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Level IV Data Package

MWH Group 239631

Method: EPA 160.1: TDS

2805060277
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2805060320

MWH Laboratories
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91106

typo; ans backwards MLE 062408

TOTAL DISSOLVED SOLIDS (TDS)
SM 2540C

14:00
Analysist Start Date: 5/6/08 End: 5/8/08
Analyst: AXA
Reviewed By:
LIMS Check By: MM 5/17/08
Was QC Criteria Met: Y N
Was QIR Needed: Y N

Oven Temp (180° ± 2°C): Start: 180 C End: 180 C
Oven Mfr: "Precision STM 135" Ser no.: "11AW-6"

Dry Time (hrs): +12

Standards:		True Value Exp. Date	% Rec	
NaCl MW#	AXA080708-1	175 mg/L 10/29/08	80 - 114	AXA080429-1
Na2SO4 MW #	AXA080504-2	700 mg/L 11/04/08	80 - 114	080504-2
NaCl MW#	AXA080507-3	10 mg/L 11/04/08	80 - 114	080504-3

Run #	Sample ID	Client Name	Date Collected	B Sample Volume (mL)	Crucible Number	A Crucible Weight (g)	C Crucible + residue 1st wt (g)	Crucible + residue 2nd wt (g)	QC 1	Residue C-A (g)	TDS (mg/L)	pH	EC	** TDS/EC	QC 2	3rd Weighing/Comments
Blk	Blank	N/A	N/A	50	74	56.5152	56.5153	56.5152		0.0001	2	N/A	N/A	N/A		
MRL	MRL 1 - 10 mg/L	N/A	N/A	100	BDL	73.4033	73.4043	73.4041		0.0010	10	N/A	N/A	N/A		
MRL	MRL 1 - 10 mg/L DUP	N/A	N/A	100	JAI	65.7440	65.7449	65.7448		0.0009	9	N/A	N/A	N/A		
LCS	LCS 1 - 175 mg/L	N/A	N/A	50	77	50.1953	50.2026	50.2027		0.0073	146	N/A	N/A	N/A		
LCS	LCS 2 - 700 mg/L	N/A	N/A	50	7G	51.0389	51.0732	51.0734		0.0343	686	N/A	N/A	N/A		
1	2805060317	KERR MCGEE	5/5/08	2	461	74.3096	74.3272	74.3273		0.0176	8800	7	14000	0.63		
DUP	2805060317	KERR MCGEE	5/5/08	2	TD	70.7007	70.7181	70.7185		0.0174	8700	7	14000	0.62		
2	2805060318	KERR MCGEE	5/5/08	2	529	75.1929	75.2105	75.2101		0.0176	8800	7	13450	0.65		
3	2805060277	KERR MCGEE	5/5/08	25	521	72.2103	72.3608	72.3607		0.1505	6020	7	7000	0.86	!	
4	2805060278	KERR MCGEE	5/5/08	50	50	67.1458	67.3017	67.3019		0.1559	3118	7	4000	0.78	!	67.3055
5	2805060279	KERR MCGEE	5/5/08	10	AI	66.8098	66.8788	66.8786		0.0690	6900	7	9200	0.75	!	
6	2805060280	KERR MCGEE	5/5/08	10	Z4	70.8105	70.8913	70.8910		0.0808	8080	7	9300	0.87	!	
7	2805060281	KERR MCGEE	5/5/08	10	J8	73.9142	73.9841	73.9839		0.0699	6990	7	8410	0.83	!	73.9854
8	2805060282	KERR MCGEE	5/5/08	10	ZH	67.3140	67.3831	67.3828		0.0691	6910	7	8430	0.82	!	67.385
9	2805060290	KERR MCGEE	5/5/08	25	4	66.2537	66.3645	66.3645		0.1108	4432	7	5820	0.76	!	66.3669
10	2805060291	KERR MCGEE	5/5/08	10	N4	70.0965	70.1772	70.1776		0.0807	8070	7	9410	0.86	!	70.1805
11	2805060293	KERR MCGEE	5/5/08	100	KC	68.2505	68.2505	68.2508		0.0003	0	7	1		!	
DUP	2805060293	KERR MCGEE	5/5/08	100	K8	67.6937	67.6937	67.6940		0.0003	0	7	1		!	
12	2805060294	KERR MCGEE	5/5/08	10	DIF	66.7860	66.8589	66.8590		0.0729	7290	7	9310	0.78	!	
13	2805060303	KERR MCGEE	5/5/08	25	517	73.0719	73.1849	73.1847		0.1130	4520	7	5740	0.79	!	73.188
14	2805060305	KERR MCGEE	5/5/08	10	Y	65.9001	65.9725	67.9730		0.0724	7240	7	9200	0.79	!	
15	2805060243	CMPL	5/5/08	100	EZ	73.1832	73.1878	73.1878		0.0046	46	7	76	0.61		
16	2805060759	COKE	4/28/08	50	515	75.3450	75.3799	75.3796		0.0349	698	7	1088	0.64		
17	2805060794	COKE	5/5/08	50	DR	70.7913	70.8185	70.8182		0.0272	544	7	854	0.64		70.8202
18	2805060276	MTN VALLEY	5/6/08	100	A	68.7807	68.7808	68.7807		0.0001	1	7	4	0.25	!	
19											#DIV/0!	7		#DIV/0!	#	
20				100								7		#DIV/0!	#	

MRL: 10 mg/L
est **"EC"(0.55 - 0.7): Expected TDS Value
Min/Max Residue: 0.5 mg - 200 mg

Holding time: 7 day from sampling date
Residues must be within 0.5 mg of each other

Recoveries:
Blank - <0.5 mg
MRL - 50 - 150%
LCS - 80 - 114%
Duplicates - < 10% RPD

Calculation:
TDS (mg/L) = [C-A] x 1,000,000 / B

%RPD= |S1-S2| x 100 / (S1+S2)/2

A = Crucible Wt (g)
B = Sample Vol (mL)
C = Cruicble + residue (g)

S1 = TDS of sample
S2 = TDS of Duplicate

MWH Laboratories
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91106

TOTAL DISSOLVED SOLIDS (TDS)
SM 2540C

typo: all handwritten MWE062408

8:45
Analysist Start Date: 5/6/08 End: 5/8/08
Analyst: AXA
Reviewed By:
LIMS Check By: MMS 5/17/08
Was QC Criteria Met: X
Was QIR Needed: Y N

Oven Temp (180° ± 2°C): Start 180 C End: 180 C
Oven Mfr: "Precision STM 135" Ser no.: "11AW-6"

Dry Time (hrs): +12

Standards:	True Value Exp. Date	% Rec
NaCl MW# AXA050708-1	175 mg/L 10/29/08	80 - 114 AXA080429-1
Na2SO4 MW # AXA080504-2	700 mg/L 11/04/08	80 - 114 — 080504-2
NaCl MW# AXA080507-3	10 mg/L 11/04/08	80 - 114 — 080504-3

Run #	Sample ID	Client Name	Date Collected	B Sample Volume (mL)	Crucible Number	A Crucible Weight (g)	C Crucible + residue 1st wt (g)	Crucible + residue 2nd wt (g)	QC 1	Residue C-A (g)	TDS (mg/L)	pH	EC	** TDS/EC	QC 2	3rd Weighing/Comments
Blk	Blank	N/A	N/A	50	B	50.5657	50.5659	50.5657		0.0002	4	N/A	N/A	N/A		
MRL	MRL 1 - 10 mg/L	N/A	N/A	100	EJ\	73.6443	73.6451	73.6449		0.0008	8	N/A	N/A	N/A		
MRL	MRL 1 - 10 mg/L DUP	N/A	N/A	100	L	66.0231	66.0239	66.0237		0.0008	8	N/A	N/A	N/A		
LCS	LCS 1 - 175 mg/L	N/A	N/A	50	C9	51.4872	51.4942	50.4944		0.0070	140	N/A	N/A	N/A		
LCS	LCS 2 - 700 mg/L	N/A	N/A	50	21	53.3368	53.3692	53.3695		0.0324	648	N/A	N/A	N/A		
1	2805050346	NEW HALL	5/5/08	50	BO	76.3553	76.3787	76.3786		0.0234	468	7	975	0.48	!	
DUP	2805050346	NEW HALL	5/5/08	50	PY	64.3330	64.3560	64.3559		0.0230	460	7	975	0.47	!	
2	2805050296	BURBANK	5/5/08	50	10	71.1323	71.1640	71.1644		0.0317	634	7	843	0.75	!	Re check
3	2805050339	WILDER MUTH	5/5/08	50	DX	48.8363	48.8546	48.8545		0.0183	366	7	518	0.71	!	
4	2805050340	WILDER MUTH	5/5/08	50	506	74.2184	74.2333	74.2329		0.0149	298	7	512	0.58		
5	2805050341	WILDER MUTH	5/5/08	50	T4	50.6235	50.7575	50.7571		0.1340	2680	7	3820	0.70	!	
6	2805050342	WILDER MUTH	5/5/08	50	NY	66.8479	66.9091	66.9090		0.0612	1224	7	1798	0.68		
7	2805050343	WILDER MUTH	5/5/08	50	CR	68.0197	68.0799	68.0796		0.0602	1204	7	2440	0.49	!	Recheck
8	2805050344	WILDER MUTH	5/5/08	50		50.4130	50.4505	50.4507		0.0375	750	7	1117	0.67		
9	2805050345	WILDER MUTH	5/5/08	50	9G	50.4520	50.4905	50.4902		0.0385	770	7	772	1.00	!	Recheck.
10	2804300477	VALLEY CO	4/30/08	50	FL	52.5235	52.5515	52.5512		0.0280	560	7	885	0.63		reanalyzed from 5/2
11	2804300416	G STATE	4/29/08	50	7	50.4588	50.4625	50.4622		0.0037	74	7	135	0.55	!	
DUP	2804300416	G STATE	4/29/08	50		50.3303	50.3342	50.3340		0.0039	78	7	135	0.58		
12	2805010270	CCDA	5/1/08	50	X	50.1020	50.1097	50.1093		0.0077	154	7	254	0.61		
13	2805050319	KERR MCGEE	5/5/08	25	Z7	49.9887	50.1697	50.1699		0.1810	7240	7	8000	0.90	!	50.1741
14	2805050320	KERR MCGEE	5/5/08	25	SJ	73.7170	73.8794	73.8793		0.1624	6496	7	7430	0.87	!	73.8827
15	2805050311	KERR MCGEE	5/5/08	25	O	68.3903	68.5433	68.5432		0.1530	6120	7	8000	0.77	!	68.5487
16	2805050312	KERR MCGEE	5/5/08	25	TJ	50.6317	50.7925	50.7927		0.1608	6432	7	8500	0.76	!	50.7796
17	2805050313	KERR MCGEE	5/5/08	2	O	51.2196	51.2371	51.2372		0.0175	8750	7	12500	0.70		51.2402
18	2805050314	KERR MCGEE	5/5/08	10	NO	69.4378	69.5113	69.5116		0.0735	7350	7	9200	0.80	!	69.5136
19	2805050315	KERR MCGEE	5/5/08	25	JC	50.4597	50.5999	50.5997		0.1402	5608	7	6800	0.82	!	50.6025, 50.6005
20	2805050316	KERR MCGEE	5/5/08	10	51Z	76.7085	76.7749	76.7752		0.0664	6640	7	8200	0.81	!	76.7778

MRL: 10 mg/L
est **EC*(0.55 - 0.7): Expected TDS Value
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Holding time: 7 day from sampling date
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Recoveries:
Blank - <0.5 mg
MRL - 50 - 150%
LCS - 80 - 114%
Duplicates - < 10% RPD

Calculation:

$$TDS\ (mg/L) = \frac{[C-A]}{B} \times 1{,}000{,}000$$

$$\%RPD = \frac{|S1-S2|}{(S1+S2)/2} \times 100$$

A = Crucible Wt (g)
B = Sample Vol (mL)
C = Cruicble + residue (g)

S1 = TDS of sample
S2 = TDS of Duplicate

3

Standard Preparation Worksheet & Certificate of Analysis

Reagent Preparation Documentation

Page:_____

(1)

Reagent: TDL 125 ppm
Date Received/Prepped: 3/22/08 | 3/4/08 | 3/20/08 | 3/24/08 | 4/1/08 | 4/24/08
Date Expired: 8/22/08 | 9/4/08 | 9/20/08 | 9/24/08 | 10/1/08 | 10/24/08
Manufacturer:
Storage Condition:

MW #: AXADSL220-1
By: AxA
Matrix: AQ
Amount: 1L
Lot #:

Component	Comment	Standard	Concentration
10000ppm NaCl	12.5ml + dilute to 1L w/DI H2O	R211617	
"	"	"	
"	"	"	
"	"	"	
"	"	"	

Comment:

Reagent: TDL 10ppm
Date Received/Prepped: 2/28/08 | 3/4/08 | 3/14/08 | 3/24/08 | 3/28/08 | 4/1/08
Date Expired: 8/28/08 | 9/4/08 | 9/14/08 | 9/24/08 | 9/28/08 | 10/1/08
Manufacturer:
Storage Condition:

MW #: axadsl225-3
By: Andrea
Matrix: AQ
Amount: 1L
Lot #:

Component	Comment	Standard	Concentration
50ppm Std	200ml dilute to 1L DI H2O	axad:71127	
"	"	"	
"	"	"	
"	"	"	
"	"	"	

Comment:

(3)

Reagent: TDS 10ppm
Date Received/Prepped: 3/4/08 | 3/14/08 | 3/20/08 | 4/1/08 | 4/24/08 | 5/4/08
Date Expired: 10/4/08 | 10/14/08 | 10/20/08 | 11/1/08 | 11/24/08 | 11/4/08
Manufacturer:
Storage Condition:

MW #: AxADSL401-3
By: Andrea
Matrix: AQ
Amount: 1L
Lot #:

Component	Comment	Standard	Concentration
50ppm Std	200ml dilute to 1L DI H2O		
"	"	"	

Comment:

2

Reagent: TDS 720ppm
Date Received/Prepped: 4/4/08 | 4/17/08 | ~~5/3/08~~ 5/4/08 | 5/5/08 | 5/30/08
Date Expired: 10/4/08 | 10/17/08 | ~~11/3/08~~ 11/4/08 | 11/5/08 | 11/30/08
Manufacturer:
Storage Condition:

MW #: 9x9080404-2
By: Andrea
Matrix: AQ
Amount: 1L
Lot #: 46252709

Component	Comment	Standard	Concentration
Sodium Sulfate	Weigh 0.7103g & dilute w/		
	1L of DI H_2O		
	~~.710~~ 0.6995g to 1L DI H_2O	9x080417-2	

Comment:

Reagent: ~~TDS 10ppm~~
Date Received/Prepped: ~~4/15/08 | 4/17/08 | 4/23/08 | 4/29/08 | 5/1/08 | 5/7/08~~
Date Expired: ~~10/15/08 | 10/17/08 | 10/23/08 | 10/29/08 | 11/1/08 | 11/7/08~~
Manufacturer:
Storage Condition:

MW #: AxD080415-3 #
By: AxD
Matrix: AQ
Amount: 1L
Lot #:

Component	Comment	Standard	Concentration
~~500ppm Soln~~	~~20 mL dilute in 1000 mL DI H_2O~~	~~AxD071213-4 #~~	
~~"~~	~~"~~		
~~"~~	~~"~~	~~AxD080423-3~~	

Comment:

Reagent: ~~TSS 10ppm~~
Date Received/Prepped: ~~4/30/08 | 5/12/08 | 5/21/08 | 6/10/08 |~~
Date Expired: ~~10/30/08 | 11/12/08 | 11/21/08 | 12/10/08 |~~
Manufacturer:
Storage Condition:

MW #: AxA080430-2
By: Andrea
Matrix:
Amount:
Lot #:

Component	Comment	Standard	Concentration
~~0.0118g celite~~	~~dilute w/ 1L of DI H_2O~~	~~R220030~~	~~10~~
~~"~~	~~"~~		
~~"~~	~~"~~		
~~"~~	~~"~~		
~~"~~			

Comment: R220030