

Quality Assurance Project Plan Addendum for Bulk Fuels Facility

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Introduction

This *Quality Assurance Project Plan (QAPP) Addendum* presents additional quality assurance/quality control (QA/QC) requirements for the on-going investigations and remedial operations being conducted at the Kirtland Air Force Base (KAFB) Bulk Fuels Facility, located on KAFB, New Mexico. The sites addressed by this QAPP Addendum include, but are not limited to, ST-106 Spill at Bulk Fuels Facility and SS-111 Bulk Fuels Facility Phase Separated Hydrocarbon.

This addendum supplements the QA/QC requirements presented in the *Kirtland AFB Bulk Quality Assurance Plan for the Bulk Fuels Facility (June, 2010)*.

The additional parameters are:

Groundwater

Total/Dissolved Calcium, magnesium, potassium, sodium (SW6010)
Chloride (EPA 300)
Sulfide (EPA 376.x)
Ammonia (EPA 350.1)
Bicarbonate and carbonate alkalinity (EPA 310.1)

Soil

Lead (SW6010)

Required Parameters and Reporting Limits

Sample containers, preservation and holding time criteria for each analysis are found in **Table 1**. The required reporting limits (RL) and QC acceptance criteria are found in **Tables 2-5**. Calibration requirements for metals (SW6010), chloride (EPA 300) and bicarbonate/carbonate alkalinity (EPA 310.1) are listed in Section 4.5 of the *Bulk Fuels Facility QAPP*. Calibration requirements for sulfide (EPA 376.x) and Ammonia (EPA 350.1) can be found in **Tables 6-7**.

Table 1.
Sample Containers, Preservative and Holding Times

Analyte	Method ^a	Matrix	Container and Minimum Quantity	Preservation	Holding Time
Metals (Total/dissolved)	SW846 6010B	Water	500 mL/P	Add nitric acid to pH<2; chill to 4°C For Dissolved: Field filter, Add nitric acid to pH<2; chill to 4°C	180 days
		Soil	2-oz. glass jar	chill to 4°C	180 days
Chloride	EPA 300	Water	500-mL/P	Chill to 4°C	28 days
Sulfide	EPA 376.X	Water	250-mL/P	Cool 4°C NaOH, Zinc Acetate	7 days
Ammonia	EPA 350.1	Water	250-mL/P	Chill to 4°C	14 days
Alkalinity (bicarbonate/carbonate)	EPA 310.1	Water	500-mL/P	Chill to 4°C	14 days

Table 2.
Reporting Limit Objectives for Groundwaters, Various Methods

Analyte	Method	MCL/NMEDSL ^a (mg/L)	Reporting Limits Water (mg/L)
Chloride	EPA 300	250	1
Sulfide	EPA 376.x	N/A	2
Alkalinity (bicarbonate/carbonate)	EPA 310.1	N/A	1
Ammonia	EPA 350.1	N/A	0.25
Calcium	SW6010B	N/A	0.1
Magnesium	SW6010B	N/A	0.1
Potassium	SW6010B	N/A	0.5
Sodium	SW6010B	N/A	0.3

Notes:
^a USEPA Maximum Contamination Level/New Mexico Environmental Department Water Quality Standard
 mg/L=milligram per liter
 N/A – There are no specific background levels or screening levels for these parameters.

Table 3.
Reporting Limit Objectives for Soil

Analyte	KAFB/NMED SSL (mg/kg)	Reporting Limits Soil (mg/kg)
Lead	11.8/400	1

Notes:
^a Kirtland AFB Background Concentration Level/New Mexico Environmental Department Soil Screening Level
 mg/kg: milligrams per kilogram

Table 4.
Accuracy and Precision Limits for Groundwaters

Analyte	Method	LCS Accuracy Water (%R)		Precision Water (%RPD)	MS/MSD Accuracy Water (%R)		Precision Water (%RPD)
		LCL	UCL		LCL	UCL	
Chloride	EPA 300	90	110	10	90	110	10
Sulfide	EPA 376.x	75	125	25	75	125	25
Alkalinity (bicarbonate/carbonate)	EPA 310.1	80	120	25	80	120	25
Ammonia	EPA 350.1	90	110	25	90	110	25
Calcium	SW6010B	80	120	20	80	120	20
Magnesium	SW6010B	80	120	20	80	120	20
Potassium	SW6010B	80	120	20	80	120	20
Sodium	SW6010B	80	120	20	80	120	20

%R= percent recovery
 RPD= relative percent difference

Table 5.
Accuracy and Precision Limits for Soil

Analyte	LCS Accuracy Soil (%R)		Precision Soil (%RPD)	MS/MSD Accuracy Soil (%R)		Precision Soil (%RPD)
	LCL	UCL		LCL	UCL	
Lead	80	120	20	80	120	20

%R= percent recovery
 RPD= relative percent difference

Table 6.
Calibration Criteria for Sulfide by Method EPA376.x

Quality Control Check	Frequency	Criteria	Corrective Action
Multi-point initial calibration (a blank and at least five standards)	Before initial sample analysis, every 24 hours, whenever modifications are made to the analytical system, or when continuing calibration verification fails	Correlation coefficient of linear regression is ≥ 0.995	Correct the problem and repeat the initial calibration.
Second-source calibration verification	Immediately following each initial calibration	Analytes within $\pm 10\%$ of expected value	Correct the problem and repeat initial calibration.
Calibration blank	After every Second-source or Continuing calibration verification analysis	No analytes detected at or above the reporting limit	Correct the problem, then re-analyze associated samples.
Continuing calibration verification	After every 10 samples and at the end of the analysis sequence	Within $\pm 10\%$ of expected value	Re-calibrate and re-analyze all samples since the last acceptable continuing calibration verification
Method Blank	At least one per analytical batch	No analytes detected at or above the reporting limit	Correct the problem and re-prepare and re-analyze all associated samples
MS/MSD	One set per 20 project-specific samples. MSD is optional if a laboratory sample duplicate is performed	All analytes within limits specified in Accuracy and Precision table	None
Laboratory sample duplicate	Once per analytical batch if MSD not performed	Concentration of reported analytes are > 5 times the reporting limit in either sample and RPD $> 20\%$. One sample result $< RL$ and a difference of ± 2 times the reporting limit	None
LCS	At least one per analytical batch	All analytes within limits specified in Accuracy and Precision table	Correct the problem, and re-prepare and reanalyze the LCS and all samples in the analytical batch

Table 7.
Calibration Criteria for Ammonia by Method EPA 350.1

QC Check	Frequency	Criteria	Corrective Action
Multi-point initial calibration (a blank and 4	Daily before sample analysis	$r > 0.995$ Calibration MUST meet acceptance criteria prior to sample	Correct the problem and repeat the initial calibration.

Table 7. Calibration Criteria for Ammonia by Method EPA 350.1			
QC Check	Frequency	Criteria	Corrective Action
standards)		analysis.	
Second-source calibration verification	Immediately following each initial calibration	Response within $\pm 15\%$.	Correct the problem and repeat initial calibration.
Continuing calibration verification	Daily	Response within $\pm 15\%$.	Recalibrate and reanalyze all samples since the last acceptable continuing calibration verification
Method Blank	One per analytical batch	No analytes detected at or above the reporting limit	Correct the problem and re-prep and reanalyze all associated samples
MS/MSD	One set per 20 project-specific samples	All analytes within limits specified in Accuracy and Precision table	None
Laboratory sample duplicate	Once per analytical batch if MSD not performed	Concentration of reported analytes are > 5 times the reporting limit in either sample and RPD >20%. One sample result < RL and a difference of ± 2 times the reporting limit	None
LCS	One per analytical batch	All analytes within limits specified in Accuracy and Precision table	Correct the problem, and re-prep and reanalyze the LCS and all samples in the analytical batch

