QAPP Worksheet #12 **Title:**
(UFP-QAPP Manual Section 2.6.2) **Revision Number:**

Measurement Performance Criteria Table

Matrix	Aqueous/Soil
Analytical Group[1]	Semi-Volatiles
Concentration Level	

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See worksheet #28 & #23	Precision Accuracy	% RPD < 30 Compound Specific (full range: D-262%)	LCS Duplicate	A
		Accuracy	Factor of two(-50% to + 100%) from the initial/continuing calibration	Internal standards	A
		Accuracy	Compound Specific (full range: D-262%)	Matrix spike	A
		Accuracy	Limits 30%-120% for Base Neutrals Limits 20%-120% for Acids	Surrogate Compounds	A
		Accuracy	< RL	Method Blank	A

QAPP Worksheet #12 **Title:**
(UFP-QAPP Manual Section 2.6.2) **Revision Number:**

Measurement Performance Criteria Table

Matrix	Aqueous/Soil
Analytical Group[1]	Metals/Mercury
Concentration Level	Low

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See #28/ #23	Precision	% RPD < 20(Aq), % RPD <25(Soil)	LCS Duplicate	A
		Accuracy	Limits: Average Recovery ± 20% aqueous, ± 25% Soil)	LCS	A
		Accuracy	± 20% aqueous, ± 25% Soil)	Matrix spike	A
		Precision	< RL Except for Al, Fe, Ca, K, Mg and Na	Interference Check Sample(ICP/AES)	A
		Accuracy	< RL	Method Blank	A
		Precision	RPD < 20 %	Serial Dilution Test(ICP/AES)	A
		Accuracy	Range of 0.60-1.87 of the original response in the calibration blank	Internal Standards(ICP-MS)	A

QAPP Worksheet #12
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Measurement Performance Criteria Table

Matrix	Aqueous/Soils
Analytical Group[1]	Microbiology
Concentration Level	N/A

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See worksheets #28/ #23	Media selectivity,sensitivity	Growth promotion	LCS(Positive Control)	A
		Precision	10% (different analyst) 5%(same analyst)	Sample Duplicates Count	A
		Contamination	No growth	Method Blank	A
		Media /containers selectivity,sensitivity Contamination	No growth	Sterility or Performance Testing	A

QAPP Worksheet #12
(UFP-QAPP Manual Section 2.6.2)

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Revision Number:
Revision Date:

Measurement Performance Criteria Table

Matrix	Aqueous/Soil
Analytical Group[1]	Pest/PCB
Concentration Level	

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See worksheets #28/ #23	Precision Accuracy	% RPD < 30 Average Recovery 50-150%	LCS Duplicate	A
		Accuracy	Compound Specific (full range: 30-150%)	Matrix spike	A
		Accuracy	Limits 30%-150%	Surrogate Compounds	A
		Accuracy	< RL	Method Blank	A

QAPP Worksheet #12 **Title:**
(UFP-QAPP Manual Section 2.6.2) **Revision Number:**

Measurement Performance Criteria Table

Matrix	Aqueous/Soil
Analytical Group[1]	Sanitary
Concentration Level	Low

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See worksheets #28/ #23	Precision	% RPD < 20	LCS Duplicates	A
		Accuracy	90-110% or manufacturer limits	LCS	A
		Accuracy	± 20%	Matrix Spike	A
		Precision	% RPD < 20	Sample Duplicates	A
		Accuracy	< RL	Method Blank	A

QAPP Worksheet #12 **Title:**
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Measurement Performance Criteria Table

Matrix	Aqueous/Soil
Analytical Group[1]	VOA
Concentration Level	Low(aq)/Medium(soil)

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
NA	See worksheets #28/ #23	Precision Accuracy	% RPD < 20 Average Recovery 70-130%	LCS Duplicate	A
		Accuracy	Factor of two(-50% to + 100%) from the initial/continuing calibration	Internal standards	A
		Accuracy	Compound Specific (full range: 17-259%)	Matrix spike	A
		Accuracy	Limits 70%-130%(Aqueous) Table 7 of C-123(low Soil)	Surrogate Compounds	A
		Accuracy	< RL	Method Blank	A

QAPP Worksheet #12 **Title:**
(UFP-QAPP Manual Section 2.6.2) **Revision Number:**
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Measurement Performance Criteria Table

Matrix	Aqueous
Analytical Group[1]	VOA
Concentration Level	Trace

Sampling Procedure[2]	**Analytical Method/SOP[3]**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria**	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
NA	See worksheets #28/ #23	Precision Accuracy	% RPD < 20 Average Recovery(80-120%)	LCS Duplicate	A
		Accuracy	+/- 40% from the initial/continuing calibration	Internal standards	A
		Accuracy	Limits 70%-130%	Matrix spike	A
		Accuracy	Limits 80%-120%	Surrogate Compounds	A
		Accuracy	< RL	Method Blank	A

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Metals-ICP/AES
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQLs µg/l	Achievable Laboratory (DESA) Limits[2] MDLs µg/l	RLs µg/l
Aluminum	7429-90-5		200	93.9	200
Antimony	7440-36-0		60	0.71	20
Arsenic	7440-38-2		10	2.26	8
Barium	7440-39-3		200	0.83	6
Beryillum	7440-41-7		5	0.24	5
Cadmium	7440-43-9		5	0.11	4
Calcium	7440-70-2		5000	68.0	1000
Chromium	7440-47-3		10	0.22	6
Cobalt	7440-48-4		50	0.18	8
Copper	7440-50-8		25	5.89	10
Iron	7439-89-6		100	35.6	100
Lead	7439-92-1		10	1.18	7
Magnesium	7439-95-4		5000	30..5	1000
Manganese	7439-96-5		15	0.07	5
Mercury	7439-97-6		0.2	.017	0.2
Nickel	7440-02-0		40	0.46	5
Potassium	7440-09-7		5000	53.3	1000
Selenium	7782-49-2		35	1.34	7
Silver	7440-22-4		10	.030	6
Sodium	7440-23-5		5000	161	1000
Thallium	7440-28-0		25	1.62	20
Vanadium	7440-62-2		50	2.14	10
Zinc	7440-66-6		60	4.84	8

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Metals-ICP/MS
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQLs µg/l	Achievable Laboratory (DESA) Limits[2] MDLs µg/l	RLs µg/l
Aluminum	7429-90-5		-	1.19	10
Antimony	7440-36-0		2	0.022	2.0
Arsenic	7440-38-2		1	0.062	1.0
Barium	7440-39-3		10	0.031	1.0
Beryillum	7440-41-7		1	0.010	1.0
Cadmium	7440-43-9		1	0.009	1.0
Calcium	7440-70-2		-		-
Chromium	7440-47-3		2	0.314	1.0
Cobalt	7440-48-4		1	0.015	1.0
Copper	7440-50-8		2	0.315	1.0
Iron	7439-89-6		-		-
Lead	7439-92-1		1	0.011	1.0
Magnesium	7439-95-4		-		-
Manganese	7439-96-5		1	0.135	1.0
Mercury	7439-97-6		-		-
Nickel	7440-02-0		1	0.471	1.0
Potassium	7440-09-7		-		-
Selenium	7782-49-2		5	0.183	5.0
Silver	7440-22-4		1	0.007	1.0
Sodium	7440-23-5		-		-
Thallium	7440-28-0		1	0.013	1.0
Vanadium	7440-62-2		1	0.082	1.0
Zinc	7440-66-6		2	0.165	1.0

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: Metals
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQLs mg/kg	Achievable Laboratory (DESA) Limits[2] MDLs mg/kg	RLsmg/kg
Aluminum	7429-90-5		20	*	100
Antimony	7440-36-0		6	0.22	2
Arsenic	7440-38-2		1	0.35	0.8
Barium	7440-39-3		20	0.24	10
Beryillum	7440-41-7		0.5	0.02	0.3
Cadmium	7440-43-9		0.5	0.02	0.3
Calcium	7440-70-2		500	12.57	50
Chromium	7440-47-3		1	0.34	0.5
Cobalt	7440-48-4		5	0.03	2
Copper	7440-50-8		2.5	0.26	1
Iron	7439-89-6		10	*	5
Lead	7439-92-1		1	0.23	0.8
Magnesium	7439-95-4		500	5.06	50
Manganese	7439-96-5		1.5	0.33	0.5
Mercury	7439-97-6		0.1	.0043	0.05
Nickel	7440-02-0		4	0.09	2
Potassium	7440-09-7		500	12.36	50
Selenium	7782-49-2		3.5	0.22	2
Silver	7440-22-4		1	0.06	0.5
Sodium	7440-23-5		500	22.48	100
Thallium	7440-28-0		2.5	3.14	2
Vanadium	7440-62-2		5	0.40	2
Zinc	7440-66-6		6	1.57	2

* MDL study cannot be successfully performed on these analytes because of high background levels in matrix (sand).

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: PEST/PCB Aroclors
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQLs µg/L	Achievable Laboratory (DESA) Limits[2] MDLs µg/L	RLs µg/L
alpha-BHC	319-89-6		0.050	0.001	0.0025
gamma-BHC	58-89-9		0.050	0.001	0.0025
beta-BHC	319-85-7		0.050	0.002	0.0025
delta-BHC	319-86-8		0.050	0.002	0.0025
HEPTACHLOR	76-44-8		0.050	0.001	0.0025
ALDRIN	309-00-2		0.050	0.001	0.0025
HEPTACHLOR EPOXIDE	1024-57-3		0.050	0.005	0.0025
gamma-CHLORDANE	5103-74-2		0.050	0.001	0.0025
alpha-CHLORDANE	5103-71-9		0.050	0.002	0.0025
ENDOSULFAN I	1031-07-8		0.050	0.002	0.0025
4,4'-DDE	72-55-9		0.10	0.003	0.005
DIELDRIN	60-57-1		0.10	0.004	0.005
ENDRIN	72-20-8		0.10	0.004	0.005
4,4'-DDD	72-54-8		0.10	0..005	0.005
ENDOSULFAN II	1031-078		0.10	0.004	0.005
4,4'-DDT	50-29-3		0.10	0.004	0.005
ENDRIN ALDEHYDE	7421-93-4		0.10	0.006	0.005
METHOXYCHLOR	72-43-5		0.50	0.032	0.050
ENDOSULFAN SULFATE	1031-07-8		0.10	0.004	0.005
ENDRIN KETONE	53494-70-5		0.10	0.004	0.005
TOXAPHENE	8001-35-2		5.0	0.049	0.1875
TECHNICAL CHLORDANE				0.020	0.0625
AROCLOR 1016	12674-11-2		1.0		0.03125
AROCLOR 1221	11104-28-2		1.0		0.0625
AROCLOR 1232	11141-16-5		1.0		0.03125
AROCLOR 1242	53469-21-9		1.0	0.020	0.03125
AROCLOR 1248	12672-29-6		1.0		0.03125
AROCLOR 1254	11097-69-1		1.0	0.014	0.03125
AROCLOR 1260	11096-82-5		1.0		0.03125
AROCLOR 1262	37324-23-5		1.0		0.03125
AROCLOR 1268	11100-14-4		1.0		0.03125

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: PEST/PCBs
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs µg/kg	Achievable Laboratory (DESA) Limits[2] MDLs µg/kg	RLs µg/kg
alpha-BHC	319-89-6		1.7	2.15	2.5
gamma-BHC	58-89-9		1.7	1.89	2.5
beta-BHC	319-85-7		1.7	1.35	2.5
delta-BHC	319-86-8		1.7	1.51	2.5
HEPTACHLOR	76-44-8		1.7	2.05	2.5
ALDRIN	309-00-2		1.7	1.66	2.5
HEPTACHLOR EPOXIDE	1024-57-3		1.7	1.34	2.5
gamma-CHLORDANE	5103-74-2		1.7	0.96	2.5
alpha-CHLORDANE	5103-71-9		1.7	1.01	2.5
ENDOSULFAN I	1031-07-8		1.7	1.16	2.5
4,4'-DDE	72-55-9		3.3	1.92	5.0
DIELDRIN	60-57-1		3.3	1.91	5.0
ENDRIN	72-20-8		3.3	1.84	5.0
4,4'-DDD	72-54-8		3.3	1.35	5.0
ENDOSULFAN II	1031-078		3.3	1.27	5.0
4,4'-DDT	50-29-3		3.3	1.52	5.0
ENDRIN ALDEHYDE	7421-93-4		3.3	2.24	5.0
METHOXYCHLOR	72-43-5		17	8.00	25
ENDOSULFAN SULFATE	1031-07-8		3.3	1.24	2.5
ENDRIN KETONE	53494-70-5		3.3	1.18	2.5
TOXAPHENE	8001-35-2		170	75.9	190
TECHNICAL CHLORDANE				56.1	62
AROCLOR 1016	12674-11-2		33		31
AROCLOR 1221	11104-28-2		33		62
AROCLOR 1232	11141-16-5		33		31
AROCLOR 1242	53469-21-9		33	29.9	31
AROCLOR 1248	12672-29-6		33		31
AROCLOR 1254	11097-69-1		33		31
AROCLOR 1260	11096-82-5		33		31
AROCLOR 1262	37324-23-5		33		31
AROCLOR 1268	11100-14-4		33		31

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Sanitary Chemistry
Concentration Level:

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs [5]	Achievable Laboratory (DESA) Limits MDLs mg/L	RLs mg/l
Alkalinity	471-34-1			0.11	1.0
Ammonia	7664-41-7			0.010	0.05
Chloride	16887-00-6			0.54	1.0
COD				8.89	20
Cyanide	57-12-5		10ug/l	1.29 µg/l	5.0 µg/l
Fluoride (IC)				0.0040o	0.10
Fluoride (ISE)	016984488			.036	1.00
Hexavalent Chromium	018540299			6.21 µg/l	10.0 ug/l
Nitrite (NO2) (as N)	014797650			0.010	0.05
Nitrite (NO2) (as N) IC				0.0030	0.10
Nitrate (NO3) (as N)	014797558			0.010	0.05
Nitrate (NO3) (as N) IC				0.050	0.10
Nitrite + Nitrate (as N)	7727-37-9			0.0020	0.05
O-PO4	14265-44-2			0.0030	0.01
0P04 (IC)				0.039	0.10
Oil and Grease(Hexane extractable Material)				1.280	5.0
TPH(Silica-Gel treated Hexane Extractable material)				4.66	5.0
TSS				N/A	10
BOD	E1640606			N/A	2.0
Total Phenols				7.13 µg/l	10.0 µg/l
Sulfate	14808-79-8			1.34	5.0
Total Phosphorus	77723-14-0			0.0060	0.05
TKN				0.070	0.10
Sulfide				0.0090	0.05
TOC	10-19-5			0.19	1.0

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Semi -Volatile Organic Compounds
Concentration Level: Low

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs	Achievable Laboratory (DESA) Limits MDLs µg/L	RLs
BENZALDEHYDE	100-52-7		5 µg/L	0.10	5 µg/L
PHENOL	108-95-2		5 µg/L	1.36	5 µg/L
BIS(2-CHLOROETHYL)ETHER	111-44-4		5 µg/L	1.38	5 µg/L
2-CHLOROPHENOL	95-57-8		5 µg/L	1.43	5 µg/L
2-METHYLPHENOL	95-48-7		5 µg/L	0.99	5 µg/L
BIS(2-CHLOROISOPROPYL)ETHER	108-60-1		5 µg/L	1.23	5 µg/L
ACETOPHENONE	98-86-2		5 µg/L	0.9	5 µg/L
4-METHYLPHENOL	106-44-5		5 µg/L	0.81	5 µg/L
N-NITROSO-DI-N-PROPYLAMINE	621-64-7		5 µg/L	0.99	5 µg/L
HEXACHLOROETHANE	67-72-1		5 µg/L	1.35	5 µg/L
NITROBENZENE	98-95-3		5 µg/L	1.13	5 µg/L
ISOPHORONE	78-59-1		5 µg/L	0.76	5 µg/L
2-NITROPHENOL	88-75-5		5 µg/L	1.08	5 µg/L
2,4-DIMETHYLPHENOL	105-67-9		5 µg/L	1.81	5 µg/L
BIS(2-CHLOROETHOXY)METHANE	111-91-1		5 µg/L	0.97	5 µg/L
2,4-DICHLOROPHENOL	120-83-2		5 µg/L	0.94	5 µg/L
NAPHTHALENE	91-20-3		5 µg/L	1.05	5 µg/L
4-CHLOROANILINE	106-47-8		5 µg/L	0.42	5 µg/L
HEXACHLOROBUTADIENE	87-68-3		5 µg/L	1.02	5 µg/L
CAPROLACTAM	105-60-2		5 µg/L	1.0	5 µg/L
4-CHLORO-3-METHYLPHENOL	59-50-7		5 µg/L	0.62	5 µg/L
2-METHYL NAPHTHALENE	91-57-6		5 µg/L	0.88	5 µg/L
HEXACHLOROCYCLOPENTADIENE	77-47-4		5 µg/L	0.92	5 µg/L
1,2,4,5-TETRACHLOROBENZENE	95-94-3		5 µg/L	0.8	5 µg/L
2,4,6-TRICHLOROPHENOL	88-06-2		5 µg/L	0.55	5 µg/L
2,4,5-TRICHLORPHENOL	95-95-4		5 µg/L	0.76	5 µg/L
1,1'-BIPHENYL	92-52-4		5 µg/L	1.0	5 µg/L
2-CHLORONAPHTHALENE	91-58-7		5 µg/L	0.80	5 µg/L
2-NITROANILINE	88-74-4		10 µg/L	0.70	5 µg/L
DIMETHYL PHTHALATE	131-11-3		5 µg/L	0.47	5 µg/L
ACENAPHTHYLENE	208-96-8		10 µg/L	0.77	5 µg/L
2,6-DINITROTOLUENE	606-20-2		5 µg/L	0.79	5 µg/L
3-NITROANILINE	99-09-2		10 µg/L	0.76	5 µg/L
ACENAPHTHENE	83-32-9		5 µg/L	0.72	5 µg/L
2,4-DINITROPHENOL	51-28-5		10 µg/L	0.33	20µg/L
4-NITROPHENOL	100-02-7		10 µg/L	0.35	10µg/L
DIBENZOFURAN	132-64-9		5 µg/L	0.72	5 µg/L
2,4-DINITROTOLUENE	121-14-2		5 µg/L	0.48	5 µg/L
2,3,4,6-TETRACHLOROPHENOL	58-90-2		5 µg/L		5 µg/L
FLUORENE	86-73-7		5 µg/L	0.61	5 µg/L
DIETHYLPHTHALATE	84-66-2		5 µg/L	0.39	5 µg/L
4-CHLOROPHENYL PHENYL ETHER	7005-72-3		5 µg/L	0.57	5 µg/L

Analyte	CAS	Project			
4-NITROANILINE	100-01-6		10 µg/L	0.34	5 µg/L
4,6-DINITRO-2-METHYLPHENOL	534-52-1		10 µg/L	0.85	10µg/L
N-NITROSODIPHENYLAMINE	86-30-6		5 µg/L	0.61	5 µg/L
4-BROMOPHENYL PHENYL ETHER	101-55-3		5 µg/L	0.58	5 µg/L
HEXACHLOROBENZENE	118-74-1		5 µg/L	0.49	5 µg/L
ATRAZINE	1912-24-9		5 µg/L	1.5	5 µg/L
PENTACHLOROPHENOL	87-86-5		10 µg/L	0.91	10µg/L
PHENANTHRENE	85-01-8		5 µg/L	0.47	5 µg/L
ANTHRACENE	120-12-7		5 µg/L	0.58	5 µg/L
CARBAZOLE	86-74-8		5 µg/L	1.2	5 µg/L
DI-N-BUTYL PHTHALATE	84-74-2		5 µg/L	0.48	5 µg/L
FLUORANTHENE	206-44-0		5 µg/L	0.51	5 µg/L
PYRENE	129-00-0		5 µg/L	0.53	5 µg/L
BUTYLBENZYLPHTHALATE	85-68-7		5 µg/L	0.49	5 µg/L
3,3-DICHLOROBENZIDINE	91-94-1		5 µg/L	0.4	5 µg/L
BENZO(A)ANTHRACENE	56-55-3		5 µg/L	0.58	5 µg/L
CHRYSENE	218-01-9		5 µg/L	0.53	5 µg/L
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		5 µg/L	0.68	5 µg/L
DI-N-OCTYL PHTHALATE	117-84-0		5 µg/L	0.57	5 µg/L
BENZO(B)FLUORANTHENE	205-99-2		5 µg/L	0.41	5 µg/L
BENZO(K)FLUORANTHENE	207-08-9		5 µg/L	0.60	5 µg/L
BENZO(A)PYRENE	50-32-8		5 µg/L	0.55	5 µg/L
INDENO(1,2,3-CD)PYRENE	193-39-5		5 µg/L	0.50	5 µg/L
DIBENZO(A,H)ANTHRCENE	53-70-6-3		5 µg/L	0.42	5 µg/L
BENZO(G,H,I)PERYLENE	191-24-2		5 µg/L	0.35	5 µg/L
*1,4-DIOXANE					2 µg/L

* MDL study is being performed

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: Semi -Volatile Organic Compounds
Concentration Level: low

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs [5] µg/kg	Achievable Laboratory (DESA) Limits[2] MDLs µg/kg	RLs µg/kg
BENZALDEHYDE	100-52-7		170		120
PHENOL	108-95-2		170		120
BIS(2-CHLOROETHYL)ETHER	111-44-4		170		120
2-CHLOROPHENOL	95-57-8		170		120
2-METHYLPHENOL	95-48-7		170		120
BIS(2-CHLOROISOPROPYL)ETHER	108-60-1		170		120
ACETOPHENONE	98-86-2		170		120
4-METHYLPHENOL	106-44-5		170		120
N-NITROSO-DI-N-PROPYLAMINE	621-64-7		170		120
HEXACHLOROETHANE	67-72-1		170		120
NITROBENZENE	98-95-3		170		120
ISOPHORONE	78-59-1		170		120
2-NITROPHENOL	88-75-5		170		120
2,4-DIMETHYLPHENOL	105-67-9		170		120
BIS(2-CHLOROETHOXY)METHANE	111-91-1		170		120
2,4-DICHLOROPHENOL	120-83-2		170		120
NAPHTHALENE	91-20-3		170		120
4-CHLOROANILINE	106-47-8		170		120
HEXACHLOROBUTADIENE	87-68-3		170		120
CAPROLACTAM	105-60-2		170		120
4-CHLORO-3-METHYLPHENOL	59-50-7		170		120
2-METHYL NAPHTHALENE	91-57-6		170		120
HEXACHLOROCYCLOPENTADIENE	77-47-4		170		120
1,2,4,5-TETRACHLOROBENZENE	95-94-3		170		120
2,4,6-TRICHLOROPHENOL	88-06-2		170		120
2,4,5-TRICHLORPHENOL	95-95-4		170		120
1,1'-BIPHENYL	92-52-4		170		120
2-CHLORONAPHTHALENE	91-58-7		170		120
2-NITROANILINE	88-74-4		330		120
DIMETHYL PHTHALATE	131-11-3		170		120
ACENAPHTHYLENE	208-96-8		170		120
2,6-DINITROTOLUENE	606-20-2		170		120
3-NITROANILINE	99-09-2		330		120
ACENAPHTHENE	83-32-9		170		120
2,4-DINITROPHENOL	51-28-5		330		800
4-NITROPHENOL	100-02-7		330		400
DIBENZOFURAN	132-64-9		170		120
2,4-DINITROTOLUENE	121-14-2		170		120
2,3,4,6-TETRACHLOROPHENOL	58-90-2		170		120
FLUORENE	86-73-7		170		120
DIETHYLPHTHALATE	84-66-2		170		120
4-CHLOROPHENYL PHENYL ETHER	7005-72-3		170		120

Analyte	CAS	Project			
4-NITROANILINE	100-01-6		330		120
4,6-DINITRO-2-METHYLPHENOL	534-52-1		330		400
N-NITROSODIPHENYLAMINE	86-30-6		170		120
4-BROMOPHENYL PHENYL ETHER	101-55-3		170		120
HEXACHLOROBENZENE	118-74-1		170		120
ATRAZINE	1912-24-9		170		120
PENTACHLOROPHENOL	87-86-5		330		400
PHENANTHRENE	85-01-8		170		120
ANTHRACENE	120-12-7		170		120
CARBAZOLE	86-74-8		170		120
DI-N-BUTYL PHTHALATE	84-74-2		170		120
FLUORANTHENE	206-44-0		170		120
PYRENE	129-00-0		170		120
BUTYLBENZYLPHTHALATE	85-68-7		170		120
3,3-DICHLOROBENZIDINE	91-94-1		170		120
BENZO(A)ANTHRACENE	56-55-3		170		120
CHRYSENE	218-01-9		170		120
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		170		120
DI-N-OCTYL PHTHALATE	117-84-0		170		120
BENZO(B)FLUORANTHENE	205-99-2		170		120
BENZO(K)FLUORANTHENE	207-08-9		170		120
BENZO(A)PYRENE	50-32-8		170		120
INDENO(1,2,3-CD)PYRENE	193-39-5		170		120
DIBENZO(A,H)ANTHRCENE	53-70-6-3		170		120
BENZO(G,H,I)PERYLENE	191-24-2		170		120
1,4-DIOXANE					

Note: Based on the new CRQLs the MDL study is currently being reanalyzed.

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Volatile Organic Compounds
Concentration Level: Low

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs	Achievable Laboratory (DESA) Limit MDLs µg/L	RLs
Dichlorodifluoromethane	75-71-8		5 µg/L	0.3	5 µg/L
Chloromethane	74-87-3		5 µg/L	0.54	5 µg/L
Vinyl Chloride	75-01-4		5 µg/L	1.52	5 µg/L
Bromomethane	74-83-9		5 µg/L	1.90	5 µg/L
Chloroethane	75-00-3		5 µg/L	1.01	5 µg/L
Trichlorofluoromethane	75-69-4		5 µg/L	2.18	5 µg/L
1,1-Dichloroethene	75-35-4		5 µg/L	1.12	5 µg/L
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		5 µg/L	0.3	5 µg/L
Carbon Disulfide	75-15-0		5 µg/L	1.58	5 µg/L
Acetone	67-64-1		10 µg/L	0.67	10 µg/L
Methyl Acetate	79-20-9		5 µg/L	0.4	5 µg/L
Methylene Chloride	75-09-2		5 µg/L	0.52	5 µg/L
trans-1,2-Dichloroethene	156-60-5		5 µg/L	0.91	5 µg/L
cis-1,2-Dichloroethene	156-59-2		5 µg/L	0.2	5 µg/L
Methyl tert-Butyl Ether	1634-04-4		5 µg/L	0.4	5 µg/L
1,1-Dichloroethane	75-34-3		5 µg/L	0.58	5 µg/L
2-Butanone	78-93-3		10 µg/L	0.7	10 µg/L
Chloroform	67-66-3		5 µg/L	0.44	5 µg/L
1,2-Dichloroethane	107-06-2		5 µg/L	0.55	5 µg/L
1,1,1-Trichloroethane	71-55-6		5 µg/L	0.6	5 µg/L
Cyclohexane	110-82-7		5 µg/L	0.6	5 µg/L
Carbon Tetrachloride	56-23-5		5 µg/L	1.23	5 µg/L
Benzene	71-43-2		5 µg/L	0.46	5 µg/L
Trichloroethene	79-01-6		5 µg/L	0.99	5 µg/L
Methylcyclohexane	108-87-2		5 µg/L	0.7	5 µg/L
1,2-Dichloropropane	78-87-5		5 µg/L	0.44	5 µg/L
Bromodichloromethane	75-27-4		5 µg/L	0.51	5 µg/L
cis-1,3-Dichloropropene	10061-01-5		5 µg/L	0.63	5 µg/L
trans-1,3-Dichloropropene	10061-02-6		5 µg/L	0.4	5 µg/L
1,1,2-Trichloroethane	79-00-5		5 µg/L	0.3	5 µg/L
Dibromochloromethane	124-48-1		5 µg/L	0.2	5 µg/L
4-Methyl-2-Pentanone	108-10-1		10 µg/L	0.64	10 µg/L
Toluene	108-88-3		5 µg/L	0.77	5 µg/L
1,2-Dibromoethane	106-93-4		5 µg/L	0.2	5 µg/L
Chlorobenzene	108-90-7		5 µg/L	0.59	5 µg/L
Tetrachloroethene	127-18-4		5 µg/L	1.11	5 µg/L

Analyte	CAS	Project			
2-Hexanone	591-78-6		10 µg/L	0.68	10 µg/L
Ethylbenzene	100-41-4		5 µg/L	0.59	5 µg/L
m,p-Xylene	179601-23-1		5 µg/L	1.17	5 µg/L
o-Xylene	95-47-6		5 µg/L	0.56	5 µg/L
Styrene	100-42-5		5 µg/L	0.57	5 µg/L
Bromoform	75-25-2		5 µg/L	0.43	5 µg/L
Isopropylbenzene	98-82-8		5 µg/L	0.3	5 µg/L
1,1,2,2-Tetrachloroethane	79-34-5		5 µg/L	0.64	5 µg/L
1,3-Dichlorobenzene	541-73-1		5 µg/L	0.82	5 µg/L
1,4-Dichlorobenzene	106-46-7		5 µg/L	0.84	5 µg/L
1,2-Dichlorobenzene	95-50-1		5 µg/L	0.75	5 µg/L
1,2-Dibromo-3-Chloropropane	96-12-8		5 µg/L	0.7	5 µg/L
1,2,4-Trichlorobenzene	120-82-1		5 µg/L	0.4	5 µg/L
*1,2,3-Trichlorobenzene	87-61-6		5 µg/L		5 µg/L
* Bromochloromethane	74-97-5		5 µg/L		5 µg/L

* MDL study will be performed.

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: Volatile Organic Compounds
Concentration Level: Low

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method QLs µg/kg	Achievable Laboratory (DESA) Limits[2] MDLs µg/kg	RLs µg/kg
Dichlorodifluoromethane	75-71-8		5	0.7	5
Chloromethane	74-87-3		5	2.2	5
Vinyl Chloride	75-01-4		5	*	5
Bromomethane	74-83-9		5	1.3	5
Chloroethane	75-00-3		5	0.9	5
Trichlorofluoromethane	75-69-4		5	0.4	5
1,1-Dichloroethene	75-35-4		5	0.7	5
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		5	0.8	5
Carbon Disulfide	75-15-0		5	0.8	5
Acetone	67-64-1		10	4.0	10
Methyl Acetate	79-20-9		5	1.6	5
Methylene Chloride	75-09-2		5	0.6	5
trans-1,2-Dichloroethene	156-60-5		5	0.5	5
cis-1,2-Dichloroethene	156-59-2		5	0.6	5
Methyl tert-Butyl Ether	1634-04-4		5	0.3	5
1,1-Dichloroethane	75-34-3		5	0.7	5
2-Butanone	78-93-3		10	1.2	10
Chloroform	67-66-3		5	0.3	5
1,2-Dichloroethane	107-06-2		5	0.5	5
1,1,1-Trichloroethane	71-55-6		5	0.3	5
Cyclohexane	110-82-7		5	0.4	5
Carbon Tetrachloride	56-23-5		5	1.9	5
Benzene	71-43-2		5	0.5	5
Trichloroethene	79-01-6		5	0.6	5
Methylcyclohexane	108-87-2		5	0.8	5
1,2-Dichloropropane	78-87-5		5	0.5	5
Bromodichloromethane	75-27-4		5	0.5	5
cis-1,3-Dichloropropene	10061-01-5		5	0.6	5
trans-1,3-Dichloropropene	10061-02-6		5	0.6	5
1,1,2-Trichloroethane	79-00-5		5	0.3	5
Dibromochloromethane	124-48-1		5	0.5	5
4-Methyl-2-Pentanone	108-10-1		10	0.6	10
Toluene	108-88-3		5	1.2	5
1,2-Dibromoethane	106-93-4		5	0.4	5
Chlorobenzene	108-90-7		5	0.8	5

Analyte	CAS	Project			
Tetrachloroethene	127-18-4		5	0.5	5
2-Hexanone	591-78-6		10	0.5	10
Ethylbenzene	100-41-4		5	0.6	5
m,p-Xylene	179601-23-1		5	1.1	5
o-Xylene	95-47-6		5	0.7	5
Styrene	100-42-5		5	0.7	5
Bromoform	75-25-2		5	0.6	5
Isopropylbenzene	98-82-8		5	0.6	5
1,1,2,2-Tetrachloroethane	79-34-5		5	0.4	5
1,3-Dichlorobenzene	541-73-1		5	1.1	5
1,4-Dichlorobenzene	106-46-7		5	1.2	5
1,2-Dichlorobenzene	95-50-1		5	1.0	5
1,2-Dibromo-3-Chloropropane	96-12-8		5	0.5	5
1,2,4-Trichlorobenzene	120-82-1		5	1.5	5
1,2,3-Trichlorobenzene	87-61-6		5	1.5	5
Bromochloromethane	74-97-5		5	0.6	5

* MDL Study will be performed

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: Volatile Organic Compounds
Concentration Level: Medium

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQL µg/kg	Achievable Laboratory (DESA) Limits[2] MDLs µg/kg	RLs µg/kg
Dichlorodifluoromethane	75-71-8		250		250
Chloromethane	74-87-3		250		250
Vinyl Chloride	75-01-4		250		250
Bromomethane	74-83-9		250		250
Chloroethane	75-00-3		250		250
Trichlorofluoromethane	75-69-4		250		250
1,1-Dichloroethene	75-35-4		250		250
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		250		250
Carbon Disulfide	75-15-0		250		250
Acetone	67-64-1		500		500
Methyl Acetate	79-20-9		250		250
Methylene Chloride	75-09-2		250		250
trans-1,2-Dichloroethene	156-60-5		250		250
cis-1,2-Dichloroethene	156-59-2		250		250
Methyl tert-Butyl Ether	1634-04-4		250		250
1,1-Dichloroethane	75-34-3		250		250
2-Butanone	78-93-3		500		500
Chloroform	67-66-3		250		250
1,2-Dichloroethane	107-06-2		250		250
1,1,1-Trichloroethane	71-55-6		250		250
Cyclohexane	110-82-7		250		250
Carbon Tetrachloride	56-23-5		250		250
Benzene	71-43-2		250		250
Trichloroethene	79-01-6		250		250
Methylcyclohexane	108-87-2		250		250
1,2-Dichloropropane	78-87-5		250		250
Bromodichloromethane	75-27-4		250		250
cis-1,3-Dichloropropene	10061-01-5		250		250
trans-1,3-Dichloropropene	10061-02-6		250		250
1,1,2-Trichloroethane	79-00-5		250		250
Dibromochloromethane	124-48-1		250		250
4-Methyl-2-Pentanone	108-10-1		500		500
Toluene	108-88-3		250		250
1,2-Dibromoethane	106-93-4		250		250
Chlorobenzene	108-90-7		250		250
Tetrachloroethene	127-18-4		250		250

Analyte	CAS	Project			
2-Hexanone	591-78-6		500		500
Ethylbenzene	100-41-4		250		250
m,p-Xylene	179601-23-1		250		250
o-Xylene	95-47-6		250		250
Styrene	100-42-5		250		250
Bromoform	75-25-2		250		250
Isopropylbenzene	98-82-8		250		250
1,1,2,2-Tetrachloroethane	79-34-5		250		250
1,3-Dichlorobenzene	541-73-1		250		250
1,4-Dichlorobenzene	106-46-7		250		250
1,2-Dichlorobenzene	95-50-1		250		250
1,2-Dibromo-3-Chloropropane	96-12-8		250		250
1,2,4-Trichlorobenzene	120-82-1		250		250
1,2,3-Trichlorobenzene	87-61-6		250		250
Bromochloromethane	74-97-5		250		250

Note: Based on the new CRQLs the MDL study is currently being reanalyzed.

QAPP Worksheet #15
Reference Limits and Evaluation Table

Matrix: Aqueous
Analytical Group: Volatile Organic Compounds
Concentration Level: Trace

Analyte	CAS Number	Project (PRP) Quantitation Limit [3]	Method CRQLs	Achievable Laboratory (DESA) Limits[2] MDLsug/l	RLs
Dichlorodifluoromethane	75-71-8		0.5ug/l	0.11	0.5ug/l
Chloromethane	74-87-3		0.5ug/l	0.07	0.5ug/l
Vinyl Chloride	75-01-4		0.5ug/l	0.12	0.5ug/l
Bromomethane	74-83-9		0.5ug/l	0.14	0.5ug/l
Chloroethane	75-00-3		0.5ug/l	0.14	0.5ug/l
Trichlorofluoromethane	75-69-4		0.5ug/l	0.11	0.5ug/l
1,1-Dichloroethene	75-35-4		0.5ug/l	0.10	0.5ug/l
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		0.5ug/l		0.5ug/l
Carbon Disulfide	75-15-0		0.5ug/l	0.10	0.5ug/l
Acetone	67-64-1		5.0ug/l	0.36	5.0ug/l
Methyl Acetate	79-20-9		0.5ug/l		0.5ug/l
Methylene Chloride	75-09-2		0.5ug/l	0.18	0.5ug/l
trans-1,2-Dichloroethene	156-60-5		0.5ug/l	0.09	0.5ug/l
cis-1,2-Dichloroethene	156-59-2		0.5ug/l	0.06	0.5ug/l
Methyl tert-Butyl Ether	1634-04-4		0.5ug/l	0.03	0.5ug/l
1,1-Dichloroethane	75-34-3		0.5ug/l	0.08	0.5ug/l
2-Butanone	78-93-3		5.0ug/l	0.21	5.0ug/l
Chloroform	67-66-3		0.5ug/l	0.07	0.5ug/l
1,2-Dichloroethane	107-06-2		0.5ug/l	0.09	0.5ug/l
1,1,1-Trichloroethane	71-55-6		0.5ug/l	0.09	0.5ug/l
Cyclohexane	110-82-7		0.5ug/l		0.5ug/l
Carbon Tetrachloride	56-23-5		0.5ug/l	0.10	0.5ug/l
Benzene	71-43-2		0.5ug/l	0.07	0.5ug/l
Trichloroethene	79-01-6		0.5ug/l	0.08	0.5ug/l
Methylcyclohexane	108-87-2		0.5ug/l		0.5ug/l
1,2-Dichloropropane	78-87-5		0.5ug/l	0.04	0.5ug/l
Bromodichloromethane	75-27-4		0.5ug/l	0.06	0.5ug/l
cis-1,3-Dichloropropene	10061-01-5		0.5ug/l	0.05	0.5ug/l
trans-1,3-Dichloropropene	10061-02-6		0.5ug/l	0.04	0.5ug/l
1,1,2-Trichloroethane	79-00-5		0.5ug/l	0.08	0.5ug/l
Dibromochloromethane	124-48-1		0.5ug/l	0.03	0.5ug/l
4-Methyl-2-Pentanone	108-10-1		0.5ug/l	0.10	0.5ug/l
Toluene	108-88-3		0.5ug/l	0.08	0.5ug/l
1,2-Dibromoethane	106-93-4		0.5ug/l	0.04	0.5ug/l
Chlorobenzene	108-90-7		0.5ug/l	0.06	0.5ug/l
Tetrachloroethene	127-18-4		0.5ug/l	0.09	0.5ug/l

Analyte	CAS	Project			
2-Hexanone	591-78-6		5.0ug/l	0.11	5.0ug/l
Ethylbenzene	100-41-4		0.5ug/l	0.06	0.5ug/l
m,p-Xylene	179601-23-1		0.5ug/l	0.13	0.5ug/l
o-Xylene	95-47-6		0.5ug/l	0.05	0.5ug/l
Styrene	100-42-5		0.5ug/l	0.03	0.5ug/l
Bromoform	75-25-2		0.5ug/l	0.07	0.5ug/l
Isopropylbenzene	98-82-8		0.5ug/l	0.06	0.5ug/l
1,1,2,2-Tetrachloroethane	79-34-5		0.5ug/l	0.05	0.5ug/l
1,3-Dichlorobenzene	541-73-1		0.5ug/l	0.05	0.5ug/l
1,4-Dichlorobenzene	106-46-7		0.5ug/l	0.03	0.5ug/l
1,2-Dichlorobenzene	95-50-1		0.5ug/l	0.04	0.5ug/l
1,2-Dibromo-3-Chloropropane	96-12-8		0.5ug/l	0.18	0.5ug/l
1,2,4-Trichlorobenzene	120-82-1		0.5ug/l	0.06	0.5ug/l
1,2,3-Trichlorobenzene	87-61-6		0.5ug/l	0.05	0.5ug/l
Bromochloromethane	74-97-5		0.5ug/l	0.10	0.5ug/l

QAPP Worksheet #19
(UFP-QAPP Manual Section 3.1.1)
For each matrix, analytical group, and concentration level, list the analytical and preparation method/SOP and associated sample volume, container specifications, preservation requirements, and maximum holding time.

Title:
Revision Number:
Revision Date:
Page ___ of ___

Analytical SOP Requirements Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference[1]	Sample Volume number, size	Containers (type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Aqueous	TCL Volatiles	Low Medium	DW-1 (*Ref: EPA 524.2)* C-89 (*Ref: EPA 624*)	3 X40ml 6 X 40ml (QC)	VOA vial with Teflon-lined septum	Cool, 4ºC ; HCL to pH < 2 $Na_2S_2O_3$, if Res CL present	Preserved w/HCL: 14 days: Unpreserved: 7 days
Soil	TCL Volatiles	Low- Medium	C-123 (*Ref:* SOM01.1)	1 x 100g or 4 X Encore Same(QC)	Glass, wide mouth or Encore samplers	Cool, 4ºC or Frozen (-10 to -14)	14 days
Aqueous	TCL Semi-Volatiles	Low	C-90 *(Ref: EPA 625)*	1 X 1000ml 2 X1000 ml(QC)	Amber Glass	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	To extraction: 7 days;40 days to analysis
Soil	TCL Semi-Volatiles	Low	C-90 *(Ref: EPA 625)*	1 x 100g 1 x 100g(QC)	Glass, wide mouth	Cool, 4ºC	To extraction: 14 days;40 days to analysis
Aqueous	Pesticides/PCBs	Low	C-91 *(Ref: EPA 608)*	2 X 1000ml 2 X1000 ml(QC)	Amber Glass	Cool, 4ºC	To extraction: 7 days;40 days to analysis
Soil	Pesticides/PCBs	Low	C-91 *(Ref: EPA 608)*	1 x 100g 1 x 100g(QC)	Glass, wide mouth	Cool, 4ºC	To extraction: 14 days;40 days to analysis

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference[1]	Sample Volume number, size	Containers Type	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Aqueous	TAL Metals/Mercury	Low	C-109, C-116 (*Ref: EPA 200.7)* C- 110, C-112 (*Ref: EPA 245.1*)	1 X 250ml 1 X 500ml(QC)	Rigid Plastic	HNO3 to pH <2	6 months Hg- 28days
Soil	TAL Metals/Mercury	Low	C-109, C-116 (*Ref: EPA 200.7)* C- 110, C-112 (*Ref: EPA 245.1)*	1 X 250g 1 X 250g(QC)	Rigid Plastic/Glass, wide mouth	Cool, 4ºC	6 months Hg- 28days
Aqueous	TCLP Metals/Mercury	Low	C-107, C-109, C-116 (*Ref: EPA 200.7)* C-107, C- 110, C-112 (*Ref: EPA 245.1)*	1 X 1000ml 1 X 1000ml(QC)	Rigid/Glass, wide mouth	Cool, 4ºC	To extraction: 6 months Hg- 28days;6 months Hg- 28days to analysis
Aqueous	TCLP - Volatiles	Low-medium	C-106, C-89 *(Ref: EPA 624)*	2X 40ml and 500ml 4X 40ml and 2X1000ml (QC)	VOA vial with Teflon-lined septum and Amber Glass	Cool, 4ºC	To extraction: 14 days; 14 days to analysis
Soild	TCLP - Volatiles	Low-medium	C-106, C-89 *(Ref: EPA 624)*	2 X 100g or 1 x 100g And 2 x Encore Same (QC)	Glass, wide mouth and/or Encore samplers	Cool, 4ºC or Frozen (-10 to-14)	To extraction: 14 days; 14 days to analysis
Aqueous	TCLP – Semi-Volatiles	Low	C-107, C-90 (*Ref: EPA 625)*	1 X 1000ml 2 x 1000ml (QC)	Amber Glass	Cool, 4ºC	To (TCLP_extraction): 14 days; 7 days after (TCLP_extraction); 40 days after 2nd extraction.
Soil	TCLP – Semi-Volatiles	Low	C-107, C-90 (*Ref: EPA 625)*	1X 250 g 1X 250g (QC)	Glass, wide mouth	Cool, 4ºC	To (TCLP_extraction): 14 days; 7 days after (TCLP_extraction); 40 days after 2nd extraction.

Soil	TCLP – Pesticides	Low	C-107, C-91 *(Ref: EPA 608)*	1 X 250g 1 x 250g (QC)	Glass, wide mouth	Cool, 4ºC	To (TCLP_extraction): 14 days; 7 days after (TCLP_extraction); 40 days after 2nd extraction.
Soil	Cyanide	Low	C-28 (*Ref:* EPA 335.4)	1 X 20g 1 X 50g (QC)	Rigid/Glass, wide mouth	Cool, 4ºC	14 days
Soil	TOC	N/A	C-88 (*Ref: SM 5310 B*)	1 x 50g 1 X 50g (QC)	Glass, wide mouth	Cool, 4ºC	None
Soil	pH	N/A	C-24 *(Ref: EPA 4500-H+ B*)	1 X 100g 1 X 250g(QC)	Rigid Plastic,widemouth	Cool, 4ºC	As soon as possible
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume number, size**	**Containers type**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	BOD	N/A	C-21 (*Ref: SM 5210 B*)	1 X 2000 ml or 2 X 1000ml (QC)	Rigid Plastic	Cool, 4ºC ;	48 hours
Aqueous	Ammonia	N/A	C-80 (*Ref: EPA 350.1*)	1 X 250 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Chloride	N/A	C-22 (*Ref: EPA 405.1*) C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	None	28 days
Aqueous	COD	N/A	C-53 (*Ref: EPA 410.4)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Fluoride	N/A	C-93 (*Ref: USGS-I-4327-85)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	None	28 days

Aqueous	Nitrite	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours
Aqueous	Nitrate	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours
Aqueous	Nitrite+ Nitrate	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	28 days
Aqueous-Grab	Oil +Grease	N/A	C-95 (*Ref: EPA 1664A)*	1 X 1000 ml 3 X 1000ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume number, size**	**Containers Type**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous-Grab	Total Petroleum Hydrocarbon	N/A	C-95 (*Ref: EPA 1664A)*	1 X 1000 ml 3 X 1000ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Soil	Total Petroleum Hydrocarbon	N/A	C-95 (*Ref: EPA 1664A)*	250g 250g (QC)	Glass, wide mouth	Cool, 4ºC	28 days
Aqueous	Total Phenols	N/A	C-29 (*Ref: EPA 420.4)*	1 X 250ml 1 X 250ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Sulfate	N/A	C-19 (*Ref: ASTM D516-02)* C-94 (*Ref: EPA 300.0*)	1 X 100ml 1 X 50ml (QC)	Rigid Plastic	Cool, 4ºC	28 days

Aqueous	Sulfide	N/A	C-115 (*Ref: SM 4500-S^2D)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC ; ZnAcetate +NaOH pH > 9	7 days
Aqueous	Total Phosphorus	N/A	C-68 (*Ref: EPA 365.1)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	TKN	N/A	C-40 (*Ref: EPA 351.2)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume number, size**	**Containers Type**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	Turbidity	N/A	C-81 (*Ref: EPA 351.2)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours
Aqueous	Total Suspended Solids(TSS)/Volatile Suspended Solids(VSS)	N/A	C-33 (*Ref: SM 2540 D)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC	7 days
Aqueous	Total Dissolved Solids (TDS)	N/A	C-37 (*Ref: SM 2540 C)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC	7 days
Aqueous	Total Organic Carbon (TOC)	N/A	C-83 (*Ref: SM 5310 B)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC H_2SO_4 to pH < 2	28 days

NAPL	Ignitability	N/A	C-23 (*Ref: SW846 Method 1010)*	1 X 250ml 1 X 250ml (QC)	Glass, wide mouth or Metal Can	None	None
Aqueous	Specific Conductance	N/A	C-36 (*Ref: EPA 120.1)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	28 days
Aqueous	Hexavalent Chromium	N/A	C-96 (*Ref: USGS-I-1230-85)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC/ Cool, 4ºC pH= 9.3-9.7 Ammonium Sulfate Buffer solution	24 hours/ 28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume number, size**	**Containers Type**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	Alkalinity	N/A	C-18 (*Ref: SM 2320 B)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	14 days
Aqueous	Total Coliform/ Fecal Coliform	N/A	B-6/B-8 (*Ref: SM 9221B/9221E)*	1 X 150ml 1 X 150ml (QC)	Rigid Plastic, wide mouth	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	6 hours
Sewage Sludge	Total Coliform /Fecal Coliform	N/A	B-6/B-8 (*Ref: SM 9221B/9221E)* *B-5/B-7* (*Ref: SM 9222B/9222E)* Colilert-18 *(Ref: SM9223B)*	1 X 250g 1 X 250g (QC)	Rigid Plastic, wide mouth	Cool, 4ºC	24 hours

Aqueous	Heterotrophic Plate Count	N/A	B-32 (*Ref: EPA 9215B)* *B-38* *(Ref: Simplate IDEX)*	1X125 ml	Rigid Plastic, wide mouth	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	8 hours
Soil/Sediment	Grain (Particle) Size	N/A	Bio 8.3 *Ref: ASTM D422-63)*	1 X 16oz/500g/500ml 1 X 16oz/500g/500ml (QC)	Rigid Plastic/ Glass wide mouth	Cool, 4ºC	None

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

QAPP Worksheet #19
(UFP-QAPP Manual Section 3.1.1)
For each matrix, analytical group, and concentration level, list the analytical and preparation method/SOP and associated sample volume, container specifications, preservation requirements, and maximum holding time.

Title:
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Analytical SOP Requirements Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference[1]	Sample Volume	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Aqueous	TCL Volatiles	Low Medium	DW-1 (*Ref: EPA 524.2)* C-89 (*Ref: EPA 624*)	3 X40ml 6 X 40ml (QC)	VOA vial with Teflon-lined septum	Cool, 4ºC ; HCL to pH < 2 $Na_2S_2O_3$, if Res CL present	Preserved w/HCL: 14 days: Unpreserved: 7 days
Soil	TCL Volatiles	Low- Medium	C-123 (*Ref:* SOM01.1)	1 x 100g or 4 X Encore Same(QC)	Glass, wide mouth or Encore samplers	Cool, 4ºC or Frozen (-10 to -14)	14 days
Aqueous	TCL Semi-Volatiles	Low	C-90 *(Ref: EPA 625)*	2 X 1000ml 2 X1000 ml(QC)	Amber Glass	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	To extraction: 7 days;40 days to analysis
Soil	TCL Semi-Volatiles	Low	C-90 *(Ref: EPA 625)*	1 x 250g 1 x 250g(QC)	Glass, wide mouth	Cool, 4ºC	To extraction: 14 days;40 days to analysis
Aqueous	Pesticides/PCBs	Low	C-91 *(Ref: EPA 608)*	2 X 1000ml 2 X1000 ml(QC)	Amber Glass	Cool, 4ºC	To extraction: 7 days;40 days to analysis
Soil	Pesticides/PCBs	Low	C-91 *(Ref: EPA 608)*	1 x 100g 1 x 100g(QC)	Glass, wide mouth	Cool, 4ºC	To extraction: 14 days;40 days to analysis

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference[1]	Sample Volume	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Aqueous	TAL Metals/Mercury	Low	C-109, C-116 (*Ref: EPA 200.7)* C- 110, C-112 (*Ref: EPA 245.1*)	1 X 500ml 1 X 250ml(QC)	Rigid Plastic	HNO3 to pH <2	6 months Hg- 28days
Soil	TAL Metals/Mercury	Low	C-109, C-116 (*Ref: EPA 200.7)* C- 110, C-112 (*Ref: EPA 245.1)*	1 X 250ml 1 X 250ml(QC)	Rigid Plastic	HNO3 to pH <2	6 months Hg- 28days
Soil	TCLP Metals/Mercury	Low	C-107, C-109, C-116 (*Ref: EPA 200.7)* C-107, C- 110, C-112 (*Ref: EPA 245.1)*	1 X 1000ml 1 X 1000ml(QC)	Rigid/Glass, wide mouth	Cool, 4ºC	To extraction: 6 months Hg- 28days;6 months Hg- 28days to analysis
Soil	TCLP - Volatiles	Low-medium	C-106, C-89 *(Ref: EPA 624)*	2 X 100g or 1 x 100g And 2 x Encore Same (QC)	Glass, wide mouth and/or Encore samplers	Cool, 4ºC or Frozen (-10 to-14)	To extraction: 14 days; 14 days to analysis
Soil	TCLP – Semi-Volatiles	Low	C-107, C-90 (*Ref: EPA 625)*	1 X 1000g 1 x 1000g (QC)	Amber Glass	Cool, 4ºC	To (TCLP_extraction): 14 days; 7 days after (TCLP_extraction); 40 days after 2nd extraction.
Soil	TCLP – Pesticides	Low	C-107, C-91 *(Ref: EPA 608)*	1 X 250g 1 x 250g (QC)	Glass, wide mouth	Cool, 4ºC	To (TCLP_extraction): 14 days; 7 days after (TCLP_extraction); 40 days after 2nd extraction.
Soil	Cyanide	Low	C-28 (*Ref:* EPA 335.4)	1 X 20g 1 X 50g (QC)	Rigid/Glass, wide mouth	Cool, 4ºC	14 days
Soil	TOC	N/A	C-88 (*Ref: SM 5310 B*)	1 x 50g 1 X 50g (QC)	Glass, wide mouth	Cool, 4ºC	28 days

Soil	pH	N/A	C-24 *(Ref: EPA 4500-H+ B*)	1 X 100g 1 X 250g(QC)	Rigid Plastic,widemouth	Cool, 4ºC	As soon as possible
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume**	**Containers (number, size, and type)**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	BOD	N/A	C-21 (*Ref: SM 5210 B*)	1 X 2000 ml or 2 X 1000ml (QC)	Rigid Plastic	Cool, 4ºC ;	48 hours
Aqueous	Ammonia	N/A	C-80 (*Ref: EPA 350.1*)	1 X 250 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Chloride	N/A	C-22 (*Ref: EPA 405.1*) C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	None	28 days
Aqueous	COD	N/A	C-53 (*Ref: EPA 410.4)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Fluoride	N/A	C-93 (*Ref: USGS-I-4327-85)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	None	28 days
Aqueous	Nitrite	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours
Aqueous	Nitrate	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours

Aqueous	Nitrite+ Nitrate	N/A	C-79 (*Ref: EPA 353.2)* C-94 (*Ref: EPA 300)*	1 X 50 ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	28 days
Aqueous-Grab	Oil +Grease	N/A	C-95 (*Ref: EPA 1664A)*	1 X 1000 ml 3 X 1000ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume**	**Containers (number, size, and type)**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous-Grab	Total Petroleum Hydrocarbon	N/A	C-95 (*Ref: EPA 1664A)*	1 X 1000 ml 3 X 1000ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Soil	Total Petroleum Hydrocarbon	N/A	C-95 (*Ref: EPA 1664A)*	250g 250g (QC)	Glass, wide mouth	Cool, 4ºC	28 days
Aqueous	Total Phenols	N/A	C-29 (*Ref: EPA 420.4)*	1 X 250ml 1 X 250ml (QC)	Glass	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Aqueous	Sulfate	N/A	C-19 (*Ref: ASTM D516-02)* C-94 (*Ref: EPA 300.0*)	1 X 100ml 1 X 50ml (QC)	Rigid Plastic	Cool, 4ºC	28 days
Aqueous	Sulfide	N/A	C-115 (*Ref: SM 4500-S^2D)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC ; ZnAcetate +NaOH pH > 9	7 days
Aqueous	Total Phosphorus	N/A	C-68 (*Ref: EPA 365.1)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days

Aqueous	TKN	N/A	C-40 (*Ref: EPA 351.2)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC ; H_2SO_4 to pH < 2	28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume**	**Containers (number, size, and type)**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	Turbidity	N/A	C-81 (*Ref: EPA 351.2)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	48 hours
Aqueous	Total Suspended Solids(TSS)/Volatile Suspended Solids(VSS)	N/A	C-33 (*Ref: SM 2540 D)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC	7 days
Aqueous	Total Dissolved Solids (TDS)	N/A	C-37 (*Ref: SM 2540 C)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC	7 days
Aqueous	Total Organic Carbon (TOC)	N/A	C-83 (*Ref: SM 5310 B)*	1 X 50ml 1 X 100ml (QC)	Rigid Plastic	Cool, 4ºC	28 days
NAPL	Ignitability	N/A	C-23 (*Ref: SW846 Method 1010)*	1 X 250ml 1 X 250ml (QC)	Glass, wide mouth or Metal Can	None	None
Aqueous	Specific Conductance	N/A	C-36 (*Ref: EPA 120.1)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	28 days

Aqueous	Hexavalent Chromium	N/A	C-96 (*Ref: USGS-I-1230-85)*	1 X 250ml 1 X 500ml (QC)	Rigid Plastic	Cool, 4ºC/ Cool, 4ºC pH= 9.3-9.7 Ammonium Sulfate Buffer solution	24 hours/ 28 days
Matrix	**Analytical Group**	**Concentration Level**	**Analytical and Preparation Method/SOP Reference[1]**	**Sample Volume**	**Containers (number, size, and type)**	**Preservation Requirements (chemical, temperature, light protected)**	**Maximum Holding Time (preparation/ analysis)**
Aqueous	Alkalinity	N/A	C-18 (*Ref: SM 2320 B)*	1 X 100ml 1 X 250ml (QC)	Rigid Plastic	Cool, 4ºC	14 days
Aqueous	Total Coliform/ Fecal Coliform	N/A	B-6/B-8 (*Ref: SM 9221B/9221E)*	1 X 150ml 1 X 150ml (QC)	Rigid Plastic, wide mouth	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	6 hours
Sewage Sludge	Total Coliform /Fecal Coliform	N/A	B-6/B-8 (*Ref: SM 9221B/9221E)* *B-5/B-7* (*Ref: SM 9222B/9222E)* Colilert-18 *(Ref: SM9223B)*	1 X 250g 1 X 250g (QC)	Rigid Plastic, wide mouth	Cool, 4ºC	24 hours
Aqueous	Heterotrophic Plate Count	N/A	B-32 (*Ref: EPA 9215B)* *B-38 (Ref: Simplate IDEX)*	1X125 ml	Rigid Plastic, wide mouth	Cool, 4ºC ; $Na_2S_2O_3$, if Res CL present	8 hours
Soil/Sediment	Grain (Particle) Size	N/A	Bio 8.3 *Ref: ASTM D422-63)*	1 X 16oz/500g/500ml 1 X 16oz/500g/500ml (QC)	Rigid Plastic/ Glass wide mouth	Cool, 4ºC	None

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

QAPP Worksheet #23
(UFP-QAPP Manual Section 3.2.1)

Title:
Revision Number:

Analytical SOP References Table

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work? (Y/N)
Bio 8.3	Grain (Particle)Size, Rev 2.0, 3/07	Definite	Grain (Particle)Size	Soil Hydrometer	DESA LAB	N
B-5/B-7	Total Coliform/ Fecal Coliform, Rev 2.0, 2/07	Definite	Total Coliform/ Fecal Coliform	N/A	DESA LAB	N
B-6/B-8	Total Coliform/ Fecal Coliform, Rev 2.0, 2/07	Definite	Total Coliform/ Fecal Coliform	N/A	DESA LAB	N
C-18	Alkalinity, , Rev 2.0, 3/07	Definite	Alkalinity	Auto Titrator System	DESA LAB	N
C-19, C-94	Sulfate, Rev 2.0, 3//07, Anions by Ion Chromatography, Rev 2.0, 3/07	Definite	Sulfate	Spectrophotometer, AutoAnalyzer, IC	DESA LAB	N
C-21	BOD/CBOD, Rev 2.0, 3/07	Definite	BOD	DO meter	DESA LAB	N
C-22, C-94	Chloride, Rev 2.0, 3//07, Anions by Ion Chromatography, Rev 2.0, 3/07	Definite	Chloride	Titration unit, AutoAnalyzer,, IC	DESA LAB	N
C-23	Ignitability, Rev 1.0, 1/06	Definite	Ignitability	Auto flash Point Test Instrument	DESA LAB	N
C-24	pH, Rev 2.0, 3/07	Definite	pH	pH meter	DESA LAB	N
C-28	Cyanides, Total, Rev 2.0, 3/07	Definite	Cyanide	AutoAnalyzer	DESA LAB	N
Reference Number	**Title, Revision Date, and/or Number**	**Definitive or Screening Data**	**Analytical Group**	**Instrument**	**Organization Performing Analysis**	**Modified for Project Work? (Y/N)**
C-29	Total Phenols, Rev 2.0, 3/07	Definite	Total Phenols	AutoAnalyzer	DESA LAB	N

C-33	Total Suspended Solids(TSS)/Volatile Suspended Solids(VSS), Rev 2.0, 2/07	Definite	Total Dissolved Solids (TDS)	N/A	DESA LAB	N
C-36	Specific Conductance, Rev 2.0, 3/07	Definite	Specific Conductance	Conductivity Meter	DESA LAB	N
C-37	Total Dissolved Solids (TDS) , Rev 2.0, 2/07	Definite	Total Dissolved Solids (TDS)	N/A	DESA LAB	N
C-40	TKN, Rev 2.0, 2/07	Definite	TKN	AutoAnalyzer	DESA LAB	N
C-53	COD, Rev 2.0, 3/07	Definite	COD	COD Reactor, Spectrophotometer	DESA LAB	N
C-68	Total Phosphorus, Rev 2.0, 12/06	Definite	Total Phosphorus	AutoAnalyzer	DESA LAB	N
C-79, C-94	Nitrite, Nitrate, Nitrite+ Nitrate Rev 2.0, 2//07, Anions by Ion Chromatography, Rev 2.0, 12/06	Definite	Nitrite	AutoAnalyzer, IC	DESA LAB	N
C-80	Ammonia, Rev 2.0, 12/06	Definite	Ammonia	AutoAnalyzer	DESA LAB	N
C-81	Turbidity, Rev 2.0, 3/07	Definite	Turbidity	Turbidimeter	DESA LAB	N
C-83	Total Organics in Aqueous, Rev 2.0, 3/07	Definite	Total Organics Carbon	TOC analyzer	DESA LAB	N
C-88	Total Organics in Soil, Rev 1.0, 1/05	Definite	Total Organics Carbon	TOC analyzer	DESA LAB	N
C-89	Analysis of Volatile Organic Compounds in Aqueous, Soil/Sediment and Waste Oil/Waste Organic Solvents Samples by Purge and Trap GC/MS, Rev 2.0, 3/07	Definite	TCL Volatiles(Aqueous)	GC-MS	DESA LAB	N
C-123	Analysis of Volatile Organic Compounds by Automated Closed System by Purge and Trap GC/MS, Rev 2.0, 3/07	Definite	TCL Volatiles(Low Soil)	GC-MS	DESA LAB	N
DW-1	Volatile Organics in Drinking Water by Purge and Trap by GC/MS, Rev 2.0, 3/07	Definite	TCL Volatiles (Trace)	GC-MS	DESA LAB	N

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work? (Y/N)
C-90	Analysis of Base/Neutral and Acid Compounds in Aqueous, Soil/Sediment and Waste Oil/Waste Organic Solvent Samples, Rev 2.0, 3/07	Definite	TCL Semi-Volatiles	GC-MS	DESA LAB	N
C-91	Analysis of Pesticides and PCBs in Aqueous, Soil/Sediments and Waste Oil/Transformer Fluid Matrices, Rev 2.0, 3/07	Definite	Pesticides/ PCBs	GC-ECD	DESA LAB	N
C-93, C-94	Fluoride, Rev 1.0, 1/05, Anions by Ion Chromatography, Rev 2.0, 12/06	Definite	Fluoride	AutoAnalyzer, Ion Selective Electrode, IC	DESA LAB	N
C-95	Oil +Grease, Total Petroleum Hydrocarbon Gravimetric, SPE, Rev 2.0, 03/07	Definite	Oil +Grease	SPE apparatus	DESA LAB	N
C-96	Hexavalent Chromium, Rev 2.0, 3/07	Definite	Hexavalent Chromium	Spectrophotometer	DESA LAB	N
C-109	Determination of Trace Elements in Aqueous Trace Metals in Aqueous, Soil/Sediment/Sludge- ICP-AES, Rev 2.0, 3/07	Definite	TAL Metals	ICP-AES	DESA LAB	N
C-110	Mercury Analysis in Water and Soil/Sediments By CVAAS, Rev 2.0, 3/07	Definite	Mercury	CVAA	DESA LAB	N
C-112	Trace Metals in Aqueous, Soil/Sediment/Sludge, Waste Oil/Organic Solvent and Biological tissue by Inductively Coupled Plasma-Mass Spectrometry, Rev 2.0, 3/07	Definite	TAL Metals	ICP-MS	DESA LAB	N
C-115	Sulfide, Rev 1.0, 3/07	Definite	Sulfide	Spectrophotometer	DESA LAB	N

QAPP Worksheet #24
(UFP-QAPP Manual Section 3.2.2)
Identify all analytical instrumentation that requires calibration and provide the SOP reference number for each. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet.

Title:
Revision Number:
Revision Date:
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Analytical Instrument Calibration Table

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference[1]
ICP-AES	See SOP C-109	See SOP C-109	See SOP C-109	See SOP C-109	Assigned Lab personnel	SOP C-109
ICP-MS	See SOP C-112	See SOP C-112	See SOP C-112	See SOP C-112	Assigned Lab personnel	SOP C-112
CVAAS	See SOP C-110	See SOP C-110	See SOP C-110	See SOP C-110	Assigned Lab personnel	SOP C-110
IC	See SOP C-94	See SOP C-94	See SOP C-94	See SOP C-94	Assigned Lab personnel	SOP C-94
Spectrophotometer	See SOP C-96	See SOP C-96	See SOP C-96	See SOP C-96	Assigned Lab personnel	SOP C-96
Colorimetric/AutoAnalyzer	See SOP C-28 Per manufacture's manual	See SOP C-28	See SOP C-28	See SOP C-28	Assigned Lab personnel	SOP C-28
GC-ECD	See SOP C-91	See SOP C-91	See SOP C-91	See SOP C-91	Assigned Lab personnel	SOP C-91
GC-MS	See SOP C- 90, C-89	See SOP C- 90, C-89	See SOP C- 90, C-89	See SOP C- 90, C-89	Assigned Lab personnel	SOP C- 90, C-89

TOC Analyzer	See SOP C-88, Per manufacture's manual	See SOP C-88	See SOP C-88	See SOP C-88	Assigned Lab personnel	SOP C-88
pH Electrode	See SOP C-24	See SOP C-24	See SOP C-24	See SOP C-24	Assigned Lab personnel	SOP C-24

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23). Details can be found in Equipment Calibration# SOP C-19

QAPP Worksheet #25 **Title:**
(UFP-QAPP Manual Section 3.2.3) **Revision Number:**
Identify all analytical instrumentation that requires maintenance, testing, or inspection and provide the SOP reference number for each. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet. **Revision Date:**
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Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument/ Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference[1]
See list of Instrument given in Worksheet #24	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19	See LQMP, G-10, G-11, G-12, G-19

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

QAPP Worksheet #26
(UFP-QAPP Manual Appendix A)
Use this worksheet to identify components of the project-specific sample handling system. Record personnel, and their organizational affiliations, who are primarily responsible for ensuring proper handling, custody, and storage of field samples from the time of collection, to laboratory delivery, to final sample disposal. Indicate the number of days field samples and their extracts/digestates will be archived prior to disposal.

Title:
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Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization):
Sample Packaging (Personnel/Organization):
Coordination of Shipment (Personnel/Organization):
Type of Shipment/Carrier:
SAMPLE RECEIPT AND ANALYSIS (Details in SOP G-25)
Sample Receipt (Personnel/Organization): OSCAR/DESA LAB
Sample Custody and Storage (Personnel/Organization): OSCAR/DESA LAB
Sample Preparation (Personnel/Organization): Lab Personnel/DESA LAB
Sample Determinative Analysis (Personnel/Organization): Lab Personnel/DESA LAB
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection):
Sample Extract/Digestate Storage (No. of days from extraction/digestion): up to 60 days
Biological Sample Storage (No. of days from sample collection):
SAMPLE DISPOSAL (Details in SOP G-6)
Personnel/Organization: DESA LAB
Number of Days from Analysis: 60 days

QAPP Worksheet #27
(UFP-QAPP Manual Section 3.3.3)
Describe the procedures that will be used to maintain sample custody and integrity. Include examples of chain-of-custody forms, traffic reports, sample identification, custody seals, laboratory sample receipt forms, and laboratory sample transfer forms. Attach or reference applicable SOPs.

Sample Custody Requirements

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory):

Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal):

See LQMP, SOP G-25(OSCAR)

Sample Identification Procedures:

See LQMP, SOP G-25(OSCAR)

Chain-of-custody Procedures:

See LQMP, SOP G-25(OSCAR)

QAPP Worksheet #28 (Semi volatiles)
(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Title:
Revision Number:
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QC Samples Table

Matrix	Aqueous/ Soil
Analytical Group	SVOC
Concentration Level	
Sampling SOP	
Analytical Method/ SOP Reference	C-90 (Ref: EPA 625)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Tuning	12 hr period	Pass all DFTPP tune criteria	Check Instrument Reanalyze, Retune	Lab personnel	Sensitivity	Pass all DFTPP tune criteria
Initial Calibration	SOP C-90	% RSD +/- 35% Allowed to fail 10% of total number of analytes but % RSD not be more than 60%	Check Instrument, Reanalyze	Lab personnel	Accuracy/ Precision	% RSD +/- 35% Allowed to fail 10% of total number of analytes but % RSD not be more than 60%
Continuing Calibration Check Standard (Alternate check standard)	1 per analytical batch of ≤ 20 samples	Min RRF 0.05 Max %D +/- 20% 10% of total analytes allowed to fail but not more than 60%	Reanalyze, Qualify data	Lab personnel	Accuracy	Min RRF 0.05 Max %D RRF +/- 20% 10% of total analytes allowed to fail but not more than 60%
Method Blank	1 per extraction batch of ≤ 20 samples	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL

LCS/LFB	2 per extraction batch of ≤ 20 samples	Limits listed in Table3 in SOP C-90 for aqueous, manufacture's limits for soil % RPD < 30	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy/ Precision	Limits listed in Table3 in SOP C-90 for aqueous, manufacture's limits for soil % RPD < 30
Laboratory Matrix spikes	1 per extraction batch of ≤ 20 samples	Limits listed in Table3 in SOP C-90	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy	Limits listed in Table3 in SOP C-90
Internal Standards	Each sample, standard, blank	Factor of two (-50% to -100%)	Check Instrument Analyse / Qualify data	Lab personnel	Quantitation	Factor of two (-50% to -100%)
Surrogates	Each sample, standard, blank	30%-120% for Base Neutrals 20-120% for Acids	Reinject, Qualify data as per SOP C-90	Lab personnel	Extraction efficiency, Accuracy	30%-120% for Base Neutrals 20-120% for Acids

QAPP Worksheet #28 (Metal+ Mercury) **Title:**
(UFP-QAPP Manual Section 3.4) **Revision Number:**
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions. **Revision Date:**
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QC Samples Table

Matrix	Aqueous/Soil
Analytical Group	Metals & Mercury
Concentration Level	Trace/Low
Sampling SOP	
Analytical Method/ SOP Reference	C-109,C-112, C-110 (Ref: EPA 200.7, 200.8, 245.1)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Tuning/System Stability(ICP-MS)	As per C-112	Pass all the tune/stability criteria	Check Instrument Reanalyze, Retune	Lab personnel	Sensitivity	Pass all the tune/stability criteria
Initial Calibration Verification	Immediately following each calibration ,after every 10 samples and at the end of each analytical run	90%-110%	Check Instrument, Reanalyze	Lab personnel	Accuracy	90%-110%
Continuing Calibration Check Standard (Alternate check standard)	Every 10 samples and at the end of each analytical run	80%-120%	Reanalyze, Qualify data	Lab personnel	Accuracy	80%-120%
Initial Calibration Blank(ICB)	After ICV	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL

Continuing Calibration Blank(CCB)	After every CCV	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Low Level Check Standard	At Beginning and end of each analytical run	± 30% of the true value	Check Instrument, Re-calibrate	Lab personnel	Accuracy	± 30% of the true value
Interference Check Sample(ICP-200.7)	At Beginning and end of each analytical run	< RL Except Al ,Fe, Ca, K, Mg and Na	As per C-109	Lab personnel	Precision	< RL Except Al ,Fe, Ca, K, Mg and Na
Method blank	1 per extraction batch of ≤ 20 samples	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
LCS/LFB	2 per extraction batch of ≤ 20 samples	Limits: Average Recovery ± 20% aqueous, ± 25% Soil) % RPD < 20(Aq), % RPD <25(Soil)	Qualify data	Lab personnel	Accuracy/ Precision	Limits: Average Recovery ± 20% aqueous, ± 25% Solids) % RPD < 20(Aq), % RPD <25(Soil
Laboratory Matrix spikes	1 per extraction batch of ≤ 20 samples	Limits ± 20% aqueous, ± 25% Soil)	Qualify data	Lab personnel	Accuracy	Limits ± 20% aqueous, ± 25% Soil)
Serial Dilution Test(ICP-200.7)	Matrix spike sample	RPD < 20 %	Qualify data	Lab personnel	Precision	RPD < 20 %
Internal Standards(ICP-MS 200.8)	Each sample, standard, blank	Range of 0.60-1.87 of the original response in the calibration blank	Check Instrument Analyse / Qualify data	Lab personnel	Quantitation	Range of 0.60-1.87 of the original response in the calibration blank

QAPP Worksheet #28 (Microbiology)
(UFP-QAPP Manual Section 3.4)

Title:
Revision Number:
Revision Date:
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QC Samples Table

Matrix	Aqueous/Soilds
Analytical Group	Microbiology
Concentration Level	N/A
Sampling SOP	
Analytical Method/ SOP Reference	B-5/B-7(*SM 9222B/D)* B-6/B-8(*SM 9221B/E*) , B-32 (*Ref: EPA 9215B) B-38(Ref: Simplate IDEX)*
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Sterility or Performance Testing	Each lot of pre-prepared, ready to use medium or batch of medium prepared in the lab, sample containers on a non-selective media	No growth	Investigate source of contamination Prepared Media is discarded	Lab personnel	Media selectivity, sensitivity Contamination	No growth
Method Blank	1 per preparation batch of 20 samples	No growth	Investigate source of contamination	Lab personnel	Contamination	No growth

Laboratory Control Sample (LCS)- positive control	1 per preparation batch of 20 samples	Growth promotion	Reanalyzed	Lab personnel	Media selectivity, sensitivity	Growth promotion
Duplicate counts (Membrane Filtration or Heterotrophic Plate count)	Monthly on one positive sample for each month the test is performed	10% (different analyst) 5%(same analyst)	Qualify data	Lab personnel	Precision	10% (different analyst) 5%(same analyst)

QAPP Worksheet #28 (Pesticides/PCBs)
(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Title:
Revision Number:
Revision Date:
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QC Samples Table

Matrix	Aqueous/Soil
Analytical Group	Pesticides/PCBs
Concentration Level	
Sampling SOP	
Analytical Method/ SOP Reference	C-91 (Ref: EPA 608)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Instrument Performance (PEM)	Beginning of each analytical run	Total breakdown <30%	Check Instrument	Lab personnel	Sensitivity Contamination	Total breakdown <30%
Initial Calibration	C-91 (Ref: EPA 608)	% RSD +/- 25% Not more than 10% of total analytes failure RSD not more than 30%	Check Instrument, Reanalyze	Lab personnel	Accuracy/ Precision	% RSD +/- 25% Not more than 10% of total analytes failure RSD not more than 30%
Continuing Calibration Check Standard (Alternate check standard)	Beginning and the end of each analytical run	Max %D RRF +/- 25%	Reanalyze, Qualify data	Lab personnel	Accuracy	Max %D RRF +/- 25%
Method Blank	1 per extraction batch	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL

LCS/LFB	2 per extraction batch	Limits: Average Recovery 50-150% % RPD < 30	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy/ Precision	Limits: Average Recovery 50-150% % RPD < 30
Laboratory Matrix spikes	1 per extraction batch	Limits 30-150%	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy	Limits 30-150%
Surrogates	Each sample, standard, blank	Limits 30%-150%	Reinject, Qualify data	Lab personnel	Extraction efficiency, Accuracy	Limits 30%-150%

QAPP Worksheet #28 (Sanitary Chemistry) **Title:**
(UFP-QAPP Manual Section 3.4) **Revision Number:**
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions. **Revision Date:**
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QC Samples Table

Matrix	Aqueous/Soil
Analytical Group	Sanitary Chemistry
Concentration Level	Low/Medium
Sampling SOP	
Analytical Method/ SOP Reference	C-28,C-29,C-40, C-53,C-68,C-79, C-80,C-83, C-88, C-94,C-96 (Ref: EPA 335.4, 420.4, 351.2, 410.4, 365.1, 353.2, 350.1, SM 5310 B, EPA 300.0, I-1230-85)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Initial Calibration Verification (ICV)	Immediately after initial calibration	90%-110% of the true value except for TOC (± 15%)	Recalibrate	Lab personnel	Accuracy/ Precision	90%-110% of the true value
Initial calibration Blank(ICB)	Immediately after ICV	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL

Continuing Calibration Verification (CCV) (Alternate check standard)	After every ten samples and at the end of the analytical run.	90%-110% of the true value	Reanalyze, Qualify data	Lab personnel	Accuracy	90%-110% of the true value
Continuing Calibration Blank (CCB)	After every ten samples and at the end of the analytical run.	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Method Blank	1 per extraction /analytical batch	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Laboartory Control Sample (LCS/LFB)	2 per extraction batch of ≤ 20 samples	Limits: Average Recovery within the standard manufacture's limits % RPD < 20	Reanalyze, Qualify data	Lab personnel	Accuracy/ Precision	Limits: Average Recovery within the standard manufacture's limits % RPD < 20
Laboratory Matrix spike (MS)	1 per extraction batch of ≤ 20 samples	Limits 80-120%	Qualify data	Lab personnel	Accuracy	Limits 80-120%

QAPP Worksheet #28 (Sanitary Chemistry)
(UFP-QAPP Manual Section 3.4)

Title:
Revision Number:
Revision Date:
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QC Samples Table

Matrix	Aqueous/Soil
Analytical Group	Sanitary Chemistry
Concentration Level	
Sampling SOP	
Analytical Method/ SOP Reference	C-18,C-19,C-21, C-22, C-23, C-24, C-33, C-36, C-37, C-81 (Ref: SM 2320 B, ASTM D516-02, SM 5210 B, SM4500CI-C, SW 846 1010, SM 4500-H+ B, SM 2540 D, EPA 120.1, SM 2540 C, EPA 180.1)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	1 per analytical batch of 20 samples	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Laboratory Control Sample (LCS/LFB)	2 per analytical batch of 20 samples	Limits: Average Recovery within the standard manufacture's limits or method limits % RPD < 20	Reanalyzed or Qualify data	Lab personnel	Accuracy/ Precision	Limits: Average Recovery within the standard manufacture's limits % RPD < 20

Sample Duplicates (TSS,TDS, Specific Conductance, Turbidity, pH, Ignitability)	1 per analytical batch of 20 samples	% RPD < 20	Affected sample Qualified	Lab personnel	Precision	% RPD < 20
Matrix spike (MS) (Alkalinity, Sulfate, Chloride, BOD/ cBOD)	1 per extraction batch of 20 samples	Limits 80-120%	Affected sample Qualified	Lab personnel	Accuracy	Limits 80-120%

QAPP Worksheet #28 (Volatiles-Low)
(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

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Revision Number:
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QC Samples Table

Matrix	Aqueous/Soil
Analytical Group	VOC
Concentration Level	Low(Aq)/Medium(soil
Sampling SOP	
Analytical Method/ SOP Reference	C-89 (Ref: EPA 624)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Tuning	12 hr period	Pass all PBFB tune criteria	Check Instrument Reanalyze, Retune	Lab personnel	Sensitivity	Pass all PBFB tune criteria
Initial Calibration	SOP C-89	% RSD +/- 35% Not more than 10% of total analytes failure % RSD not more than 60%	Check Instrument, Reanalyze	Lab personnel	Accuracy/ Precision	% RSD +/- 35% Not more than 10% of total analytes failure % RSD not more than 60%
Continuing Calibration Check Standard (Alternate check standard)	1 per analytical batch of 20 samples	Max %D RRF +/- 30% Not more than 10% of total analytes failure % D not more than 60%	Reanalyze, Qualify data	Lab personnel	Accuracy	Max %D RRF +/- 30% Not more than 10% of total analytes failure % D not more than 60%
Method Blank	1 per extraction batch of 20 samples	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL

Trip Blank	1 per cooler containing VOC samples	Client Defined	Investigate source of contamination	Lab personnel	Sensitivity Contamination	
LCS/LFB	2 per extraction batch of 20 samples	Limits: Average Recovery 70-130% % RPD < 20	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy/ Precision	Limits: Average Recovery 70-130% % RPD < 20
Laboratory Matrix spikes	1 per extraction batch of 20 samples	Table 4 of C-89 compound specific (full range- 17-259%)	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy	Table 4 of C-89 compound specific (full range- 17-259%)
Internal Standards	Each sample, standard, blank	Factor of two(-50% to + 100%) from the initial/continuing calibration	Check Instrument Analyse / Qualify data	Lab personnel	Quantitation	Factor of two(-50% to + 100%) from the initial/continuing calibration
Surrogates	Each sample, standard, blank	Limits 70%-130%	Reinject, Qualify data	Lab personnel	Extraction efficiency, Accuracy	Limits 70%-130%

QAPP Worksheet #28 (Volatiles-Low)
(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

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QC Samples Table

Matrix	Soil
Analytical Group	VOC
Concentration Level	Low
Sampling SOP	
Analytical Method/ SOP Reference	C-123 (Ref: EPA 624)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Tuning	12 hr period	Pass all PBFB tune criteria	Check Instrument Reanalyze, Retune	Lab personnel	Sensitivity	Pass all PBFB tune criteria
Initial Calibration	SOP C-123	% RSD +/- 50% Min RRF 0.010	Check Instrument, Reanalyze	Lab personnel	Accuracy/ Precision	% RSD +/- 50% Min RRF 0.010
Continuing Calibration Check Standard (Alternate check standard)	1 per analytical batch of 20 samples	Max %D listed in Table 4A of C-123	Reanalyze, Qualify data	Lab personnel	Accuracy	Max %D listed in Table 4A of C-123
Method Blank	1 per extraction batch of 20 samples	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Trip Blank	1 per cooler containing VOC samples	Client Defined	Investigate source of contamination	Lab personnel	Sensitivity Contamination	

LCS/LFB	2 per extraction batch of 20 samples	Limits: Average Recovery 70-130% % RPD < 20	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy/ Precision	Limits: Average Recovery 70-130% % RPD < 20
Laboratory Matrix spikes	1 per extraction batch of 20 samples	Table 8 of C-123 compound specific (full range- 17-259%)	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy	Table 8 of C-123 compound specific (full range- 17-259%)
Internal Standards	Each sample, standard, blank	Factor of two(-50% to + 100%) from the initial/continuing calibration	Check Instrument Analyse / Qualify data	Lab personnel	Quantitation	Factor of two(-50% to + 100%) from the initial/continuing calibration
Surrogates	Each sample, standard, blank	Table 7 of C-123	Reinject, Qualify data	Lab personnel	Extraction efficiency, Accuracy	Table 7 of C-123

QAPP Worksheet #28 (Volatiles- Trace) **Title:**
(UFP-QAPP Manual Section 3.4) **Revision Number:**
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions. **Revision Date:**
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QC Samples Table

Matrix	Aqueous
Analytical Group	VOC
Concentration Level	Trace
Sampling SOP	
Analytical Method/ SOP Reference	DW-1 (Ref: EPA 524.2)
Sampler's Name	
Field Sampling Organization	
Analytical Organization	USEPA Region 2 Lab
No. of Sample Locations	

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Tuning	12 hr period	Pass all PBFB tune criteria	Check Instrument Reanalyze, Retune	Lab personnel	Sensitivity	Pass all PBFB tune criteria
Initial Calibration	SOP DW-1	% RSD +/- 20% Not more than 10% of total analytes failure	Check Instrument, Reanalyze	Lab personnel	Accuracy/ Precision	% RSD +/- 20% Not more than 10% of total analytes failure
Continuing Calibration Check Standard (Alternate check standard)	1 per analytical batch	Max %D RRF +/- 30% Not more than 10% of total analytes failure	Reanalyze, Qualify data	Lab personnel	Accuracy	Max %D RRF +/- 30% Not more than 10% of total analytes failure
Method Blank	1 per extraction batch	< RL	Investigate source of contamination	Lab personnel	Sensitivity Contamination	< RL
Trip Blank	1 per cooler containing VOC samples	Client Defined	Investigate source of contamination	Lab personnel	Sensitivity Contamination	

LCS/LFB	2 per extraction batch	Limits: Average Recovery 70-130% % RPD < 20	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy/ Precision	Limits: Average Recovery 70-130% RPD 20%
Laboratory Matrix spikes	1 per extraction batch	Limits 70-130%	Qualify data unless high recovery and/or Not Detected)	Lab personnel	Accuracy	Limits 70-130%
Internal Standards	Each sample, standard, blank	+/- 40% from the initial/continuing calibration	Check Instrument Analyse / Qualify data	Lab personnel	Quantitation	+/- 40% from the initial/continuing calibration
Surrogates	Each sample, standard, blank	Limits 80%-120%	Reinject, Qualify data	Lab personnel	Extraction efficiency, Accuracy	Limits 80%-120%

QAPP Worksheet #29
(UFP-QAPP Manual Section 3.5.1)
Identify the documents and records that will be generated for all aspects of the project including, but not limited to, sample collection and field measurement, on-site and off-site analysis, and data assessment.

Title:
Revision Number:
Revision Date:
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Project Documents and Records Table

Sample Collection Documents and Records	On-site Analysis Documents and Records	Off-site Analysis Documents and Records	Data Assessment Documents and Records	Other
Field Chains-of-Custody	Internal Chains-of-Custody		Sample acceptance checklist	Customer Service Survey Cards
Packing Slips and Sample Tags	Sample Preparation Log		PT Sample Results	Telephone Logs
Request Forms and Associated Correspondence	Standard Traceability Record		Training Records	Procurement Request Forms
	Instrument Analysis Log			
Sample Acceptance Checklist	QC summary checklist with all relevant information		MDL Study Records	Equipment Maintenance Logs
LIMS Sample Receipts	Sample Analysis Data		Initial DOC / CDOC Records	Validated Computer Software Records
Automated OSCAR Logs	Instrument Calibration Data		Internal Audit Reports	
Laboratory sample identification numbers	Instrument/ Computer Printouts		Corrective Action Reports	
	Definition of Qualifiers		External Laboratory Assessment	
	Cover Letter		NELAC Accreditation	
	Approval Form			
	Case Narrative			
	Final Report			

QAPP Worksheet #31
(UFP-QAPP Manual Section 4.1.1)
Identify the type, frequency, and responsible parties of planned assessment activities that will be performed for the project.

Title:
Revision Number:
Revision Date:
Page ___ of ___

Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (CA) (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (Title and Organizational Affiliation)
PT	Semiannually	External	NELAC	PT provider	Lab Personnel	Lab Personnel	Lab QA Officer
NELAC	Every two years	External	NELAC	Florida DOH	Lab QA Officer	Lab Personnel	Florida DOH
INTERNAL AUDIT	Monthly	Internally	DESA Lab	Lab QA Officer	Lab Personnel	Lab Personnel	Lab QA Officer

QAPP Worksheet #32
(UFP-QAPP Manual Section 4.1.2)
For each type of assessment describe procedures for handling QAPP and project deviations encountered during the planned project assessments.

Title:
Revision Number:
Revision Date:
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Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Proficiency Testing (PT)	Letter with PT failure indicated	Lab QA Officer	30 days after the audit	Investigate the reason for the PT failure	Lab QA Officer	45 days after the CA report
NELAC	Audit Report with Non-conformance to QAPP, SOPs, NELAC+LQMP	Lab Management	30 days after the audit	Investigate and have a corrective action plan for the deficiencies	Florida DOH	30 days after receiving notification
INTERNAL	Audit Report with Non-conformance to QAPP, SOPs, NELAC Regulations	Lab Management	30 days after the audit	Investigate and have a corrective action plan for the deficiencies	Lab QA Officer	45 days after the CA report

QAPP Worksheet #34
(UFP-QAPP Manual Section 5.2.1)
Describe the processes that will be followed to verify project data. Manual (Section 5.1). Describe how each item will be verified, when the activity will occur, and what documentation is necessary, and identify the person responsible. *Internal* or *external* is in relation to the data generator.

Title:
Revision Number:
Revision Date:
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Verification (Step I) Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
Chain of Custody	Chain-of-custody forms will be verified against the sample cooler they represent. Sample Acceptance Checklist is completed. The OSCAR staff supervisor utilizes the analyses request information and the external COC to review the accuracy and completeness of LIMS log-in entries, as reflected on the LIMS Sample Receipt Form Details can be found in Laboratory Quality Management Plan, SOP G-25	Internal	OSCAR Personnel DESA LAB
Analytical data package/ Final Report	The procedures for data review : 1- Data reduction/review by Primary Analyst. 2- Review complete data package (raw data) by independent Peer Reviewer 3- The Sample Project Coordinator reviews the project documentation for completeness followed by a QA review by the QAO 4- Final review by Branch Chief/Section Chief prior to release, this review is to ensure completeness and general compliance with the objectives of the project. This final review typically does not include a review of raw data. Details can be found in Laboratory Quality Management Plan.	Internal	Primary Analyst, Peer Reviewer, Sample Project Coordinator, Quality Assurance Officer, Section Chief/ Branch Chief. DESA LAB

QAPP Worksheet #35

UFP-QAPP Manual Section 5.2.2
Describe the processes that will be followed to validate project data. Validation inputs include items such as those listed in Table 9 of the UFP-QAPP Manual (Section 5.1). Describe how each item will be validated, when the activity will occur, and what documentation is necessary and identify the person responsible. Differentiate between steps IIa and IIb of validation.

Revision Number:
Revision Date:

Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation (Name, Organization)
	Chain of Custody	Chain-of-custody forms will be verified against the sample cooler they represent. Sample Acceptance Checklist is completed. The OSCAR staff supervisor utilizes the analyses request information and the external COC to review the accuracy and completeness of LIMS log-in entries, as reflected on the LIMS Sample Receipt Form Details can be found in Laboratory Quality Management Plan, SOP G-25	OSCAR Personnel DESA LAB
	Analytical data package/ Final Report	The procedures for data review : 1- Data reduction/review by Primary Analyst. 2- Review complete data package (raw data) by independent Peer Reviewer 3- The Sample Project Coordinator reviews the project documentation for completeness followed by a QA review by the QAO 4- Final review by Branch Chief/Section Chief prior to release, this review is to ensure completeness and general compliance with the objectives of the project. This final review typically does not include a review of raw data. Details can be found in Laboratory Quality Management Plan.	Primary Analyst, Peer Reviewer, Sample Project Coordinator, Quality Assurance Officer, Section Chief/ Branch Chief. DESA LAB

* DESA Laboratory performs the validation.