CURRENT CERTIFICATIONS

NELAP — (Primary AA: California, Certificate No. 02102CA)

Department of the Navy

U.S. Army Corps of Engineers

U.S. EPA Region 5

Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)

Commonwealth of Kentucky — (Certificate No. 90063)

Commonwealth of Virginia — (Certificate No. 00013)

State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)

State of Arizona — (Certificate No. AZ0639)

State of Arkansas, Department of Health — (Approval granted through CA certification)

State of Arkansas, Department of Environmental Quality

State of California — (Certificate No. 1640)

State of Colorado

State of Connecticut — (Certificate No. PH-0182)

State of Florida — (Certificate No. 87456)

State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)

State of Louisiana, Department of Environmental Quality

State of Maine

State of Michigan (Certificate No. 81178087)

State of Mississippi — (Approval granted through CA certification)

State of Nevada — (Certificate No. CA413)

State of New Jersey — (Certificate No. CA003)

State of New York, Department of Health — (Certificate No. 11411)

State of North Carolina — (Certification No. 06700)

State of North Dakota, Department of Health — (Certificate No. R-078)

State of New Mexico

State of Oklahoma – (D9919)

State of Oregon – (Certificate No. CA413)

State of Pennsylvania — (Certificate No. 68-490)

State of South Carolina — (Certificate No. 87002001)

State of Tennessee — (Certificate No. 02996)

State of Texas — (Certificate No. TX247-1000A

State of Utah — (Certificate No. E-201)

State of Washington – (Certification No. C091)

State of Wisconsin — (Certificate No. 998036160)

State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)

Del Mar Analytical

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) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOD2055

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:

Alta Analytical
1104 Windfield Way
El Dorado Hills, CA 95762
Phone :(916) 933-1640
Fax: (916) 673-0106

26114
1.1°C

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

Analysis	Expiration	Comments
Sample ID: IOD2055-01 Water	**Sampled: 04/28/05 11:10**	**Instant Nofication**
1613-Dioxin-HR	05/05/05 11:10	J flags,17 congeners,no TEQ,sub=Alta, DP to AMEC
EDD + Level 4	05/26/05 11:10	Excel EDD email to pm,Include Std logs for Lvl IV

Containers Supplied:

1 L Amber (IOD2055-01C)
1 L Amber (IOD2055-01D)

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): _____

Released By	Date	Time	Received By	Date	Time
	4-29-05	17:00	M Tallant	4/30/05	0915

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 26114

		YES	NO	NA
1.	Date Samples Arrived: 4/30/05 0915 Initials: MM Location: WK-2			
2.	Time / Date logged in: 0935 5/2/05 Initials: BLB Location: WK-2			
3.	Samples Arrived By: (circle) (FedEx) UPS World Courier Other:			
4.	Shipping Preservation: (circle) (Ice) (Blue Ice) / Dry Ice / None Temp °C 1.1			
5.	Shipping Container(s) Intact? If not, describe condition in comment section.	✓		
6.	Shipping Container(s) Custody Seals Present?		✓	
	Intact? If not intact, describe condition in comment section.			✓
7.	Shipping Documentation Present? (circle) Shipping Label (Airbill)	✓		
	Tracking Number 7916 1353 $260			
8.	Sample Custody Seal(s) Present? No. of Seals_____ or Seal No.		✓	✓
	Intact? If not intact, describe condition in comment section.			✓
9.	Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10.	Chain of Custody (COC) or other Sample Documentation Present?	✓		
11.	COC/Documentation Acceptable? If no, complete COC Anomaly Form.	✓		
12.	Shipping Container (circle): ALTA (Client) Retain or (Return) or Disposed			
13.	Container(s) and/or Bottle(s) Requested?		✓	
14.	Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N			✓
	Preservation Info From? (circle) COC or Sample Container or None Noted			

Comments: Sampler's initials found on sample labels

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

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

Laboratory: Alta
Reviewer: H. Chang
Analysis/Method: Dioxin&Furans/1613

Package ID: T711DF47
Task Order: 313150012
SDG No.: IOD2051, 2054, 2055
No. of Analyses: 3

Date: May 31, 2005
Reviewer's Signature: H. Chang

ACTION ITEMS[a]	
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.,**	Detects below the calibration range were qualified "J."
	EMPCs were qualified "UJ."
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS[b]	

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

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

*#	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).

DATA VALIDATION REPORT

NPDES
Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOD2051, IOD2054, & IOD2055

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
Sample Delivery Group #:	IOD2051, IOD2054, & IOD2055
Project Manager:	B. McIlvaine
Matrix:	Water
Analysis:	Dioxins/Furans
QC Level:	Level IV
No. of Samples:	3
No. of Reanalyses/Dilutions:	0
Reviewer:	H. Chang
Date of Review:	May 31, 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 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 003	IOD2051-01	26119-001	water	1613
Outfall 005	IOD2054-01	26113-001	water	1613
Outfall 006	IOD2055-01	26114-001	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 these SDGs 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 below the temperature limits of 4°C ±2°C at 1.1°C; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the 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, custody seals were not required. The cooler received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. 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 05/19/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs ≤20% for the 16 native compounds (calibration by isotope dilution) and ≤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 and end of each analytical sequence. The VERs were 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 (6789-MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6789-OPR001) was extracted and analyzed with the samples in these SDGs. 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 these SDGs. 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 these SDGs had no associated field QC samples. No qualifications were required.

2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

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. No 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. Detects above the low point of the calibration curve but below the EPA Method 1613 minimum level were denoted by the laboratory with an "A," flag and were qualified as estimated, "J." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." If the concentration of any component of the total was below the lower method calibration level (MCL), the total detect was qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." The results and reporting limits were reported in ug/L for samples Outfall 003 and Outfall 005 and in ng/L for sample Outfall 006. No further qualifications were required.

ALTA

Sample ID: IOD2051-01 Outfall 003 **EPA Method 1613**

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26119-001	Date Received:	30-Apr-05
Project:	IOD2051	Sample Size:	0.961 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1340						

Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	0.00000118		
1,2,3,7,8-PeCDD	ND	0.00000210		
1,2,3,4,7,8-HxCDD	ND	0.00000331		
1,2,3,6,7,8-HxCDD	ND	0.00000325		
1,2,3,7,8,9-HxCDD	ND	0.00000335		
1,2,3,4,6,7,8-HpCDD	0.0000247			A
OCDD	0.000242			
2,3,7,8-TCDF	ND	0.00000141		
1,2,3,7,8-PeCDF	ND	0.00000196		
2,3,4,7,8-PeCDF	ND	0.00000167		
1,2,3,4,7,8-HxCDF	ND	0.000000587		
1,2,3,6,7,8-HxCDF	ND	0.000000571		
2,3,4,6,7,8-HxCDF	ND	0.000000600		
1,2,3,7,8,9-HxCDF	ND	0.00000117		
1,2,3,4,6,7,8-HpCDF	ND	0.000000979		
1,2,3,4,7,8,9-HpCDF	ND	0.00000182		
OCDF	ND		0.00000663	

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	61.5	25 - 164	
	13C-1,2,3,7,8-PeCDD	67.1	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	65.3	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	68.4	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	57.8	23 - 140	
	13C-OCDD	49.8	17 - 157	
	13C-2,3,7,8-TCDF	66.9	24 - 169	
	13C-1,2,3,7,8-PeCDF	67.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	68.2	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	68.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	68.1	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	71.4	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	63.3	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	53.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	47.7	26 - 138	
	13C-OCDF	41.7	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	83.1	35 - 197	

Totals

Total TCDD	ND	0.00000118	
Total PeCDD	ND	0.00000210	
Total HxCDD	ND	0.00000330	
Total HpCDD	0.0000494		
Total TCDF	ND	0.00000141	
Total PeCDF	ND	0.00000181	
Total HxCDF	0.00000136		
Total HpCDF	0.00000504		

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:12

ALTA

Sample ID: IOD2054-01 Outfall 005

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26113-001	Date Received:	30-Apr-05
Project:	IOD2054	Sample Size:	0.943 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1052						

Rev Qual / Qual Code

Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	0.00000162		
1,2,3,7,8-PeCDD	ND	0.00000196		
1,2,3,4,7,8-HxCDD	ND	0.00000297		
1,2,3,6,7,8-HxCDD	ND	0.00000286		
1,2,3,7,8,9-HxCDD	ND	0.00000297		
1,2,3,4,6,7,8-HpCDD	ND	0.00000421		
OCDD	ND	0.0000161		
2,3,7,8-TCDF	ND	0.00000194		
1,2,3,7,8-PeCDF	ND	0.00000278		
2,3,4,7,8-PeCDF	ND	0.00000232		
1,2,3,4,7,8-HxCDF	ND	0.000000933		
1,2,3,6,7,8-HxCDF	ND	0.000000917		
2,3,4,6,7,8-HxCDF	ND	0.000000991		
1,2,3,7,8,9-HxCDF	ND	0.00000193		
1,2,3,4,6,7,8-HpCDF	ND	0.00000135		
1,2,3,4,7,8,9-HpCDF	ND	0.00000263		
OCDF	ND	0.00000485		
Totals				
Total TCDD	ND	0.00000162		
Total PeCDD	ND	0.00000196		
Total HxCDD	ND	0.00000293		
Total HpCDD	ND	0.00000421		
Total TCDF	ND	0.00000194		
Total PeCDF	ND	0.00000254		
Total HxCDF	ND	0.00000112		
Total HpCDF	ND	0.00000185		

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	65.2	25 - 164	
	13C-1,2,3,7,8-PeCDD	68.9	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	60.9	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	64.2	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	55.8	23 - 140	
	13C-OCDD	36.4	17 - 157	
	13C-2,3,7,8-TCDF	67.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	64.5	24 - 185	
	13C-2,3,4,7,8-PeCDF	66.5	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	63.6	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	66.1	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	66.2	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	57.6	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	46.3	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	41.9	26 - 138	
	13C-OCDF	34.7	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	87.2	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 10:59

ALTA

Sample ID: IOD2055-01 Outfall 006

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26114-001	Date Received:	30-Apr-05
Project:	IOD2055	Sample Size:	0.930 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1110						

Analyte	Conc. (ng/L)	DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	0.00159		
1,2,3,7,8-PeCDD	ND	0.00212		
1,2,3,4,7,8-HxCDD	ND	0.00247		
1,2,3,6,7,8-HxCDD	ND	0.00236		
1,2,3,7,8,9-HxCDD	ND	0.00246		
1,2,3,4,6,7,8-HpCDD	ND	0.00323		
OCDD	0.0294			J
2,3,7,8-TCDF	ND	0.00144		
1,2,3,7,8-PeCDF	ND	0.00282		
2,3,4,7,8-PeCDF	ND	0.00224		
1,2,3,4,7,8-HxCDF	ND	0.000746		
1,2,3,6,7,8-HxCDF	ND	0.000691		
2,3,4,6,7,8-HxCDF	ND	0.000794		
1,2,3,7,8,9-HxCDF	ND	0.00142		
1,2,3,4,6,7,8-HpCDF	ND	0.00103		
1,2,3,4,7,8,9-HpCDF	ND	0.00205		
OCDF	ND	0.00715		

Totals

Total TCDD	ND	0.00159	
Total PeCDD	ND	0.00212	
Total HxCDD	ND	0.00243	
Total HpCDD	ND	0.00542	
Total TCDF	ND	0.00144	
Total PeCDF	ND	0.00251	
Total HxCDF	ND	0.000864	
Total HpCDF	ND	0.00143	

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	68.4	25 - 164	
	13C-1,2,3,7,8-PeCDD	74.2	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	64.7	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	68.7	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	60.7	23 - 140	
	13C-OCDD	41.3	17 - 157	
	13C-2,3,7,8-TCDF	68.3	24 - 169	
	13C-1,2,3,7,8-PeCDF	69.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	73.1	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	69.2	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	70.4	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	72.7	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	62.8	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	54.0	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	49.5	26 - 138	
	13C-OCDF	39.5	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	88.7	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:00

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental
355 South Teller Street
Suite 300
Lakewood, CO 80226

Package ID T711MT89
Task Order 313150010, 313150012
SDG No. IOD2031, 2053, 2055
No. of Analyses 3

Laboratory Del Mar Analytical
Reviewer P. Meeks
Analysis/Method Metals

Date: 06/27/05
Reviewer's Signature
P. Mee

ACTION ITEMS[a]	
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.,**	Detects below the reporting limit.
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	

COMMENTS[b]	

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

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

*#	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).

DATA VALIDATION REPORT

NPDES
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOD2051, IOD2053, IOD2055

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, 313150012
SDG#:	IOD205, IOD2053, IOD2055
Project Manager:	B. McIlvaine
Matrix:	Water
Analysis:	Metals
QC Level:	Level IV
No. of Samples:	3
No. of Reanalyses/Dilutions:	0
Reviewer:	P. Meeks
Date of Review:	June 29, 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-MS Metals, (DVP-5-A, Rev.0), AMEC Data Validation Procedure for Levels III and IV ICP Metals* (DVP-5, Rev. 0), SW-846 *Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, SW-846 *Method 7471A for Mercury (Manual Cold-Vapor Technique)*, 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	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 003	Outfall 003	IOD2051-01	water	ILM04
Outfall 004	Outfall 004	IOD2053-01	water	ILM04
Outfall 006	Outfall 006	IOD2055-01	water	ILM04

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 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. A duplicate sample was listed on the COCs for all samples; however, duplicate analyses were not necessary. As the samples were delivered to the laboratory by courier, custody seals were not required. 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. No qualifications were required.

2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for the ICP/MS metals. The reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

2.4 BLANKS

Lead was not detected in any of the blank analyses associated with the samples in these SDGs. No 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. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride. Lead was not spiked into the ICSAB solution. Potassium in both the ICSA and ICSAB and sodium in the ICSA were recovered above the linear range of the calibration. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride. No further qualifications were required.

2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5D29095-BS1. The LCS result on the summary form and in the raw data were within the laboratory-established ICP/MS control limits of 85-115%. No qualifications were required.

2.7 LABORATORY DUPLICATES

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

2.8 MATRIX SPIKE

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

2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis 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

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

2.12 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. Analytes detected below the reporting limit were qualified as estimated, "J." 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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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003
Report Number: IOD2051

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOD2051-01 (DRAFT: Outfall 003 - Water)									
Reporting Units: ug/l									
Lead	EPA 200.8	5D29095	0.13	1.0	3.5	1	04/29/05	05/03/05	

Rev Qual | Qual Code

AMEC VALIDATED

LEVEL I

DRAFT REPORT
DRAFT REPORT
DATA SUBJECT TO CHANGE

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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: IOD2053

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOD2053-01 (DRAFT: Outfall 004 - Water)											
Reporting Units: ug/l											
Lead	EPA 200.8	5D29095	0.13	1.0	**0.68**	1	04/29/05	05/03/05	J	J	DNQ

AMEC VALIDATED
LEVEL 1

DRAFT REPORT
DRAFT REPORT
DATA SUBJECT TO CHANGE

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 006

Report Number: IOD2055

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOD2055-01 (DRAFT: Outfall 006 - Water)											
Reporting Units: ug/l											
Lead	EPA 200.8	5D29095	0.13	1.0	0.44	1	04/29/05	05/03/05	J	J	DNQ

AMEC VALIDATED

LEVEL II

DRAFT REPORT
DRAFT REPORT
DATA SUBJECT TO CHANGE

APPENDIX G

Section 7

Outfall 009

Del Mar Analytical Laboratory Reports

AMEC Data Validation Reports

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: 04/28/05
Received: 04/28/05
Issued: 06/20/05 17:01

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
IOD2056-01	Outfall 009	Water

Reviewed By:

Michele Harper

Del Mar Analytical, Irvine
Michele Harper
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 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOD2056-01 (Outfall 009 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5D29095	0.18	2.0	ND	1	04/29/05	05/03/05	
Cadmium	EPA 200.8	5D29095	0.015	1.0	**0.024**	1	04/29/05	05/03/05	J
Copper	EPA 200.8	5D29095	0.49	2.0	**3.2**	1	04/29/05	05/03/05	
Lead	EPA 200.8	5D29095	0.13	1.0	**1.1**	1	04/29/05	05/03/05	
Mercury	EPA 245.1	5D29061	0.063	0.20	ND	1	04/29/05	04/29/05	

Del Mar Analytical, Irvine
Michele Harper
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: IOD2056

Sampled: 04/28/05
Received: 04/28/05

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOD2056-01 (Outfall 009 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5D28116	0.15	0.50	**10**	1	04/28/05	04/29/05	
Nitrate/Nitrite-N	EPA 300.0	5D28116	0.075	0.15	**0.53**	1	04/28/05	04/29/05	
Oil & Grease	EPA 413.1	5D29041	0.94	5.0	ND	1	04/29/05	04/29/05	
Sulfate	EPA 300.0	5D28116	0.45	0.50	**36**	1	04/28/05	04/29/05	
Total Dissolved Solids	SM2540C	5D29129	10	10	**160**	1	04/29/05	04/29/05	
Total Suspended Solids	EPA 160.2	5E04071	10	10	ND	1	05/04/05	05/04/05	

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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: IOD2056

Sampled: 04/28/05
Received: 04/28/05

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 009 (IOD2056-01) - Water					
EPA 300.0	2	04/28/2005 12:13	04/28/2005 18:15	04/28/2005 21:30	04/29/2005 02:43

Del Mar Analytical, Irvine
Michele Harper
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: IOD2056

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D29061 Extracted: 04/29/05											
Blank Analyzed: 04/29/2005 (5D29061-BLK1)											
Mercury	ND	0.20	0.063	ug/l							
LCS Analyzed: 04/29/2005 (5D29061-BS1)											
Mercury	8.06	0.20	0.063	ug/l	8.00		101	85-115			
Matrix Spike Analyzed: 04/29/2005 (5D29061-MS1)						**Source: IOD2033-03**					
Mercury	7.76	0.20	0.063	ug/l	8.00	ND	97	70-130			
Matrix Spike Dup Analyzed: 04/29/2005 (5D29061-MSD1)						**Source: IOD2033-03**					
Mercury	7.82	0.20	0.063	ug/l	8.00	ND	98	70-130	1	20	
Batch: 5D29095 Extracted: 04/29/05											
Blank Analyzed: 05/03/2005 (5D29095-BLK1)											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Copper	ND	2.0	0.49	ug/l							
Lead	ND	1.0	0.13	ug/l							
LCS Analyzed: 05/03/2005 (5D29095-BS1)											
Antimony	87.8	2.0	0.18	ug/l	80.0		110	85-115			
Cadmium	87.8	1.0	0.015	ug/l	80.0		110	85-115			
Copper	78.5	2.0	0.49	ug/l	80.0		98	85-115			
Lead	81.9	1.0	0.13	ug/l	80.0		102	85-115			
Matrix Spike Analyzed: 05/03/2005 (5D29095-MS1)						**Source: IOD2054-01**					
Antimony	98.9	2.0	0.18	ug/l	80.0	0.31	123	70-130			
Cadmium	86.7	1.0	0.015	ug/l	80.0	0.058	108	70-130			
Copper	79.4	2.0	0.49	ug/l	80.0	2.0	97	70-130			
Lead	80.9	1.0	0.13	ug/l	80.0	0.24	101	70-130			

Del Mar Analytical, Irvine
Michele Harper
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 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D29095 Extracted: 04/29/05											
Matrix Spike Analyzed: 05/03/2005 (5D29095-MS2)						**Source: IOD2149-03**					
Antimony	100	10	0.90	ug/l	80.0	ND	125	70-130			
Cadmium	76.0	5.0	0.075	ug/l	80.0	0.45	94	70-130			
Copper	90.1	10	2.4	ug/l	80.0	17	91	70-130			
Lead	73.5	5.0	0.65	ug/l	80.0	1.1	90	70-130			
Matrix Spike Dup Analyzed: 05/03/2005 (5D29095-MSD1)						**Source: IOD2054-01**					
Antimony	99.6	2.0	0.18	ug/l	80.0	0.31	124	70-130	1	20	
Cadmium	87.7	1.0	0.015	ug/l	80.0	0.058	110	70-130	1	20	
Copper	81.3	2.0	0.49	ug/l	80.0	2.0	99	70-130	2	20	
Lead	81.0	1.0	0.13	ug/l	80.0	0.24	101	70-130	0	20	

Del Mar Analytical, Irvine
Michele Harper
Project Manager

Del Mar Analytical

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D28116 Extracted: 04/28/05											
Blank Analyzed: 04/28/2005 (5D28116-BLK1)											
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							
LCS Analyzed: 04/28/2005 (5D28116-BS1)											
Chloride	4.82	0.50	0.26	mg/l	5.00		96	90-110			*M-3*
Sulfate	9.63	0.50	0.18	mg/l	10.0		96	90-110			*M-3*
Batch: 5D29041 Extracted: 04/29/05											
Blank Analyzed: 04/29/2005 (5D29041-BLK1)											
Oil & Grease	ND	5.0	0.94	mg/l							
LCS Analyzed: 04/29/2005 (5D29041-BS1)											
Oil & Grease	18.3	5.0	0.94	mg/l	20.0		92	65-120			*M-NR1*
LCS Dup Analyzed: 04/29/2005 (5D29041-BSD1)											
Oil & Grease	18.9	5.0	0.94	mg/l	20.0		94	65-120	3	20	
Batch: 5D29129 Extracted: 04/29/05											
Blank Analyzed: 04/29/2005 (5D29129-BLK1)											
Total Dissolved Solids	ND	10	10	mg/l							
LCS Analyzed: 04/29/2005 (5D29129-BS1)											
Total Dissolved Solids	930	10	10	mg/l	1000		93	90-110			

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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: IOD2056

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D29129 Extracted: 04/29/05											
Duplicate Analyzed: 04/29/2005 (5D29129-DUP1)						**Source: IOD2033-01**					
Total Dissolved Solids	334	10	10	mg/l		360			7	10	
Batch: 5E04071 Extracted: 05/04/05											
Blank Analyzed: 05/04/2005 (5E04071-BLK1)											
Total Suspended Solids	ND	10	10	mg/l							
LCS Analyzed: 05/04/2005 (5E04071-BS1)											
Total Suspended Solids	1000	10	10	mg/l	1000		100	85-115			
Duplicate Analyzed: 05/04/2005 (5E04071-DUP1)						**Source: IOD2054-01**					
Total Suspended Solids	ND	10	10	mg/l		ND				10	

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

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
IOD2056-01	413.1 Oil and Grease	Oil & Grease	mg/l	-1	5.0	15
IOD2056-01	Chloride - 300.0	Chloride	mg/l	10.00	0.50	150
IOD2056-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.53	0.15	10.00
IOD2056-01	Sulfate-300.0	Sulfate	mg/l	36	0.50	250
IOD2056-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	160	10	850

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

Project ID: Routine Outfall 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

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

Del Mar Analytical, Irvine
Michele Harper
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 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
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.

Subcontracted Laboratories

Alta Analytical *California Cert #1640, Nevada Cert #CA-413*
1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR
Samples: IOD2056-01

Analysis Performed: EDD + Level 4
Samples: IOD2056-01

Del Mar Analytical, Irvine
Michele Harper
Project Manager

4C9 100256

Del Mar Analytical Version 02/17/05 CHAIN OF CUSTODY FORM

Client Name/Address:	Project:
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101	Boeing-SSFL NPDES **Routine Outfall 009** Stormwater at WS-13
Project Manager: Bronwyn Kelly Sampler: Rick Banuag	Phone Number: (626) 568-6691 Fax Number: (626) 568-6515

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle * #	ANALYSIS REQUIRED: Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl-, SO4, NO3+NO2-N	TDS, TSS					Field readings: Temp = 59.4° pH= 7.29 **Comments**
Outfall 009	W	Poly-1L	1	4-28-05 12:15	HNO3	1A	X									
Outfall 009-Dup	W	Poly-1L	1		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	4-28-05 12:15	None	5A, 5B					X					

Relinquished By	Date/Time:	Received By	Date/Time:
Brian Knight	4-28-05 15:30	L Ho Tang	4/28/05 1530
L Ho Tang	4/28/05 1815		
Relinquished By	Date/Time:	Received By	Date/Time: 4/28/05 1815

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 X On Ice: 3°C

Del Mar Analytical

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June 20, 2005

MWH- Pasadena / Boeing
300 North Lake Avenue, Suite 1200
Pasadena , CA 91101

Attention: Bronwyn Kelly

Project: Routine Outfall 009
Sampled: 04/28/05
Del Mar Analytical Number: IOD2056

Dear Ms. Kelly:

Alta Analytical Laboratories performed the EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	Del Mar ID	Alta ID
Outfall 009	IOD2056-01	26115-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022, extension 215.

Sincerely yours,

DEL MAR ANALYTICAL

Michele Harper
Project Manager

Enclosure

ALTA

May 20, 2005

Alta Project I.D.: 26115

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

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on April 30, 2005 under your Project Name "IOD2056". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard 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. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier
Director of HRMS Services

Section I: Sample Inventory Report

Date Received: **4/30/2005**

Alta Lab. ID	Client Sample ID
26115-001	IOD2056-01

SECTION II

Method Blank — **EPA Method 1613**

Matrix: Aqueous | QC Batch No.: 6789 | Lab Sample: 0-MB001

Sample Size: 1.000 L | Date Extracted: 17-May-05 | Date Analyzed DB-5: 19-May-05 | Date Analyzed DB-225: NA

Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	0.00000124		
1,2,3,7,8-PeCDD	ND	0.00000166		
1,2,3,4,7,8-HxCDD	ND	0.00000186		
1,2,3,6,7,8-HxCDD	ND	0.00000179		
1,2,3,7,8,9-HxCDD	ND	0.00000186		
1,2,3,4,6,7,8-HpCDD	ND	0.00000303		
OCDD	ND	0.00000677		
2,3,7,8-TCDF	ND	0.000000924		
1,2,3,7,8-PeCDF	ND	0.00000226		
2,3,4,7,8-PeCDF	ND	0.00000193		
1,2,3,4,7,8-HxCDF	ND	0.000000785		
1,2,3,6,7,8-HxCDF	ND	0.000000731		
2,3,4,6,7,8-HxCDF	ND	0.000000672		
1,2,3,7,8,9-HxCDF	ND	0.00000158		
1,2,3,4,6,7,8-HpCDF	ND	0.000000969		
1,2,3,4,7,8,9-HpCDF	ND	0.00000192		
OCDF	ND	0.00000476		

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	69.9	25 - 164	
	13C-1,2,3,7,8-PeCDD	84.1	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	72.5	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	75.3	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	65.8	23 - 140	
	13C-OCDD	58.4	17 - 157	
	13C-2,3,7,8-TCDF	81.1	24 - 169	
	13C-1,2,3,7,8-PeCDF	79.5	24 - 185	
	13C-2,3,4,7,8-PeCDF	82.4	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	72.6	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	75.4	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	92.3	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	68.4	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	63.5	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	52.9	26 - 138	
	13C-OCDF	49.2	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	89.9	35 - 197	

Totals

Total TCDD	ND	0.00000124
Total PeCDD	ND	0.00000166
Total HxCDD	ND	0.00000183
Total HpCDD	ND	0.00000303
Total TCDF	ND	0.000000924
Total PeCDF	ND	0.00000209
Total HxCDF	ND	0.000000872
Total HpCDF	ND	0.00000132

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:05

ALTA

OPR Results — **EPA Method 1613**

Matrix:	Aqueous	QC Batch No.:	6789	Lab Sample:	0-OPR001
Sample Size:	1.000 L	Date Extracted:	17-May-05	Date Analyzed DB-5:	19-May-05
				Date Analyzed DB-225:	NA

Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits
2,3,7,8-TCDD	10.0	10.3	6.7 - 15.8
1,2,3,7,8-PeCDD	50.0	51.8	35 - 71
1,2,3,4,7,8-HxCDD	50.0	50.1	35 - 82
1,2,3,6,7,8-HxCDD	50.0	52.2	38 - 67
1,2,3,7,8,9-HxCDD	50.0	54.3	32 - 81
1,2,3,4,6,7,8-HpCDD	50.0	49.7	35 - 70
OCDD	100	99.1	78 - 144
2,3,7,8-TCDF	10.0	10.1	7.5 - 15.8
1,2,3,7,8-PeCDF	50.0	49.0	40 - 67
2,3,4,7,8-PeCDF	50.0	49.2	34 - 80
1,2,3,4,7,8-HxCDF	50.0	48.2	36 - 67
1,2,3,6,7,8-HxCDF	50.0	48.8	42 - 65
2,3,4,6,7,8-HxCDF	50.0	48.4	35 - 78
1,2,3,7,8,9-HxCDF	50.0	49.7	39 - 65
1,2,3,4,6,7,8-HpCDF	50.0	49.7	41 - 61
1,2,3,4,7,8,9-HpCDF	50.0	50.6	39 - 69
OCDF	100	93.6	63 - 170

	Labeled Standard	%R	LCL-UCL
IS	13C-2,3,7,8-TCDD	66.3	25 - 164
	13C-1,2,3,7,8-PeCDD	82.1	25 - 181
	13C-1,2,3,4,7,8-HxCDD	69.4	32 - 141
	13C-1,2,3,6,7,8-HxCDD	74.5	28 - 130
	13C-1,2,3,4,6,7,8-HpCDD	64.6	23 - 140
	13C-OCDD	40.2	17 - 157
	13C-2,3,7,8-TCDF	71.3	24 - 169
	13C-1,2,3,7,8-PeCDF	78.8	24 - 185
	13C-2,3,4,7,8-PeCDF	85.0	21 - 178
	13C-1,2,3,4,7,8-HxCDF	72.8	26 - 152
	13C-1,2,3,6,7,8-HxCDF	78.4	26 - 123
	13C-2,3,4,6,7,8-HxCDF	82.5	28 - 136
	13C-1,2,3,7,8,9-HxCDF	69.8	29 - 147
	13C-1,2,3,4,6,7,8-HpCDF	58.1	28 - 143
	13C-1,2,3,4,7,8,9-HpCDF	45.9	26 - 138
	13C-OCDF	36.3	17 - 157
CRS	37Cl-2,3,7,8-TCDD	85.6	35 - 197

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:05

ALTA

Sample ID: IOD2056-01

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26115-001	Date Received:	30-Apr-05
Project:	IOD2056	Sample Size:	0.960 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1213						

Analyte	Conc. (ug/L)	DL [a]	EMPC[b]	Qualifiers
2,3,7,8-TCDD	ND	0.00000140		
1,2,3,7,8-PeCDD	ND	0.00000144		
1,2,3,4,7,8-HxCDD	ND	0.00000241		
1,2,3,6,7,8-HxCDD	ND	0.00000237		
1,2,3,7,8,9-HxCDD	ND	0.00000244		
1,2,3,4,6,7,8-HpCDD	0.0000129			A
OCDD	0.000119			
2,3,7,8-TCDF	ND	0.000000942		
1,2,3,7,8-PeCDF	ND	0.00000149		
2,3,4,7,8-PeCDF	ND	0.00000125		
1,2,3,4,7,8-HxCDF	ND	0.000000643		
1,2,3,6,7,8-HxCDF	ND	0.000000572		
2,3,4,6,7,8-HxCDF	ND	0.000000654		
1,2,3,7,8,9-HxCDF	ND	0.00000115		
1,2,3,4,6,7,8-HpCDF	ND	0.00000154		
1,2,3,4,7,8,9-HpCDF	ND	0.00000136		
OCDF	ND	0.00000672		

Totals				
Total TCDD	ND	0.00000140		
Total PeCDD	ND	0.00000144		
Total HxCDD	ND	0.00000240		
Total HpCDD	0.0000303			
Total TCDF	ND	0.000000942		
Total PeCDF	ND	0.00000136		
Total HxCDF	0.000000890			
Total HpCDF	ND	0.00000194		

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	66.6	25 - 164	
	13C-1,2,3,7,8-PeCDD	70.0	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	71.1	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	71.9	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	63.5	23 - 140	
	13C-OCDD	36.0	17 - 157	
	13C-2,3,7,8-TCDF	70.2	24 - 169	
	13C-1,2,3,7,8-PeCDF	71.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	72.7	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	76.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	75.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	78.8	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	74.7	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	63.6	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	66.9	26 - 138	
	13C-OCDF	45.5	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	80.5	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:05

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.
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.
P	Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit.
*	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 correspond 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.

The control limits are "interim limits only" until in-house limits are utilized.

NELAP — (Primary AA: California, Certificate No. 02102CA)

Department of the Navy

U.S. Army Corps of Engineers

U.S. EPA Region 5

Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)

Commonwealth of Kentucky — (Certificate No. 90063)

Commonwealth of Virginia — (Certificate No. 00013)

State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)

State of Arizona — (Certificate No. AZ0639)

State of Arkansas, Department of Health — (Approval granted through CA certification)

State of Arkansas, Department of Environmental Quality

State of California — (Certificate No. 1640)

State of Colorado

State of Connecticut — (Certificate No. PH-0182)

State of Florida — (Certificate No. 87456)

State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)

State of Louisiana, Department of Environmental Quality

State of Maine

State of Michigan (Certificate No. 81178087)

State of Mississippi — (Approval granted through CA certification)

State of Nevada — (Certificate No. CA413)

State of New Jersey — (Certificate No. CA003)

State of New York, Department of Health — (Certificate No. 11411)

State of North Carolina — (Certification No. 06700)

State of North Dakota, Department of Health — (Certificate No. R-078)

State of New Mexico

State of Oklahoma – (D9919)

State of Oregon – (Certificate No. CA413)

State of Pennsylvania — (Certificate No. 68-490)

State of South Carolina — (Certificate No. 87002001)

State of Tennessee — (Certificate No. 02996)

State of Texas — (Certificate No. TX247-1000A

State of Utah — (Certificate No. E-201)

State of Washington – (Certification No. C091)

State of Wisconsin — (Certificate No. 998036160)

State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)

Del Mar Analytical

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) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOD2056

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:

Alta Analytical
1104 Windfield Way
El Dorado Hills, CA 95762
Phone :(916) 933-1640
Fax: (916) 673-0106

26115
1.1°C

Standard TAT is requested unless specific due date is requested => Due Date: _____ **Initials:** _____

Analysis	Expiration	Comments
Sample ID: IOD2056-01 Water	**Sampled: 04/28/05 12:13**	**Instant Nofication**
1613-Dioxin-HR	05/05/05 12:13	J flags,17 congeners,no TEQ,sub=Alta, DP to AMEC
EDD + Level 4	05/26/05 12:13	Excel EDD email to pm,Include Std logs for Lvl IV

Containers Supplied:
1 L Amber (IOD2056-01C)
1 L Amber (IOD2056-01D)

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): _____

Released By	Date	Time	Received By	Date	Time
	4.29.05	12:00	M Jallent	4/30/05	0915

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 26115

		YES	NO	NA
1.	Date Samples Arrived: 4/30/05 0915 Initials: MT Location: WR-2			
2.	Time / Date logged in: 0950 5/2/05 Initials: BLB Location: WR-2			
3.	Samples Arrived By: (circle) (FedEx) UPS World Courier Other:			
4.	Shipping Preservation: (circle) (Ice) (Blue Ice) / Dry Ice / None Temp °C 1.1			
5.	Shipping Container(s) Intact"? If not, describe condition in comment section.	✓		
6.	Shipping Container(s) Custody Seals Present?		✓	
	Intact? If not intact, describe condition in comment section.			✓
7.	Shipping Documentation Present? (circle) Shipping Label (Airbill)	✓		
	Tracking Number 7916 1353 5260			
8.	Sample Custody Seal(s) Present? No. of Seals_____ or Seal No.		✓	✓
	Intact? If not intact, describe condition in comment section.			
9.	Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10.	Chain of Custody (COC) or other Sample Documentation Present?	✓		
11.	COC/Documentation Acceptable? If no, complete COC Anomaly Form.	✓		
12.	Shipping Container (circle): ALTA (Client) Retain or (Return) or Disposed			
13.	Container(s) and/or Bottle(s) Requested?		✓	
14.	Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N			✓
	Preservation Info From? (circle) COC or Sample Container or None Noted			

Comments: sampler's initials found on sample labels

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

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

Laboratory Alta
Reviewer H. Chang
Analysis/Method Dioxin&Furans/1613

Package ID T711DF48
Task Order 313150010
SDG No. Multiple
No. of Analyses 6

Date: June 1, 2005
Reviewer's Signature H. Chang

ACTION ITEMS[a]	
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.,**	Detects below the calibration range were qualified "J."
	EMPCs were qualified "UJ."
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS[b]	

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

DATA VALIDATION REPORT

NPDES
Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOD2043, IOD2044, IOD2049, IOD2053, IOD2056 & IOD2058

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
Sample Delivery Group #:	IOD2043, IOD2044, IOD2049, IOD2053, IOD2056 & IOD2058
Project Manager:	B. McIlvaine
Matrix:	Water
Analysis:	Dioxins/Furans
QC Level:	Level IV
No. of Samples:	6
No. of Reanalyses/Dilutions:	0
Reviewer:	H. Chang
Date of Review:	June 1, 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 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 001	IOD2043-01	26117-001	water	1613
Outfall 002	IOD2044-01	26112-001	water	1613
Outfall 018	IOD2049-01	26118-001	water	1613
Outfall 004	IOD2053-01	26120-001	water	1613
Outfall 010	IOD2056-01	26116-001	water	1613
Outfall 009	IOD2058-01	26115-001	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 these SDGs 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 below the temperature limits of 4°C ±2°C at 0°C and 1.1°C; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the 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, custody seals were not required. The cooler received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. 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 05/09/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs ≤20% for the 16 native compounds (calibration by isotope dilution) and ≤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 and end of each analytical sequence. The VERs were 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 (6789-MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6789-OPR001) was extracted and analyzed with the samples in these SDGs. 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 these SDGs. 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 these SDGs had no associated field QC samples. No qualifications were required.

2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

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. No 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. In five of the six SDGs, the laboratory noted that detects above the low point of the calibration curve but below the EPA Method 1613 minimum level were denoted by an "A" laboratory qualifier. However, all results with "A" qualifier were actually below the low point of the calibration curve and should have been flagged as "J." Also, one of the detects which should have been flagged as "A" was incorrectly flagged as "J" by the laboratory. Any detects below the method minimum level were qualified as estimated, "J." If the concentration of any component of the total was below the lower method calibration level (MCL), the total detect was qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." The results and reporting limits were reported in µg/L except for the results in sample Outfall 010 which were reported in ng/L. No further qualifications were required.

ALTA

Sample ID: **IOD2043-01** Outfall 001

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26117-001	Date Received:	30-Apr-05
Project:	IOD2043	Sample Size:	0.957 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1116						

Rev Qual	Qual Code	Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00000132		
		1,2,3,7,8-PeCDD	ND	0.00000179		
		1,2,3,4,7,8-HxCDD	ND	0.00000375		
		1,2,3,6,7,8-HxCDD	ND	0.00000354		
		1,2,3,7,8,9-HxCDD	ND	0.00000372		
J	DNQ	1,2,3,4,6,7,8-HpCDD	0.0000517			
		OCDD	0.000373			J
U		2,3,7,8-TCDF	ND	0.00000133		
		1,2,3,7,8-PeCDF	ND	0.00000165		
		2,3,4,7,8-PeCDF	ND	0.00000139		
		1,2,3,4,7,8-HxCDF	ND	0.000000862		
		1,2,3,6,7,8-HxCDF	ND	0.000000782		
		2,3,4,6,7,8-HxCDF	ND	0.000000881		
		1,2,3,7,8,9-HxCDF	ND	0.00000157		
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.00000903			
U		1,2,3,4,7,8,9-HpCDF	ND	0.00000132		A
J	DNQ	OCDF	0.0000390			
		Totals				A
U		Total TCDD	ND	0.00000132		
U		Total PeCDD	ND	0.00000179		
J	DNQ	Total HxCDD	0.0000114			
		Total HpCDD	0.000124			
U		Total TCDF	ND	0.00000133		
U		Total PeCDF	ND	0.00000151		
J	DNQ	Total HxCDF	0.00000540			
J	DNQ	Total HpCDF	0.0000268			

		Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS		13C-2,3,7,8-TCDD	60.8	25 - 164	
		13C-1,2,3,7,8-PeCDD	63.1	25 - 181	
		13C-1,2,3,4,7,8-HxCDD	61.3	32 - 141	
		13C-1,2,3,6,7,8-HxCDD	60.9	28 - 130	
		13C-1,2,3,4,6,7,8-HpCDD	53.8	23 - 140	
		13C-OCDD	34.9	17 - 157	
		13C-2,3,7,8-TCDF	65.0	24 - 169	
		13C-1,2,3,7,8-PeCDF	66.4	24 - 185	
		13C-2,3,4,7,8-PeCDF	66.3	21 - 178	
		13C-1,2,3,4,7,8-HxCDF	57.6	26 - 152	
		13C-1,2,3,6,7,8-HxCDF	60.4	26 - 123	
		13C-2,3,4,6,7,8-HxCDF	63.2	28 - 136	
		13C-1,2,3,7,8,9-HxCDF	55.9	29 - 147	
		13C-1,2,3,4,6,7,8-HpCDF	44.4	28 - 143	
		13C-1,2,3,4,7,8,9-HpCDF	43.0	26 - 138	
		13C-OCDF	33.6	17 - 157	
CRS		37Cl-2,3,7,8-TCDD	81.7	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:09

Project 26117

ALTA

Sample ID: IOD2044-01 Outfall 002

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26112-001	Date Received:	30-Apr-05
Project:	IOD2044	Sample Size:	0.950 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1406						

Rev Qual	Qual Code	Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00000199		
		1,2,3,7,8-PeCDD	ND	0.00000294		
		1,2,3,4,7,8-HxCDD	ND	0.00000400		
		1,2,3,6,7,8-HxCDD	ND	0.00000399		
		1,2,3,7,8,9-HxCDD	ND	0.00000409		
		1,2,3,4,6,7,8-HpCDD	0.0000557			
		OCDD	0.000706			
U		2,3,7,8-TCDF	ND	0.00000200		
		1,2,3,7,8-PeCDF	ND	0.00000362		
		2,3,4,7,8-PeCDF	ND	0.00000288		
		1,2,3,4,7,8-HxCDF	ND	0.00000117		
		1,2,3,6,7,8-HxCDF	ND	0.00000165		
		2,3,4,6,7,8-HxCDF	ND	0.00000118		
U		1,2,3,7,8,9-HxCDF	ND	0.00000214		
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.00000968			A
U		1,2,3,4,7,8,9-HpCDF	ND	0.00000252		
J	DNQ	OCDF	0.0000306			A
		Totals				
U		Total TCDD	ND	0.00000199		
U		Total PeCDD	ND	0.00000294		
J	DNQ	Total HxCDD	0.00000660		0.0000135	
		Total HpCDD	0.000114			
J	DNQ	Total TCDF	0.00000366			
U		Total PeCDF	ND	0.00000322		
J	DNQ	Total HxCDF	0.00000666		0.00000980	
J	DNQ	Total HpCDF	0.0000253			

		Labeled Standard	%R	LCL-UCL [d]	Qualifiers
	IS	13C-2,3,7,8-TCDD	61.2	25 - 164	
		13C-1,2,3,7,8-PeCDD	65.5	25 - 181	
		13C-1,2,3,4,7,8-HxCDD	63.8	32 - 141	
		13C-1,2,3,6,7,8-HxCDD	65.8	28 - 130	
		13C-1,2,3,4,6,7,8-HpCDD	61.5	23 - 140	
		13C-OCDD	45.0	17 - 157	
		13C-2,3,7,8-TCDF	66.5	24 - 169	
		13C-1,2,3,7,8-PeCDF	63.6	24 - 185	
		13C-2,3,4,7,8-PeCDF	66.3	21 - 178	
		13C-1,2,3,4,7,8-HxCDF	65.2	26 - 152	
		13C-1,2,3,6,7,8-HxCDF	69.0	26 - 123	
		13C-2,3,4,6,7,8-HxCDF	70.5	28 - 136	
		13C-1,2,3,7,8,9-HxCDF	62.6	29 - 147	
		13C-1,2,3,4,6,7,8-HpCDF	58.0	28 - 143	
		13C-1,2,3,4,7,8,9-HpCDF	49.7	26 - 138	
		13C-OCDF	43.8	17 - 157	
	CRS	37Cl-2,3,7,8-TCDD	78.7	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 10:57

ALTA

Sample ID: IOD2049 Outfall 018

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26118-001	Date Received:	30-Apr-05
Project:	IOD2049	Sample Size:	0.910 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1516						

Rev Qual	Qual Code	Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00000162		
		1,2,3,7,8-PeCDD	ND	0.00000180		
		1,2,3,4,7,8-HxCDD	ND	0.00000269		
		1,2,3,6,7,8-HxCDD	ND	0.00000265		
		1,2,3,7,8,9-HxCDD	ND	0.00000273		
J	DNQ	1,2,3,4,6,7,8-HpCDD	0.0000445			
		OCDD	0.000477			J
U		2,3,7,8-TCDF	ND	0.00000164		
		1,2,3,7,8-PeCDF	ND	0.00000218		
		2,3,4,7,8-PeCDF	ND	0.00000195		
		1,2,3,4,7,8-HxCDF	ND	0.00000105		
		1,2,3,6,7,8-HxCDF	ND	0.000000992		
		2,3,4,6,7,8-HxCDF	ND	0.00000107		
		1,2,3,7,8,9-HxCDF	ND	0.00000207		
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.00000505			
U		1,2,3,4,7,8,9-HpCDF	ND	0.00000211		A
U		OCDF	ND	0.0000145		
		Totals				
U		Total TCDD	ND	0.00000162		
U		Total PeCDD	ND	0.00000180		
J	DNQ	Total HxCDD	0.00000896			
J	DNQ	Total HpCDD	0.0000879			
J	DNQ	Total TCDF	0.00000379			
U		Total PeCDF	ND	0.00000206		
J	DNQ	Total HxCDF	0.00000262		0.00000434	
J	DNQ	Total HpCDF	0.0000122			

		Labeled Standard	%R	LCL-UCL [d]	Qualifiers
	IS	13C-2,3,7,8-TCDD	65.5	25 - 164	
		13C-1,2,3,7,8-PeCDD	66.7	25 - 181	
		13C-1,2,3,4,7,8-HxCDD	64.4	32 - 141	
		13C-1,2,3,6,7,8-HxCDD	63.7	28 - 130	
		13C-1,2,3,4,6,7,8-HpCDD	60.1	23 - 140	
		13C-OCDD	44.7	17 - 157	
		13C-2,3,7,8-TCDF	70.2	24 - 169	
		13C-1,2,3,7,8-PeCDF	66.1	24 - 185	
		13C-2,3,4,7,8-PeCDF	67.0	21 - 178	
		13C-1,2,3,4,7,8-HxCDF	65.1	26 - 152	
		13C-1,2,3,6,7,8-HxCDF	64.8	26 - 123	
		13C-2,3,4,6,7,8-HxCDF	69.4	28 - 136	
		13C-1,2,3,7,8,9-HxCDF	59.2	29 - 147	
		13C-1,2,3,4,6,7,8-HpCDF	55.7	28 - 143	
		13C-1,2,3,4,7,8,9-HpCDF	49.5	26 - 138	
		13C-OCDF	44.8	17 - 157	
	CRS	37Cl-2,3,7,8-TCDD	87.0	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:10

Project 26118

ALTA

Sample ID: **IOD2053-01** Outfall 004

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26120-001	Date Received:	30-Apr-05
Project:	IOD2053	Sample Size:	0.968 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1140						

Rev Qual	Qual Code	Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00000131		
		1,2,3,7,8-PeCDD	ND	0.00000171		
		1,2,3,4,7,8-HxCDD	ND	0.00000161		
		1,2,3,6,7,8-HxCDD	ND	0.00000164		
		1,2,3,7,8,9-HxCDD	ND	0.00000166		
UJ	HD	1,2,3,4,6,7,8-HpCDD	ND		0.0000163	
		OCDD	0.000234			
U		2,3,7,8-TCDF	ND	0.00000135		
		1,2,3,7,8-PeCDF	ND	0.00000133		
		2,3,4,7,8-PeCDF	ND	0.00000119		
		1,2,3,4,7,8-HxCDF	ND	0.000000591		
		1,2,3,6,7,8-HxCDF	ND	0.000000518		
		2,3,4,6,7,8-HxCDF	ND	0.000000586		
		1,2,3,7,8,9-HxCDF	ND	0.00000105		
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.00000258			A
U		1,2,3,4,7,8,9-HpCDF	ND	0.00000180		
U		OCDF	ND	0.00000877		
		Totals				
U		Total TCDD	ND	0.00000131		
U		Total PeCDD	ND	0.00000171		
J	DNQ	Total HxCDD	0.00000183			
J	DNQ	Total HpCDD	0.0000189		0.0000352	
U		Total TCDF	ND	0.00000135		
U		Total PeCDF	ND	0.00000126		
J	DNQ	Total HxCDF	0.00000229			
J	DNQ	Total HpCDF	0.00000723			

		Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS		13C-2,3,7,8-TCDD	70.3	25 - 164	
		13C-1,2,3,7,8-PeCDD	71.3	25 - 181	
		13C-1,2,3,4,7,8-HxCDD	69.9	32 - 141	
		13C-1,2,3,6,7,8-HxCDD	75.4	28 - 130	
		13C-1,2,3,4,6,7,8-HpCDD	66.2	23 - 140	
		13C-OCDD	45.9	17 - 157	
		13C-2,3,7,8-TCDF	72.7	24 - 169	
		13C-1,2,3,7,8-PeCDF	70.7	24 - 185	
		13C-2,3,4,7,8-PeCDF	71.8	21 - 178	
		13C-1,2,3,4,7,8-HxCDF	73.2	26 - 152	
		13C-1,2,3,6,7,8-HxCDF	74.6	26 - 123	
		13C-2,3,4,6,7,8-HxCDF	75.6	28 - 136	
		13C-1,2,3,7,8,9-HxCDF	70.0	29 - 147	
		13C-1,2,3,4,6,7,8-HpCDF	62.5	28 - 143	
		13C-1,2,3,4,7,8,9-HpCDF	53.9	26 - 138	
		13C-OCDF	47.5	17 - 157	
CRS		37Cl-2,3,7,8-TCDD	87.8	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:13

Project 26120

ALTA

Sample ID: IOD2056-01 Outfall 009

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26115-001	Date Received:	30-Apr-05
Project:	IOD2056	Sample Size:	0.960 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1213						

Rev Qual	Qual Code	Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00000140		
		1,2,3,7,8-PeCDD	ND	0.00000144		
		1,2,3,4,7,8-HxCDD	ND	0.00000241		
		1,2,3,6,7,8-HxCDD	ND	0.00000237		
		1,2,3,7,8,9-HxCDD	ND	0.00000244		
J	DNQ	1,2,3,4,6,7,8-HpCDD	0.0000129			
		OCDD	0.000119			A
U		2,3,7,8-TCDF	ND	0.000000942		
		1,2,3,7,8-PeCDF	ND	0.00000149		
		2,3,4,7,8-PeCDF	ND	0.00000125		
		1,2,3,4,7,8-HxCDF	ND	0.000000643		
		1,2,3,6,7,8-HxCDF	ND	0.000000572		
		2,3,4,6,7,8-HxCDF	ND	0.000000654		
		1,2,3,7,8,9-HxCDF	ND	0.00000115		
		1,2,3,4,6,7,8-HpCDF	ND	0.00000154		
		1,2,3,4,7,8,9-HpCDF	ND	0.00000136		
		OCDF	ND	0.00000672		
		Totals				
U		Total TCDD	ND	0.00000140		
		Total PeCDD	ND	0.00000144		
		Total HxCDD	ND	0.00000240		
J	DNQ	Total HpCDD	0.0000303			
U		Total TCDF	ND	0.000000942		
		Total PeCDF	ND	0.00000136		
J	DNQ	Total HxCDF	0.000000890			
U		Total HpCDF	ND	0.00000194		

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	66.6	25 - 164	
	13C-1,2,3,7,8-PeCDD	70.0	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	71.1	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	71.9	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	63.5	23 - 140	
	13C-OCDD	36.0	17 - 157	
	13C-2,3,7,8-TCDF	70.2	24 - 169	
	13C-1,2,3,7,8-PeCDF	71.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	72.7	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	76.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	75.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	78.8	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	74.7	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	63.6	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	66.9	26 - 138	
	13C-OCDF	45.5	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	80.5	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:05

ALTA

Sample ID: IOD2058-01 Outfall 010

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	26116-001	Date Received:	30-Apr-05
Project:	IOD2058	Sample Size:	0.957 L	QC Batch No.:	6789	Date Extracted:	17-May-05
Date Collected:	28-Apr-05			Date Analyzed DB-5:	19-May-05	Date Analyzed DB-225:	NA
Time Collected:	1205						

Rev Qual	Qual Code	Analyte	Conc. (ng/L)	DL [a]	EMPC [b]	Qualifiers
U		2,3,7,8-TCDD	ND	0.00139		
		1,2,3,7,8-PeCDD	ND	0.00165		
		1,2,3,4,7,8-HxCDD	ND	0.00301		
		1,2,3,6,7,8-HxCDD	ND	0.00283		
		1,2,3,7,8,9-HxCDD	ND	0.00298		
		1,2,3,4,6,7,8-HpCDD	ND	0.00774		
J	DNQ	OCDD	0.0584		J	
U		2,3,7,8-TCDF	ND	0.00166		
		1,2,3,7,8-PeCDF	ND	0.00262		
		2,3,4,7,8-PeCDF	ND	0.00218		
		1,2,3,4,7,8-HxCDF	ND	0.000772		
		1,2,3,6,7,8-HxCDF	ND	0.000738		
		2,3,4,6,7,8-HxCDF	ND	0.000842		
		1,2,3,7,8,9-HxCDF	ND	0.00149		
		1,2,3,4,6,7,8-HpCDF	ND	0.00231		
		1,2,3,4,7,8,9-HpCDF	ND	0.00224		
		OCDF	ND	0.00980		
		Totals				
U		Total TCDD	ND	0.00139		
		Total PeCDD	ND	0.00165		
		Total HxCDD	ND	0.00293		
		Total HpCDD	ND	0.0137		
		Total TCDF	ND	0.00166		
		Total PeCDF	ND	0.00239		
		Total HxCDF	ND	0.000911		
		Total HpCDF	ND	0.00309		

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	53.3	25 - 164	
	13C-1,2,3,7,8-PeCDD	53.1	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	62.6	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	63.9	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	52.7	23 - 140	
	13C-OCDD	29.8	17 - 157	
	13C-2,3,7,8-TCDF	57.5	24 - 169	
	13C-1,2,3,7,8-PeCDF	53.6	24 - 185	
	13C-2,3,4,7,8-PeCDF	55.9	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	66.9	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	67.2	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	67.3	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	59.7	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	51.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	52.1	26 - 138	
	13C-OCDF	36.1	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	76.1	35 - 197	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

AMEC VALIDATED

LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:07

Project 26116

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental
550 South Wadsworth Boulevard
Suite 500

Lakewood, CO 80226

Laboratory Del Mar Analytical
Reviewer L. Jarusewic
Analysis/Method Metals

Package ID T711MT88
Task Order 313150010
SDG No. IOD2043, 2049, 2054, 2056, 2058
No. of Analyses 5/2 reanalyses

Date: 06/06/05
Reviewer's Signature L. Jarusewic

ACTION ITEMS[a]	
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 Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were applied for: 1) CCB negative results 2) Change of MDL by reviewer 3) Rejected reanalyses in favor of original analysis 4) Detects below the reporting limit

COMMENTS[b]

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

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.
*#	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).	Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).

DATA VALIDATION REPORT

NPDES
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOD2043, IOD2049, IOD2054, IOD2056, IOD2058

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#:	IOD2043, IOD2049, IOD2054, IOD2056, IOD2058
Project Manager:	B. McIlvaine
Matrix:	Water
Analysis:	Metals
QC Level:	Level IV
No. of Samples:	5
No. of Reanalyses/Dilutions:	2
Reviewer:	L. Jarusewic
Date of Review:	June 6, 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-MS Metals, (DVP-5-A, Rev.0), AMEC Data Validation Procedure for Levels III and IV ICP Metals* (DVP-5, Rev. 0), SW-846 *Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, SW-846 *Method 7471A for Mercury (Manual Cold-Vapor Technique)*, 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	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 001	Outfall 001	IOD2043-01	water	ILM04
Outfall 001RE1	Outfall 001RE1	IOD2043-01RE1	water	ILM04
Outfall 001RE2	Outfall 001RE2	IOD2043-01RE2	water	ILM04
Outfall 005	Outfall 005	IOD2054-01	water	ILM04
Outfall 009	Outfall 009	IOD2056-01	water	ILM04
Outfall 010	Outfall 010	IOD2058-01	water	ILM04
Outfall 018	Outfall 018	IOD2049-01	water	ILM04

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 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. The COCs accounted for the samples and analyses presented in these SDGs. The laboratory did not include the "RE1" and "RE2" client ID suffixes for the iron reanalyses on the Form I for sample Outfall 001. The reviewer appended the Form I with the correct suffixes to reflect this information. 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 and ICP/MS metals and 28-days for mercury. No qualifications were required.

2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP-MS metals and 80-120% for mercury. The 0.2 µg/L ICP-MS reporting limit check standard was not recovered for antimony; however, as the antimony MDL was raised to 0.61 µg/L, no qualifications were required (see section 2.4). The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

2.4 BLANKS

Cadmium was reported in a bracketing ICP-MS CCB at -0.028 µg/L; therefore, cadmium detected in samples Outfall 009 and Outfall 010 was qualified as estimated, "J." Antimony was detected in a bracketing ICP-MS CCB at 0.61 µg/L; however, as antimony was not detected in Outfall 009 or Outfall 010, no qualifications were required. The remaining method blank and CCB results were nondetects at the reporting limit.

There were antimony detects in both the bracketing ICP-MS CCBs at concentrations ≥3×MDL. The antimony CCB detects indicated the laboratory could not detect antimony at the reported MDL. The reviewer, therefore, raised the MDLs for antimony to the highest level reported in the CCBs, 0.61 µg/L. No further qualifications were required due to the method and calibration blank results.

2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and titanium. Antimony and lead were not spiked into the ICSAB solution. Potassium exceeded the calibration range of the instrument in both the ICSA/AB solutions associated with the Outfall 005, Outfall 009 and Outfall 010 analyses. Sodium exceeded the calibration range of the instrument in the ICSA solution for all associated analyses, and was recovered within the control limits in the ICSAB solution associated with the Outfall 005 analysis. Copper and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP-MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, titanium, and chloride.

ICSA and ICSAB analyses were included in the raw data for the ICP analyses and were analyzed the same day the samples. The recoveries were within the control limits of 80-120% and no qualifications were required.

2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP LCS sample was identified as 5D29098-BS1 and the ICP-MS LCS sample was identified as 5D29095-BS1. The mercury LCS sample was identified as 5D29061-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established control limits of 85-115% for the ICP, ICP-MS, and mercury analyses. No qualifications were required.

2.7 LABORATORY DUPLICATES

MS/MSD analyses were performed in association with the ICP-MS analyses on sample Outfall 005 for lead. The RPD was within the control limits of ≤20% and no qualifications were required.

2.8 MATRIX SPIKE

MS/MSD analyses were performed in association with the ICP/MS analyses on sample Outfall 005 for lead. The recoveries were within the control limits of 70-130% and no qualifications were 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

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required

2.12 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. The laboratory reanalyzed sample Outfall 001 for iron. As the Outfall 001RE1 and Outfall 002RE2 results were similar to the original result, the Outfall 001RE1 and Outfall 002RE2 iron results were rejected, "R," in favor of the original iron analysis. Lead in Outfall 005, cadmium in Outfall 009 and Outfall 010, and mercury in Outfall 010 detected below the reporting limit were qualified as estimated, "J." 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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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 001

Report Number: IOD2043

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers REV QUAL	Data Qualifiers QUAL CODE
Sample ID: IOD2043-01 (DRAFT: Outfall 001 - Water)										
Reporting Units: mg/l										
Iron	EPA 200.7	5D29098	0.0088	0.040	**0.36**	1	04/29/05	05/02/05		
Sample ID: IOD2043-01RE1 (DRAFT: ~~Outfall 001~~ Outfall 001RE1 - Water)										
Reporting Units: mg/l										
Iron	EPA 200.7	5E17078	0.0088	0.040	**0.34**	1	04/29/05	05/17/05	R	D
Sample ID: IOD2043-01RE2 (DRAFT: ~~Outfall 001~~ Outfall 001RE2 - Water)										
Reporting Units: mg/l										
Iron	EPA 200.7	5D29098	0.0088	0.040	**0.36**	1	04/29/05	05/17/05	R	D

AJ 06/06/05

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LEVEL IV

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MWH-Pasadena/Boeing
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Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOD2049

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers REV QUAL	Data Qualifiers QUAL CODE
Sample ID: IOD2049-01 (DRAFT: Outfall 018 - Water) - cont.										
Reporting Units: ug/l										
Copper	EPA 200.8	5D29095	0.49	2.0	**3.7**	1	04/29/05	05/03/05		
Lead	EPA 200.8	5D29095	0.13	1.0	**1.9**	1	04/29/05	05/03/05		
Mercury	EPA 245.1	5D29061	0.063	0.20	ND	1	04/29/05	04/29/05	U	

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LEVEL IV

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DATA SUBJECT TO CHANGE

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers REV NUM	Data Qualifiers QUAL CODE
Sample ID: IOD2054-01 (DRAFT: Outfall 005 - Water)										
Reporting Units: ug/l										
Lead	EPA 200.8	5D29095	0.13	1.0	**0.24**	1	04/29/05	05/03/05	J	J DNQ

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LEVEL IV

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DATA SUBJECT TO CHANGE

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Project ID: Routine Outfall 009

Report Number: IOD2056

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers REV QUAL	Data Qualifiers QUAL CODE
Sample ID: IOD2056-01 (DRAFT: Outfall 009 - Water)										
Reporting Units: ug/l			0.61							
Antimony	EPA 200.8	5D29095	~~0.18~~	2.0	ND	1	04/29/05	05/03/05	UJ	#5, $
Cadmium	EPA 200.8	5D29095	0.015	1.0	**0.024**	1	04/29/05	05/03/05	J	J B, DNQ
Copper	EPA 200.8	5D29095	0.49	2.0	**3.2**	1	04/29/05	05/03/05		
Lead	EPA 200.8	5D29095	0.13	1.0	**1.1**	1	04/29/05	05/03/05		
Mercury	EPA 245.1	5D29061	0.063	0.20	ND	1	04/29/05	04/29/05	U	

J 06/06/05

AMEC VALIDATED

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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: IOD2058

Sampled: 04/28/05
Received: 04/28/05

DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	REV QUAL	Data Qualifiers QUAL CODE
Sample ID: IOD2058-01 (DRAFT: Outfall 010 - Water)										
Reporting Units: ug/l										
Antimony	EPA 200.8	5D29095	0.61 ~~0.18~~	2.0	ND	1	04/29/05	05/03/05	UJ	~~B~~, $
Cadmium	EPA 200.8	5D29095	0.015	1.0	**0.084**	1	04/29/05	05/03/05	J	B, DNQ
Copper	EPA 200.8	5D29095	0.49	2.0	**6.0**	1	04/29/05	05/03/05		
Lead	EPA 200.8	5D29095	0.13	1.0	**3.0**	1	04/29/05	05/03/05		
Mercury	EPA 245.1	5D29061	0.063	0.20	**0.18**	1	04/29/05	04/29/05	J	DNQ

J 06/06/05

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LEVEL IV

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APPENDIX G

Section 8

Outfall 010

Del Mar Analytical Laboratory Reports

AMEC Data Validation Reports

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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 010

Sampled: 04/28/05
Received: 04/28/05
Issued: 06/20/05 17:02

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
IOD2058-01	Outfall 010	Water

Reviewed By:

Michele Harper

Del Mar Analytical, Irvine
Michele Harper
Project Manager

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOD2058-01 (Outfall 010 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	5D29095	0.18	2.0	ND	1	04/29/05	05/03/05	
Cadmium	EPA 200.8	5D29095	0.015	1.0	**0.084**	1	04/29/05	05/03/05	J
Copper	EPA 200.8	5D29095	0.49	2.0	**6.0**	1	04/29/05	05/03/05	
Lead	EPA 200.8	5D29095	0.13	1.0	**3.0**	1	04/29/05	05/03/05	
Mercury	EPA 245.1	5D29061	0.063	0.20	**0.18**	1	04/29/05	04/29/05	J

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MWH-Pasadena/Boeing
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Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOD2058-01 (Outfall 010 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5D28116	0.15	0.50	**13**	1	04/28/05	04/29/05	
Nitrate/Nitrite-N	EPA 300.0	5D28116	0.075	0.15	**0.50**	1	04/28/05	04/29/05	
Oil & Grease	EPA 413.1	5D29041	0.94	5.0	ND	1	04/29/05	04/29/05	
Sulfate	EPA 300.0	5D28116	0.45	0.50	**12**	1	04/28/05	04/29/05	
Total Dissolved Solids	SM2540C	5E01033	10	10	**120**	1	05/01/05	05/01/05	
Total Suspended Solids	EPA 160.2	5E04071	10	10	**28**	1	05/04/05	05/04/05	

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MWH-Pasadena/Boeing
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Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 010 (IOD2058-01) - Water					
EPA 300.0	2	04/28/2005 12:05	04/28/2005 18:15	04/28/2005 21:30	04/29/2005 02:57

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

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D29061 Extracted: 04/29/05											
Blank Analyzed: 04/29/2005 (5D29061-BLK1)											
Mercury	ND	0.20	0.063	ug/l							
LCS Analyzed: 04/29/2005 (5D29061-BS1)											
Mercury	8.06	0.20	0.063	ug/l	8.00		101	85-115			
Matrix Spike Analyzed: 04/29/2005 (5D29061-MS1)						**Source: IOD2033-03**					
Mercury	7.76	0.20	0.063	ug/l	8.00	ND	97	70-130			
Matrix Spike Dup Analyzed: 04/29/2005 (5D29061-MSD1)						**Source: IOD2033-03**					
Mercury	7.82	0.20	0.063	ug/l	8.00	ND	98	70-130	1	20	
Batch: 5D29095 Extracted: 04/29/05											
Blank Analyzed: 05/03/2005 (5D29095-BLK1)											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Copper	ND	2.0	0.49	ug/l							
Lead	ND	1.0	0.13	ug/l							
LCS Analyzed: 05/03/2005 (5D29095-BS1)											
Antimony	87.8	2.0	0.18	ug/l	80.0		110	85-115			
Cadmium	87.8	1.0	0.015	ug/l	80.0		110	85-115			
Copper	78.5	2.0	0.49	ug/l	80.0		98	85-115			
Lead	81.9	1.0	0.13	ug/l	80.0		102	85-115			
Matrix Spike Analyzed: 05/03/2005 (5D29095-MS1)						**Source: IOD2054-01**					
Antimony	98.9	2.0	0.18	ug/l	80.0	0.31	123	70-130			
Cadmium	86.7	1.0	0.015	ug/l	80.0	0.058	108	70-130			
Copper	79.4	2.0	0.49	ug/l	80.0	2.0	97	70-130			
Lead	80.9	1.0	0.13	ug/l	80.0	0.24	101	70-130			

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MWH-Pasadena/Boeing
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Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D29095 Extracted: 04/29/05											
Matrix Spike Analyzed: 05/03/2005 (5D29095-MS2)						**Source: IOD2149-03**					
Antimony	100	10	0.90	ug/l	80.0	ND	125	70-130			
Cadmium	76.0	5.0	0.075	ug/l	80.0	0.45	94	70-130			
Copper	90.1	10	2.4	ug/l	80.0	17	91	70-130			
Lead	73.5	5.0	0.65	ug/l	80.0	1.1	90	70-130			
Matrix Spike Dup Analyzed: 05/03/2005 (5D29095-MSD1)						**Source: IOD2054-01**					
Antimony	99.6	2.0	0.18	ug/l	80.0	0.31	124	70-130	1	20	
Cadmium	87.7	1.0	0.015	ug/l	80.0	0.058	110	70-130	1	20	
Copper	81.3	2.0	0.49	ug/l	80.0	2.0	99	70-130	2	20	
Lead	81.0	1.0	0.13	ug/l	80.0	0.24	101	70-130	0	20	

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5D28116 Extracted: 04/28/05											
Blank Analyzed: 04/28/2005 (5D28116-BLK1)											
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							
LCS Analyzed: 04/28/2005 (5D28116-BS1)											
Chloride	4.82	0.50	0.26	mg/l	5.00		96	90-110			*M-3*
Sulfate	9.63	0.50	0.18	mg/l	10.0		96	90-110			*M-3*
Batch: 5D29041 Extracted: 04/29/05											
Blank Analyzed: 04/29/2005 (5D29041-BLK1)											
Oil & Grease	ND	5.0	0.94	mg/l							
LCS Analyzed: 04/29/2005 (5D29041-BS1)											
Oil & Grease	18.3	5.0	0.94	mg/l	20.0		92	65-120			*M-NR1*
LCS Dup Analyzed: 04/29/2005 (5D29041-BSD1)											
Oil & Grease	18.9	5.0	0.94	mg/l	20.0		94	65-120	3	20	
Batch: 5E01033 Extracted: 05/01/05											
Blank Analyzed: 05/01/2005 (5E01033-BLK1)											
Total Dissolved Solids	ND	10	10	mg/l							
LCS Analyzed: 05/01/2005 (5E01033-BS1)											
Total Dissolved Solids	956	10	10	mg/l	1000		96	90-110			

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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: IOD2058

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5E01033 Extracted: 05/01/05											
Duplicate Analyzed: 05/01/2005 (5E01033-DUP1)						**Source: IOD2237-01**					
Total Dissolved Solids	285	10	10	mg/l		290			2	10	
Batch: 5E04071 Extracted: 05/04/05											
Blank Analyzed: 05/04/2005 (5E04071-BLK1)											
Total Suspended Solids	ND	10	10	mg/l							
LCS Analyzed: 05/04/2005 (5E04071-BS1)											
Total Suspended Solids	1000	10	10	mg/l	1000		100	85-115			
Duplicate Analyzed: 05/04/2005 (5E04071-DUP1)						**Source: IOD2054-01**					
Total Suspended Solids	ND	10	10	mg/l		ND				10	

Del Mar Analytical, Irvine
Michele Harper
Project Manager

Del Mar Analytical

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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
IOD2058-01	413.1 Oil and Grease	Oil & Grease	mg/l	-1	5.0	15
IOD2058-01	Chloride - 300.0	Chloride	mg/l	13	0.50	150
IOD2058-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.50	0.15	10.00
IOD2058-01	Sulfate-300.0	Sulfate	mg/l	12	0.50	250
IOD2058-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	120	10	850

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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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Michele Harper
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Attention: Bronwyn Kelly

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Report Number: IOD2058

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Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
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.

Subcontracted Laboratories

Alta Analytical *California Cert #1640, Nevada Cert #CA-413*
1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR
Samples: IOD2058-01

Analysis Performed: EDD + Level 4
Samples: IOD2058-01

Del Mar Analytical, Irvine
Michele Harper
Project Manager

406 IOD2058

Del Mar Analytical Version 5 8/12/04 CHAIN OF CUSTODY FORM

Client Name/Address:	Project:
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101	Boeing-SSFL NPDES **Routine Outfall 010** Stormwater at Building 203
Project Manager: Bronwyn Kelly Sampler: Dolock	Phone Number: (626) 568-6691 Fax Number: (626) 568-6515

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle * #	ANALYSIS REQUIRED: Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl-, SO4, NO3+NO2-N	TDS					Comments
Outfall 010	W	Poly-1L	1	4-28-05, 1205	HNO3	1A	X									
Outfall 010-Dup	W	Poly-1L	1		HNO3	1B	X									
Outfall 010	W	Glass-Amber	2		None	2A, 2B		X								
Outfall 010	W	Glass-Amber	2		HCl	3A, 3B			X							
Outfall 010	W	Poly-500 ml	2		None	4A, 4B				X						
Outfall 010	W	Poly-500 ml	2		None	5A, 5B					X					

Field readings:
Temp = 55.4 F
pH= 6.9

Relinquished By	Date/Time:	Received By	Date/Time:
[signature]	4-28-05 1530	L McLaney	4/28/05 1530
L McLaney	4/28/05 1815	[signature]	4/28/05 1815
Relinquished By	Date/Time:	Received By	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

Del Mar Analytical

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June 20, 2005

MWH- Pasadena / Boeing
300 North Lake Avenue, Suite 1200
Pasadena , CA 91101

Attention: Bronwyn Kelly

Project: Routine Outfall 010
Sampled: 04/28/05
Del Mar Analytical Number: IOD2058

Dear Ms. Kelly:

Alta Analytical Laboratories performed the EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	Del Mar ID	Alta ID
Outfall 010	IOD2058-01	26116-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022, extension 215.

Sincerely yours,

DEL MAR ANALYTICAL

Michele Harper
Project Manager

Enclosure

ALTA

May 20, 2005

Alta Project I.D.: 26116

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

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on April 30, 2005 under your Project Name "IOD2058". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard 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. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier
Director of HRMS Services

Alta Analytical Laboratory Inc.
1104 Windfield Way
El Dorado Hills, CA 95762
FAX (916) 673-0106
(916) 933-1640