on LCS results. No qualifications were required.

## 2.9 ICP-MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.10 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.11 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Some target analytes were reported from dilution analyses due to matrix interference. Reporting limits and MDLs were adjusted accordingly. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit.

Antimony in Outfall 003, copper in Outfall 005, and antimony and mercury in Outfall 006 were reanalyzed to confirm the original results. As the original results were all confirmed, the results for Outfall 003RE1, Outfall 005RE1, Outfall 006RE1, and Outfall 006RE2 were rejected, "R," in favor of the original results. No further qualifications were required.

## 2.12 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.12.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.12.2 Field Duplicates

There were no field duplicate analyses performed in association with these samples.



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 9830 South 57th St., Suite B-120, Phoenix, AZ 85044 (480) 785-0543 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 009 Report Number: IOK0904	Sampled: 11/09/05 Received: 11/09/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0904-01 (Outfall 009 - Water) Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.050	2.0	0.74	1	11/16/05	11/16/05	J
Cadmium	EPA 200.8	5K16096	0.025	1.0	0.071	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.25	2.0	6.4	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	3.3	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	

Pass	Good
Good	Code
	10/10/05
	10/10/05

LEVEL IV

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC181  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar -Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 22, 2005  
 Reviewer's Signature 

ACTION ITEMS*	
1. Case Narrative	
Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were assigned for the following:
Holding Times	- estimations between the MDL and RL
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
COMMENTS*	
<p>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.                      * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Sampling

**ANALYSIS: GENERAL MINERALS**

**SAMPLE DELIVERY GROUPS:  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904**

Prepared by

AMEC – Denver Operations  
355 South Teller Street  
Lakewood, CO 80226

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
AMEC Project Number: 313150010  
Sample Delivery Group: IOK0900, IOK0901, IOK0902, IOK0903, IOK0904  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for General Minerals (DVP-6, Rev. 2)*, *USEPA Methods for Chemical Analysis of Water and Wastes Methods 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-CMOD*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form Is as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOK0900-01	Water	General Minerals
Outfall 004	IOK0901-01	Water	General Minerals
Outfall 005	IOK0902-01	Water	General Minerals
Outfall 006	IOK0903-01	Water	General Minerals
Outfall 009	IOK0904-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times were met and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The blank results associated with the analyses were nondetects at the reporting limit or were significantly less than the sample detects so as not to result in data qualification. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

## 2.5 LABORATORY DUPLICATES

A laboratory duplicate analysis was performed on Outfall 009 for TDS. The %D was less than the laboratory-established control limit of 10%. No qualifications were required.

## 2.6 MATRIX SPIKES

No MS/MSD analyses were performed in association with this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as estimated, "J," with the annotation of "DNQ," in accordance with the requirements of the NPDES permit. No further qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



17461 Dertan Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
1814 E. Creoley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1044  
9404 Chesapeake Dr., Suite 602, San Diego, CA 92123 (619) 505-8506 FAX (619) 505-8689  
9830 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 796-3621

MWH-Pasadena/Bocing Project ID: Routine Outfall 009  
300 North Lake Avenue, Suite 1200 Report Number: IOK0904  
Pasadena, CA 91101 Sampled: 11/09/05  
Attention: Bronwyn Kelly Received: 11/09/05

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0904-01 (Outfall 009 - Water) - cont. Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	0.15	0.50	11	1	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.080	0.15	0.90	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.89	4.7	1.1	1	11/14/05	11/14/05	
Sulfate	EPA 300.0	5K09130	0.45	0.50	38	1	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	200	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	19	1	11/10/05	11/10/05	

LEVEL IV

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOK0904 <Page 3 of 11>

# **APPENDIX G**

## **Section 25**

Outfall 010, October 18, 2005

Del Mar Analytical Laboratory Report



Del Mar Analytical

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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 010

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 15:57

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

### SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID  
IOJ1232-01

CLIENT ID  
Outfall 010

MATRIX  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOJ1232

Sampled: 10/18/05  
 Received: 10/18/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1232-01 (Outfall 010 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.050	2.0	20	1	10/19/05	10/20/05	
Cadmium	EPA 200.8	5J19098	0.025	1.0	0.35	1	10/19/05	10/20/05	J
Copper	EPA 200.8	5J19098	0.25	2.0	13	1	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.040	1.0	79	1	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	0.097	1	10/19/05	10/19/05	J

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010  Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOJ1232-01 (Outfall 010 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	1.5	5.0	45	10	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.080	0.15	2.5	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.89	4.7	ND	1	10/24/05	10/24/05	
Sulfate	EPA 300.0	5J18042	0.45	0.50	50	1	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J24100	10	10	320	1	10/24/05	10/24/05	
Total Suspended Solids	EPA 160.2	5J21114	10	10	86	1	10/21/05	10/21/05	

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010  Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 010 (IOJ1232-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 12:21	10/18/2005 18:00	10/18/2005 21:30	10/18/2005 22:43

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010 Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
--	---	---

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010  Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOJ1232

Sampled: 10/18/05

Received: 10/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>											
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110			M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1)</b>											
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1)</b>											
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20	
<b>Batch: 5J21114 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 10/21/2005 (5J21114-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/21/2005 (5J21114-BS1)</b>											
Total Suspended Solids	960	10	10	mg/l	1000		96	85-115			
<b>Duplicate Analyzed: 10/21/2005 (5J21114-DUP1)</b>											
Total Suspended Solids	436	10	10	mg/l		420			4	10	
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010 Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120			M-NR1
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>											
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20	
<b>Batch: 5J24100 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24100-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/24/2005 (5J24100-BS1)</b>											
Total Dissolved Solids	998	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 10/24/2005 (5J24100-DUP1)</b>											
Total Dissolved Solids	440	10	10	mg/l		Source: IOJ0222-03 440			0	10	

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOJ1232

Sampled: 10/18/05  
 Received: 10/18/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1232-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.19	4.7	15
IOJ1232-01	Chloride - 300.0	Chloride	mg/l	45	5.0	150
IOJ1232-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	2.50	0.15	10.00
IOJ1232-01	Sulfate-300.0	Sulfate	mg/l	50	0.50	250
IOJ1232-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	320	10	850

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Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOJ1232

Sampled: 10/18/05

Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

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Project ID: Routine Outfall 010

Report Number: IOJ1232

Sampled: 10/18/05

Received: 10/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta

Samples: IOJ1232-01

Analysis Performed: Level 4 + EDD

Samples: IOJ1232-01

Del Mar Analytical, Irvine

Michele Chamberlin

Project Manager

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## ADDITIONAL ANALYSIS REQUEST FORM

Today's Date: 11/29 Del Mar Analytical Project Manager: MC

Request via:  telephone  chain of custody form  fax transmission  E-mail  other

Client: MWH - Pasadena/Beijing Contact: Erin Weir Kelley

Project: Routine Outfall 010

Date Sampled: 10/18/05 Date Received: 10/18/05

Status:  in progress  completed  received today  received yesterday  on hold  other

SAMPLE NUMBER	SAMPLE DESCRIPTION	ANALYSIS REQUESTED	SPECIAL REQUIREMENTS
<u>1051232-01</u>	<u>Outfall 010</u>	<u>1613-HR<sup>10</sup> &amp; H<sub>2</sub>O</u>	<u>- subcontracted 11 Lamber preserved w/ HCl, send "halos" normal TAT</u>

TURNAROUND STATUS:  Same Day  24hr  48hr  3days  
 5days  Standard  No Rush Charge



117 1051232 Page 1 of 1

# Del Mar Analytical CHAIN OF CUSTODY FORM

Version 02/17/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES <b>Routine Outfall 010</b> Stormwater at Building 203		<b>ANALYSIS REQUIRED</b>		Field readings: Temp = 60.3 pH = 7.14	
<b>Project Manager:</b> Bronwyn Kelly (626) 568-6691 Fax Number: (626) 568-6515		<b>Phone Number:</b> (626) 568-6691 <b>Fax Number:</b> (626) 568-6515		Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg		Comments	
<b>Sampler:</b> R.C.F.		Sampling Date/Time: 10-18-05		Oil & Grease (EPA 413.1)		TDS, TSS	
Sample Description: Outfall 010		Container Type: Poly-1L		Preservative: HNO3		Cl, SO4, NO3+NO2-N	
Sample Matrix: W		# of Cont.: 1		Bottle #: 1A		TCDD (and all congeners)	
Outfall 010-Dup		Container Type: Poly-1L		Preservative: HNO3		X	
Outfall 010		Container Type: Glass-Amber		Preservative: None		X	
Outfall 010		Container Type: Glass-Amber		Preservative: HCl		X	
Outfall 010		Container Type: Poly-500 ml		Preservative: None		X	
Outfall 010		Container Type: Poly-500 ml		Preservative: None		X	
Relinquished By: <i>Bronwyn Kelly</i>		Date/Time: 10-18-05 15:01		Received By: <i>Bronwyn Kelly</i>		Date/Time: 10/18/05 15:01	
Relinquished By: <i>Bronwyn Kelly</i>		Date/Time: 10/18/05 1800		Relinquished By: <i>Bronwyn Kelly</i>		Date/Time: 10/18/05 1800	
Relinquished By:		Date/Time:		Relinquished By:		Date/Time:	
Turn around Time: (check)		24 Hours		48 Hours		72 Hours	
Metals Only 72 Hours		Perchlorate Only 72 Hours		Sample Integrity: (check)		Intact	
On Ice		4°C					



December 11, 2005

**Alta Project I.D.: 26993**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on November 30, 2005 under your Project Name "IOJ1232". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

An "A" qualifier indicates that the result is greater than the low point in the calibration curve, but lower than the EPA Method 1613 Minimum Level.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*

**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640

Project 26993

Page 1 of 345

NPDES - 631

**Section I: Sample Inventory Report**

**Date Received: 11/30/2005**

Alta Lab. ID

Client Sample ID

26993-001

IOJ1232-01

**SECTION II**

Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000105			13C-2,3,7,8-TCDD	79.8	25 - 161	
1,2,3,7,8-PeCDD	ND	0.000000893			13C-1,2,3,7,8-PeCDD	81.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000158			13C-1,2,3,4,7,8-HxCDD	75.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000149			13C-1,2,3,6,7,8-HxCDD	77.1	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000154			13C-1,2,3,4,6,7,8-HpCDD	70.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000172			13C-OCDD	56.0	17 - 157	
OCDD	ND	0.00000585			13C-2,3,7,8-TCDF	79.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000899			13C-1,2,3,7,8-PeCDF	73.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000135			13C-2,3,4,7,8-PeCDF	76.2	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000117			13C-1,2,3,4,7,8-HxCDF	70.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000723			13C-1,2,3,6,7,8-HxCDF	74.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000682			13C-2,3,4,6,7,8-HxCDF	73.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000824			13C-1,2,3,7,8,9-HxCDF	76.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000132			13C-1,2,3,4,6,7,8-HpCDF	68.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000743			13C-1,2,3,4,7,8,9-HpCDF	72.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000947			13C-OCDF	59.0	17 - 157	
OCDF	ND	0.00000230			CRS 37Cl-2,3,7,8-TCDD	97.0	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.00000105						
Total PeCDD	ND	0.000000893						
Total HxCDD	ND	0.00000154						
Total HpCDD	ND	0.00000172						
Total TCDF	ND	0.000000899						
Total PeCDF	ND	0.000000593						
Total HxCDF	ND	0.000000861						
Total HpCDF	ND	0.000000833						

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: W/JL

Approved By: Martha M. Maier 11-Dec-2005 09:49

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 161
1,2,3,7,8-PeCDD	50.0	45.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	49.9	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	49.9	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	50.6	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	99.8	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	9.96	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	52.7	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	53.8	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	50.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.5	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.7	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.6	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	51.4	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	98.6	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL

Approved By: Martha M. Maier 11-Dec-2005 09:49

Sample ID: IOJ1232-01		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26993-001		
Project:	IOJ1232	Sample Size:	0.998 L	QC Batch No.:	7516		
Date Collected:	18-Oct-05	DL <sup>a</sup>	EMPC <sup>b</sup>	Date Analyzed DB-5:	10-Dec-05		
Time Collected:	1221	Conc. (ug/L)	Qualifiers	Date Analyzed DB-225:	10-Dec-05		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UC <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	0.00000294			13C-2,3,7,8-TCDD	89.0	25 - 164	J
1,2,3,7,8-PeCDD	0.00000811			13C-1,2,3,7,8-PeCDD	89.1	25 - 181	J
1,2,3,4,7,8-HxCDD	0.00000544			13C-1,2,3,4,7,8-HxCDD	83.8	32 - 141	J
1,2,3,6,7,8-HxCDD	0.00000906			13C-1,2,3,6,7,8-HxCDD	83.6	28 - 130	J
1,2,3,7,8,9-HxCDD	0.00000774			13C-1,2,3,4,6,7,8-HpCDD	82.0	23 - 140	J
1,2,3,4,6,7,8-HpCDD	0.0000595			13C-OCDD	63.2	17 - 157	
OCDD	0.000337			13C-2,3,7,8-TCDF	86.2	24 - 169	
2,3,7,8-TCDF	0.0000230			13C-1,2,3,7,8-PeCDF	84.3	24 - 185	
1,2,3,7,8-PeCDF	0.0000252			13C-2,3,4,7,8-PeCDF	83.7	21 - 178	A
2,3,4,7,8-PeCDF	0.0000259			13C-1,2,3,4,7,8-HxCDF	73.0	26 - 152	A
1,2,3,4,7,8-HxCDF	0.0000227			13C-1,2,3,6,7,8-HxCDF	59.3	26 - 123	J
1,2,3,5,7,8-HxCDF	0.0000180			13C-2,3,4,6,7,8-HxCDF	79.8	28 - 136	J
2,3,4,6,7,8-HxCDF	0.0000131			13C-1,2,3,7,8,9-HxCDF	85.7	29 - 147	J
1,2,3,7,8,9-HxCDF	0.0000584			13C-1,2,3,4,6,7,8-HpCDF	74.4	28 - 143	J
1,2,3,4,6,7,8-HpCDF	0.0000311			13C-1,2,3,4,7,8,9-HpCDF	82.2	26 - 138	A
1,2,3,4,7,8,9-HpCDF	0.0000576			13C-OCDF	68.4	17 - 157	J
OCDF	0.0000502			CRS 37Cl-2,3,7,8-TCDD	96.5	35 - 197	A
<b>Totals</b>							
Total TCDD	0.000174		0.000177				
Total PeCDD	0.000134		0.000142				
Total HxCDD	0.0000990						
Total HpCDD	0.000117						
Total TCDF	0.000582						
Total PeCDF	0.000317		0.000323				
Total HxCDF	0.000146		0.000148				
Total HpCDF	0.000368		0.000684				
<b>Footnotes</b>							
a. Sample specific estimated detection limit.							
b. Estimated maximum possible concentration.							
c. Method detection limit.							
d. Lower control limit - upper control limit.							

Analyst: WJL  
 Approved By: Martha M. Maier  
 11-Dec-2005 09:53

**APPENDIX**



## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-6596 Fax (619) 505-6629  
 9530 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOJ1232**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  <div style="text-align: right; font-size: 2em;">26993</div> <div style="text-align: right; font-size: 2em;">0.70</div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1232-01 Water	Sampled: 10/18/05 12:21	Instant Notification
1613-Dioxin-HR-Alta	10/25/05 12:21	J flags, 17 congeners, no TEQ, ug/L, sub=Alta
Level 4 + EDD-OUT	11/15/05 12:21	Excel EDD email to pm, Include Std logs for Lvl IV

Containers Supplied:  
 1 L Amber w/HCl (IOJ1232-01F)

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: *[Signature]* Date: 11-24-05 Time: 1700 Received By: *[Signature]* Date: 11/30/05 Time: 0900

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 26993

Samples Arrival:	Date/Time <u>11/30/05 09:00</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>11/30/05 1627</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	<u>0.7°C</u>	Time: <u>0945</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill			
Trk # <u>7912 87A1 3230</u>	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
Drinking Water Sample?		✓	
Acceptable Preservation?	✓		

Preservation Info		<input checked="" type="checkbox"/> COC	Sample Container	None
Shipping Container	Alta	<input checked="" type="checkbox"/> Client	Retain	Return
				<input checked="" type="checkbox"/> Dispose

Comments:

# **APPENDIX G**

## **Section 26**

Outfall 010, October 18, 2005

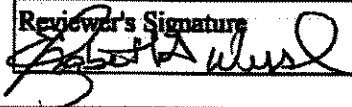
AMEC Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC178  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method General Minerals

Date: December 12, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Qualifications for "J" values between the RL and MDL.
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 5  
Reviewer: E. Wessling  
Date of Review: December 12, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.2, 300.0, and 413.1, Standard Methods for the Examination of Water and Wastewater Method SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 003	IOJ1231-01	Water	General Minerals
Outfall 010	IOJ1232-01	Water	General Minerals
Outfall 006	IOJ1180-01	Water	General Minerals
Outfall 007	IOJ1184-01	Water	General Minerals
Outfall 009	IOJ1186-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel and accounted for the samples and all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

DATA VALIDATION REPORT

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on samples in association with these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing Project ID: Routine Outfall 010  
 300 North Lake Avenue, Suite 1200 Report Number: IOJ1232  
 Pasadena, CA 91101 Sampled: 10/18/05  
 Attention: Bronwyn Kelly Received: 10/18/05

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real Qual	Qual Code
Sample ID: IOJ1232-01 (Outfall 010 - Water) - cont.											
Reporting Units: mg/l											
Chloride	EPA 300.0	5J18042	1.5	5.0	45	10	10/18/05	10/18/05			
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.080	0.15	2.5	1	10/18/05	10/18/05			
<u>Oil &amp; Grease</u>	EPA 413.1	5J24050	0.94	5.0	ND	1	10/24/05	10/24/05	u		
Sulfate	EPA 300.0	5J18042	0.45	0.50	50	1	10/18/05	10/18/05			
Total Dissolved Solids	SM2540C	5J24100	10	10	320	1	10/24/05	10/24/05			
Total Suspended Solids	EPA 160.2	5J21114	10	10	86	1	10/21/05	10/21/05			

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1232 <Page 3 of 11>

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

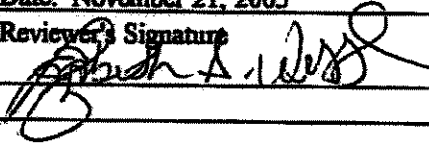
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF50  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 8

Laboratory Pace - Minneapolis

Reviewer E. Wessling

Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -EMPCs qualified as estimated nondetects -IOJ1186-01 and IOJ1232-01 rejected for lab contamination -- method blank contamination
COMMENTS*	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1181, IOJ1176, IOJ1186, IOJ1180,  
IOJ1184, IOJ1177, IOJ1232, IOJ1231

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 008	IOJ1181-01	1021758001	water	1613
Outfall 005	IOJ1176-01	1021760001	water	1613
Outfall 009	IOJ1186-01	1021761001	water	1613
Outfall 006	IOJ1180-01	1021763001	water	1613
Outfall 007	IOJ1184-01	1021765001	water	1613
Outfall 004	IOJ1177-01	1021766001	water	1613
Outfall 010	IOJ1232-01	1021908001	water	1613
Outfall 003	IOJ1231-01	1021910001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1232-01 and IOJ1231-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (Blank 8223) was extracted and analyzed with the samples in this SDG. Target compounds 1,2,3,4,6,7,8-HpCDD and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (LCS/LCSD 8224/8225) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## **2.7 FIELD QC SAMPLES**

Following are findings associated with field QC:

### **2.7.1 Field Blanks and Equipment Rinsates**

The samples in this SDG had no identified field QC samples. No qualifications were required.

### **2.7.2 Field Duplicates**

No field duplicate samples were identified for this SDG.

## **2.8 INTERNAL STANDARDS**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## **2.9 COMPOUND IDENTIFICATION**

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. Two samples, Outfall 009 and outfall 010, exhibited atypical target compound detects. These samples were rejected in favor of a reanalysis at another laboratory that was not experiencing contamination problems. This was done to ensure the target compound detects were representative of site conditions and not laboratory cross-contamination. No further qualifications were required.

## **2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1232-01  
Lab Sample ID 1021908001  
Filename F51109C\_18  
Injected By BAL  
Total Amount Extracted 1050 mL  
% Moisture NA  
Dry Weight Extracted NA  
ICAL Date 10/22/2005  
CCal Filename(s) F51109C\_02  
Method Blank ID BLANK-8223

*Outfall 1010*

Matrix Water  
Dilution NA  
Collected 10/18/2005  
Received 10/20/2005  
Extracted 11/08/2005  
Analyzed 11/10/2005 11:08

*Raw Anal*  
*Anal*  
*Code*  
*R*  
*D*

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	0.000024	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	0.0000180	—	0.000024	2,3,7,8-TCDD-13C	2.00	75
2,3,7,8-TCDD	ND	—	0.000023	1,2,3,7,8-PeCDF-13C	2.00	68
Total TCDD	0.0000100	—	0.000023	2,3,4,7,8-PeCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	—	0.000027	1,2,3,7,8-PeCDD-13C	2.00	91
2,3,4,7,8-PeCDF	0.000023	—	0.000020 J	1,2,3,4,7,8-HxCDF-13C	2.00	74
Total PeCDF	0.0000180	—	0.000024 J	1,2,3,6,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDD	ND	—	0.000028	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDD	ND	—	0.000028	1,2,3,7,8,9-HxCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	0.000034	—	0.000019 J	1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	0.000023	—	0.000018 J	1,2,3,6,7,8-HxCDD-13C	2.00	77
2,3,4,6,7,8-HxCDF	ND	—	0.000021	1,2,3,4,6,7,8-HpCDF-13C	2.00	66
1,2,3,7,8,9-HxCDF	ND	—	0.000023	1,2,3,4,6,7,8-HpCDD-13C	2.00	54
Total HxCDF	0.0000150	—	0.000020 J	OCDD-13C	4.00	67
1,2,3,4,7,8-HxCDD	ND	—	0.000023	1,2,3,4-TCDD-13C	2.00	NA
1,2,3,6,7,8-HxCDD	ND	—	0.000031	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD	0.000020	—	0.000020 J	2,3,7,8-TCDD-37Cl4	0.20	81
Total HxCDD	0.000050	—	0.000025 J			
1,2,3,4,6,7,8-HpCDF	0.000058	—	0.000022 J			
1,2,3,4,7,8,9-HpCDF	ND	—	0.000027			
Total HpCDF	0.0000130	—	0.000024 J			
1,2,3,4,6,7,8-HpCDD	0.0000180	—	0.000024 BJ			
Total HpCDD	0.0000280	—	0.000024 BJ			
OCDF	0.0000230	—	0.000038 BJ			
OCDD	0.0001400	—	0.000045			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....1021908

### *Level IV Validated* REPORT OF LABORATORY ANALYSIS

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT93  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 5

Laboratory Del Mar - Irvine

Date: December 18, 2005

Reviewer E. Wessling

Reviewer's Signature  


Analysis/Method Metals

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Blank contamination - Sample results between the MDL and RL were estimated - Reanalyses were rejected in favor of the original analyses
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

SAMPLE DELIVERY GROUPS IOJ1231, IOJ1232, IOJ1180,  
IOJ1184, IOJ1186

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 3  
Reviewer: E. Wessling  
Date of Review: December 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**Table 1. Sample identification**

<b>Client ID</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>COC Method</b>
Outfall 003	IOJ1231-01	Water	200.8/245.1
Outfall 010	IOJ1232-01	Water	200.8/245.1
Outfall 006	IOJ1180-01	Water	200.8/245.1
Outfall 007	IOJ1184-01	Water	200.8/245.1
Outfall 009	IOJ1186-01	Water	200.8/245.1



## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ± 2°C. No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### **2.1.3 Holding Times**

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### **2.2 ICP-MS TUNING**

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### **2.3 CALIBRATION**

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### **2.4 BLANKS**

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of cadmium in the method blank. Cadmium was qualified as a nondetect, "U," in the sample from Outfall 006. No further qualifications were required.

**DATA VALIDATION REPORT**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

No MS/MSD analyses were performed on samples in these SDGs. No qualification was required.

**2.8 MATRIX SPIKE**

No MS/MSD analyses were performed on samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified.

**2.11 INTERNAL STANDARDS PERFORMANCE**

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

Project: NPDES Monitoring  
SDG No.: Multiple  
Analysis: METALS

**DATA VALIDATION REPORT**

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of the original analysis. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



17461 Dertan Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1048  
 9484 Chesapeake Dr., Suite 803, San Diego, CA 92123 (619) 503-8596 FAX (619) 503-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0843 FAX (480) 785-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Routine Outfall 010 Report Number: IOJ1232	Sampled: 10/18/05 Received: 10/18/05
--	---	---

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	
Sample ID: IOJ1232-01 (Outfall 010 - Water)											
Reporting Units: ug/l											
Antimony	EPA 200.8	5J19098	0.050	2.0	20	1	10/19/05	10/20/05	J	2	DNC
Cadmium	EPA 200.8	5J19098	0.025	1.0	0.35	1	10/19/05	10/20/05	J	2	DNC
Copper	EPA 200.8	5J19098	0.25	2.0	13	1	10/19/05	10/20/05	J	2	DNC
Lead	EPA 200.8	5J19098	0.040	1.0	79	1	10/19/05	10/20/05	J	2	DNC
Mercury	EPA 245.1	5J19052	0.050	0.20	0.097	1	10/19/05	10/19/05	J	2	DNC

Level IV Validated

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. IOJ1232 <Page 2 of 11>


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8  
 Date: December 22, 2005

Laboratory Alta  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by 1613

Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -- false positive -- estimated values between the RL and MDL -- estimated maximum possible concentrations -- nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS<sup>b</sup></b>	_____
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Sample ID: IOJ1232-01		Outfall 010		EPA Method 1613			
Client Data		Sample Data		Laboratory Data		Qualifiers	
Name: Del Mer Analytical, Irvine	Metric: Aqueous	Lab Sample: 26993-001	Date Received: 30-Nov-05	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
Project: IOJ1232	Sample Size: 0.998 L	QC Batch No.: 7516	Date Extracted: 8-Dec-05				
Date Collected: 18-Oct-05		Date Analyzed DB-S: 10-Dec-05	Dates Analyzed DB-ZTS: 10-Dec-05				
Time Collected: 1221							
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>				
2,3,7,8-TCDD	0.0000294			J	89.0	25 - 164	
1,2,3,7,8-PeCDD	0.0000811			J	89.1	25 - 181	
1,2,3,4,7,8-HxCDD	0.0000344			J	83.8	32 - 141	
1,2,3,6,7,8-HxCDD	0.0000906			J	83.6	28 - 130	
1,2,3,7,8,9-HxCDD	0.0000774			J	82.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000595				63.2	17 - 157	
OCDD	0.000337				86.2	24 - 169	
2,3,7,8-TCDF	0.0000230				84.3	24 - 185	
1,2,3,7,8-PeCDF	0.0000252			A	83.7	21 - 178	
2,3,4,7,8-PeCDF	0.0000259			A	73.0	26 - 152	
1,2,3,4,7,8-HxCDF	0.0000227			J	59.3	26 - 123	
1,2,3,6,7,8-HxCDF	0.0000180			J	79.8	28 - 136	
2,3,4,6,7,8-HxCDF	0.0000131			J	85.7	29 - 147	
1,2,3,7,8,9-HxCDF	0.0000584			J	74.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000311			A	82.2	26 - 138	
1,2,3,7,8,9-HpCDF	0.0000576			J	68.4	17 - 157	
OCDF	0.000502			A	96.5	35 - 197	
<b>Totals</b>							
Total TCDD	0.000174				0.000177		
Total PeCDD	0.000134				0.000142		
Total HxCDD	0.0000990						
Total HpCDD	0.000117						
Total TCDF	0.000582						
Total PeCDF	0.000317						
Total HxCDF	0.000146						
Total HpCDF	0.000368						

Not  
Quid  
Quid  
DNG  
DNG  
DNG

Footnotes  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Analyst: WIL  
 Approved By: Martha M. Maier 11-Dec-2005 09:53

## **APPENDIX G**

### **Section 27**

Outfall 018, November 09, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Quarterly Outfall 018

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:22

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 3 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOK0899-01	Outfall 018	Water
IOK0899-02	Trip Blank	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5K18005	0.28	2.0	ND	1	11/18/05	11/18/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5K18005	1.2	5.0	ND	1	11/18/05	11/18/05	
Carbon tetrachloride	EPA 624	5K18005	0.28	5.0	ND	1	11/18/05	11/18/05	
Chloroform	EPA 624	5K18005	0.33	2.0	ND	1	11/18/05	11/18/05	
1,1-Dichloroethane	EPA 624	5K18005	0.27	2.0	ND	1	11/18/05	11/18/05	
1,2-Dichloroethane	EPA 624	5K18005	0.28	2.0	ND	1	11/18/05	11/18/05	
1,1-Dichloroethene	EPA 624	5K18005	0.42	3.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 624	5K18005	0.25	2.0	ND	1	11/18/05	11/18/05	
Tetrachloroethene	EPA 624	5K18005	0.32	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 624	5K18005	0.36	2.0	ND	1	11/18/05	11/18/05	
1,1,1-Trichloroethane	EPA 624	5K18005	0.30	2.0	ND	1	11/18/05	11/18/05	
1,1,2-Trichloroethane	EPA 624	5K18005	0.30	2.0	ND	1	11/18/05	11/18/05	
Trichloroethene	EPA 624	5K18005	0.26	5.0	ND	1	11/18/05	11/18/05	
Trichlorofluoromethane	EPA 624	5K18005	0.34	5.0	ND	1	11/18/05	11/18/05	
Vinyl chloride	EPA 624	5K18005	0.26	5.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 624	5K18005	0.52	4.0	ND	1	11/18/05	11/18/05	

Surrogate: Dibromofluoromethane (80-120%) 107 %  
 Surrogate: Toluene-d8 (80-120%) 106 %  
 Surrogate: 4-Bromofluorobenzene (80-120%) 98 %

### Sample ID: IOK0899-02 (Trip Blank - Water)

Reporting Units: ug/l

Benzene	EPA 624	5K22008	0.28	2.0	ND	1	11/22/05	11/22/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5K22008	1.2	5.0	ND	1	11/22/05	11/22/05	
Carbon tetrachloride	EPA 624	5K22008	0.28	5.0	ND	1	11/22/05	11/22/05	
Chloroform	EPA 624	5K22008	0.33	2.0	ND	1	11/22/05	11/22/05	
1,1-Dichloroethane	EPA 624	5K22008	0.27	2.0	ND	1	11/22/05	11/22/05	
1,2-Dichloroethane	EPA 624	5K22008	0.28	2.0	ND	1	11/22/05	11/22/05	
1,1-Dichloroethene	EPA 624	5K22008	0.42	3.0	ND	1	11/22/05	11/22/05	
Ethylbenzene	EPA 624	5K22008	0.25	2.0	ND	1	11/22/05	11/22/05	
Tetrachloroethene	EPA 624	5K22008	0.32	2.0	ND	1	11/22/05	11/22/05	
Toluene	EPA 624	5K22008	0.36	2.0	ND	1	11/22/05	11/22/05	
1,1,1-Trichloroethane	EPA 624	5K22008	0.30	2.0	ND	1	11/22/05	11/22/05	
1,1,2-Trichloroethane	EPA 624	5K22008	0.30	2.0	ND	1	11/22/05	11/22/05	
Trichloroethene	EPA 624	5K22008	0.26	5.0	ND	1	11/22/05	11/22/05	
Trichlorofluoromethane	EPA 624	5K22008	0.34	5.0	ND	1	11/22/05	11/22/05	
Vinyl chloride	EPA 624	5K22008	0.26	5.0	ND	1	11/22/05	11/22/05	
Xylenes, Total	EPA 624	5K22008	0.52	4.0	ND	1	11/22/05	11/22/05	

Surrogate: Dibromofluoromethane (80-120%) 102 %  
 Surrogate: Toluene-d8 (80-120%) 104 %  
 Surrogate: 4-Bromofluorobenzene (80-120%) 95 %

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: ug/l									
Bis(2-ethylhexyl)phthalate	EPA 625	5K11061	1.1	4.8	1.8	0.962	11/11/05	11/15/05	B, J
2,4-Dinitrotoluene	EPA 625	5K11061	0.22	8.7	ND	0.962	11/11/05	11/15/05	
N-Nitrosodimethylamine	EPA 625	5K11061	0.21	7.7	ND	0.962	11/11/05	11/15/05	
Pentachlorophenol	EPA 625	5K11061	0.75	7.7	ND	0.962	11/11/05	11/15/05	
2,4,6-Trichlorophenol	EPA 625	5K11061	0.096	5.8	ND	0.962	11/11/05	11/15/05	
Surrogate: 2-Fluorophenol (30-120%)					55 %				
Surrogate: Phenol-d6 (35-120%)					67 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					65 %				
Surrogate: Nitrobenzene-d5 (45-120%)					73 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					87 %				
Surrogate: Terphenyl-d14 (45-120%)					87 %				

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018  Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
alpha-BHC	EPA 608	5K11059	0.00096	0.0096	ND	0.962	11/11/05	11/12/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					69 %				
<i>Surrogate: Tetrachloro-m-xylene (35-115%)</i>					75 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water) - cont.</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5K16096	0.49	2.0	1.5	1	11/16/05	11/16/05	B, J
Lead	EPA 200.8	5K16096	0.13	1.0	0.21	1	11/16/05	11/16/05	B, J
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	

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 Michele Chamberlin  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05  
 Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water) - cont.</b>									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5K11084	0.30	0.50	ND	1	11/11/05	11/11/05	
Biochemical Oxygen Demand	EPA 405.1	5K10068	0.59	2.0	2.4	1	11/10/05	11/15/05	
Chloride	EPA 300.0	5K09130	1.3	2.5	36	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.080	0.15	ND	1	11/09/05	11/10/05	
Oil & Grease	EPA 413.1	5K14056	0.90	4.8	ND	1	11/14/05	11/14/05	
Sulfate	EPA 300.0	5K09130	0.90	2.5	89	5	11/09/05	11/10/05	
Surfactants (MBAS)	EPA 425.1	5K10122	0.044	0.10	0.089	1	11/10/05	11/10/05	J
Total Dissolved Solids	EPA 160.1	5K16116	10	10	420	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	ND	1	11/10/05	11/10/05	
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5K10069	0.10	0.10	ND	1	11/10/05	11/10/05	
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: NTU									
Turbidity	EPA 180.1	5K10086	0.040	1.0	3.6	1	11/10/05	11/10/05	
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5K11094	2.2	5.0	ND	1	11/11/05	11/11/05	
Perchlorate	EPA 314.0	5K10063	0.80	4.0	ND	1	11/10/05	11/10/05	
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5K30112	1.0	1.0	640	1	11/30/05	11/30/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 018 (IOK0899-01) - Water	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
EPA 160.5	2	11/09/2005 11:46	11/09/2005 18:00	11/10/2005 09:18	11/10/2005 11:20
EPA 180.1	2	11/09/2005 11:46	11/09/2005 18:00	11/10/2005 11:00	11/10/2005 12:00
EPA 300.0	2	11/09/2005 11:46	11/09/2005 18:00	11/09/2005 23:30	11/10/2005 03:02
EPA 405.1	2	11/09/2005 11:46	11/09/2005 18:00	11/10/2005 11:00	11/15/2005 11:30
EPA 425.1	2	11/09/2005 11:46	11/09/2005 18:00	11/10/2005 17:00	11/10/2005 19:06

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K18005 Extracted: 11/18/05</b>										
<b>Blank Analyzed: 11/18/2005 (5K18005-BLK1)</b>										
Benzene	ND	2.0	0.28	ug/l						
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Carbon tetrachloride	ND	5.0	0.28	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	2.0	0.28	ug/l						
1,1-Dichloroethene	ND	3.0	0.42	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	5.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	5.0	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	25.7			ug/l	25.0		103	80-120		
Surrogate: Toluene-d8	25.9			ug/l	25.0		104	80-120		
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96	80-120		
<b>LCS Analyzed: 11/18/2005 (5K18005-BS1)</b>										
Benzene	22.4	2.0	0.28	ug/l	25.0		90	65-120		
Carbon tetrachloride	26.3	5.0	0.28	ug/l	25.0		105	65-140		
Chloroform	23.5	2.0	0.33	ug/l	25.0		94	65-130		
1,1-Dichloroethane	21.0	2.0	0.27	ug/l	25.0		84	65-130		
1,2-Dichloroethane	24.0	2.0	0.28	ug/l	25.0		96	60-140		
1,1-Dichloroethene	23.3	3.0	0.42	ug/l	25.0		93	70-130		
Ethylbenzene	23.9	2.0	0.25	ug/l	25.0		96	70-125		
Tetrachloroethene	24.1	2.0	0.32	ug/l	25.0		96	65-125		
Toluene	22.6	2.0	0.36	ug/l	25.0		90	70-125		
1,1,1-Trichloroethane	23.6	2.0	0.30	ug/l	25.0		94	65-135		
1,1,2-Trichloroethane	24.2	2.0	0.30	ug/l	25.0		97	65-125		
Trichloroethene	23.0	5.0	0.26	ug/l	25.0		92	70-125		
Trichlorofluoromethane	24.5	5.0	0.34	ug/l	25.0		98	60-140		
Vinyl chloride	21.3	5.0	0.26	ug/l	25.0		85	50-130		
Surrogate: Dibromofluoromethane	25.6			ug/l	25.0		102	80-120		

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K18005 Extracted: 11/18/05</b>											
<b>LCS Analyzed: 11/18/2005 (5K18005-BS1)</b>											
Surrogate: Toluene-d8	26.3			ug/l	25.0		105	80-120			
Surrogate: 4-Bromofluorobenzene	27.0			ug/l	25.0		108	80-120			
<b>Matrix Spike Analyzed: 11/18/2005 (5K18005-MS1) Source: IOK1167-10</b>											
Benzene	22.3	2.0	0.28	ug/l	25.0	ND	89	60-125			
Carbon tetrachloride	26.5	5.0	0.28	ug/l	25.0	ND	106	65-140			
Chloroform	23.4	2.0	0.33	ug/l	25.0	ND	94	65-135			
1,1-Dichloroethane	20.8	2.0	0.27	ug/l	25.0	ND	83	60-130			
1,2-Dichloroethane	23.3	2.0	0.28	ug/l	25.0	ND	93	60-140			
1,1-Dichloroethene	21.9	3.0	0.42	ug/l	25.0	ND	88	60-135			
Ethylbenzene	23.0	2.0	0.25	ug/l	25.0	ND	92	65-130			
Tetrachloroethene	22.8	2.0	0.32	ug/l	25.0	ND	91	60-130			
Toluene	22.7	2.0	0.36	ug/l	25.0	ND	91	65-125			
1,1,1-Trichloroethane	23.9	2.0	0.30	ug/l	25.0	ND	96	65-140			
1,1,2-Trichloroethane	21.9	2.0	0.30	ug/l	25.0	ND	88	60-130			
Trichloroethene	22.7	5.0	0.26	ug/l	25.0	ND	91	60-125			
Trichlorofluoromethane	24.6	5.0	0.34	ug/l	25.0	ND	98	55-145			
Vinyl chloride	21.1	5.0	0.26	ug/l	25.0	ND	84	40-135			
Surrogate: Dibromofluoromethane	25.5			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	26.2			ug/l	25.0		105	80-120			
<b>Matrix Spike Dup Analyzed: 11/18/2005 (5K18005-MSD1) Source: IOK1167-10</b>											
Benzene	22.0	2.0	0.28	ug/l	25.0	ND	88	60-125	1	20	
Carbon tetrachloride	26.0	5.0	0.28	ug/l	25.0	ND	104	65-140	2	25	
Chloroform	23.5	2.0	0.33	ug/l	25.0	ND	94	65-135	0	20	
1,1-Dichloroethane	20.8	2.0	0.27	ug/l	25.0	ND	83	60-130	0	20	
1,2-Dichloroethane	24.7	2.0	0.28	ug/l	25.0	ND	99	60-140	6	20	
1,1-Dichloroethene	22.9	3.0	0.42	ug/l	25.0	ND	92	60-135	4	20	
Ethylbenzene	23.3	2.0	0.25	ug/l	25.0	ND	93	65-130	1	20	
Tetrachloroethene	24.0	2.0	0.32	ug/l	25.0	ND	96	60-130	5	20	
Toluene	22.5	2.0	0.36	ug/l	25.0	ND	90	65-125	1	20	
1,1,1-Trichloroethane	23.4	2.0	0.30	ug/l	25.0	ND	94	65-140	2	20	
1,1,2-Trichloroethane	24.8	2.0	0.30	ug/l	25.0	ND	99	60-130	12	25	
Trichloroethene	22.6	5.0	0.26	ug/l	25.0	ND	90	60-125	0	20	
Trichlorofluoromethane	24.1	5.0	0.34	ug/l	25.0	ND	96	55-145	2	25	

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018  Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K18005 Extracted: 11/18/05</b>											
<b>Matrix Spike Dup Analyzed: 11/18/2005 (5K18005-MSD1)</b>						<b>Source: IOK1167-10</b>					
Vinyl chloride	20.9	5.0	0.26	ug/l	25.0	ND	84	40-135	1	30	
Surrogate: Dibromofluoromethane	26.3			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	26.7			ug/l	25.0		107	80-120			
Surrogate: 4-Bromofluorobenzene	27.3			ug/l	25.0		109	80-120			
<b>Batch: 5K22008 Extracted: 11/22/05</b>											
<b>Blank Analyzed: 11/22/2005 (5K22008-BLK1)</b>											
Benzene	ND	2.0	0.28	ug/l							
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Carbon tetrachloride	ND	5.0	0.28	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	2.0	0.28	ug/l							
1,1-Dichloroethene	ND	3.0	0.42	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	5.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	5.0	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Surrogate: Dibromofluoromethane	26.0			ug/l	25.0		104	80-120			
Surrogate: Toluene-d8	24.0			ug/l	25.0		96	80-120			
Surrogate: 4-Bromofluorobenzene	23.2			ug/l	25.0		93	80-120			

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 Project Manager

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K22008 Extracted: 11/22/05</b>											
<b>LCS Analyzed: 11/22/2005 (5K22008-BS1)</b>											
Benzene	24.5	2.0	0.28	ug/l	25.0		98	65-120			
Carbon tetrachloride	28.3	5.0	0.28	ug/l	25.0		113	65-140			
Chloroform	25.5	2.0	0.33	ug/l	25.0		102	65-130			M-3
1,1-Dichloroethane	22.8	2.0	0.27	ug/l	25.0		91	65-130			
1,2-Dichloroethane	26.0	2.0	0.28	ug/l	25.0		104	60-140			
1,1-Dichloroethene	25.5	3.0	0.42	ug/l	25.0		102	70-130			
Ethylbenzene	26.2	2.0	0.25	ug/l	25.0		105	70-125			M-3
Tetrachloroethene	26.6	2.0	0.32	ug/l	25.0		106	65-125			
Toluene	25.0	2.0	0.36	ug/l	25.0		100	70-125			
1,1,1-Trichloroethane	25.4	2.0	0.30	ug/l	25.0		102	65-135			
1,1,2-Trichloroethane	26.7	2.0	0.30	ug/l	25.0		107	65-125			
Trichloroethene	25.9	5.0	0.26	ug/l	25.0		104	70-125			M-3
Trichlorofluoromethane	26.2	5.0	0.34	ug/l	25.0		105	60-140			
Vinyl chloride	22.7	5.0	0.26	ug/l	25.0		91	50-130			
Surrogate: Dibromofluoromethane	24.9			ug/l	25.0		100	80-120			
Surrogate: Toluene-d8	26.6			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			
<b>Matrix Spike Analyzed: 11/22/2005 (5K22008-MS1)</b>											
<b>Source: IOK1525-02</b>											
Benzene	30.8	2.0	0.28	ug/l	25.0	3.4	110	60-125			
Carbon tetrachloride	33.1	5.0	0.28	ug/l	25.0	2.0	124	65-140			
1,1-Dichloroethane	24.6	2.0	0.27	ug/l	25.0	ND	98	60-130			
1,2-Dichloroethane	28.7	2.0	0.28	ug/l	25.0	0.55	113	60-140			
1,1-Dichloroethene	28.1	3.0	0.42	ug/l	25.0	0.55	110	60-135			
Tetrachloroethene	30.6	2.0	0.32	ug/l	25.0	1.0	118	60-130			
Toluene	27.7	2.0	0.36	ug/l	25.0	0.57	109	65-125			
1,1,1-Trichloroethane	26.7	2.0	0.30	ug/l	25.0	ND	107	65-140			
1,1,2-Trichloroethane	30.0	2.0	0.30	ug/l	25.0	ND	120	60-130			
Trichlorofluoromethane	130	5.0	0.34	ug/l	25.0	110	80	55-145			M-HA
Vinyl chloride	24.9	5.0	0.26	ug/l	25.0	ND	100	40-135			
Surrogate: Dibromofluoromethane	25.1			ug/l	25.0		100	80-120			
Surrogate: Toluene-d8	26.5			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	27.9			ug/l	25.0		112	80-120			

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K22008 Extracted: 11/22/05</b>											
<b>Matrix Spike Dup Analyzed: 11/22/2005 (5K22008-MSD1)</b>						<b>Source: IOK1525-02</b>					
Benzene	28.8	2.0	0.28	ug/l	25.0	3.4	102	60-125	7	20	
Carbon tetrachloride	30.2	5.0	0.28	ug/l	25.0	2.0	113	65-140	9	25	
1,1-Dichloroethane	23.5	2.0	0.27	ug/l	25.0	ND	94	60-130	5	20	
1,2-Dichloroethane	26.2	2.0	0.28	ug/l	25.0	0.55	103	60-140	9	20	
1,1-Dichloroethene	26.8	3.0	0.42	ug/l	25.0	0.55	105	60-135	5	20	
Tetrachloroethene	28.6	2.0	0.32	ug/l	25.0	1.0	110	60-130	7	20	
Toluene	26.3	2.0	0.36	ug/l	25.0	0.57	103	65-125	5	20	
1,1,1-Trichloroethane	24.6	2.0	0.30	ug/l	25.0	ND	98	65-140	8	20	
1,1,2-Trichloroethane	28.2	2.0	0.30	ug/l	25.0	ND	113	60-130	6	25	
Trichlorofluoromethane	119	5.0	0.34	ug/l	25.0	110	36	55-145	9	25	M-HA
Vinyl chloride	23.4	5.0	0.26	ug/l	25.0	ND	94	40-135	6	30	
Surrogate: Dibromofluoromethane	24.9			ug/l	25.0		100	80-120			
Surrogate: Toluene-d8	26.2			ug/l	25.0		105	80-120			
Surrogate: 4-Bromofluorobenzene	27.0			ug/l	25.0		108	80-120			

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 Project Manager

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K11061 Extracted: 11/11/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K11061-BLK1)</b>											
Bis(2-ethylhexyl)phthalate	1.82	5.0	1.1	ug/l							J
2,4-Dinitrotoluene	ND	9.0	0.23	ug/l							
N-Nitrosodimethylamine	ND	8.0	0.22	ug/l							
Pentachlorophenol	ND	8.0	0.78	ug/l							
2,4,6-Trichlorophenol	ND	6.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	12.7			ug/l	20.0		64	30-120			
Surrogate: Phenol-d6	14.4			ug/l	20.0		72	35-120			
Surrogate: 2,4,6-Tribromophenol	12.7			ug/l	20.0		64	45-120			
Surrogate: Nitrobenzene-d5	7.86			ug/l	10.0		79	45-120			
Surrogate: 2-Fluorobiphenyl	9.62			ug/l	10.0		96	45-120			
Surrogate: Terphenyl-d14	9.18			ug/l	10.0		92	45-120			
<b>LCS Analyzed: 11/14/2005 (5K11061-BS1)</b>											
Bis(2-ethylhexyl)phthalate	11.1	5.0	1.1	ug/l	10.0		111	60-130			M-NR1
2,4-Dinitrotoluene	8.60	9.0	0.23	ug/l	10.0		86	60-120			J
N-Nitrosodimethylamine	7.48	8.0	0.22	ug/l	10.0		75	40-120			J
Pentachlorophenol	9.22	8.0	0.78	ug/l	10.0		92	50-120			
2,4,6-Trichlorophenol	8.32	6.0	0.10	ug/l	10.0		83	60-120			
Surrogate: 2-Fluorophenol	13.9			ug/l	20.0		70	30-120			
Surrogate: Phenol-d6	15.1			ug/l	20.0		76	35-120			
Surrogate: 2,4,6-Tribromophenol	15.8			ug/l	20.0		79	45-120			
Surrogate: Nitrobenzene-d5	7.42			ug/l	10.0		74	45-120			
Surrogate: 2-Fluorobiphenyl	7.64			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	9.26			ug/l	10.0		93	45-120			
<b>LCS Dup Analyzed: 11/14/2005 (5K11061-BSD1)</b>											
Bis(2-ethylhexyl)phthalate	9.74	5.0	1.1	ug/l	10.0		97	60-130	13	20	
2,4-Dinitrotoluene	7.72	9.0	0.23	ug/l	10.0		77	60-120	11	20	J
N-Nitrosodimethylamine	6.92	8.0	0.22	ug/l	10.0		69	40-120	8	20	J
Pentachlorophenol	8.28	8.0	0.78	ug/l	10.0		83	50-120	11	25	
2,4,6-Trichlorophenol	8.24	6.0	0.10	ug/l	10.0		82	60-120	1	20	
Surrogate: 2-Fluorophenol	13.7			ug/l	20.0		68	30-120			
Surrogate: Phenol-d6	14.0			ug/l	20.0		70	35-120			
Surrogate: 2,4,6-Tribromophenol	14.9			ug/l	20.0		74	45-120			
Surrogate: Nitrobenzene-d5	6.74			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.44			ug/l	10.0		74	45-120			

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018  Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K11061 Extracted: 11/11/05</b>											
<b>LCS Dup Analyzed: 11/14/2005 (5K11061-BSD1)</b>											
Surrogate: Terphenyl-d14	8.00			ug/l	10.0		80	45-120			

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Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

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## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K11059 Extracted: 11/11/05</b>											
<b>Blank Analyzed: 11/11/2005 (5K11059-BLK1)</b>											
alpha-BHC	ND	0.010	0.0010	ug/l							
Surrogate: Decachlorobiphenyl	0.376			ug/l	0.500		75	45-120			
Surrogate: Tetrachloro-m-xylene	0.251			ug/l	0.500		50	35-115			
<b>LCS Analyzed: 11/11/2005 (5K11059-BS1)</b>											
alpha-BHC	0.447	0.010	0.0010	ug/l	0.500		89	45-120			M-NRI
Surrogate: Decachlorobiphenyl	0.403			ug/l	0.500		81	45-120			
Surrogate: Tetrachloro-m-xylene	0.400			ug/l	0.500		80	35-115			
<b>LCS Dup Analyzed: 11/11/2005 (5K11059-BSD1)</b>											
alpha-BHC	0.438	0.010	0.0010	ug/l	0.500		88	45-120	2	30	
Surrogate: Decachlorobiphenyl	0.352			ug/l	0.500		70	45-120			
Surrogate: Tetrachloro-m-xylene	0.392			ug/l	0.500		78	35-115			

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Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16096-BLK1)</b>											
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005 (5K16096-BS1)</b>											
Copper	82.7	2.0	0.25	ug/l	80.0		103	85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103	85-115			
<b>Matrix Spike Analyzed: 11/16/2005 (5K16096-MS1)</b>											
						<b>Source: IOK0918-02</b>					
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005 (5K16096-MS2)</b>											
						<b>Source: IOK0922-03</b>					
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005 (5K16096-MSD1)</b>											
						<b>Source: IOK0918-02</b>					
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>						<b>Source: IOK0827-04</b>					
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>						<b>Source: IOK0827-04</b>					
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	

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Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1) Source: IOK0875-01</b>											
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1) Source: IOK0875-01</b>											
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10063 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10063-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 11/10/2005 (5K10063-BS1)</b>											
Perchlorate	54.8	4.0	0.80	ug/l	50.0		110	85-115			
<b>Matrix Spike Analyzed: 11/10/2005 (5K10063-MS1) Source: IOK0701-04</b>											
Perchlorate	63.2	4.0	0.80	ug/l	50.0	11	104	80-120			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K10063 Extracted: 11/10/05</b>											
<b>Matrix Spike Dup Analyzed: 11/10/2005 (5K10063-MSD1)</b>						<b>Source: IOK0701-04</b>					
Perchlorate	64.7	4.0	0.80	ug/l	50.0	11	107	80-120	2	20	
<b>Batch: 5K10068 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/15/2005 (5K10068-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 11/15/2005 (5K10068-BS1)</b>											
Biochemical Oxygen Demand	206	100	30	mg/l	198		104	85-115			
<b>LCS Dup Analyzed: 11/15/2005 (5K10068-BSD1)</b>											
Biochemical Oxygen Demand	204	100	30	mg/l	198		103	85-115	1	20	
<b>Batch: 5K10086 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10086-BLK1)</b>											
Turbidity	ND	1.0	0.040	NTU							
<b>Duplicate Analyzed: 11/10/2005 (5K10086-DUP1)</b>						<b>Source: IOK0921-01</b>					
Turbidity	0.650	1.0	0.040	NTU		0.62			5	20	J
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1)</b>											
						<b>Source: IOK0617-01</b>					
Total Suspended Solids	440	10	10	mg/l		450			2	10	
<b>Batch: 5K10122 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10122-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10122-BS1)</b>											
Surfactants (MBAS)	0.234	0.10	0.044	mg/l	0.250		94	90-110			
<b>Matrix Spike Analyzed: 11/10/2005 (5K10122-MS1)</b>											
						<b>Source: IOK0909-01</b>					
Surfactants (MBAS)	0.322	0.10	0.044	mg/l	0.250	0.12	81	50-125			
<b>Matrix Spike Dup Analyzed: 11/10/2005 (5K10122-MSD1)</b>											
						<b>Source: IOK0909-01</b>					
Surfactants (MBAS)	0.320	0.10	0.044	mg/l	0.250	0.12	80	50-125	1	20	
<b>Batch: 5K11084 Extracted: 11/11/05</b>											
<b>Blank Analyzed: 11/11/2005 (5K11084-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 11/11/2005 (5K11084-BS1)</b>											
Ammonia-N (Distilled)	11.2	0.50	0.30	mg/l	10.0		112	80-115			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K11084 Extracted: 11/11/05</b>											
<b>Matrix Spike Analyzed: 11/11/2005 (5K11084-MS1)</b>						<b>Source: IOK0899-01</b>					
Ammonia-N (Distilled)	10.9	0.50	0.30	mg/l	10.0	ND	109	70-120			
<b>Matrix Spike Dup Analyzed: 11/11/2005 (5K11084-MSD1)</b>						<b>Source: IOK0899-01</b>					
Ammonia-N (Distilled)	10.9	0.50	0.30	mg/l	10.0	ND	109	70-120	0	15	
<b>Batch: 5K11094 Extracted: 11/11/05</b>											
<b>Blank Analyzed: 11/11/2005 (5K11094-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 11/11/2005 (5K11094-BS1)</b>											
Total Cyanide	197	5.0	2.2	ug/l	200		98	90-110			
<b>Matrix Spike Analyzed: 11/11/2005 (5K11094-MS1)</b>						<b>Source: IOK0997-01</b>					
Total Cyanide	191	5.0	2.2	ug/l	200	ND	96	70-115			
<b>Matrix Spike Dup Analyzed: 11/11/2005 (5K11094-MSD1)</b>						<b>Source: IOK0997-01</b>					
Total Cyanide	196	5.0	2.2	ug/l	200	ND	98	70-115	3	15	
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NR1

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01 200			2	10	
<b>Batch: 5K21086 Extracted: 11/19/05</b>											
<b>Blank Analyzed: 11/19/2005 (5K21086-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/19/2005 (5K21086-BS1)</b>											
Total Dissolved Solids	1010	10	10	mg/l	1000		101	90-110			
<b>Duplicate Analyzed: 11/19/2005 (5K21086-DUP1)</b>											
Total Dissolved Solids	380	10	10	mg/l		Source: IOK0899-01 420			10	10	
<b>Batch: 5K30112 Extracted: 11/30/05</b>											
<b>Duplicate Analyzed: 11/30/2005 (5K30112-DUP1)</b>											
Specific Conductance	641	1.0	1.0	umhos/cm		Source: IOK0899-01 640			0	5	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-HA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOK0899

Sampled: 11/09/05

Received: 11/09/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 120.1	Water	X	X
EPA 160.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	N/A	X
EPA 335.2	Water	X	X
EPA 350.2	Water		X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 425.1	Water	X	X
EPA 608	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

**Alta Analytical** NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOK0899-01

Analysis Performed: EDD + Level 4

Samples: IOK0899-01

### Del Mar Analytical, Irvine

Michele Chamberlin

Project Manager

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10K0899

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/05

**Client Name/Address:**  
 MWH-Pasadena  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
**Project Manager:** Bronwyn Kelly  
 Sampler: *Rick BANIAGA*

**Project:**  
 Boeing-SSFL NPDES  
 Quarterly Outfall 018  
 R-2 Spillway

**Phone Number:**  
 (626) 568-6691  
**Fax Number:**  
 (626) 568-6515

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Cu, Pb, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N, Perchlorate	Turbidity, TDS, TSS, Conductivity	Ammonia-N	Alpha BHC (6081A)	2,4,6 Trichlorophenol, 2,4 Dinitrofluorene, Bis(2- ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625)	Monomethylhydrazine	Field readings: Temp = 60.8 pH = 7.22	Comments
Outfall 018	W	Poly-1L	1	11-9-05	HNO3	1A	X															
Outfall 018-Dup	W	Poly-1L	1	11-9-05	HNO3	1B	X															
Outfall 018	W	Poly-1L	1		None	2		X														
Outfall 018	W	VOAs	3		HCl	3A,3B,3C			X													
Outfall 018	W	1L Amber	2		None	4A,4B				X												
Outfall 018	W	1L Amber	2		HCl	5A, 5B					X											
Outfall 018	W	Poly-500 ml	1		NaOH	6					X											
Outfall 018	W	Poly-1 L	1		None	7							X									
Outfall 018	W	Poly-500 ml	2		None	8A,8B								X								
Outfall 018	W	Poly-500 ml	2		None	9A,9B									X							
Outfall 018	W	Poly-500 ml	2		None	10A, 10B										X						
Outfall 018	W	Poly-500 ml	1		H2SO4	11											X					
Outfall 018	W	1L Amber	2		None	12A,12B												X				
Outfall 018	W	1L Amber	2		None	13A,13B													X			
Outfall 018	W	1L Amber	2	11-9-05	None	14A,14B														X		
Trip Blank	W	VOAs	3	11-9-05	HCl	15A,15B,15C			X													

Turn around Time (days)  
 24 Hours  8 Days  
 48 Hours  10 Days  
 72 Hours  Normal   
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_

Received By: *[Signature]* Date/Time: 11/9/05 1500  
 Received By: *[Signature]* Date/Time: 11/9/05 1800  
 Received By: *[Signature]* Date/Time: 11/9/05 1800

Relinquished By: *[Signature]* Date/Time: 11-9-05 1500  
 Relinquished By: *[Signature]* Date/Time: 11/9/05 1800  
 Relinquished By: *[Signature]* Date/Time: 11/9/05 1800

Sample Integrity: (Check)  
 Intact  On Ice

NPDES - 699

10K0899

CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/17/05

Client Name/Address:  
**MWH-Pasadena**  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Project Manager: **Bronwyn Kelly**  
 Sampler: **Rick BANAÇA**

Project:  
**Boeing-SSFL NPDES**  
**Quarterly Outfall 018**  
 R-2 Spillway

Phone Number:  
 (626) 568-6691  
 Fax Number:  
 (626) 568-6515

ANALYSIS REQUIRED		Field readings:	Comments
Turn around Time: (check)	24 Hours	Temp = 60.8	
	48 Hours	pH = 7.22	
	72 Hours		
	Perchlorate Only 72 Hours		
	Metals Only 72 Hours		
Sample Integrity: (Check)	Intact		
On ice:			

Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	Total Recoverable Metals: Cu, Pb, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N, Perchlorate	Turbidity, TDS, TSS, Conductivity	Ammonia-N	Alpha BHC (8081A)	2,4,6 Trichlorophenol, 2,4 Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625)	Monomethylhydrazine
Outfall 018	W	Poly-1L	1	HNO3	1A	X													
Outfall 018-Dup	W	Poly-1L	1	HNO3	1B	X													
Outfall 018	W	Poly-1L	1	None	2		X												
Outfall 018	W	VOAs	3	HCl	3A,3B,3C			X											
Outfall 018	W	1L Amber	2	None	4A,4B				X										
Outfall 018	W	1L Amber	2	HCl	5A, 5B					X									
Outfall 018	W	Poly-500 ml	1	NaOH	6						X								
Outfall 018	W	Poly-1 L	1	None	7							X							
Outfall 018	W	Poly-500 ml	2	None	8A,8B								X						
Outfall 018	W	Poly-500 ml	2	None	9A,9B									X					
Outfall 018	W	Poly-500 ml	2	None	10A, 10B										X				
Outfall 018	W	Poly-500 ml	1	H2SO4	11											X			
Outfall 018	W	1L Amber	2	None	12A,12B												X		
Outfall 018	W	1L Amber	2	None	13A,13B													X	
Outfall 018	W	1L Amber	2	None	14A,14B														X
Trip Blank	W	VOAs	3	HCl	15A,15B, 15C			X											

Relinquished By: *Rick Banaça* Date/Time: 11/9/05 1500  
 Relinquished By: *Rick Banaça* Date/Time: 11/9/05 1500  
 Relinquished By: *Rick Banaça* Date/Time: 11/9/05 1800

Received By: *Rick Banaça* Date/Time: 11/9/05 1500  
 Received By: *Rick Banaça* Date/Time: 11/9/05 1800  
 Received By: *Rick Banaça* Date/Time: 11/9/05 1800







December 10, 2005

**Alta Project LD.: 27025**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0899". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

**Alta Lab. ID**

**Client Sample ID**

27025-001

IOK0899-01

**SECTION II**

Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000105			13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000893			13C-1,2,3,7,8-PeCDD	81.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000158			13C-1,2,3,4,7,8-HxCDD	75.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000149			13C-1,2,3,6,7,8-HxCDD	77.1	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000154			13C-1,2,3,4,6,7,8-HpCDD	70.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000172			13C-OCDD	56.0	17 - 157	
OCDD	ND	0.00000585			13C-2,3,7,8-TCDF	79.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000899			13C-1,2,3,7,8-PeCDF	73.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000135			13C-2,3,4,7,8-PeCDF	76.2	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000117			13C-1,2,3,4,7,8-HxCDF	70.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000723			13C-1,2,3,6,7,8-HxCDF	74.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000652			13C-2,3,4,6,7,8-HxCDF	73.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000824			13C-1,2,3,7,8,9-HxCDF	76.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000132			13C-1,2,3,4,6,7,8-HpCDF	68.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000743			13C-1,2,3,4,7,8,9-HpCDF	72.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000947			13C-OCDF	59.0	17 - 157	
OCDF	ND	0.00000230			37Cl-2,3,7,8-TCDD	97.0	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.00000105						
Total PeCDD	ND	0.000000893						
Total HxCDD	ND	0.00000154						
Total HpCDD	ND	0.00000172						
Total TCDF	ND	0.000000899						
Total PeCDF	ND	0.000000593						
Total HxCDF	ND	0.000000861						
Total HpCDF	ND	0.000000833						

Footnotes  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: W/JL Approved By: Martha M. Maier 10-Dec-2005 14:04

OPR Results		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-OPR001
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Spike Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: W/JL

Approved By: Martha M. Maier 10-Dec-2005 14:04

**Sample ID: IOK0899-01** **EPA Method 1613**

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOK0899  
 Date Collected: 9-Nov-05  
 Time Collected: 1146

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 1.011 L

**Laboratory Data**  
 Lab Sample: 27025-001  
 QC Batch No.: 7516  
 Date Analyzed DB-5: 10-Dec-05  
 Date Received: 8-Dec-05  
 Date Extracted: 8-Dec-05  
 Date Analyzed DB-225: NA

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000763			13C-2,3,7,8-TCDD	90.0	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000133			13C-1,2,3,7,8-PeCDD	88.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000329			13C-1,2,3,4,7,8-HxCDD	78.5	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000362			13C-1,2,3,6,7,8-HxCDD	79.6	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000347			13C-1,2,3,4,6,7,8-HpCDD	82.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000143			J	13C-OCDD	66.2	17 - 157	
OCDD	0.000164							
2,3,7,8-TCDF	ND	0.00000115			13C-2,3,7,8-TCDF	87.5	24 - 169	
1,2,3,7,8-PeCDF	ND	0.00000210			13C-1,2,3,7,8-PeCDF	84.3	24 - 185	
2,3,4,7,8-PeCDF	ND	0.00000200			13C-2,3,4,7,8-PeCDF	80.8	21 - 178	
1,2,3,4,7,8-HxCDF	ND	0.00000809			13C-1,2,3,4,7,8-HxCDF	70.4	26 - 152	
1,2,3,6,7,8-HxCDF	ND	0.00000112			13C-1,2,3,6,7,8-HxCDF	55.2	26 - 123	
2,3,4,6,7,8-HxCDF	ND	0.00000841			13C-2,3,4,6,7,8-HxCDF	76.5	28 - 136	
1,2,3,7,8,9-HxCDF	ND	0.00000129			13C-1,2,3,7,8,9-HxCDF	81.3	29 - 147	
1,2,3,4,6,7,8-HpCDF	0.00000187			J	13C-1,2,3,4,6,7,8-HpCDF	75.8	28 - 143	
1,2,3,4,7,8,9-HpCDF	ND	0.00000125			13C-1,2,3,4,7,8,9-HpCDF	83.4	26 - 138	
OCDF	0.00000642			J	13C-OCDF	70.1	17 - 157	
<b>Totals</b>					<b>CRS 37Cl-2,3,7,8-TCDD</b>	<b>102</b>	<b>35 - 197</b>	

**Footnotes**  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

**Totals**  
 Total TCDD: ND  
 Total PeCDD: ND  
 Total HxCDD: ND  
 Total HpCDD: 0.0000307  
 Total TCDF: ND  
 Total PeCDF: ND  
 Total HxCDF: ND  
 Total HpCDF: 0.00000187

Analyst: WJL  
 Approved By: Martha M. Maier  
 10-Dec-2005 14:04

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.



**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1614 E. Coady Dr., Suite A, Colton, CA 92324 Ph (909) 370-0007 Fax (909) 370-1048  
 6484 Champagne Drive, Suite 888, San Diego, CA 92123 Ph (619) 595-0080 Fax (619) 595-0088  
 8830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0051  
 2820 E. Rowland Pl., Suite 80, Las Vegas, NV 89120 Ph (702) 798-0020 Fax (702) 798-0020

**SUBCONTRACT ORDER - PROJECT # IOK0899**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 673-0106  <div style="text-align: right; font-size: 2em;">             27025              1.7°C           </div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0899-01	Water	Sampled: 11/09/05 11:46
1613-Dioxin-HR	11/16/05 11:46	J flags, 17 congeners, no TEQ, ug/L, sub=Face-MN
EDD + Level 4	12/07/05 11:46	Excel EDD email to pm, Include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IOK0899-01G)		
1 L Amber (IOK0899-01H)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

*COC rec'd via email Bettina J. Benedict 10/18/05*

Released By	Date	Time	Received By	Date	Time

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27025

Samples Arrival:	Date/Time 12/8/05 0910	Initials: CSB	Location: WR-2			
Logged In:	Date/Time 12/8/05 1059	Initials: CSB	Location: WR-2			
Delivered By:	<u>FedEx</u>	UPS	Cal	DHL	Hand Delivered	Other
Preservation:	<u>Ice</u>	Blue Ice	Dry Ice	None		
Temp °C	1.7°C	Time:	0925	Thermometer ID:	DT-20	

	YES	NO	NA		
Adequate Sample Volume Received?	✓				
Holding Time Acceptable?	✓				
Shipping Container(s) Intact?	✓				
Shipping Custody Seals Intact?			✓		
Shipping Documentation Present?	✓				
Airbill					
Trk #	6741 2802 3830				
Sample Container Intact?	✓				
Sample Custody Seals Intact?			✓		
Chain of Custody / Sample Documentation Present?		✓			
COC Anomaly/Sample Acceptance Form completed?	✓				
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓		
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container	None	
Shipping Container	Alta	<u>Client</u>	Retain	<u>Return</u>	Dispose

Comments:

10K0899-01 Outfall 018 11/8/05 00:00  
 10K0900-01 Outfall 003 11/9/05 13:38  
 10K0901-01 Outfall 004 11/9/05 13:52  
 10K0902-01 outfall 005 11/9/05 12:40  
 10K0903-01 Outfall 006 11/9/05 13:06  
 10K0904-01 Outfall 009 11/9/05 13:46

## **APPENDIX G**

### **Section 28**

Outfall 018, November 09, 2005

AMEC Data Validation Reports


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF51  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 8

Laboratory Alta  
 Reviewer E. Wessling  
 Analysis/Method Dioxins/Furans by 1613

Date: December 22, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -- false positive --estimated values between the RL and MDL --estimated maximum possible concentrations --nonconfirmation of 2,3,7,8-TCDF
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1186, IOJ1232, IOK0899,  
IOK0900, IOK0901, IOK0902, IOK0903, IOK0904

Prepared by

AMEC—Denver Operations  
355 South Teller Street Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 009	IOJ1232-01	26994-001	water	1613
Outfall 010	IOJ1186-01	26993-001	water	1613
Outfall 018	IOK0899-01	27025-001	water	1613
Outfall 003	IOK0900-01	27026-001	water	1613
Outfall 004	IOK0901-01	27027-001	water	1613
Outfall 005	IOK0902-01	27028-001	water	1613
Outfall 006	IOK0903-01	27029-001	water	1613
Outfall 009	IOK0904-01	27030-001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2° C. The samples were shipped to Alta for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C or slightly below for some of the samples. As none of the samples was noted to be damaged or frozen, no qualifications were required. According to the case narratives and laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Alta had no custody seals. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

The initial calibration was analyzed 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0-7516-MB001) was extracted and analyzed with the samples in this SDG. No target compounds were detected in the method blank and no qualifications were required. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike (OPR 0-7516-OPR001) was extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### **2.7.1 Field Blanks and Equipment Rinsates**

The samples in this SDG had no identified field QC samples. No qualifications were required.

### **2.7.2 Field Duplicates**

No field duplicate samples were identified for this SDG.

## **2.8 INTERNAL STANDARDS**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## **2.9 COMPOUND IDENTIFICATION**

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted with the exception of a false positive in Outfall 005 for 1,2,3,4,7,8-HxCDD. The sample was a nondetect Confirmation for 2,3,7,8-TCDF detected in samples Outfall 004, Outfall 005, and Outfall 006 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

## **2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. These "J" values were annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



Client Data		Sample Data		Laboratory Data		EPA Method 1613	
Sample ID:	IOK0899-01	Del Mar Analytical, Irvine	Matrix:	Lab Sample:	27025-001	Date Received:	8-Dec-05
Date Collected:	9-Nov-05	Sample Size:	Aqueous	QC Batch No.:	7516	Date Extracted:	8-Dec-05
Time Collected:	1146	DL <sup>a</sup>	1.011 L	Date Analyzed DB-5:	10-Dec-05	Date Analyzed DB-223:	NA
Analyte	Conc. (ug/L)	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000763		13C-2,3,7,8-TCDD	90.0	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000133		13C-1,2,3,7,8-PeCDD	88.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000329		13C-1,2,3,4,7,8-HxCDD	78.5	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000362		13C-1,2,3,6,7,8-HxCDD	79.6	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000347		13C-1,2,3,4,6,7,8-HpCDD	82.6	23 - 140	
1,2,3,4,6,7,8-HxCDD	0.0000143		J	13C-OCDD	66.2	17 - 157	
OCDD	0.000164			13C-2,3,7,8-TCDF	87.5	24 - 169	
2,3,7,8-TCDF	ND	0.00000115		13C-1,2,3,7,8-PeCDF	84.3	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000210		13C-2,3,4,7,8-PeCDF	80.8	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000200		13C-1,2,3,4,7,8-HxCDF	70.4	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000809		13C-1,2,3,6,7,8-HxCDF	55.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000112		13C-2,3,4,6,7,8-HxCDF	76.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000841		13C-1,2,3,7,8,9-HxCDF	81.3	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000129		13C-1,2,3,4,6,7,8-HpCDF	75.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00000187		J	13C-1,2,3,4,7,8,9-HpCDF	83.4	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000125		13C-OCDF	70.1	17 - 157	
OCDF	0.00000642		J	CRS 37C1-2,3,7,8-TCDD	102	35 - 197	
Totals				Footnotes			
Total TCDD	ND	0.000000763		a. Sample specific estimated detection limit.			
Total PeCDD	ND	0.00000133		b. Estimated minimum possible concentration.			
Total HxCDD	ND	0.00000348		c. Method detection limit.			
Total HpCDD	0.00000307			d. Lower control limit - upper control limit.			
Total TCDF	ND	0.00000115					
Total PeCDF	ND	0.00000204					
Total HxCDF	ND	0.00000100					
Total HpCDF	0.00000187	0.00000480					

*Outfall 01B*

*Red and  
and  
code*

*DNR*

*DNR*

*DNR*

Approved By: **Martha M. Maier** 10-Dec-2005 14:04

Project 27025

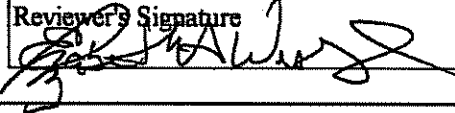
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711WC182  
Task Order 313150010  
SDG No. IOK0899

No. of Analyses 1

Laboratory Del Mar - Irvine  
Reviewer E. Wessling  
Analysis/Method General Minerals

Date: December 22, 2005  
Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --estimated data between the RL and MDL -- actual sample weights not being used for MBAS analysis
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring Program

ANALYSIS: GENERAL MINERALS  
And PERCHLORATE

SAMPLE DELIVERY GROUPS: IOK0899

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOK0899  
Project Manager: P. Costa  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: E. Wessling  
Date of Review: December 22, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 160.1, 160.2, 160.5, 180.1, 300.0, 335.2, 350.2, 405.1, 425.1, 314.0, and 413.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 018	IOK0899-01	Water	General Minerals



## **2. DATA VALIDATION FINDINGS**

### **2.1 SAMPLE MANAGEMENT**

Following are findings associated with sample management:

#### **2.1.1 Sample Preservation, Handling, and Transport**

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### **2.1.2 Chain of Custody**

The COCs were signed and dated by field and laboratory personnel and accounted for the sample and all analyses presented in this SDG. No sample qualifications were required.

#### **2.1.3 Holding Times**

The holding times were assessed by comparing the dates of collection with the dates of analysis. The analytical holding times for all analyses were met. No qualifications were required.

### **2.2 CALIBRATION**

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. No qualifications were required.

### **2.3 BLANKS**

Target compounds were not detected in the associated method blanks. Raw data was reviewed to verify the blank data. No qualifications were required.

### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample recoveries were within the laboratory-established control limits. Raw data was reviewed to verify the values reported for the LCS recoveries. No qualifications were required.

### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

DATA VALIDATION REPORT

## 2.6 LABORATORY DUPLICATES

No MS/MSD analyses were performed on the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on the sample in this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for analyses without an MS/MSD. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Results reported by the laboratory between the MDL and reporting limit were qualified as "J" values and annotated with the qualification code of "DNQ" to comply with the reporting requirements of the NPDES permit. No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with this SDG.





# DATA VALIDATION REPORT

## NPDES Monitoring Program

### ANALYSIS: METALS

### SAMPLE DELIVERY GROUP IOK0899

Prepared by

AMEC—Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contrat Task Order #: 313150010  
SDG#: IOK0899  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 22, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 2)*, *USEPA Methods 200.8 for ICP-MS and 245.1 for Mercury*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Laboratory ID	Matrix	COC Method
Outfall 018	IOK0899-01	Water	200.8/245.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the samples and analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals and 28-days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

The ICP-MS met the method specified tune criteria; therefore, no qualifications were required for ICP-MS tuning.

### 2.3 CALIBRATION

The ICV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The laboratory analyzed reporting limit check standards in association with this SDG and all recoveries were acceptable. No qualifications were required.

### 2.4 BLANKS

The method blank and CCB results were nondetects at the reporting limit or were significantly below the sample detects so as not to result in qualification of the data with the exception of copper and lead in the method blank. Copper and lead were qualified as a nondetect, "U," in the sample from Outfall 018. No further qualifications were required.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP/MS analyses. The recoveries were within the control limits and no qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS samples and mercury LCS samples as reported on the LCS on the summary forms and in the raw data were within the laboratory-established control limits. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD analyses were performed on the sample in this SDG. No qualification was required.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed on the sample in this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results for all analyses. No qualification was required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

For the target compounds analyzed by ICP/MS, the ICP/MS internal standards were within established control limits. No qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.



## **2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.13.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site sample.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0899-01 (Outfall 018 - Water) - cont.									
Reporting Units: ug/l									
Copper	EPA 200.8	5K16096	0.49	2.0	ND <del>1.5</del>	1	11/16/05	11/16/05	B, J
Lead	EPA 200.8	5K16096	0.13	1.0	ND <del>0.21</del>	1	11/16/05	11/16/05	B, J
Mercury	EPA 245.1	5K17098	0.063	0.20	ND	1	11/17/05	11/17/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

# LEVEL IV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

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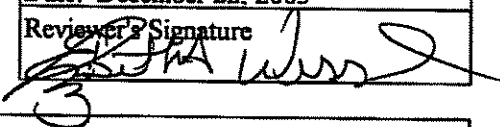
Package ID T711SV68  
 Task Order 313150010  
 SDG No. IOK0899

No. of Analyses 1

Laboratory Del Mar - Irvine

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Semivolatiles by 625

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -blank contamination
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring Program

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOK0899

Prepared by

AMEC Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring Program  
Contract Task Order #: 313150010  
SDG#: IOK0899  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 22, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Lab No.	Matrix	Method
Outfall 018	IOK0899-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFTPP injection times. No qualifications were required.

### 2.3 CALIBRATION

There was one initial calibration associated with this SDG dated 11/14/2005. The average RRFs were  $\geq 0.05$  in both initial calibrations. The %RSDs were  $\leq 35\%$  or  $r^2$  values were  $\geq 0.995$  for the target compounds listed on the sample summary forms. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted.

The continuing calibrations associated with the sample analysis was analyzed 11/15/05. The RRFs for the target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$ . A representative number of average RRFs and %RSDs in the initial calibrations and RRFs and %Ds in the continuing calibrations were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.4 BLANKS

One method blank (5K11061-BLK1) was extracted and analyzed with these SDGs. Target compound butyl benzyl phthalate was reported at a concentration of  $1.82\mu\text{g/L}$  in the method blank. The target compound was also reported at concentrations between the MDL and the reporting limit in the samples of these SDGs. The results for butyl benzyl phthalate were qualified as nondetects "U," and raised to the reporting limits for the sample in this SDG. Review of the raw data indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5K11061-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogate recoveries reported on the sample result summaries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples identified for this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.



## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for five semivolatile compounds by EPA Method 625. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low point of the initial calibration and the laboratory MDL. No qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
--	---	---

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0899-01 (Outfall 018 - Water)									
Reporting Units: ug/l									
Bis(2-ethylhexyl)phthalate	EPA 625	5K11061	1.1	4.8	ND 1.8	0.962	11/11/05	11/15/05	u B+B
2,4-Dinitrotoluene	EPA 625	5K11061	0.22	8.7	ND	0.962	11/11/05	11/15/05	u
N-Nitrosodimethylamine	EPA 625	5K11061	0.21	7.7	ND	0.962	11/11/05	11/15/05	
Pentachlorophenol	EPA 625	5K11061	0.75	7.7	ND	0.962	11/11/05	11/15/05	
2,4,6-Trichlorophenol	EPA 625	5K11061	0.096	5.8	ND	0.962	11/11/05	11/15/05	
Surrogate: 2-Fluorophenol (30-120%)					55 %				
Surrogate: Phenol-d6 (35-120%)					67 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					65 %				
Surrogate: Nitrobenzene-d5 (45-120%)					73 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					87 %				
Surrogate: Terphenyl-d14 (45-120%)					87 %				

Rev  
Qual  
Date

u B+B

↓

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

# LEVEL IV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP3718  
 Task Order 313150010  
 SDG No. IOK0899

No. of Analyses 1

Laboratory Del Mar -Irvine

Date: December 22, 2005

Reviewer E. Wessling

Reviewer's Signature 

Analysis/Method Pesticides by 608

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____ _____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____ _____
5. Incorrect Hardcopy Deliverables	_____ _____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: --acceptable as reviewed _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOK0899

Prepared by

AMEC Denver Operations  
355 South Teller Street, Suite 300  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOK0899  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 22, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev. 2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 018	Outfall 018	IOK0899-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 11/11/05 associated with the pesticide analyses of the samples, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following the initial calibration. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing the pesticide analyses of the sample, all %Ds were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5K11059-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5K11059-BS1/BSD1) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide were below within QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.



## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchesheets, no cleanups were performed on this water sample. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compound alpha-BHC by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating a representative number of blank spike and surrogate recoveries since there were no target compounds detected in the site sample. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volume extracted. Results were reported in ug/L (ppb). No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
--	---	---

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOK0899-01 (Outfall 018 - Water) - cont.										
Reporting Units: ug/l										
alpha-BHC	EPA 608	5K11059	0.00096	0.0096	ND	0.962	11/11/05	11/12/05	u	u
Surrogate: Decachlorobiphenyl (45-120%)					69 %					
Surrogate: Tetrachloro-m-xylene (35-115%)					75 %					

*Handwritten notes:*  
 Rey / Paul  
 Paul / Rey

**LEVEL IV**

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager


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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO129  
 Task Order 313150010  
 SDG No. IOK0899  
 No. of Analyses 2

Laboratory Del Mar - Irvine  
 Reviewer E. Wessling  
 Analysis/Method Volatiles by 624

Date: December 22, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: <u>Acceptable as reviewed</u>
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOK0899

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOK0899  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 22, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624, SW846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 018	Outfall 018	IOK0899-01	water	624
Trip Blank	Trip Blank	IOK0899-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of 4°C ±2°C. The samples were properly preserved. The COC noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in EPA Method 624, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection time. The BFB summary report was verified from the raw data and no discrepancies between the summary report and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration dated 10/05/05 was associated with this SDG. The average RRFs were ≥0.05 for the target compounds listed on the sample result summaries. The %RSDs were ≤35% for all applicable target compounds. Two continuing calibrations dated 11/18/05 and 11/22/05 were associated with the sample analyses in this SDG. The %Ds were less than 20% in the continuing calibrations dated 11/18/05 and 11/22/05; therefore, no qualifications were required. The RRFs were ≥0.05 for the target compounds listed on the sample result summaries. A representative number of %RSDs and average RRFs from the initial calibration, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

Two water method blanks (5K18007-BLK1 and 5K22008-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5K18005-BS1 and 5K22008-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed for this SDG. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank was the trip blank associated with this SDG. There were no target compounds detected above the MDLs in the trip blank. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG.



## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standard and by the MDL study. As there were no sample detects in this SDG, compound quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: Quarterly Outfall 018 Report Number: IOK0899	Sampled: 11/09/05 Received: 11/09/05
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**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0899-01 (Outfall 018 - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5K18005	0.28	2.0	ND	1	11/18/05	11/18/05	u
Trichlorotrifluoroethane (Freon 113)	EPA 624	5K18005	1.2	5.0	ND	1	11/18/05	11/18/05	u
Carbon tetrachloride	EPA 624	5K18005	0.28	5.0	ND	1	11/18/05	11/18/05	u
Chloroform	EPA 624	5K18005	0.33	2.0	ND	1	11/18/05	11/18/05	u
1,1-Dichloroethane	EPA 624	5K18005	0.27	2.0	ND	1	11/18/05	11/18/05	u
1,2-Dichloroethane	EPA 624	5K18005	0.28	2.0	ND	1	11/18/05	11/18/05	u
1,1-Dichloroethene	EPA 624	5K18005	0.42	3.0	ND	1	11/18/05	11/18/05	u
Ethylbenzene	EPA 624	5K18005	0.25	2.0	ND	1	11/18/05	11/18/05	u
Tetrachloroethene	EPA 624	5K18005	0.32	2.0	ND	1	11/18/05	11/18/05	u
Toluene	EPA 624	5K18005	0.36	2.0	ND	1	11/18/05	11/18/05	u
1,1,1-Trichloroethane	EPA 624	5K18005	0.30	2.0	ND	1	11/18/05	11/18/05	u
1,1,2-Trichloroethane	EPA 624	5K18005	0.30	2.0	ND	1	11/18/05	11/18/05	u
Trichloroethene	EPA 624	5K18005	0.26	5.0	ND	1	11/18/05	11/18/05	u
Trichlorofluoromethane	EPA 624	5K18005	0.34	5.0	ND	1	11/18/05	11/18/05	u
Vinyl chloride	EPA 624	5K18005	0.26	5.0	ND	1	11/18/05	11/18/05	u
Xylenes, Total	EPA 624	5K18005	0.52	4.0	ND	1	11/18/05	11/18/05	u
Surrogate: Dibromofluoromethane (80-120%)					107 %				
Surrogate: Toluene-d8 (80-120%)					106 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

<b>Sample ID: IOK0899-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5K22008	0.28	2.0	ND	1	11/22/05	11/22/05	u
Trichlorotrifluoroethane (Freon 113)	EPA 624	5K22008	1.2	5.0	ND	1	11/22/05	11/22/05	u
Carbon tetrachloride	EPA 624	5K22008	0.28	5.0	ND	1	11/22/05	11/22/05	u
Chloroform	EPA 624	5K22008	0.33	2.0	ND	1	11/22/05	11/22/05	u
1,1-Dichloroethane	EPA 624	5K22008	0.27	2.0	ND	1	11/22/05	11/22/05	u
1,2-Dichloroethane	EPA 624	5K22008	0.28	2.0	ND	1	11/22/05	11/22/05	u
1,1-Dichloroethene	EPA 624	5K22008	0.42	3.0	ND	1	11/22/05	11/22/05	u
Ethylbenzene	EPA 624	5K22008	0.25	2.0	ND	1	11/22/05	11/22/05	u
Tetrachloroethene	EPA 624	5K22008	0.32	2.0	ND	1	11/22/05	11/22/05	u
Toluene	EPA 624	5K22008	0.36	2.0	ND	1	11/22/05	11/22/05	u
1,1,1-Trichloroethane	EPA 624	5K22008	0.30	2.0	ND	1	11/22/05	11/22/05	u
1,1,2-Trichloroethane	EPA 624	5K22008	0.30	2.0	ND	1	11/22/05	11/22/05	u
Trichloroethene	EPA 624	5K22008	0.26	5.0	ND	1	11/22/05	11/22/05	u
Trichlorofluoromethane	EPA 624	5K22008	0.34	5.0	ND	1	11/22/05	11/22/05	u
Vinyl chloride	EPA 624	5K22008	0.26	5.0	ND	1	11/22/05	11/22/05	u
Xylenes, Total	EPA 624	5K22008	0.52	4.0	ND	1	11/22/05	11/22/05	u
Surrogate: Dibromofluoromethane (80-120%)					102 %				
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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**LEVEL IV**