

APPENDIX E

Measurement Performance Criteria Tables

Appendix E: Measurement Performance Criteria Table

TABLE E-1
Measurement Performance Criteria for Volatile Organic Compounds in Soil and Water

Matrix	Soil and Groundwater				
Analytical Group	Volatile organic compounds (VOC), Gasoline-Range Organics (GRO), Volatile Total Petroleum Hydrocarbon Speciation				
Concentration Level	Low/Medium				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
Water: SOP-13	SW8260B:	Precision	RPD, reference Appendix K	MS, MSD, FD	S&A
Soil: SOP-07, SOP-22	EMAX: EMAX-SW8260B	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, MS, surrogate spikes, internal standards, calibration	A
	TestAmerica: WS-MS-0001 AK101:				
	EMAX: EMAX-AK101	Completeness	>90% Laboratory Analysis for soil matrices, >95% for water matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
	TestAmerica: WS-MS-0001 AK101/SW8021B: Field Lab: KAL01.01				
NWVPH: TestAmerica: TA-GS-0339-R10	Representativeness	Contamination of sample or extract with a target analytes	MB, TB, EB	S&A	
		Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A
		Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A

TABLE E-2
Measurement Performance Criteria for Semi-Volatile Organic Compounds in Soil and Water

Matrix	Soil and Groundwater				
Analytical Group	Semivolatile organic compounds, Polynuclear Aromatic Hydrocarbons, Diesel Range Organics, Residual Range Organics and Extractable Total Petroleum Hydrocarbon Speciation				
Concentration Level	Low/Medium				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
Water: SOP-13	SW8270C:	Precision	RPD, reference Appendix K	MS, MSD, FD	S&A
Soil: SOP-07, SOP-22	EMAX: EMAX-8270	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, MS, surrogate spikes, internal standards, calibration	A
	TestAmerica: WS-OP-0001, WS-MS-0005				
	SW8270C-SIM:	Completeness	>90% Laboratory Analysis for soil matrices, >95% for water matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
	EMAX: EMAX-8270SIM				
	TestAmerica: WS-OP-0001, WS-MS-0008	Representativeness	Contamination of sample or extract with a target analytes	MB, TB, EB	S&A
	AK102/AK103:				
EMAX: EMAX-AK102, EMAX-AK103					
Field Lab: KAL02.01	Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A	
NWEPH:					
TestAmerica: TA-GS-0339-R10	Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A	

TABLE E-3
Measurement Performance Criteria for Pesticides and Polychlorinated Biphenyls in Soil and Water

Matrix	Soil and Groundwater				
Analytical Group	Pesticides and Polychlorinated Biphenyls				
Concentration Level	NA				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
Water: SOP-13	SW8081A:	Precision	RPD, reference Appendix K	MS, MSD, FD, second-column confirmation	S&A
Soil: SOP-07, SOP-22	EMAX: EMAX-8081 TestAmerica: WS-OP-0002, WS-GC-0001	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, MS, surrogate spikes, internal standards, calibration	A for confirmation A
	SW8082: EMAX: EMAX-8082 TestAmerica: WS-OP-0001, WS-GC-0002	Completeness	>90% Laboratory Analysis for soil matrices, >95% for water matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
		Representativeness	Contamination of sample or extract with a target analytes	MB, TB, EB	S&A
		Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A
		Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A

TABLE E-4
Measurement Performance Criteria for Dioxins and Furans in Soil and Water

Matrix	Soil and Groundwater				
Analytical Group	Dioxins and Furans				
Concentration Level	NA				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
Water: SOP-13	SW8290:	Precision	RPD, reference Appendix K	MS, MSD, FD	S&A
Soil: SOP-07, SOP-22	TestAmerica: WS-ID-0005, WS-IDP-0005	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, MS, surrogate spikes, internal standards, calibration	A
		Completeness	>90% Laboratory Analysis for soil matrices, >95% for water and air matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
		Representativeness	Contamination of sample or extract with a target analytes	MB, TB, EB	S&A
		Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A
		Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A

TABLE E-5
Measurement Performance Criteria for Metals and Mercury in Soil and Water

Matrix	Soil and Groundwater				
Analytical Group	Metals and Mercury				
Concentration Level	NA				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
Water: SOP-13	SW6010B:	Precision	RPD, reference Appendix K	MS, MSD, FD, LD	S&A
Soil: SOP-07, SOP-22	EMAX: EMAX-6010	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, MS, post-digestion spikes, serial dilutions, internal standards, calibration, ICS	A
	TestAmerica: WS-IP-0001, WS-IP-0002, WS-MT-0003				
	SW6020:	Completeness	>90% Laboratory Analysis for soil matrices, >95% for water matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
	EMAX: EMAX-6020	Representativeness	Contamination of sample or extract with a target analytes	MB, TB, CB, EB	S&A
	TestAmerica: WS-IP-0001, WS-IP-0002, SAC-MT-0001				
SW7470A:	Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A	
EMAX: EMAX-7470, EMAX-7471	SW7471A:	Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A
TestAmerica: WS-MT-0005	EMAX: EMAX-7470A/7471A				
	TestAmerica: WS-MT-0007				

TABLE E-6
Measurement Performance Criteria for Volatile Organic Compounds in Soil Vapor

Matrix	Soil Vapor				
Analytical Group	VOCs and GRO				
Concentration Level	NA				
Sampling Procedure/Field SOP	Analytical Method/Laboratory SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QB Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)
SOP-15	TO-15: EMAX: EMAX-TO-15	Precision	RPD, reference Appendix K	FD	S&A
	AirToxics: SOP-6 TO-3:	Accuracy/Bias	Percent recovery, reference Appendix K	LCS, surrogate spikes, internal standards, calibration	A
	AirToxics: SOP-43	Completeness	>95% for water and air matrices	Percent completeness, measure of the amount of valid data obtained compared with the amount that was expected to be obtained.	S&A
		Representativeness	Contamination of sample or extract with a target analytes	MB	S&A
		Comparability	Qualitative measure for field sampling and analytical procedures	Industry standard methods, QAPP compliance	S&A
		Sensitivity	Verification of accurate assessment of data at the MDL where the MDL meets project objectives	In control calibrations, MBs, current and valid MDL for the matrix/method.	A