

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term Laboratory Duplicate refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. Abbreviations: LOR = Limit of Reporting, RPD = Relative Percent Difference.
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit
- Result between 10 and 20 times LOR, 0% - 50%
- Result > 20 times LOR, 0% - 20%

Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
ED093F: Dissolved Major Cations						
ED093F: Dissolved Major Cations - (QC Lot: 48918)						
ES0501498-016	Anonymous	Calcium	1 mg/L	223	224	0.7
		Magnesium	1 mg/L	212	213	0.0
ES0501501-001	Anonymous	Calcium	1 mg/L	15	15	0.0
		Magnesium	1 mg/L	2	2	0.0
ED093F: Dissolved Major Cations - (QC Lot: 48920)						
ES0501569-006	MW13D	Calcium	1 mg/L	14	14	0.0
		Magnesium	1 mg/L	66	66	0.0
ES0501599-004	Anonymous	Calcium	1 mg/L	107	107	0.0
		Magnesium	1 mg/L	179	178	0.0
EG020F: Dissolved Metals by ICP-MS						
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 47782)						
ES0501551-011	Anonymous	Arsenic	0.001 mg/L	0.017	0.016	7.2
		Cadmium	0.0001 mg/L	0.0007	0.0007	0.0
		Chromium	0.001 mg/L	0.012	0.012	0.0
		Copper	0.001 mg/L	0.021	0.022	0.0
		Lead	0.001 mg/L	0.002	0.002	0.0
		Nickel	0.001 mg/L	0.004	0.006	19.7
		Zinc	0.005 mg/L	0.098	0.101	2.9
ES0501569-003	MW20S	Arsenic	0.001 mg/L	0.013	0.013	0.0
		Cadmium	0.0001 mg/L	<0.0001	<0.0001	0.0
		Chromium	0.001 mg/L	<0.005	<0.005	0.0
		Copper	0.001 mg/L	0.001	0.001	0.0
		Lead	0.001 mg/L	0.005	0.005	0.0
		Nickel	0.001 mg/L	0.002	0.002	0.0
		Zinc	0.005 mg/L	0.020	0.018	11.2



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Work Order : ES0501569
ALS Quote Reference : SY/221/04

Client : SINCLAIR KNIGHT MERZ
Project : ENO1669

Laboratory Duplicates (DUP) Report

Matrix Type: WATER

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG035F: Dissolved Mercury by FIMS						
EG035F: Dissolved Mercury by FIMS - (QC Lot: 49640)						
ES0501551-011	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
ES0501554-010	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
EG035F: Dissolved Mercury by FIMS - (QC Lot: 49641)						
ES0501569-007	MW17D	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
ES0501596-010	Anonymous	Mercury	0.0001 mg/L	<0.0001	<0.0001	0.0
EG050F: Hexavalent Chromium - Filtered						
EG050F: Hexavalent Chromium - Filtered - (QC Lot: 47321)						
ES0501569-001	MW06S	Hexavalent Chromium	0.010 mg/L	<0.010	<0.010	0.0
EK055G: Ammonia as N by Discrete Analyser						
EK055G: Ammonia as N by Discrete Analyser - (QC Lot: 47439)						
ES0501554-001	Anonymous	Ammonia as N	0.010 mg/L	1.81	1.77	2.3
ES0501554-010	Anonymous	Ammonia as N	0.010 mg/L	2.21	1.86	17.2
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 47331)						
ES0501569-001	MW06S	Nitrite + Nitrate as N	0.010 mg/L	0.382	0.364	4.8
EK061: Total Kjeldahl Nitrogen (TKN)						
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 47830)						
ES0501501-001	Anonymous	Total Kjeldahl Nitrogen as N	0.1 mg/L	0.8	0.6	34.3
EP005: Total Organic Carbon (TOC)						
EP005: Total Organic Carbon (TOC) - (QC Lot: 47633)						
EB0501750-001	Anonymous	Total Organic Carbon	1 mg/L	47	45	4.3
ES0501580-002	Anonymous	Total Organic Carbon	1 mg/L	13	13	0.0
EP026: Chemical Oxygen Demand (COD)						
EP026: Chemical Oxygen Demand (COD) - (QC Lot: 47779)						
ES0501528-001	Anonymous	Chemical Oxygen Demand	5 mg/L	64	65	1.6
ES0501569-004	MW07D	Chemical Oxygen Demand	5 mg/L	68	67	1.5
EP026: Chemical Oxygen Demand (COD) - (QC Lot: 48044)						
ES0501569-005	MW18D	Chemical Oxygen Demand	5 mg/L	19	19	0.0
EP030: Biochemical Oxygen Demand (BOD)						
EP030: Biochemical Oxygen Demand (BOD) - (QC Lot: 47538)						
ES0501569-001	MW06S	Biochemical Oxygen Demand	2 mg/L	2	<2	0.0

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Matrix Type: WATER

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074A: Monocyclic Aromatic Hydrocarbons						
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 48425)						
ES0501569-001	MW06S	Benzene	5 µg/L	<5	<5	0.0
		Toluene	5 µg/L	<5	<5	0.0
		Ethylbenzene	5 µg/L	<5	<5	0.0
		meta- & para-Xylene	5 µg/L	<5	<5	0.0
		Styrene	5 µg/L	<5	<5	0.0
		ortho-Xylene	5 µg/L	<5	<5	0.0
		Isopropylbenzene	5 µg/L	<5	<5	0.0
		n-Propylbenzene	5 µg/L	<5	<5	0.0
		1,3,5-Trimethylbenzene	5 µg/L	<5	<5	0.0
		sec-Butylbenzene	5 µg/L	<5	<5	0.0
		1,2,4-Trimethylbenzene	5 µg/L	<5	<5	0.0
		tert-Butylbenzene	5 µg/L	<5	<5	0.0
		p-Isopropyltoluene	5 µg/L	<5	<5	0.0
		n-Butylbenzene	5 µg/L	<5	<5	0.0
ES0501569-005	MW18D	Benzene	5 µg/L	17	22	23.3
		Toluene	5 µg/L	<5	<5	0.0
		Ethylbenzene	5 µg/L	<5	<5	0.0
		meta- & para-Xylene	5 µg/L	<5	<5	0.0
		Styrene	5 µg/L	<5	<5	0.0
		ortho-Xylene	5 µg/L	<5	<5	0.0
		Isopropylbenzene	5 µg/L	<5	<5	0.0
		n-Propylbenzene	5 µg/L	<5	<5	0.0
		1,3,5-Trimethylbenzene	5 µg/L	<5	<5	0.0
		sec-Butylbenzene	5 µg/L	<5	<5	0.0
		1,2,4-Trimethylbenzene	5 µg/L	<5	<5	0.0
		tert-Butylbenzene	5 µg/L	<5	<5	0.0
		p-Isopropyltoluene	5 µg/L	<5	<5	0.0
		n-Butylbenzene	5 µg/L	<5	<5	0.0
EP074B: Oxygenated Compounds						
EP074B: Oxygenated Compounds - (QC Lot: 48425)						
ES0501569-001	MW06S	Vinyl Acetate	50 µg/L	<50	<50	0.0
		2-Butanone (MEK)	50 µg/L	<50	<50	0.0
		4-Methyl-2-pentanone (MIBK)	50 µg/L	<50	<50	0.0
		2-Hexanone (MBK)	50 µg/L	<50	<50	0.0
ES0501569-005	MW18D	Vinyl Acetate	50 µg/L	<50	<50	0.0
		2-Butanone (MEK)	50 µg/L	<50	<50	0.0
		4-Methyl-2-pentanone (MIBK)	50 µg/L	<50	<50	0.0
		2-Hexanone (MBK)	50 µg/L	<50	<50	0.0

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Matrix Type: WATER

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074C: Sulfonated Compounds						
EP074C: Sulfonated Compounds - (QC Lot: 48425)						
ES0501569-001	MW06S	Carbon disulfide	5 µg/L	<5 µg/L	<5 µg/L	0.0
ES0501569-005	MW18D	Carbon disulfide	5 µg/L	<5 µg/L	<5 µg/L	0.0
EP074D: Fumigants						
EP074D: Fumigants - (QC Lot: 48425)						
ES0501569-001	MW06S	2,2-Dichloropropane	5 µg/L	<5 µg/L	<5 µg/L	0.0
		1,2-Dichloropropane	5 µg/L	<5 µg/L	<5 µg/L	0.0
		cis-1,3-Dichloropropylene	5 µg/L	<5 µg/L	<5 µg/L	0.0
		trans-1,3-Dichloropropylene	5 µg/L	<5 µg/L	<5 µg/L	0.0
		1,2-Dibromoethane (EDB)	5 µg/L	<5 µg/L	<5 µg/L	0.0
ES0501569-005	MW18D	2,2-Dichloropropane	5 µg/L	<5 µg/L	<5 µg/L	0.0
		1,2-Dichloropropane	5 µg/L	<5 µg/L	<5 µg/L	0.0
		cis-1,3-Dichloropropylene	5 µg/L	<5 µg/L	<5 µg/L	0.0
		trans-1,3-Dichloropropylene	5 µg/L	<5 µg/L	<5 µg/L	0.0
		1,2-Dibromoethane (EDB)	5 µg/L	<5 µg/L	<5 µg/L	0.0



Matrix Type: WATER

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074E: Halogenated Aliphatic Compounds						
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 48425)						
ES0501569-001	MW06S	Dichlorodifluoromethane	50 µg/L	<50	<50	0.0
		Chloromethane	50 µg/L	<50	<50	0.0
		Vinyl chloride	50 µg/L	<50	<50	0.0
		Bromomethane	50 µg/L	<50	<50	0.0
		Chloroethane	50 µg/L	<50	<50	0.0
		Trichlorofluoromethane	50 µg/L	<50	<50	0.0
		1,1-Dichloroethene	5 µg/L	<5	<5	0.0
		Iodomethane	5 µg/L	<5	<5	0.0
		trans-1,2-Dichloroethene	5 µg/L	<5	<5	0.0
		1,1-Dichloroethane	5 µg/L	<5	<5	0.0
		cis-1,2-Dichloroethene	5 µg/L	<5	<5	0.0
		1,1,1-Trichloroethane	5 µg/L	<5	<5	0.0
		1,1-Dichloropropylene	5 µg/L	<5	<5	0.0
		Carbon Tetrachloride	5 µg/L	<5	<5	0.0
		1,2-Dichloroethane	5 µg/L	<5	<5	0.0
		Trichloroethene	5 µg/L	<5	<5	0.0
		Dibromomethane	5 µg/L	<5	<5	0.0
		1,1,2-Trichloroethane	5 µg/L	<5	<5	0.0
		1,3-Dichloropropane	5 µg/L	<5	<5	0.0
		Tetrachloroethene	5 µg/L	<5	<5	0.0
ES0501569-005	MW18D	1,1,1,2-Tetrachloroethane	5 µg/L	<5	<5	0.0
		trans-1,4-Dichloro-2-butene	5 µg/L	<5	<5	0.0
		cis-1,4-Dichloro-2-butene	5 µg/L	<5	<5	0.0
		1,1,2,2-Tetrachloroethane	5 µg/L	<5	<5	0.0
		1,2,3-Trichloropropane	5 µg/L	<5	<5	0.0
		Pentachloroethane	5 µg/L	<5	<5	0.0
		1,2-Dibromo-3-chloropropane	5 µg/L	<5	<5	0.0
		Hexachlorobutadiene	5 µg/L	<5	<5	0.0
		Dichlorodifluoromethane	50 µg/L	<50	<50	0.0
		Chloromethane	50 µg/L	<50	<50	0.0
		Vinyl chloride	50 µg/L	<50	<50	0.0
		Bromomethane	50 µg/L	<50	<50	0.0
		Chloroethane	50 µg/L	<50	<50	0.0
		Trichlorofluoromethane	50 µg/L	<50	<50	0.0
		1,1-Dichloroethene	5 µg/L	<5	<5	0.0
		Iodomethane	5 µg/L	<5	<5	0.0
		trans-1,2-Dichloroethene	5 µg/L	<5	<5	0.0
		1,1-Dichloroethane	5 µg/L	<5	<5	0.0

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Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
ES0501569-005	MW18D	cis-1,2-Dichloroethene	5 µg/L	<5	<5	0.0
		1,1,1-Trichloroethane	5 µg/L	<5	<5	0.0
		1,1-Dichloropropylene	5 µg/L	<5	<5	0.0
		Carbon Tetrachloride	5 µg/L	<5	<5	0.0
		1,2-Dichloroethane	5 µg/L	<5	<5	0.0
		Trichloroethene	5 µg/L	<5	<5	0.0
		Dibromomethane	5 µg/L	<5	<5	0.0
		1,1,2-Trichloroethane	5 µg/L	<5	<5	0.0
		1,3-Dichloropropane	5 µg/L	<5	<5	0.0
		Tetrachloroethene	5 µg/L	<5	<5	0.0
		1,1,1,2-Tetrachloroethane	5 µg/L	<5	<5	0.0
		trans-1,4-Dichloro-2-butene	5 µg/L	<5	<5	0.0
		cis-1,4-Dichloro-2-butene	5 µg/L	<5	<5	0.0
		1,1,2,2-Tetrachloroethane	5 µg/L	<5	<5	0.0
		1,2,3-Trichloropropane	5 µg/L	<5	<5	0.0
		Pentachloroethane	5 µg/L	<5	<5	0.0
		1,2-Dibromo-3-chloropropane	5 µg/L	<5	<5	0.0
		Hexachlorobutadiene	5 µg/L	<5	<5	0.0

EP074F: Halogenated Aromatic Compounds

EP074F: Halogenated Aromatic Compounds - (QC Lot: 48425)

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
ES0501569-001	MW06S	Chlorobenzene	5 µg/L	<5	<5	0.0
		Bromobenzene	5 µg/L	<5	<5	0.0
		2-Chlorotoluene	5 µg/L	<5	<5	0.0
		4-Chlorotoluene	5 µg/L	<5	<5	0.0
		1,3-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,4-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,2-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,2,4-Trichlorobenzene	5 µg/L	<5	<5	0.0
		1,2,3-Trichlorobenzene	5 µg/L	<5	<5	0.0
		Chlorobenzene	5 µg/L	<5	<5	0.0
ES0501569-005	MW18D	Bromobenzene	5 µg/L	<5	<5	0.0
		2-Chlorotoluene	5 µg/L	<5	<5	0.0
		4-Chlorotoluene	5 µg/L	<5	<5	0.0
		1,3-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,4-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,2-Dichlorobenzene	5 µg/L	<5	<5	0.0
		1,2,4-Trichlorobenzene	5 µg/L	<5	<5	0.0



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Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP074G: Trihalomethanes						
EP074G: Trihalomethanes - (QC Lot: 48425)						
ES0501569-001	MW06S	Chloroform	5 µg/L	<5	<5	0.0
		Bromodichloromethane	5 µg/L	<5	<5	0.0
		Dibromochloromethane	5 µg/L	<5	<5	0.0
		Bromoform	5 µg/L	<5	<5	0.0
ES0501569-005	MW18D	Chloroform	5 µg/L	<5	<5	0.0
		Bromodichloromethane	5 µg/L	<5	<5	0.0
		Dibromochloromethane	5 µg/L	<5	<5	0.0
		Bromoform	5 µg/L	<5	<5	0.0
EP074H: Naphthalene						
EP074H: Naphthalene - (QC Lot: 48425)						
ES0501569-001	MW06S	Naphthalene	5 µg/L	<7	<5	33.3
ES0501569-005	MW18D	Naphthalene	5 µg/L	<7	<5	33.3
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 48424)						
ES0501569-001	MW06S	C6 - C9 Fraction	20 µg/L	<20	<20	0.0
ES0501569-005	MW18D	C6 - C9 Fraction	20 µg/L	<20	<20	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Abbreviations: LOR = Limit of

Matrix Type: WATER

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name		LOR	Method blank result	Actual Results		Recovery Limits	
				Spike concentration	Spike Recovery	Dynamic Recovery Limits	High
ED093F: Dissolved Major Cations							
ED093F: Dissolved Major Cations - (QC Lot: 48918)							
Calcium	1 mg/L		mg/L		%	%	%
	1 mg/L		50		101	70	130
	1 mg/L		<1		----	----	----
Magnesium	1 mg/L				99.2	70	130
	1 mg/L		<1		----	----	----
ED093F: Dissolved Major Cations - (QC Lot: 48920)							
Calcium	1 mg/L		mg/L		%	%	%
	1 mg/L		<1		----	----	----
	1 mg/L		50		102	70	130
Magnesium	1 mg/L		<1		----	----	----
	1 mg/L		50		98.9	70	130
EG020F: Dissolved Metals by ICP-MS							
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 47782)							
Arsenic	0.001 mg/L		mg/L		%	%	%
	0.001 mg/L		<0.001		110	70	130
	0.0001 mg/L		----		----	----	----
Cadmium	0.0001 mg/L		0.1		100	70	130
	0.0001 mg/L		<0.0001		----	----	----
Chromium	0.001 mg/L		0.1		98.6	70	130
	0.001 mg/L		<0.001		----	----	----
Copper	0.001 mg/L		0.1		103	70	130
	0.001 mg/L		<0.001		----	----	----
Lead	0.001 mg/L		0.1		102	70	130
	0.001 mg/L		<0.001		----	----	----
Nickel	0.001 mg/L		0.1		107	70	130
	0.001 mg/L		<0.001		----	----	----
Zinc	0.005 mg/L		0.1		97.5	70	130
	0.005 mg/L		<0.005		----	----	----