**QUALITY ASSURANCE GUIDANCE
FOR
FIELD SAMPLING AND MEASUREMENT
ASSESSMENT PLATES
IN SUPPORT OF
EM ENVIRONMENTAL
SAMPLING AND ANALYSIS ACTIVITIES**

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U.S. Department of Energy

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FIELD ASSESSMENT GUIDANCE

1.0 INTRODUCTION

This document is one of several guidance documents developed by the U.S. Department of Energy (DOE) Office of Environmental Restoration and Waste Management (EM). These documents support the EM Analytical Services Program (ASP) and are based on applicable regulatory requirements and DOE Orders. They address requirements in DOE Orders by providing guidance that pertains specifically to environmental restoration and waste management sampling and analysis activities.

DOE 5700.6C Quality Assurance (QA) defines policy and requirements to establish QA programs ensuring that risks and environmental impacts are minimized and that safety, reliability, and performance are maximized. This is accomplished through the application of effective management systems commensurate with the risks imposed by the facility and the project. Every organization supporting EM's environmental sampling and analysis activities must develop and document a QA program. Management of each organization is responsible for appropriate QA program implementation, assessment, and improvement. The collection of credible and cost-effective environmental data is critical to the long-term success of remedial and waste management actions performed at DOE facilities. Only well established and management supported assessment programs within each EM-support organization will enable DOE to demonstrate data quality. The purpose of this series of documents is to offer specific guidance for establishing an effective assessment program for EM's environmental sampling and analysis (ESA) activities.

Assessments are a management tool required to be implemented as part of an organization's QA program to help assure achievement of quality goals. They provide a documented means of detecting missing quality assurance requirements and potential problem areas. Assessments form one of the bases for quality improvement.

The Analytical Services Division, Office of Environmental Restoration and Waste Management (EM-263) has developed and is implementing an assessment program to evaluate EM's sampling and analysis activities to ensure that satisfactory management systems are implemented.

1.1 Purpose

The purpose of this document is to introduce assessment plates that can be used to conduct performance assessments of an organization's or project's ability to meet quality goals for field sampling, screening, and analytical activities. To support this goal, the final version of this document is provided in hardcopy and available upon request from EM-263 as a series of WordPerfect 5.1 files.

1.2 Scope

These assessment plates are provided as non-prescriptive guidance to EM-support organizations that are responsible for collection of environmental data. EM-support organizations include all private sector, government-owned/contractor-operated, and government-owned/government-operated

organizations collecting environmental data for EM's programs. The field!!! assessment plates are designed to be used by the oversight organization without significant revision and to introduce a more consistent assessment program across the DOE Complex. In addition, internal and external circulation and review of the assessment plates is consistent with the recognized need for interagency harmonization.

1.3 EM Assessment Program

The collection of credible and cost-effective environmental data is critical to the long-term success of remediation and waste management programs at DOE facilities. Only with well established and supported performance evaluation and audit programs will DOE be able to demonstrate that data are of known and accountable quality. The Analytical Services Division (EM-263), in the Office of Technology Development, is responsible for assuring that all EM operations have the environmental sampling and analysis services required. The Analytical Services Division has developed and is implementing an assessment/surveillance program to evaluate field and laboratory activities, as put forward in EM's Analytical Services Program (ASP) Five Year Plan. EM-263 (in cooperation with other EM organizations) will periodically (approximately two-year intervals) conduct independent assessments of Field Office programs. An integral part of these assessments will be to validate Field Office audits of field sampling, screening, and analytical support, including both contractors and sub-contractors. These technical systems audits will review the following aspects of environmental data collection:

- (1) the implementation of QA functions associated with planning, conducting and assessing field and laboratory activities,
- (2) technical procedures to determine whether the procedures were developed and are implemented properly, and
- (3) the analytical and field data to assess quality and appropriateness of use.

2.0 ASSESSMENT PLATES

Field assessments consist of an objective evaluation of all components of the field sampling, field screening, and analytical systems to determine their proper selection and use. These assessments should include a careful evaluation of field quality assurance procedures and should be performed on a regularly scheduled basis during the lifetime of the EM support program.

The assessment plates are designed to be used in a modular fashion, since not every sampling or measurement activity will be used for every project or at every facility. Based on preliminary information, the assessment plates corresponding to procedures applicable to the site will become part of the assessment plan specific to the facility.

Section 2.1 provides a set of technical assessment plates for evaluating !!! laboratory activities to be used by EM-263. Major technical areas include:

- soil/sediment/sludge,
- biota,
- surface water/ground water,
- air, and
- solid waste/liquid waste.

Section 2.2 provides a set of generic assessment plates for field screening activities. The plates address

- screening and test kit procedures, and
- field analytical activities, whether performed in a true field laboratory, off the back of a vehicle, or with hand-held equipment.

Because of the complex nature of EM projects at DOE sites, there will be site-specific areas of investigation not addressed in the attached oversight documentation. The assessment plan developed for a facility will include a site-specific compilation of plates to assess both routine procedures and unique site activities.

Section 2.3 provides detailed assessment plates covering quality assurance and quality control aspects of both laboratory and field assessment programs. This section is intentionally duplicated and included in both guidance documents for use in both program areas and to assure that the sampling and analysis processes are effectively linked. These assessment plates include reviews of:

- organization,
- facilities and equipment,
- quality assurance, and
- sample management.

These specific areas of investigation have varying degrees of application in field and laboratory assessments. An effective assessment will assign most individual components to either the sampling or laboratory investigation but will include some redundancy to evaluate consistency of responses between the activity areas.

The attached assessment plates are designed to be a source document for an assessment team to highlight technical areas for investigation. Assessments are concerned with both technical procedures and the implementation of the QA program. The specific procedures for the interview process are not prescribed. Not all the questions are designed to give a "yes" or "no" response. Some of

the questions are designed to reveal the possible use of methods that are inappropriate. Other questions are designed to invoke a descriptive response or a more detailed explanation. Rather than "Is it?" "How is it?" is implied. The technical experts are to be familiar with the rationale for the questions through both their prior knowledge of the subject area and their audit training. The plates are designed primarily as a guide in order to give the assessors, as technical experts, the freedom to pursue a given response in greater depth or to follow up on an unsatisfactory response. The assessors are free to approach the subject area from a viewpoint that they feel will elicit a full and satisfactory evaluation of the subject area. However, all elements contained in the assessments plates should be addressed to assure standardization, comparability, and reciprocity among EM programs. Although the assessment plates are not designed to be "checked off" question by question, they provide a useful means for documenting pertinent facts and on-the-spot comments, and constitute minimum on-site information. These recorded comments will then become part of the source materials for the reports of the assessors, which will formulate the facts noted into findings and observations.

This module is a living document, and as such, will periodically undergo modification, especially in regards to site-specific review areas. This document is designed to help establish consistent reporting and documentation of assessment findings related to ASD's activities. Experience from the assessment activities may reveal weaknesses, or suggest improvements for a more efficient program. Recommended changes and additions, as well as general comments, should be directed to the Analytical Services Division, Office of Environmental Restoration and Waste Management.

SECTION 2.1

FIELD SAMPLING ASSESSMENT PLATES

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LIQUID SAMPLING CHECKLIST

The following is a list of generic items that are to be gone over with the sampler (the person actually engaged in the sampling activity that is being assessed). Please attach a copy of this sheet to every device (activity) that you evaluate.

NAME OF DEVICE: _____

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

QA ASPECTS

- 1.1 Are the samples taken at all of the locations designated in the sampling plan?
- 1.2 Are the proper number of samples taken as outlined in the sampling plan?
- 1.3 Are the proper number of field QC samples taken?
- 1.4 Are the sampling points located as outlined in the sampling plan?
- 1.5 Are there any deviations from the sampling plan?
- 1.6 If yes to 1.5, have these deviations been accepted by the authorized manager?
- 1.7 If yes to 1.5, are these deviations documented?
- 1.8 Is sufficient quantity of sample taken to meet the analytical needs?

SAMPLE HANDLING

- 2.1 Are appropriate sample containers used?
- 2.2 Are appropriate sample preservation techniques used and documented?
- 2.3 Are appropriate sample storage, transportation and transfer techniques used?
- 2.4 Is the sampling equipment decontaminated as described in the sampling plan?
- 2.5 Are the decontamination liquids contained for disposal?
- 2.6 Are chain of custody procedures required? _____ and followed? _____
- 2.7 Do the sample labels include the complete list of required data?
- 2.8 Is the sampling personnel training consistent with the QA plan?
- 2.9 Is this training documented?

TYPES OF LIQUID SAMPLED

- 3.1 Indicate the type of liquid(s) that is sampled:
Groundwater _____	Surface water _____	Lakes _____
Ponds _____	Lagoons _____	Sumps _____
Containerized fluids (of any type) _____ Describe: _____		
Non-aqueous fluids (of any type) _____ Describe: _____		
Wells _____	Other: _____	Describe _____

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1

LIQUID SAMPLING

COLIWASA

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is the coliwasa only used once?
- 1.2 If no for 1.1, was the rinsate collected immediately after cleaning/decontamination of the COLIWASA prior to and between uses?
- 1.3 If allowed to sit between uses, was the unit rinsed and the rinsate collected immediately prior to use?
- 1.4 Are the fluids being sampled of high viscosity?
- 1.5 Are the fluids being sampled highly stratified?
- 1.6 Are the fluids being sampled taken from a drum? ____, UST? ____, tanker truck? ____ or other?: ____
- 1.7 Is the length of the COLIWASA sufficient to reach the bottom of the container being sampled?

TYPES OF DEVICES USED

- 2.1 Is more than one COLIWASA being used?
- 2.2 If yes to 2.1, is the unit made of glass? ____, plastic? ____, or both? ____
- 2.3 If used, is the glass unit exposed to HF or strong alkali?
- 2.4 If used, is the plastic unit exposed to ketones, nitrobenzene, mesityl oxide, or tetrahydrofuran?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 4.2

LIQUID SAMPLING

Direct Immersion Sampler (Weighted Sample Bottle)

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

TYPES OF BOTTLES USED

Describe each specific type of sampling bottle(s) :
Complete questions 1.1 thru 3.3 for each type listed (Attach sheets if needed)

BOTTLE CLEANING AND PREPARATION

- 1.1 Is the sampling bottle used only once?
- 1.2 Is the sampling bottle cleaned by lab personnel? _____, field personnel? _____ or purchased as ready to use? _____
- 1.3 If cleaned by lab or field personnel, briefly describe the procedure:
- _____
- _____
- 1.4 Is the exterior of the bottle scrupulously clean?
- 1.5 At what point in the sampling procedure is the sampling bottle labeled?
- 1.6 Does the bottle used contain any preservative?
- 1.7 Is the sampling bottle used for surface water only?

VOA SAMPLING

- 3.1 Are VOA's being sampled?
- 3.2 If yes for 3.1, is the sampling bottle filled to zero headspace?
- 3.3 If yes for 3.1, is a teflon lined cap used?

Comments:

Attach sheets for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2, 3.2.4, 3.2.5, 3.7

LIQUID SAMPLING

Pond Sampler (Dipper)

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE CLEANING AND PREPARATION

- 1.1 Is the bucket or beaker used scrupulously cleaned before use?
- 1.2 Does the unit employ a detachable bucket or beaker?
- 1.3 Is the bucket or beaker used only once?
- 1.4 If no for 1.3, was the bucket or beaker cleaned between uses?
- 1.5 If yes for 1.4, briefly describe the decontamination procedure used:

- 1.6 Does the decontamination procedure (described in 1.5) seem adequate for the water sampled?

OPERATIONAL CRITERIA

- 2.1 Is the material to be sampled viscous?
- 2.2 Is the material to be sampled highly stratified?
- 2.3 At what depths are typical samples to be taken?
- 2.4 How many immersions into the water being sampled are required?
- 2.5 Is the sample transferred to the lab container in a manner as to minimize possible aeration of the sample?

Comments:

Attach additional sheets for type of device used

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

Bomb Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Describe each specific type of device(s).

DEVICE CLEANING AND PREPARATION

- 1.1 Is the trigger lined checked before use?
- 1.2 Is the unit used more than once?
- 1.3 If yes for 1.2, was the unit cleaned between uses?
- 1.4 If yes for 1.3, briefly describe the decontamination procedure used?

- 1.5 Does the decontamination procedure (described in 1.4) seem adequate for the water sampled?

OPERATIONAL CRITERIA

- 2.1 Is the material to be sampled viscous?
- 2.2 Is the material to be sampled highly stratified?
- 2.2 At what depths are typical samples to be taken? _____
- 2.4 Are VOA's sampled?
- 2.5 How many immersions into the water being sampled are required?
- 2.6 Is the sample transferred to the lab container in a manner as to minimize possible aeration of the sample?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Section(s) 2.5.2, 3.2.4

Pumps

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSORS(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

i). If a Bladder or Gas Driven pump is being used

OPERATIONAL CRITERIA

- 1.1 Is the pump used for samplers at a depth of less than 400 ft?
- 1.2 What type of material is the bladder made of? : _____
- 1.3 What type of material is the tubing made of? : _____

DEVICE CLEANING

- 2.1 Is tubing replaced between samples?
- 2.2 If no for 2.1, is the tubing cleaned between samples?
- 2.3 If yes for 2.1, briefly describe the cleaning process:

- 2.4 Is the cleaning described in 2.3 sufficient?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 3.1 What type of gas is used to drive the pump? _____
- 3.2 Are any of the analytes pH sensitive?
- 3.3 Is the pump properly monitored for continuous operation?
- 3.4 If yes for 3.3, how often? _____

VOA SAMPLING

- 4.1 Are any of the analytes volatile? (Are VOAs being sampled?)
- 4.2 If yes for 4.1, list parameters:

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

ii). If a Submersible pump used

SOP IDENTIFICATION:

Helical/Rotor _____ Gear Driven _____ Both _____

Groundwater _____ (not suggested)

OPERATIONAL CRITERIA

- 1.1 Is the pump used at a depths of 25 to 200 ft.?
- 1.2 Are VOAs being sampled?
- 1.3 After examining the SAP, are any of the analytes, besides VOAs, incompatible with the construction of this device?

DEVICE CLEANING

- 2.1 What type of material is the tubing made of? _____
- 2.2 Is new, clean tubing used between samples?
- 2.3 If no for 2.2, is the tubing cleaned between samples?
- 2.5 If yes for 2.3, briefly describe the cleaning process:

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

LIQUID SAMPLING [pumps p.3]

iii). If a Suction Lift (Peristaltic/Centrifugal) pump is used

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is the sample depth less than 25-30 ft.?
- 1.2 What type of tubing is used? _____
- 1.3 Are procedures sufficient to reduce sample contamination?
- 1.4 Are blanks taken and documented to assure this?
- 1.5 Are these types of pumps used on monitor wells? _____ and/or potable wells? _____

2.1 Describe how the pump is primed:

- 3.1 Is new, clean tubing used between samples?
- 3.2 If no for 3.1, is the tubing cleaned between sample collections?
- 3.3 If yes for 3.1, briefly describe the cleaning process:

3.4 Is the cleaning described in 3.3 sufficient?

VOA SAMPLING

- 4.1 Are volatiles to be sampled?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

iv). If a Packer pump is used

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is the sample depth less than 25-30 ft.?
- 1.2 What type of tubing is used? _____
- 1.3 Are procedures sufficient to reduce sample contamination? _____
- 1.4 Are blanks taken and documented to assure this? _____
- 1.5 Are these types of pumps used on monitor wells? _____ and/or potable wells? _____
- 1.6 Is a "straddle packer" pump used? _____
- 1.7 Is the position of the packer at the position (depth) designated in the SAP? _____
- 1.8 Is the packer inflated as given in the SAP? _____

2.1 Describe how the pump is primed:

DEVICE CLEANING

- 3.1 Is new, clean tubing used between samples?
- 3.2 If no for 3.1, is the tubing cleaned between sample collections?
- 3.3 If yes for 3.2, briefly describe the cleaning process:

3.4 Is the cleaning described in 3.3 sufficient?

VOA SAMPLING

- 4.1 Are volatiles to be sampled?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2, 3.2.4

LIQUID SAMPLING [pumps p.5]

v). If an Air Lift pump is used

SOP IDENTIFICATION:

Groundwater _____ (not suggested)

OPERATIONAL CRITERIA

- 1.1 Is the sample depth less than 25-30 ft.?
- 1.2 What type of tubing is used? _____
- 1.3 Are procedures sufficient to reduce sample to sample contamination?
- 1.4 Are blanks taken and documented to assure this?

2.1 Describe how the pump is primed:

DEVICE CLEANING

- 3.1 Is new, clean tubing used between samples?
- 3.2 If no for 3.1, is the tubing cleaned between sample collections?
- 3.3 If yes for 3.2, briefly describe the cleaning process:

3.4 Is the cleaning described in 3.3 sufficient?

VOA SAMPLING

- 4.1 Are volatiles to be sampled?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4, 3.2.2

vi). If a Gas Piston pump is used

Groundwater _____ (not suggested)

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is the sample depth less than 25-30 ft.?
 - 1.2 What type of tubing is used? _____
 - 1.3 Are procedures sufficient to reduce sample to sample contamination?
 - 1.4 Are blanks taken and documented to assure this?
- 2.1 Describe how the pump is primed:

DEVICE CLEANING

- 3.1 Is new, clean tubing used between samples?
- 3.2 If no for 3.1, is the tubing cleaned between sample collections?
- 3.3 If yes for 3.2, briefly describe the cleaning process:

- 3.4 Is the cleaning described in 3.3 sufficient?

VOA SAMPLING

- 3.1 Are volatiles to be sampled?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2, 3.2.4

LIQUID SAMPLING

Bailer

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE CLEANING AND PREPARATION

- 1.1 Is the bailer line cleaned?
- 1.2 Is the bailer made of inert material?
- 1.3 Is the bailer made of a flexible material?
- 1.4 Is the bailer regularly decontaminated?
- 1.5 If yes for 1.4, at what frequency is it decontaminated?
- 1.6 If yes for 1.4, please describe the procedure:

OPERATIONAL CRITERIA

- 2.1 Is the unit allowed to "sink and fill" during sampling?
- 2.2 Is the bailer dedicated to a specific sampling site?
- 2.3 Describe the type of bailer used: _____
- 2.4 Is the unit a single? ____ or double? ____ check valve type of unit.
- 2.5 If applicable, is an inert material used for the check valves?
- 2.6 Are sample transfers done in a way that minimizes the turbulence?

POSSIBLE MATRIX INTERFERENCES

- 3.1 Is there a reason to expect a high concentration of suspended solids?
- 3.2 Is the water sampled considered stagnant?
- 3.3 Does the water contain any ice?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

Monitor / Potable Wells

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE SELECTION

- 1.1 What type of Sampling device is used to sample the well?:
 Bailer: _____ Pump: _____ (specify type): _____
 Other device: _____ (describe): _____

QA ASPECTS

- 2.1 Is this unit used to sample a monitor well? _____ or a potable water well? _____
 2.2 Are the following items noted for each well sample?
 a). Site ID _____; b). Location-latitude _____; c). Location-longitude _____
 d). Altitude of site _____; e). Depth of well _____; f). Depth to water _____
 g). Depth of sample _____; h). Type of well _____; i). Is the well locked _____

OPERATIONAL CRITERIA

- 3.1 What is the volume of water used to purge the well? _____
 3.2 Is this volume sufficient?
 3.3 Has the SAP been designed to avoid "overpumping" of the well?
 3.4 Were the number and location of the wells consistent with the sampling plan?
 3.5 What is the time between purging the well and sample collection: _____
 3.6 Are any parameters measured during purging?
 3.7 If yes for 3.6, are these properly documented?
 3.8 If yes for 3.6, please list these parameters:

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

LIQUID SAMPLING

Van Dorn Sampler

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is the sample taken at a depth of at least 1.5 meter?
- 1.2 Are aliquots taken from the sampler?
- 1.3 If yes for 1.2 , explain procedure for taking aliquots:

1.4 Are these aliquots taken as outlined in the SAP?

1.5 Is care taken not to lose sample or introduce air?

PREPARATION

- 2.1 Is care taken to insure that the unit operates properly before use?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4, 4.2

Kemmerer Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS:(NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is care taken not to lose sample or to introduce air?
 1.2 Are aliquots taken from the sampler?
 1.3 If yes for 1.2 , explain procedure for taking aliquots:

- 1.4 For 1.3, are these aliquots taken properly?
 1.5 Is the unit used more than once?
 1.6 Is the rinse water used lab blank water?
 1.7 What is the volume of water used for each rinse?:
 1.8 Number of times the sampler is rinsed before taking the sample:

PREPARATION

- 2.1 Is care taken to insure that the unit operates properly before use?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4, 4.2

LIQUID SAMPLING

Syringe

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 What is the volume of the syringe? _____
- 1.2 Is care taken not to lose sample or introduce air? _____
- 1.3 Are aliquots taken from the sampler? _____
- 1.4 If yes for 1.3, explain procedure for taking aliquots: _____

- 1.5 For 1.3, are these aliquots taken properly? _____

DEVICE CLEANING AND PREPARATION

- 2.1 Is care taken to insure that the unit operates properly before use? _____
- 2.2 Is the unit used more than once? _____
- 2.3 Is the rinse water used lab blank water? _____
- 2.4 What is the volume of water used for each rinse?: _____
- 2.5 Number of times the sampler is rinsed before taking the sample: _____

VOA SAMPLING

- 3.1 Are mechanical? ___ or pneumatic? ___ means used to fill the syringe?
- 3.2 Are VOAs being sampled?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4, 4.2

LIQUID SAMPLING

Stratified Sample Thief

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is more than one thief being used?
- 1.2 If yes for 1.1, is the unit made of glass? ___ plastic? ___ or both? ___
- 1.3 Is the thief only used once?
- 1.4 If no for 1.3, was the rinsate collected just after cleaning/decontamination of the unit prior to and/or between uses?
- 1.5 Is more than one aliquot taken from the device?

POSSIBLE CONTRAINDICATIONS FOR USE

- 2.1 What is the diameter of the unit in use? _____
- 2.2 Are the fluids being sampled of high viscosity?
- 2.3 Are the fluids being sampled highly stratified?

DEVICE CLEANING AND PREPARATION

- 3.1 If the thief is made of glass, is the sample suspected to contain HF or to be strongly alkali?
- 3.2 If the thief is made of plastic, is the sample suspected to contain ketones, THF, nitrobenzene, DMF or mesityl oxide?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Section 2.5.2, 3.2.4, 4.2

LIQUID SAMPLING

Open Sampling Tube (Thief)

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is more than one tube being used?
- 1.2 If yes for 1.1, is the unit made of glass?____, plastic?____, or both____?
- 1.3 Is the tube only used once?
- 1.4 If no for 1.3, was the rinsate collected just after cleaning/decontamination of the unit prior to and between uses?
- 1.5 Does the sampler wear a glove or finger cot when covering the top of the thief?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 2.1 Are the fluids being sampled of high viscosity?
- 2.2 What is the diameter of the unit(s) in use?____/____/____/____

DEVICE CLEANING AND PREPARATION

- 3.1 If the thief is made of glass, is the sample suspected of containing HF or to be strongly alkali?
- 3.2 If the thief is made of plastic, is the sample suspected of containing ketones, THF, nitrobenzene, DMF or mesityl oxide?

Comments:	Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4, 4.2

PACS Grab Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE CLEANING AND PREPARATION

- 1.1 Is the unit scrupulously cleaned before use?
 1.2 Is the unit used only once?
 1.3 If no for 1.2, was the unit cleaned between uses?
 1.4 If yes for 1.3, briefly describe the decontamination procedure used:

- 1.5 Does the decontamination procedure (described in 1.4) seem adequate for the water sampled?

OPERATIONAL CRITERIA

- 2.1 How long is the pole that the "container" is attached to? _____
 2.2 At what depths are typical samples to be taken? _____
 2.3 How many immersions into the water being sampled are required?
 2.4 Is the sample transferred to the lab container in a manner as to minimize possible aeration of the sample?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 3.1 Is the material to be sampled viscous?
 3.2 Is the material to be sampled highly stratified?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

LIQUID SAMPLING

Sample Splitters

Cone____ Churn____ Other____

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 What material is the splitter made of: _____
- 1.2 Is the material listed in 1.1 incompatible with the materials being sampled? _____
- 1.3 How many ports does the unit have? _____
- 1.4 How many splits are routinely taken? _____

DEVICE CLEANING

- 2.1 Is the splitter cleaned between sample splits as outlined in the sampling protocol? _____
- 2.2 If yes for 2.1, are blanks taken to prove this? _____
- 2.3 Is the rinse water used lab blank water? _____
- 2.4 What volume of water is used for each rinse?: _____
- 2.5 Number of times the sampler is rinsed between samples: _____

VOA SAMPLING

- 3.1 Are VOAs being sampled? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2, 4.2

Lysimeters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Type of Lysimeter: Suction: _____ Trench: _____
 Other: _____ Pan: _____

OPERATIONAL CRITERIA

- 1.1 Is the unit used as a pressure? _____ or vacuum? _____ type of device
 1.2 If yes for either item in 1.1, please describe it's use:

- 1.3 What is the typical range in pressure or vacuum that is used? _____
 1.4 Is this pressure, or vacuum, interrupted during sampling?
 1.5 Are any type of separating membranes used in the device?
 1.6 If yes for 1.5, please describe: _____
 1.7 If yes for 1.5, have the membranes been checked for inertness?
 1.8 If yes for 1.5, have the membranes been checked for permeability?

For Trench Lysimeters

- 2.1 If the unit is used in a trench, describe the dimensions and construction of the trench:

 2.2 If the unit used is a trench lysimeter, does it employ a sand filled funnel, or similar device, as a sample collection device?

For Cup Lysimeters

3.1 Is ceramic cup? _____ or any water collection device? _____ used

3.2 If yes for 2.1, please describe: _____

POSSIBLE CONTRA-INDICATIONS FOR USE

4.1 Is the sample matrix very rocky soils?

4.2 Is the sample matrix mostly a "clay" type soil?

4.3 At what depth is the lysimeter installed? _____

4.4 Is the unit installed at right angles to the surface?

4.5 By what means is 4.4 assured? _____

PREPARATION AND CLEANING

5.1 Prior to installation is the unit checked for leaks?

5.2 Is 1.4 documented?

5.3 Is the "dead volume" of the unit determined before installation?

5.4 Is a silica flour type of slurry used to prevent clogging?

VOA SAMPLING

6.1 Are VOAs being sampled?

6.2 If yes for 6.1, has equilibrium been established before any samples are taken?

6.3 Is the water being sampled considered "fast moving"?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2

SOIL/SEDIMENT/SLUDGE SAMPLING CHECKLIST

The following is a list of generic checklist items that are to be gone over with the sampler (the person actually engaged in the sampling activity that is being assessed). Please attach a copy of this sheet to every device (activity) that you evaluate.

NAME OF DEVICE: _____

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

QA ASPECTS

- 1.1 Are the proper number of field QC samples taken?
- 1.2 Are the sampling points located as outlined in the sampling plan?
- 1.3 Are the samples taken at all of the locations designated in the sampling plan?
- 1.4 Are the proper number of samples taken as outlined in the sampling plan?
- 1.5 Is the depth determined as outlined in the SAP?
- 1.6 Are there any deviations from the sampling plan?
- 1.7 If yes to 1.6, have these deviations been accepted by the authorized manager?
- 1.8 If yes to 1.6, are these deviations documented?
- 1.9 Is sufficient quantity of sample taken to meet the analytical needs?
- 2.0 Is the local soil horizon free of debris?
- 2.1 Describe the measures taken to insure that the device is inserted into the soil at the angle described in the SAP? _____

SAMPLE HANDLING

- 3.1 Are appropriate sample containers used?
- 3.2 Are appropriate sample preservation techniques used and documented?
- 3.3 Are appropriate sample storage, transportation and transfer techniques used?
- 3.4 Is the device used more than once?
- 3.5 Is the sampling equipment decontaminated as described in the sampling plan?
- 3.6 Are the decontamination liquids contained for disposal?
- 3.7 Are chain of custody procedures required? _____ and followed? _____
- 3.8 Is the hole created backfilled after sampling? _____
- 3.9 How is the sample removed from the device? _____
- 4.1 Do the sample labels include the complete list of required data? _____
- 4.2 Is the sampling personnel training consistent with the QA plan?
- 4.3 Is this training documented?

TYPE OF MATRIX SAMPLED

- 5.1 Please check the matrix(ices) that are being sampled with this device:
 Soil: _____ Sediment: _____ Sludge: _____ Waste Piles: _____ Other: _____

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1

SOIL/SEDIMENT/SLUDGE SAMPLING

Auger

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Type of Auger: _____

OPERATIONAL CRITERIA

- 1.1 When augering, was water present or visible?
- 1.2 When accumulated soils are removed, how are loose materials prevented from falling back into the bore hole? _____
- 1.3 Does the unit operate by hand? _____ or by engine? _____
- 1.4 If an engine is used, are there any special precautions used to eliminate sample contamination?
- 1.5 If yes for 1.4, please describe them: _____

- 2.1 At what depth(s) are samples being taken? _____
- 2.2 After reaching the desired depth, is the auger removed slowly and carefully?
- 2.3 Is the outside of the auger free of debris before any sample is removed?
- 3.1 Is the desired sample a grab? _____ or a composite? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

Corers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is the corer twisted and withdrawn in a single smooth motion?
- 1.2 Is the device ever used on "rocky" or "very tightly packed soils" ?
- 1.3 Is the cutting edge of the device plastic? ____ or glass? ____
- 1.4 Is the cutting edge serrated?
- 1.5 Is a "nosepiece" used?
- 1.6 If yes for 1.5, what is it's composition? _____
- 1.6 Is a liner being used?
- 1.7 If yes for 1.6, what is it's composition? (Glass? ____ Plastic? ____ Other? _____)

QA ASPECTS

- 2.1 If the samples are composited are they screened first?
- 2.2 Are depth profiles samples being taken?
- 2.3 Is the desired sample a grab? ____ or a composite? ____
- 2.4 Does the length of the device allow samples to be taken at the depths as outlined in the sampling plan?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Section 2.5.2

SOIL/SEDIMENT/SLUDGE SAMPLING

For Volatile Organic Analysis

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Are volatile organic samples collected first?
- 1.2 Is there any headspace in the container?
- 1.3 Is the headspace in the sample containers minimized?
- 1.4 Are volatile organic samples shielded from light?
- 1.5 Are sample jar lids re-tightened after initial cool down or immediately prior to shipping?
- 1.6 Were the sample containers immediately placed in a 4°C environment?

QA ASPECTS

- 2.1 When a spade or scoop is used, is it non-plated?
- 2.2 For volatile grabs, was a gravity corer used?
- 2.3 Does the sampling plan indicate that composite samples are to be taken from the beginning, middle, and end of the regions of each site?

SOIL GASES

- 3.1 Are soil gases to be analyzed?
- 3.2 Are all these sampling procedures documented?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Section 2.5.2, 3.1.4, 3.2.2

Scoop Sampler/Trowel/Shovel

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Was the device used: Teflon _____ Stainless Steel _____ Other: _____

OPERATIONAL CRITERIA

- 1.1 Was the sample container tilted properly to fill with minimal disturbance?
- 1.2 Was the sampling device emptied slowly with minimal disturbance?
- 1.3 Is this device used for VOA samples?
- 1.4 Is the device decontaminated properly between uses?
- 1.5 Are the decontamination liquids contained for disposal?

QA ASPECTS

- 2.1 Is the device non-plated?
- 2.2 Are the edges of the device parallel?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2, 4.2

SOIL/SEDIMENT/SLUDGE SAMPLING

Split Spoon Sampler

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

1.1 Are multiple samples removed from the spoon?

1.2 If yes for 1.1, describe procedure:

1.3 Does the unit use a liner?

1.4 If yes for 1.3, describe it's composition:

1.5 Does the composition of the liner indicate a possible interaction with the sample being taken?

QA ASPECTS

2.1 Does the splitting procedure follow the procedure outlined in the sampling plan?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.1, 2.5.2

Sample Trier / Waste Pile Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 What is the diameter of the device? _____
- 1.2 Is the particle size of the material to be sampled larger than half the diameter of the device?
- 1.3 Is the device fabricated? _____ or purchased? _____
- 1.4 Is the device used more than once?
- 1.5 If yes for 1.4, is the unit properly decontaminated between uses?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 2.1 Is the material sampled extremely moist?
- 2.2 Is the device used on dry _____, sandy _____, stony or powdery _____ materials?
- 2.3 Is the device used at an angle of between 0° and 45°?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.4, 4.2

SOIL/SEDIMENT/SLUDGE SAMPLING

Veihmeyer Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Are the tips that are being used suitable for their specific application?
1.2 Describe the tip(s) used on this device:

- 2.1 Is the entire device _____ or the tip _____ used more than once?
2.2 If yes for 2.1, is the unit properly decontaminated between uses?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 3.1 Is the device used to sample other than stony _____, rocky _____, or very moist _____ types of soils?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.4

Grain Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is this unit used on containerized waste?
- 1.2 If yes for 1.1, does the sampler insert the device to a point diagonally opposite point of entry?
- 2.1 Does the sampler know if the average particle size of the sample matrix is less than 0.6 cm.?
- 2.2 If yes for 2.1, what is the average particle size involved? _____
- 3.1 Is the device inserted in the material to be sampled more than once?
- 3.2 If yes for 3.1, how many times? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Is the sample matrix very moist _____ or a viscous sludge? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

SOIL/SEDIMENT/SLUDGE SAMPLING

Thin-Wall Type Sampling Tubes

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is the device twisted____ or pounded____ into the ground?
- 1.2 Is an initial hole created into which the device is inserted?
- 1.3 If yes for 1.2, describe how the hole is created:

- 1.4 Is the device used to obtain an undisturbed core sample?
- 1.5 Does the device contain a split-shell?
- 1.6 Is tube shipped intact? (without sample being removed)
- 2.1 Is the cutting edge of the device plastic____ or glass?____
- 2.2 Is the cutting edge serrated?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 3.1 Is the sample matrix very rocky soils?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2, 3.2.5

SLUDGE SAMPLING

Ponar Dredge

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is the unit used in such a way as to minimize disturbance to the material being sampled?
- 1.2 Does the unit use a screen?
- 1.3 If yes for 1.2, what is the approximate size of the mesh? _____
- 1.4 Outline the process that is used to remove the sample from the device:

- 1.5 Has any portion of the sample aliquot taken contacted the sides of the device?

QA ASPECTS

- 2.1 Are the unit's moving parts checked before use?
- 2.2 Is the sample to be collected a grab? ____ or a composite? ____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

SLUDGE SAMPLING

PACS Sludge Sampler

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

- 1.1 Is a bag or liner used on this unit?
- 1.2 If yes for 1.1, what is the volume _____ and composition _____ of the bag or liner?
- 1.3 What is the capacity of the "cup"?
- 1.4 Can the sample technician physically maneuver the device as required?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 2.1 Is this unit used on very viscous or " heavy " sludges only?
- 2.2 If no for 1.1, describe what else it is used for:

- 2.3 If no for 1.1, is the use as described in 2.2 applicable?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 3.1.2, 3.2.4

PACS Grab Sampler

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is the unit used only on sludges?
- 2.1 What is the volume of the container? _____
- 2.2 What is the length of the pole that is used in conjunction with the unit? _____
- 3.1 Is the unit used more than once?
- 3.2 If yes for 3.1, is the field decontamination procedure adequate for the samples being taken?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

SURFACE SAMPLING

Wipes

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

What surfaces are being sampled?

☐ Glass ☐ Metal ☐ Other: _____

OPERATIONAL CRITERIA

1.1 Is a gauze pad used to take the sample?

1.2 If no for 1.1, what is used? _____

1.3 Is at least one horizontal motion and one vertical motion used during the taking of the sampling?

1.4 Are only pre-measured areas sampled?

1.5 Is the area to be sampled measured by:

☐ Ruler ☐ Template ☐ Other: _____

1.6 Is a solvent used during the sampling procedure?

1.7 If yes for 1.6, what solvent is used? _____

1.8 If yes for 1.6, what volume of solvent is used? _____

1.9 If yes for 1.6, is the solvent added to the gauze pad (or other device) immediately before the sample is taken?

POSSIBLE CONTRA-INDICATIONS FOR USE

2.1 Are only non-porous surfaces being sampled?

2.2 Are any volatile analytes to be tested?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2

SURFACE SAMPLING

Chips

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

What surfaces are being sampled?: ☐ Cement ☐ Brick ☐ Asphalt ☐ Wood
☐ Other: _____

OPERATIONAL CRITERIA

- 1.1 Is a chisel and hammer used to take the sample?
1.2 If no for 1.1, what is used?:

- 1.3 Are only pre-measured areas sampled?
1.4 Is the area to be sampled measured by:
☐ Ruler ☐ Template ☐

Other?: _____

- 1.5 Is the depth at which the sample chip is to be taken detailed in the SOP?
1.6 If yes for 1.5, is it properly recorded by the technician?
1.7 Does the sampling technician keep the scatter of the chips to a minimum?
1.8 Is the scattered material collected?
1.9 If yes for 1.8, how is the scattered material collected and retained?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 2.1 Are any volatile analytes being analyzed for?
2.2 Are only porous surfaces being sampled?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

SURFACE SAMPLING

Sweeps

NAME OF FACILITY:

SITE ID:

DATE OF AUDIT:

AUDITOR(S):

CONTACTS:NAME/TITLE

Sampling Technician

SOP IDENTIFICATION:

What surfaces are being sampled?:

- ☐ Cement ☐ Brick ☐ Asphalt ☐ Wood ☐ Glass ☐ Metal
☐ Other: _____

OPERATIONAL CRITERIA

- 1.1 Is a brush and dust pan used to take the sample?
1.2 If no for 1.1, what is used?:

1.3 Are only pre-measured areas sampled?

1.4 Is the area to be sampled measured by:

- ☐ Ruler ☐ Template ☐

Other?: _____

1.5 Is the sample collected directly into the sample container?

1.6 If no for 1.5, is the sample transferred with minimal losses?

1.7 Are samples taken from areas where material has been allowed to accumulate?

1.8 Is there any SOP's for collecting samples from these areas of accumulation?

POSSIBLE CONTRA-INDICATIONS FOR USE

2.1 Are any volatile analytes being analyzed for?

2.2 Are porous _____, non-porous _____, or both _____ types of surfaces being sampled?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

AIR SAMPLING CHECKLIST

The following is a list of generic checklist items that are to be reviewed with the sampler (the person actually engaged in the sampling activity that is being assessed). Please attach a copy of this sheet to every device (or activity) that you evaluate.

NAME OF DEVICE: _____

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

SOP IDENTIFICATION: _____

QA ASPECTS

- 1.1 Are the proper number of samples taken? _____ At all the locations designated in the sampling plan?
- 1.2 Are the sampling points designated _____ and located _____ as outlined in the sampling plan?
- 1.3 Are the proper number of field QC (background) samples taken?
- 1.4 Are there any deviations from the sampling plan?
- 1.5 If yes for 1.4, have these deviations been accepted by the authorized manager?
- 1.6 If yes for 1.4, are these deviations documented?
- 1.7 Is sufficient quantity of sample taken to meet the analytical needs?

SAMPLE HANDLING

- 2.1 Are appropriate sample preservation techniques used _____ And documented? _____
- 2.2 Are appropriate sample storage and transportation techniques used?
- 2.3 Are isokinetic samples taken whenever possible?
- 2.4 Is the sampling equipment decontaminated as described in the sampling plan?
- 2.5 If applicable, is the decontamination liquid contained for disposal?
- 2.6 Are chain of custody procedures required _____ And followed? _____
- 2.7 Do the sample labels include the complete list of required data?
- 2.8 Is the sampling personnel training consistent with the QA plan? _____ And is this training documented? _____

WEATHER CONDITIONS

- 3.1 Are meteorological conditions monitored at the time of sampling?
- 3.2 If yes for 3.1, are the following monitored?: (1) Temperature? _____; (2) Humidity? _____
(3) Wind Direction? _____; (4) Wind Velocity? _____; (5) Barometric Pressure? _____
- 3.3 If yes for 3.2, are these conditions monitored at the sampling site?
- 3.4 If no for 3.2, at what distance from the sampling site are the measurements taken? _____
- 4.1 If a pump is used, how often is it calibrated? _____
- 4.2 Is the pump calibrated at the same temperature as it's intended use?
- 4.3 If a flow meter is used, how often is it calibrated? _____
- 4.4 Is the flow meter calibrated at the same temperature as it's intended use?

AIR STACKS

- 5.1 Are air stacks being sampled?
- 5.2 If yes for 5.1, are grab _____ or composite _____ samples taken?
- 5.3 Is the flow from the stack continuous _____ or cyclic _____ in nature?
- 5.4 If the flow is cyclic in nature, does the sampling period cover at least one cycle?

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1

AIR SAMPLING

Pumps

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Type of Pump(s) Used:

- o Diaphragm: (Metal _____ Rubber _____)
- o Piston: (Surge Chamber used to reduce flow irregularities? _____)
- o Gear Driven o Rotary Vane
- o Lobe Type o Hand Operated: (type) _____
- o Other:(describe) _____

DEVICE PREPARATION

- 1.1 Is the pump calibrated and checked for wear?
- 1.2 If yes for 1.1, when was it examined and calibrated last? _____
- 1.3 If yes for 1.1, how often is it examined and calibrated? _____
- 1.4 If yes for 1.1, please explain the process: _____

OPERATIONAL CRITERIA

- 2.1 Are possible "memory effects" of the pump considered?
- 2.2 If yes for 2.1, please explain the measures taken to reduce or eliminate it:

- 2.3 If applicable, list the sorbents that are in use in conjunction with pumps:

--

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

Filters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA

- 1.1 Is a pressure drop observed?
 1.2 Is penetration of the filter observed?
- 2.1 Is there any device between the filter and the sampling point?
 2.2 If yes for 2.1, describe the elements of the sampling train used:

QA ASPECTS

- 3.1 Is the collection efficiency initially calibrated?
 3.2 At what frequency is it rechecked?

TYPES OF FILTERS USED

- 4.1 Outline the type(s) of filters routinely used:
- o Fiber Type: o Cellulose o Glass o Plastic (type):
 - o Other: (describe):
 - o Membrane Type: o Cellulose o Plastic (type):
 - o Other: (describe):
 - o Nucleopore
 - o Other Type:

Comments:

Attach a sheet for each type of filter in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

AIR SAMPLING

Impingers (Absorption Methods)

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	

SOP IDENTIFICATION:

Solution Used Sampled	Analyte	Pump Calibrated/Date	Vol. Air

OPERATIONAL CRITERIA

- 1.1 Is the preparation of the standard solutions properly documented?
1.2 Is the impinger system cooled?
1.3 What is the volume of the impinger?: _____

- 2.1 Is a filter installed before the impinger?
2.2 If yes for 2.1, what type of filter is used? _____

- 3.1 Please identify the pump(s) used for the impinger sampling train:

QA ASPECTS

- 4.1 Is the collection efficiency initially calibrated?
4.2 If yes for 4.1, at what frequency is it rechecked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

Adsorbent Tubes

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Type of Adsorbent Technique	Analyte(s)	Efficiency Checked?		Collection	
☐ Charcoal Tubes		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Molecular Sieves		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Tenex		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Florisil		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Porous Polymers		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Other:		☐ Yes	☐ No	☐ Passive	☐ Active
☐ Other:		☐ Yes	☐ No	☐ Passive	☐ Active

OPERATIONAL CRITERIA

1.1 Are weather conditions considered for sampling event(s) using this collection system?

1.2 What is typical sampling time? _____

1.3 What is the flow rate used? _____

1.4 Is the collection efficiency initially calibrated? _____

1.5 If yes for 1.4, at what frequency is it rechecked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

AIR SAMPLING

Whole Air Sampling

i). SAMPLING BAG

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

LEAK CHECKS

- 1.1 Is the bag routinely checked for leaks?
1.2 If yes for 1.1, at what frequency?
1.3 Is the entire sampling system, including valves and hoses, routinely checked for leaks?
1.4 If yes for 1.3, at what frequency?

OPERATIONAL CRITERIA

- 2.1 What material is the bag made of: ☐ Polyethylene ☐ Saran
 ☐ Mylar ☐ Teflon
 ☐ Tedlar ☐ Other: _____
- 2.2 What is the typical temperature of use? _____
- 2.3 What is the volume of the bag? _____

QA ASPECTS

- 3.1 Is the collection efficiency initially calibrated?
3.2 Is the bag checked for possible permeation?
3.3 Is the tensile strength of the bag checked?
3.4 Is possible adsorption checked?

Comments:

Attach a sheet for each type of bag in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

Whole Air Sampling

ii). SUMMA CANISTER

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

LEAK CHECKS

- 1.1 Is the unit routinely checked for leaks?
 1.2 If yes for 1.1, what type of gas is used for checking for leaks? (Nitrogen? ___ Oxygen? ___
 Other: ___)
 1.3 If yes for 1.1, is the unit filled to 30 psig or is another pressure used? (List: ___)
 1.4 If yes for 1.1, does the pressure drop less than 2 psig in 24 hours?
 1.5 If yes for 1.1, at what frequency is it rechecked? _____

CANISTER CLEANING

- 2.1 Is the canister cleaned by heating for 8 hours at 150"°?
 2.2 Is the canister repeatedly evacuated to less than 0.5 mm. Hg followed by pressurization for cleaning?
 2.3 If yes for 2.2, what gas is used? _____
 2.4 If no for 2.1 or 2.2, what is the protocol for cleaning?: _____
 2.5 Are the canisters cleaned in batches? _____
 2.6 If yes for 2.5, what is the typical batch size? _____
 2.7 After cleaning, how are the canisters stored? _____

VOA SAMPLES

- 3.1 For each sampling event at which VOA's are taken, is at least one canister left untouched to serve as a VOA blank?
 3.2 What is the a typical volume of a VOA blank canister? _____
 3.3 What is the typical volume of a canister used for samples? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

AIR SAMPLING

Whole Air Sampling
iii). GAS SAMPLING BULB / EVACUATED FLASK

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Description of Device: _____

DEVICE SELECTION

- 1.1 Is the device used a heavy walled vessel ?
1.2 Is the device used a flexible container?
1.3 If no to both 1.1 and 1.2, describe it:

- 1.4 These containers are made of what material? _____
1.5 What is the volume of the container? _____

OPERATIONAL CRITERIA

- 2.1 Are water soluble _____ or reactive compounds _____ to be sampled?
2.2 What volume of air is swept out during container cleaning? _____
2.3 How is the pressure inside the container reduced?

- 2.4 How is the container sealed?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

Impactor Type Samplers

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

Type of sampler :

☐ Cascade Type ☐ Virtual (Dichotomous) ☐ Rotary ☐ Inertial Spectrometer
OPERATIONAL CRITERIA

1.1 How many stages are employed? _____

1.2 Is overloading typically seen? _____

1.3 Are any of these adhesives used? ☐ Not Applicable☐ Paraffin☐ Grease (type: _____)☐ Sintered Metal☐ Oiled Teflon Disc☐ Polyethylene Glycol☐ Other: _____

1.4 What is the typical air flow? _____

QA ASPECTS

2.1 Is the collection efficiency initially calibrated? _____

2.2 If yes for 2.1, at what frequency is it rechecked? _____

2.3 If applicable, is particle size calibration done? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

AIR SAMPLING

Electrostatic Samplers

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

OPERATIONAL CRITERIA

1.1 What voltage is typically used? _____

1.2 What procedure is used to verify 1.1? _____

2.1 What gas is used? _____

2.2 At what flow rate? _____

3.1 Is the collection surface covered with paper _____ or liquid _____ or is an electron microscope grid sampler used? _____

3.2 How are transfer sample losses guarded against? _____

4.1 Are external power supplies in use? _____

4.2 If yes for 4.1, are there proper records pertaining to the units maintenance? _____

QA ASPECTS

5.1 Is the collection efficiency initially calibrated? _____

5.2 If yes for 5.1, at what frequency is it checked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

Soil Gas Sampling

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

State device(s) that are employed:

General Device Description	Specific Type	Comments
Adsorbent Tubes	☐ Charcoal Tubes ☐ Tenex Tubes ☐ Polyurethane Foam (PUF) ☐ Other: _____	
Impingers	☐ Dinitrophenylhydrazine ☐ Other: _____	
Whole Air	☐ SUMMA Canister ☐ Tedlar Bag ☐ Other: _____	

1.1 Are grab samples taken?

2.1 List analytes that are being sampled for:

Comments:

For questions 1.1 thru 2.1

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

AIR SAMPLING

Soil Gas Sampling (cont.)

3.0 For Core samples:

- 3.1 Are core samples taken?
3.2 If yes for 3.1, are drive tubes used?
3.3 If yes for 3.1, is the drive tube lined?
3.4 If yes for 3.3, what is it lined with? _____
3.5 Is care taken so that the samples are not compressed when they are taken?
3.6 Is the sample capped with a teflon lined cap?

4.0 For Shallow Hole Chambers:

- 4.1 Are shallow hole chambers employed?
4.2 If yes for 4.1, what is the depth? _____
4.3 If applicable, what is the sweep air velocity? _____
4.4 Are the samples taken with a syringe _____, tedlar bag _____, or something else? _____
4.5 If no for 4.1, describe how sample is taken:

5.0 For Pipe probes:

- 5.1 Is a "Sleeve" type used? _____
5.2 Is the pipe driven into ground? _____
5.3 To what depth is the pipe driven? _____
5.4 Is the sample of soil gas taken for a subsequent analysis _____ or is it read directly with a direct reading type of device? _____
5.5 If a direct reading type of device is used please give description:

Overall Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.4

Cryogenic Traps

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

- 1.1 Is the possibility of "trap freezing" routinely checked for?
 1.2 If yes for 1.1, at what frequency? _____
- 2.1 Is the collection efficiency initially calibrated?
 2.2 If yes for 2.1, at what frequency? _____
- 3.1 What drying agent is used? _____
- 4.1 What is used as coolant? _____
- 5.1 What are the devices used in the sampling train?

QA ASPECTS:

- 6.1 Is the collection efficiency initially calibrated?
 6.2 If yes for 6.1, at what frequency? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

AIR SAMPLING

Diffusion Batteries / Denuders

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

- 1.1 How many stages does the unit have? _____
2.1 Does the unit use fine mesh screens? _____
2.2 Is break-through checked? _____
2.3 If yes for 2.1, how many screens are being used? _____
2.4 If yes for 2.1, what is their typical thickness? _____
2.5 If yes for 2.1, what is the material used? _____
3.1 Is a tube (or channel) type of unit used? _____
3.2 If yes for 3.1 indicate the type: ☐ Cylindrical ☐ Rectangular
 ☐ Annular ☐ Parallel Circular
 ☐ Transition Flow ☐ Other: _____
 ☐ Diffusion
4.1 If denuders are used, what is the substrate used: ☐ Paper ☐ Tenex
 ☐ Nylon ☐ Silica Gel
 ☐ Grease (type: _____) ☐ Other: _____
4.2 Is solvent used during substrate application? _____
4.3 Is the unit made _____ or bought? _____

QA ASPECTS:

- 5.1 Is the collection efficiency initially calibrated? _____
5.2 If yes for 5.1, at what frequency is it rechecked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

Cyclone Samplers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

- 1.1 Are multi-staged units used?
 1.2 If yes for 1.1, how many stages are employed? _____

- 2.1 Are any parts of the unit made of nylon?
 2.2 Is the unit checked for static charge build-up?
 2.3 If yes for 2.2, at what frequency? _____

- 3.1 Are the flow rates adjusted so overloading is guarded against?

- 4.1 Are "position sensitive" units being used?

- 5.1 Is the unit used in any high temperature applications?
 5.2 If yes for 5.2, outline use:

QA ASPECTS:

- 6.1 Is the collection efficiency initially calibrated?
 6.2 If yes for 6.1, at what frequency is it re-checked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

AIR SAMPLING

Thermal Precipitators

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

- 1.1 What type of gas is used?
- 1.2 What is the flow rate? _____
- 1.3 Is the flow rate stated in 1.2 as low as possible?

QA ASPECTS:

- 2.1 Is the collection efficiency initially calibrated?
- 2.2 At what frequency is it rechecked? _____

VOA SAMPLES:

- 3.1 Are volatile samples taken?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.2

Sequential / Tape Samplers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

OPERATIONAL CRITERIA:

1.1 Indicate if any (or all) of these samplers are used:

- ☐ Rotating Drum ☐ Moving Slide
☐ Tape ☐ Rotating Disc
☐ Turntable ☐ Other: _____

2.1 Samples are collected by:

- ☐ Sorbent Tubes (Filled with: _____)
☐ Impinger (Filled with: _____)
☐ Impregnated Paper (Impregnated with: _____)
☐ Other: _____

QA ASPECTS:

3.1 Is the collection efficiency initially calibrated?

3.2 If yes for 3.1, at what frequency is it rechecked? _____

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2

AIR SAMPLING

Passive Dosimeters

NAME OF FACILITY:	
SITE ID:	
DATE OF AUDIT:	
AUDITOR(S):	
CONTACTS:NAME/TITLE	
<u>Sampling Technician</u>	

- 1.1 Is the unit a diffusion sampler_____ or a permeation dosimeter? ._____
1.2 If the unit is a permeation device, what type of membrane is employed?_____
1.3 What is the typical exposure (sampling) time?_____
2.1 What is the typical range of temperature of use?_____
2.2 What is the typical range of humidity?_____
3.1 Are the units ever calibrated?
3.2 Are they checked on a batch-to-batch basis?
3.3 If yes for 3.1 or 3.2, outline method and frequency:

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2

Microbiological Sampling -Generic Checklist-

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS:

- 1.1 Are the samples taken at all the locations designated in the sampling plan?
- 1.2 Are the proper number of samples taken as outlined in the sampling plan?
- 1.3 Are the proper number of field QC samples taken?
- 1.4 Are there any deviations from the sampling plan?
- 1.5 If yes to 1.4, have these deviations been accepted by the authorized manager?
- 1.6 If yes to 1.4, are these deviations documented?
- 1.7 Is sufficient quantity of sample taken to meet the analytical needs?
- 1.8 Are the sampling points designated as outlined in the sampling plan?

SAMPLE HANDLING:

- 2.1 Are appropriate sterile sample containers used?
- 2.2 Are appropriate sample preservation techniques used and documented?
- 2.3 Are appropriate sample storage and transportation and transfer techniques used?
- 2.4 Is the sampling equipment decontaminated as described in the sampling plan?
- 2.5 Are the decontamination liquids contained for disposal?
- 2.6 Are chain of custody procedures required? _____ and followed? _____
- 3.1 Do the sample labels include the complete list of required data?
- 3.2 Is the sampling personnel training consistent with the QA plan?
- 3.3 Is this training documented?

STERILITY:

- 4.1 Are adequate blanks run to prove the sterility of the media and containers?
- 4.2 Are all the samples collected in sterile media?
- 4.3 Are the water samples chilled between collection and filtration?
- 4.4 Is thiosulfate added to water samples to remove residual chlorine?
- 4.5 Are all the samples thoroughly shaken before any subsampling is performed ?
- 4.6 Are all sample splitting procedures followed exactly and properly documented?
- 4.7 Are a range of sample volumes used for obtaining colony counts?
- 4.8 Are all the sterile buffers and media plates properly stored before use?
- 4.9 If used, are the filtration units properly rinsed before use?
- 4.10 Are all the bottle, forceps, media, and petri dish sterilization procedures followed exactly and properly documented?

CYCLONE SAMPLERS:

- 5.1 Is there a dedicated cyclone air sampler?

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

- 1.1 Are the samples taken at all the outfall locations as designated in the permit?
- 1.2 Are the proper number of samples taken at each outfall?
- 1.3 Are the outfalls designated as outlined in the permit?
- 1.4 Insufficient quantity of sample taken to meet the analytical needs?
- 1.5 Are there any deviations from the sampling design, as outlined in the permit?
- 1.6 If yes to 1.5, have these deviations been accepted by the authorized manager? _____ or the responsible regulator _____ or both? _____
- 1.7 Are the proper number of field QC samples taken?
- 1.8 Are appropriate sterile sample containers used?
- 1.9 Are appropriate sample storage and transportation and transfer techniques used?
- 2.0 Is a list of proper bottles, sample volumes, preservatives and holding times provided to the samplers?
- 2.1 Are chain of custody procedures required _____ and followed? _____
- 2.2 Do the sample labels include the complete list of required data?
- 2.3 Is the sampling personnel training consistent with the QA plan?
- 2.4 Is this training documented?

3.0 Indicate type of Sampler used: ☐ Niskin ☐ Zobell ☐ Direct Immersion: ☐ Other:

4.1 Are all the sterile buffers and media plates properly stored before use?

4.2 If used, are the filtration units properly rinsed before use?

4.3 Are all the bottle, forceps, media, and petri dish sterilization procedures followed exactly and properly documented?

5.1 Please list preservatives used:

o Dechlorination Agents	Identify: _____
o Chelating Agents	Identify: _____
o Other:	Identify: _____

Attach a sheet for each device in use

May 1994

Vegetation Sampling Generic Checklist

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

QA ASPECTS:

- 1.1 Are the samples taken at all the locations designated in the sampling plan?
- 1.2 Are the proper number of samples taken as outlined in the sampling plan?
- 1.3 Are the proper number of field QC samples taken?
- 1.4 Are there any deviations from the sampling plan?
- 1.5 If yes to 1.4, have these deviations been accepted by the authorized manager?
- 1.6 If yes to 1.4, are these deviations documented?
- 1.7 Is sufficient quantity of sample taken to meet the analytical needs?
- 1.8 Are the sampling points designated as outlined in the sampling plan?

SAMPLE HANDLING:

- 2.1 Are appropriate sample containers used?
- 2.2 Are appropriate sample preservation techniques used and documented?
- 2.3 Are appropriate sample storage and transportation and transfer techniques used?
- 2.4 Is the sampling equipment decontaminated as described in the sampling plan?
- 2.5 Are the decontamination liquids contained for disposal?
- 2.6 Are chain of custody procedures required? and followed?
- 2.7 Do the sample labels include the complete list of required data?
- 2.8 Is the sampling personnel training consistent with the QA plan?
- 2.9 Is this training documented?
- 3.1 Do the samplers know all the proper sampling and preservation techniques for every type of analyte and flora involved?
- 4.1 Are any of the samples to be analyzed "composite" samples?
- 5.1 Is a list of proper bottles, sample volumes, preservatives and holding times provided to the samplers?
- 6.1 Are all sample splitting procedures followed exactly and properly documented?
- 7.1 Is there dedicated sampling equipment?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1, 2.6, 3.2.2, 3.2.4, 3.2.5, 3.4

Produce Sampling Generic Checklist

TYPE OF PRODUCE: _____

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

SOP IDENTIFICATION:

QA ASPECTS:

- 1.1 Is there a sampling plan available for the various sample types?
- 1.2 Are the samples taken at all the locations designated in the sampling plan?
- 1.3 Are the proper number of samples taken as outlined in the sampling plan?
- 1.4 Are the proper number of field QC samples taken?
- 1.5 Are there any deviations from the sampling plan?
- 1.6 If yes to 1.5, have these deviations been accepted by the authorized manager?
- 1.7 If yes to 1.5, are these deviations documented?
- 1.8 Are chain of custody procedures followed?
- 1.9 Do the sample labels include the complete list of required data, type of sample, date and location?
- 1.10 Are the appropriate samples marked "PERISHABLE"?
- 1.11 Is the sampling personnel training consistent with the QA plan?
- 1.12 Is this training documented?
- 1.13 Are chain of custody procedures followed?
- 1.14 Do the sample labels include the complete list of required data, type of sample, date and location?
- 1.15 Are the appropriate samples marked "PERISHABLE"?

OPERATIONAL CRITERIA:

- 2.1 What equipment is being used for the sampling? _____
- 2.2 Are appropriate samples taken adjacent to soil core?
- 2.3 Are samples taken before harvest and at harvest time?
- 2.4 What height above the soil surface are the appropriate samples taken at? _____
- 2.5 Is sufficient quantity of sample taken to meet the analytical needs?
- 2.6 Are the sampling points designated as outlined in the sampling plan?
- 2.7 Is the procedure for proper sample quantity, preservation and holding times provided to the samplers?
- 2.8 Are all sample splitting procedures followed exactly and properly documented?
- 2.9 Is there a dedicated pruning shears and/or hand scythe available for sampling?

SAMPLE HANDLING:

- 3.1 Are appropriate sample containers used?
- 3.2 Are appropriate sample preservation techniques used and documented?
- 3.3 Are wet samples thoroughly air dried before wrapping, if freezing or chilling is not required?
- 3.4 Are any of the samples to be analyzed "composite" samples?
- 3.5 Does the dull side of aluminum foil come into contact with samples?
- 3.5 Are appropriate samples frozen or chilled before shipping?
- 3.6 Are appropriate sample packing, shipping and transfer techniques used?
- 3.7 Is sampling equipment decontaminated as described in the sampling plan?
- 3.8 Is the decontamination liquid contained for disposal?

Comments: _____

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1, 2.6, 3.2.2, 3.2.4, 3.2.5, 3.4

Grass Sampling Generic Checklist

TYPE OF GRASS: _____

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	

QA ASPECTS:

- 1.1 Is there a sampling plan available for the various sample types?
- 1.2 Are the samples taken at all the locations designated in the sampling plan?
- 1.3 Are the proper number of samples taken as outlined in the sampling plan?
- 1.4 Are the proper number of field QC samples taken?
- 1.5 Are there any deviations from the sampling plan?
- 1.6 If yes to 1.5, have these deviations been accepted by the authorized manager?
- 1.7 If yes to 1.5, are these deviations documented?
- 1.8 Are chain of custody procedures followed?
- 1.9 Do the sample labels include the complete list of required data, type of sample, date and location?
- 1.10 Is the sampling personnel training consistent with the QA plan?
- 1.11 Is this training documented?

OPERATIONAL CRITERIA:

- 2.1 What equipment is being used for the sampling? _____
- 2.2 Are samples taken adjacent to soil core?
- 2.3 Are samples taken near the end of growing season or before the last cutting? _____
- 2.4 At what height above the soil surface are the samples taken? _____
- 2.5 Is sufficient quantity of sample taken to meet the analytical needs?
- 2.6 Are the sampling points designated as outlined in the sampling plan?

SAMPLE HANDLING:

- 3.1 Are appropriate sample containers used?
- 3.2 Are appropriate sample preservation techniques used and documented?
- 3.3 Are samples thoroughly air dried and mixed before packing?
- 3.4 Are any of the samples to be analyzed "composite" samples?
- 3.5 Does the dull side of aluminum foil come into contact with samples?
- 3.6 Are appropriate sample packing, shipping and transfer techniques used?
- 3.7 Is sampling equipment decontaminated as described in the sampling plan?
- 3.8 Is the decontamination liquid contained for disposal?

- 4.1 Is the procedure for proper sample quantity, preservation and holding times provided to the samplers?
- 4.2 Are all sample splitting procedures followed exactly and properly documented?

- 5.1 Is there a dedicated pruning shears and/or hand scythe available for sampling?

Comments:

Attach a sheet for each device in use

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.1, 2.6, 3.2.2, 3.2.4, 3.2.5, 3.4

SECTION 2.2

FIELD MEASUREMENT ASSESSMENT PLATES

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AIR

MEASURING AIR

Oxygen (AMBIENT AIR) Meter

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(s):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 2.1 Is the battery checked and sufficiently charged?
- 2.2 Is this documented?

QA ASPECTS

- 3.1 Has the instrument been recently calibrated?
- 3.2 By Whom? _____
- 3.3 Last Calibration date: _____
- 3.4 Is this documented?
- 3.5 At what frequency is it calibrated?
- 3.6 Is the operator training consistent with the QA plan?
- 3.7 Is this training documented?

OPERATIONAL CRITERIA

- 4.1 Has the instrument been allowed to warm up properly before measurement begins?
- 4.2 Are all the samples to be analyzed grab samples?
- 4.3 Are all samples composite samples?
- 4.4 Is the unit used for continual monitoring?
- 4.5 If yes for 4.4, are any measures taken to ensure that the atmosphere being sampled does not contain elevated Oxygen (O₂) levels?
- 4.6 If yes for 4.5, describe:

- 4.7 Is there any evidence that the current weather conditions may be effecting the unit?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Portable Combustible Gas Indicator

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(s):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented?
 1.4 Is the battery checked and sufficiently charged?
 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated? _____
 2.6 What gas is used for calibration? _____

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
 3.2 Is the operator training consistent with the QA plan?
 3.3 Is this training documented?
 3.4 Is the intake positioned close to the area in question?
 3.5 Is the intake moved with slow, sweeping motions?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING AIR

Portable Flame Ionization Detector

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated? _____
- 2.6 What gas is used for calibration? _____

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Is the intake positioned close to the area in question?
- 3.5 Is a chart recorder _____ or automatic data reduction _____ used?
- 3.6 Are the gases of proper quality?
- 3.7 Do the gases have the proper regulators?
- 3.8 Is the system leak free?
- 3.9 Verified by: _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Portable Photoionization Detector

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented?
 1.4 Is the battery checked and sufficiently charged?
 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated? _____
 2.6 What gas is used for calibration? _____

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
 3.2 Is the operator training consistent with the QA plan?
 3.3 Is the unit used during periods of high humidity?
 3.4 Is this training documented?
 3.5 Is the intake positioned close to the area in question?
 3.6 Is the intake moved with slow, sweeping motions?
 3.7 Is there any evidence that the current weather conditions may be effecting the unit?

LAMPS:

- 4.1 Are all the lamps used clean?
 4.2 How often are they cleaned?: _____
 4.3 Is this documented?
 4.4 What is the energy rating of the lamp(s) used?
 10.2 e.v. _____ 10.7 e.v. _____ 11.2 e.v. _____ 11.7 e.v. _____ Other: _____
 4.5 For a given area within a site, are readings taken with more than one energy lamp?
 4.6 Are the energies used appropriate for the anticipated analytes?
 4.7 What lamp is used for calibration?: _____
 4.8 Are the meters placed in direct sunlight when not in use?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING AIR

Colorimetric Indicator Tubes

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Type of Tube:

Scale: _____
Marking: _____

Comparison: _____
Diffusion: _____

Presence/Absence: _____
Analyte: _____

QA ASPECTS

- 1.1 Is the operator training consistent with the QA plan?
- 1.2 Is this training documented?
- 1.3 What is the analyte/analyte class of interest? _____
- 1.4 Are the tubes being used within their self-life?

OPERATIONAL CRITERIA

- 2.1 What is the Standard Range of Measurement? _____
- 2.2 Number of strokes to be used?(Not applicable if diffusion type) _____
- 3.1 What is the relative standard deviation of the system? _____
- 3.2 List the Cross-Sensitivities: _____

- 4.1 Has the batch of tubes in current use been checked for MDL?
- 4.2 Has the batch of tubes in current use been checked for specificity?
- 5.1 Is a pump? _____ or a "bellows" used? _____
- 5.2 Is the pump/bellows properly calibrated?
- 5.3 Is this documented?
- 5.4 Is there any evidence that the current weather conditions may be effecting the unit?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

LIQUID

MEASURING LIQUID

pH Electrodes

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

DEVICE INFORMATION

1.1 How many pH meters are being used? _____

1.2 List Make(s) Model(s) Last Calibration date

1.3 Is the battery checked and sufficiently charged?

1.4 Is this documented?

QA ASPECTS

2.1 Has the instrument been recently calibrated?

2.2 By Whom? _____

2.3 Last Calibration date: _____

2.4 Is this documented?

2.5 At what frequency is it calibrated? _____

OPERATIONAL CRITERIA

3.1 Are the samples and standards measured at 25°C?

3.2 If no for 3.1, is temperature correction available on the meter?

3.3 Has the instrument been allowed to warm up properly before measurement begins?

3.4 Is the operator training consistent with the QA plan?

3.5 Is this training documented?

3.6 What is the source of the buffers? _____

3.7 Is this documented?

3.8 Have the buffers expired?

3.9 What is the expiration date of the buffers: _____

3.10 Are at least three buffers being used?

3.11 List the buffers used for calibration: pH= _____

3.12 Are electrodes stored according to the manufacturer's instructions? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Specific Ion Electrodes

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Are reference electrodes in use?
 1.2 Types of ion specific probes used: (Include ID of reference electrodes)

Model	Manuf.	Analyte/Reference
_____	_____	_____
_____	_____	_____
_____	_____	_____

QA ASPECTS

- 2.1 Is a proper filling solution used? and documented?
 2.2 Is filling solution bought? _____ or made? _____
 2.3 If made, can it's composition be documented?
 2.4 Are at least 3 standards and one blank used?
 2.5 Is the probe slope documented?
 2.6 Are subsequent slopes within 10% ?
 2.7 If not, outline action taken: _____

OPERATIONAL CRITERIA

- 3.1 Is the meter capable of reading (+/-) .01 m.v.?
 3.2 Are the standards and samples measured at the same temperatures?
 3.3 Has the instrument been allowed to warm up properly before measurement begins?
 3.4 Is the operator training consistent with the QA plan?
 3.5 Is this training documented?
 3.6 Is the standard addition method used?
 3.7 If yes to 3.6, what equation is being used for the quantitation:

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2, 4.3

MEASURING LIQUID

Thermometers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS

- 1.1 Is at least one NBS certified thermometer available?
- 1.2 Is this calibration traceable?
- 1.3 Are all the other thermometers / meters calibrated against the certified thermometer?
- 1.4 Is this documented?
- 1.5 At what temperature(s) does the calibration take place? _____
- 2.1 Is the operator fully trained and knowledgeable in the use of the thermometer?
- 2.2 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 Are correction factors recorded and used when reporting results?
- 3.2 For incubators and ovens, are the bulbs immersed in sand or water?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Specific Conductivity Meters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated? _____
- 2.6 Is the cell constant calculated and recorded?
- 2.7 Is the cell constant frequently checked?
- 2.8 How often: _____
- 2.9 Is this documented?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Is the meter standardized against 0.1 N KCl?
- 3.5 Is any other standard used?
- 3.6 If yes for 3.5, what is it?: _____
- 3.7 Is the meter standardized before each use?
- 3.8 Is this properly documented?
- 3.9 Is the cell cleaned between each use?
- 3.10 Are the standards and samples measured at the same temperatures?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING LIQUID

Turbidity Meters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Are the cells cleaned before use?
- 3.5 What standard is used for calibration? _____
- 3.6 Is the standard bought? _____ or made? _____
- 3.7 If the standard is made, at what frequency is the standard made? _____
- 3.8 If applicable, is 3.7 documented?
- 3.9 If the standard is bought, what is the half-life? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Enzyme Kits

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Manufacturer: _____
- 1.2 Expiration date of the batch of kits: _____

QA ASPECTS

- 2.1 Is a spectrophotometer used?: _____
- 2.2 If yes to 2.1, has it been recently calibrated? _____
- 2.3 At what frequency is it calibrated? _____
- 2.4 At what wavelength(s) is the calibration performed? _____
- 2.5 Is this documented? _____

OPERATIONAL CRITERIA

- 3.1 What is the analyte of interest? _____
- 3.2 Is the MDL checked? _____
- 3.3 Is the specificity checked before use? _____
- 3.4 Is the MDL and specificity of the kit proper for it's designed use? _____
- 3.5 Is the operator fully trained and knowledgeable in the use of these kits? _____
- 3.6 Is this training documented? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING LIQUID

ReDox Potential

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

Types of Redox probes used: (Include ID of reference electrodes)

Model	Manuf.	Reference Probe

DEVICE INFORMATION

- 1.1 Is the meter capable of reading (+/-) 0.01 m.v.?
- 1.2 Is the meter calibrated to read (+/-) 1500 m.v. absolute?
- 1.3 Are the samples measured at ambient temperatures?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? ..
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated? _____

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Is a proper filling solution used? _____
- 3.5 Is this documented? _____
- 3.6 Is filling solution bought? _____ or made? _____
- 3.7 If made, can it's composition be documented?
- 3.8 Are the readings taken in absolute? _____ or relative? _____ millivolts

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Fluorometer

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

List assays that the unit is used for:

ANALYTE	WAVELENGTH(S)	MDL	CALIBRATION RANGE

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented?
 1.4 Is the battery checked and sufficiently charged?
 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
 3.2 Is the operator training consistent with the QA plan?
 3.3 Is this training documented?
 3.4 What standard is used for calibration? _____
 3.5 Does the unit use filters? _____ or a monochromator? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING LIQUID

Color

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model of color comparator: _____ / _____
1.2 Is the unit clean and serviceable?
1.3 Is this documented?

QA ASPECTS

- 2.1 Are the cells cleaned before use?
2.2 Is the operator fully trained and knowledgeable in the use of the unit?
2.3 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 What standard is used for calibration? _____
3.2 Is the standard bought? _____ or made? _____
3.3 If the standard is made, at what frequency is the standard made? _____
3.4 If applicable, is 3.2 documented?
3.5 If applicable, is 3.3 documented?
3.6 If the standard is bought, has it expired?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Portable Oxygen (D.O.) Meter

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented?
 1.4 Is the battery checked and sufficiently charged?
 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated? _____
 2.6 Is the operator training consistent with the QA plan?
 2.7 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
 4.1 Is a Winkler Calibration used?
 4.2 If no for 4.1, what calibration method is used? _____
 4.3 If yes for 4.1, what is used as a titrant? _____
 4.4 What is the titrant standardized against? _____
 4.5 Is the primary standard specified in 4.4 properly documented?
 4.6 Where is titrant stored? _____
 4.7 Is this documented?
 4.8 Are items 4.1 thru 4.7 consistent with the QA project plan?
 5.1 Is the unit checked for bubbles before use?
 5.2 Is the meter readout allowed to stabilize before readings are taken?
 5.3 What is the typical time for the meter to stabilize? _____
 6.1 Are all the samples to be analyzed grab samples?
 6.2 Are all the samples collected in appropriate containers?
 6.3 If the samples are not analyzed "on site," are they stored in a dark place during transport?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.1.2, 3.2.4

MEASURING LIQUID

Flow Meters
a. Rotating Element

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
1.2 Is the instrument clean and serviceable?
1.3 Is this documented?
1.4 Is the battery checked and sufficiently charged? (If applicable)
1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
2.2 By Whom? _____
2.3 Last Calibration date: _____
2.4 Is this documented?
2.5 At what frequency is it calibrated? _____
2.6 Does the sampling plan outline when this meter is to be used?
2.7 Are these applications reasonable?
2.8 Are these instructions followed?
2.9 Is the operator training consistent with the QA plan?
2.10 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
3.2 At what depth(s) are the flows measured? _____
3.3 How is the flow then calculated? _____
3.4 Does this comply with the sampling plan?
3.5 Is the flow measured within the manufacturer's specification?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
a). Open Channels?
b). Closed Conduits (pipes)?
4.2 Is the measurement instantaneous? _____ or continuous? _____ in nature.

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

Flow Meters

b. Floats

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable? _____
- 1.3 Is this documented? _____
- 1.4 Is the battery checked and sufficiently charged? _____
- 1.5 Is this documented? _____

QA ASPECTS

- 2.1 Has the instrument been recently calibrated? _____
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented? _____
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when this meter is to be used? _____
- 2.7 Are these applications reasonable? _____
- 2.8 Are these instructions followed? _____
- 2.9 Is the operator training consistent with the QA plan? _____
- 2.10 Is this training documented? _____

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
- a). Open Channels?
 - b). Closed Conduits (pipes)?
- 4.2 Is the measurement instantaneous _____ or continuous _____ in nature?
- 4.3 Is the flow measured within the manufacturer's specification? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Meters
c. Calibrated vessels

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated?
- 2.6 Does the sampling plan outline when this meter is to be used?
- 2.7 Are these applications reasonable?
- 2.8 Are these instructions followed?
- 2.9 Is the operator training consistent with the QA plan?
- 2.10 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
 - a). Open Channels?
 - b). Closed Conduits (pipes)?
- 4.2 Is the measurement instantaneous or continuous in nature?
- 4.3 Is the flow measured within the manufactures's specification?
- 4.4 What is the volume of the collection vessel used? _____
- 4.5 What is the typical elapsed time used for sample collection? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

Flow Meters

d. Vane Meters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meters are to be used?
- 2.7 Are these applications reasonable?
- 2.8 Are these instructions followed?
- 2.8 Is the operator training consistent with the QA plan?
- 2.10 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
- a). Open Channels?
 - b). Closed Conduits (pipes)?
- 4.2 Is the measurement instantaneous ___ or continuous ___ in nature?
- 4.3 Is the flow measured within the manufactures's specification?
- 4.4 Is the unit a horizontal (propeller) type? ___ or a vertical (cup) type? ___
- 4.5 Are any of the cups or blades bent or damaged in any way?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Meters
e. Electromagnetic Meters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meters are to be used?
- 2.7 Are these applications reasonable?
- 2.8 Are these instructions followed?
- 2.9 Is the operator training consistent with the QA plan?
- 2.10 Is this training documented?

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
 - a). Open Channels?
 - b). Closed Conduits (pipes)?
- 4.2 Is the measurement instantaneous or continuous in nature?
- 4.3 Is the flow measured within the manufacturer's specification?
- 4.4 Is the flow meter checked for grease deposits or pitting?
- 4.5 If yes for 4.4, at what frequency? _____
- 4.6 Is 4.5 documented?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

Flow Meters

f. Tracer / Dilution Methods

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable? _____
- 1.3 Is this documented? _____
- 1.4 Is the battery checked and sufficiently charged? _____
- 1.5 Is this documented? _____

QA ASPECTS

- 2.1 Has the instrument been recently calibrated? _____
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented? _____
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meters are to be used? _____
- 2.7 Are these applications reasonable? _____
- 2.8 Are these instructions followed? _____
- 2.9 Is the operator training consistent with the QA plan? _____
- 2.10 Is this training documented? _____

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
 a). Open Channels? _____ b). Closed Conduits (pipes)? _____
- 4.2 Is the measurement instantaneous? _____ or continuous? _____ in nature.
- 4.3 What parameter / analyte is being monitored? _____
- 4.4 How is this parameter monitored? _____
- 4.5 Is the flow measured reasonable for this method? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Meters
g. Venturi Meter

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable? _____
- 1.3 Is this documented? _____
- 1.4 Is the battery checked and sufficiently charged? _____
- 1.5 Is this documented? _____

QA ASPECTS

- 2.1 Has the instrument been recently calibrated? _____
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented? _____
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meter are to be used? _____
- 2.7 Are these applications reasonable? _____
- 2.8 Are these instructions followed? _____
- 2.9 Is the operator training consistent with the QA plan? _____
- 2.10 Is this training documented? _____

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
 - a). Open Channels? _____
 - b). Closed Conduits (pipes)? _____
- 4.2 Is the measurement instantaneous _____ or continuous _____ in nature?
- 4.3 Is the flow measured within the manufactures's specification? _____
- 4.4 Does the water contain high levels of suspended solids? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

Flow Meters

h. Orifice Meter

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

SOP IDENTIFICATION: _____

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable? _____
- 1.3 Is this documented? _____
- 1.4 Is the battery checked and sufficiently charged? _____
- 1.5 Is this documented? _____

QA ASPECTS

- 2.1 Has the instrument been recently calibrated? _____
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented? _____
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meters are to be used? _____
- 2.7 Are these applications reasonable? _____
- 2.8 Are these instructions followed? _____
- 2.9 Is the operator training consistent with the QA plan? _____
- 2.10 Is this training documented? _____

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations: a). Open Channels? b). Closed Conduits (pipes)? _____
- 4.2 Is the measurement instantaneous? _____ or continuous? _____ in nature.
- 4.3 Is the flow measured within the manufacturer's specification? _____
- 4.4 Does the water contain high levels of suspended solids? _____

Comments: _____

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Meters
i. Acoustic Methods

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable? _____
- 1.3 Is this documented? _____
- 1.4 Is the battery checked and sufficiently charged? _____
- 1.5 Is this documented? _____

QA ASPECTS

- 2.1 Has the instrument been recently calibrated? _____
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented? _____
- 2.5 At what frequency is it calibrated? _____
- 2.6 Does the sampling plan outline when these meters are to be used? _____
- 2.7 Are these applications reasonable? _____
- 2.8 Are these instructions followed? _____
- 2.9 Is the operator training consistent with the QA plan? _____
- 2.10 Is this training documented? _____

OPERATIONAL CRITERIA

- 3.1 At how many points is the flow measured? _____
- 3.2 At what depth(s) are the flows measured? _____
- 3.3 How is the flow then calculated? _____
- 3.4 Does this comply with the sampling plan? _____

POSSIBLE CONTRA-INDICATIONS FOR USE

- 4.1 Are flows measured in any of the following situations?:
 - a). Open Channels? _____
 - b). Closed Conduits (pipes)? _____
- 4.2 Is the measurement instantaneous _____ or continuous _____ in nature?
- 4.3 Is the flow measured reasonable for this method? _____
- 4.4 Is the flow measured within the manufacture's specification? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

Flow Meters
j. Trajectory Methods

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS

- 1.1 Does the sampling plan outline when this method is to be used?
- 1.2 Are these applications reasonable?
- 1.3 Are these instructions followed?
- 1.4 Is the operator fully trained and knowledgeable in the use of this method?
- 1.5 Is this training documented?

OPERATIONAL CRITERIA

- 2.1 At how many points is the flow measured? _____
- 2.2 How is the flow then calculated? _____
- 2.3 Does this comply with the sampling plan?

POSSIBLE CONTRA-INDICATIONS FOR USE

- 3.1 Are flows measured in any of the following situations?:
 - a). Open Channels?
 - b). Closed Conduits (pipes)?
- 3.2 Is the measurement instantaneous____ or continuous____ in nature?
- 3.3 Is it assumed that these measurements are only estimates?
- 3.4 Is the flow measured reasonable for this method?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Measurement
k. Weirs

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

TYPES OF DEVICES USED

1.1 Please indicate the type of weir in use:

- a). Broad Crested: _____
- b). Sharp Crested: _____
 - i). Rectangular: _____
 - ii). Cipolletti: _____
 - iii). V-Shaped (Triangular): _____
- c). Open Channel Flow Nozzle: _____ (special type of weir)
 - i). Parabolic: _____
 - ii). Kennison: _____

QA ASPECTS

2.1 Please show equation(s) used in flow calculations:

2.2 Are these equations and calculations used correct?

2.3 Have the equations used been checked? By Whom: _____

2.4 Is the weir calibrated?

2.5 If yes to 2.4, outline procedure: _____

2.6 If no to 2.4, explain why calibration is not needed: _____

2.7 Are there proper records indicating that the weir was correctly installed?

OPERATIONAL CRITERIA

3.1 Is this method used to measure flows in any of the following situations?:

- a). Open Channels?
- b). Closed Conduits (pipes)?

WEIRS (cont'd.)

- 3.1 Is the measurement instantaneous_____ or continuous_____ in nature?
- 3.2 Does the water contain corrosive materials, trash, or floating (or suspended) solids?
- 3.3 Is there settling of water behind the weir?
- 3.4 If yes to 3.3, is it removed before any measurements are taken?
- 3.5 Is the flow measured reasonable for this method?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

Flow Measurement
Flumes

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

TYPES OF DEVICES USED

1.1 Please indicate the type of flume in use:

- i). Parshall Flume: _____
- ii). Palmer-Bowlus Flume: _____
- ii). Open-Channel Flow Nozzle: _____

QA ASPECTS

2.1 Please show equation(s) used in flow calculations:

2.2 Are these equations and calculations used correct?

2.3 Have the equations used been checked? By Whom: _____

2.4 Is the flume calibrated?

2.5 If yes to 2.4, outline procedure: _____

2.6 If no to 2.4, explain why calibration is not needed: _____

2.7 Are there proper records indicating that the flume was correctly installed?

OPERATIONAL CRITERIA

3.1 What is shape of the flume? _____

3.2 Is this method used to measure flows in any of the following situations?:

- a). Open Channels? _____ b). Closed Conduits (pipes)? _____

3.3 Is the measurement instantaneous? _____ or continuous? _____ in nature.

3.4 Are the points for measuring head pressure properly located?

3.5 Does the water contain corrosive materials, trash, floating (or suspended) solids?

3.6 Is there settling of water behind the flume?

3.7 If yes to 3.6, is it removed before any measurements are taken?

3.8 Is the flow measured reasonable for this method?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

DEPTH MEASUREMENT Steel Tapes

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS

- 1.1 Does the sampling plan outline when this method is to be used?
- 1.2 Are these applications reasonable?
- 1.3 Are these instructions followed?
- 1.4 Is the operator fully trained and knowledgeable in the use of this method?
- 1.5 Is this training documented?

OPERATIONAL CRITERIA

- 2.1 At how many points is the depth measured? _____
- 2.2 What type of water formation is being measured? _____
- 2.3 What are the graduations of the tape? _____
- 2.4 Is this method used in conjunction with any sampling methods?
- 2.5 If yes for 2.4, please list below:

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

MEASURING LIQUID

DEPTH MEASUREMENT
Electric Drop Lines

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS

- 1.1 Does the sampling plan outline when this method is to be used?
- 1.2 Are these applications reasonable?
- 1.3 Are these instructions followed?
- 1.4 Is the operator fully trained and knowledgeable in the use of this method?
- 1.5 Is this training documented?

OPERATIONAL CRITERIA

- 2.1 At how many points is the depth measured? _____
- 2.2 How is the water level sensed? _____
- 2.3 How is the length of the drop line measured? _____
- 2.4 Is any looseness detected in the line or is the line kinked?
- 2.5 Is this method used in conjunction with any sampling methods?
- 2.6 If yes for 2.5, please list below:

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

DEPTH MEASUREMENT

Pressure Transducers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QA ASPECTS

- 1.1 Does the sampling plan outline when this method is to be used?
- 1.2 Are these applications reasonable?
- 1.3 Are these instructions followed?
- 1.4 Is the operator fully trained and knowledgeable in the use of this method?
- 1.5 Is this training documented?

OPERATIONAL CRITERIA

- 2.1 At how many points is the depth measured? _____
- 2.2 Is this unit used on a continuing (monitoring) basis?
- 2.3 Is the unit permanently installed?
- 2.4 If yes to 2.3, how is the data recorded? _____
- 2.5 Is this method used in conjunction with any sampling methods?
- 2.6 If yes for 2.5, please list below:

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 2.9, 3.1.1, 3.1.2

SOIL/ SEDIMENT/ SLUDGE

MEASURING SOIL

Infrared (IR) and Fourier Transform Infrared (FTIR) Spectrophotometry

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Are the optics cleaned before use?
- 3.5 Are matched cells used?

- 4.1 List assays that the unit is used for: _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

MEASURING SOIL

Ultraviolet (UV)-Visible Spectrophotometers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
- 1.2 Is the instrument clean and serviceable?
- 1.3 Is this documented?
- 1.4 Is the battery checked and sufficiently charged?
- 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
- 2.2 By Whom? _____
- 2.3 Last Calibration date: _____
- 2.4 Is this documented?
- 2.5 At what frequency is it calibrated?

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
- 3.2 Is the operator training consistent with the QA plan?
- 3.3 Is this training documented?
- 3.4 Are the optics cleaned before use?
- 3.5 Are matched cells used?

- 4.1 List assays that the unit is used for:

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

X-Ray Fluorescence

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented?
 1.4 Is the battery checked and sufficiently charged?
 1.5 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated? _____

OPERATIONAL CRITERIA

- 3.1 Has the instrument been allowed to warm up properly before measurement begins?
 3.2 Is the operator training consistent with the QA plan?
 3.3 Is this training documented?

- 4.1 List assays that the unit is used for:

- 4.2 Is the instrument calibrated for the elements of interest?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.2, 2.5.2, 3.1.1, 3.1.2

RADIOACTIVITY

Questions 1.1 thru 6.4 are the *generic* questions to be asked for every type of *Radiation* field screening device in use.

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Make / Model: _____ / _____
 1.2 Is the instrument clean and serviceable?
 1.3 Is this documented? (i.e. Is there a logbook?)
 1.4 Are suitable oscilloscopes / voltmeters available and calibrated when checking and adjusting the counting instruments?
 1.5 Is the battery checked and sufficiently charged?
 1.6 Is this documented?

QA ASPECTS

- 2.1 Has the instrument been recently calibrated?
 2.2 By Whom? _____
 2.3 Last Calibration date: _____
 2.4 Is this documented?
 2.5 At what frequency is it calibrated? _____
 2.6 For field measurements, has a known radiation field been used for calibration?
 2.7 For field measurements, what height above the ground are these radiation measurements taken? _____
 2.8 For radiation samples, is a check standard used?
 2.9 Are "shadow shield" techniques used in calibration of instrumentation?
 2.10 Are certificates of calibration maintained?
 3.1 If applicable, please fill out the following Table:

Standards Used for Calibration		Energy Range		NIST Traceable?

Generic Radiation / Radioactivity Questions (cont'd.)

- 4.1 Is the operator training consistent with the QA plan?
- 4.2 Is 4.1 documented?
- 4.3 Have all required QA/QC samples been analyzed? _____ and properly recorded? _____
- 4.4 Are all QA/QC and operational criteria met before analysis begins?

OPERATIONAL CRITERIA

- 5.1 Are self-absorption corrections made?
- 5.2 Are all samples and standards counted using the same, reproducible geometry?
- 5.3 At what frequency are background readings taken? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

Proportional Counters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Is this a windowless____ or a thin window____ type of unit?
- 1.2 If a window is being used, describe its composition: _____
- 1.3 Is this a low background unit?
- 1.4 Is this unit used to monitor:
- ☐ Alpha Radiation?
 ☐ Neutrons? _____
 ☐ Gamma?
- ☐ Beta Radiation?
 ☐ X-Rays?

1.5 Is this unit used for screening only?

OPERATIONAL CRITERIA

2.1 List isotopes monitored with this unit:

3.1 Are self-absorption curves used for solid samples?

3.2 Are the following items routinely monitored:

	Frequency of Monitoring / Examination
☐ Voltage Plateaus	
☐ Typical Operating Voltage	
☐ Crosstalk between alpha and beta channels evaluated	
☐ Fill Gas Gas used:	

3.3 How many channels are being used? _____

3.4 Is the operator familiar with the gas multiplication factor of the system?

3.5 Is the operator cognizant of the type of space charge effects that may occur with the system?

3.6 Does the system employ a cosmic guard detector used in anticoincidence with the signal?

3.7 Are the standards used for calibration applicable for the isotopes to be analyzed?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

MEASURING RADIOACTIVITY

A. Boron Trifluoride System

(This is a special type of proportional counter)

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Is this a windowless____, a thin window____, or end window____ type of unit?
1.2 If a window is being used, describe it's composition:

- 1.3 Is the unit used only for the measurement of:

- ☐ Neutrons?
- ☐ Gamma?

- 2.1 If the unit used for both Gamma and Neutrons, is amplitude discrimination used?

- 2.2 Is the unit used for screening only?

- 3.1 List isotopes monitored with this unit:

OPERATIONAL CRITERIA

- 4.1 What is the range of voltage typically used? _____
4.2 What is the optimal voltage: _____
4.3 Is the temperature of the unit kept constant? _____
4.4 Typical temperature of use: _____
4.5 Does the system employ a second gas mixed with the BF₃?
4.6 If yes for 4.5, what gas is used? _____
4.7 Is the unit subjected to a large amount of shocks? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

MEASURING RADIOACTIVITY

Geiger-Muller Counters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

1.1 Is this a windowless____ or a thin window type____ of unit?

1.2 If a window is being used describe it's composition:_____

2.1 Is the unit used only for the measurement of gross alpha____ and gross beta____?

2.2 Is the unit used to monitor:

- ☐ Alpha Radiation
- ☐ Beta Radiation
- ☐ Neutron_____
- ☐ X-Ray
- ☐ Gamma

QA ASPECTS

3.1 Are the standards used for calibration applicable for the type(s) of radiation monitored?

3.2 Has the GM tube to be used been energy compensated?

3.3 Does it need to be?

OPERATIONAL CRITERIA

4.1 List type(s) of fill gas employed:_____

4.2 What is the maximum counting rate usually seen?_____

4.3 Are smaller tubes used in cases of high flux? (if applicable)

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

Semiconductor Detectors

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 What is the composition of the semiconductor? _____
- 1.2 If used, what type of window is used? _____

QA ASPECTS

- 2.1 When is liquid nitrogen used? _____
- 2.2 If applicable, is there a logbook for the use of liquid nitrogen? _____
- 2.3 What is the operating voltage? _____

OPERATIONAL CRITERIA

- 3.1 What is the specific configuration and application of the unit?

- X-ray Spectroscopy : (Si(Li)) Other type: _____
- Gamma : (Ge detector) Gamma: _____ Other: _____

- * High Purity * Planar Configuration
- * P__ or N__ type * Coaxial Configuration * Well
- (True__ Closed End__ Bulletized__)

- Charged Particle Spectroscopy: Rad type: ◦ Alpha ◦ Beta ◦ Other: _____

- Detector type: * Diffused Junction * Surface Barrier * Ion
- Implanted

- 4.1 List the isotopes monitored with this unit:

- 4.2 Are the standards used for calibration applicable for the isotopes to be analyzed?

- 5.1 Is loss of resolution monitored?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

MEASURING RADIOACTIVITY

Solid Scintillation Detectors

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

DEVICE INFORMATION

1.1 List type of Material used in the detector:

- ☐ NaI ☐ NaI(Tl) ☐ Cs(Tl) ☐ CsI(Na)
☐ BGO ☐ BaF₂ ☐ Glass ☐ LiI(Eu) ☐ Gas: _____

1.2 Is this unit used to monitor:?

- ☐ Alpha Radiation ☐ Beta Radiation ☐ Neutrons _____
☐ X-Rays ☐ Gamma

QA ASPECTS

2.1 Is the background, due to phosphorescence, routinely monitored?

2.2 If yes for 2.1, at what frequency? _____

2.3 If used, is the age of the photomultiplier tubes monitored?

2.4 Is the noise level checked _____ and documented _____?

OPERATIONAL CRITERIA

3.1 What is the typical operating voltage? _____

3.2 Is the unit used for spectroscopy? _____ or gross count rate? _____

3.3 List isotopes monitored with this unit:

3.4 Are the standards used for calibration applicable for the isotopes to be analyzed?

4.1 Typical sample size: _____

4.2 Typical background counts: _____

5.1 Is a "wvshifter" used?

5.2 If yes for 5.1, please identify: _____

5.3 Is an "activator" used?

5.4 If yes for 5.3, please identify: _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

Liquid Scintillation Detectors

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE) _____

Sampling Technician _____

SOP IDENTIFICATION: _____

DEVICE INFORMATION

1.1 List type of material used in the detector: _____

1.2 Is this unit used to monitor: _____

- ☐ Alpha Radiation? ☐ Beta Radiation? ☐ Neutrons? _____
☐ X-Rays? ☐ Gamma? _____

OPERATIONAL CRITERIA

2.1 Please list the isotopes monitored with this unit:

2.2 Are the standards used for calibration applicable for the radiation monitored?

3.1 Typical sample size: _____

3.2 Typical background counts: _____

4.1 Is a "wveshifter" used?

4.2 If yes for 4.1, Please identify: _____

4.3 Are multiple discriminator channels used?

4.4 If yes for 4.3, how many are in use: _____

4.5 If used, is the age of the photomultiplier tubes monitored? _____

4.6 Are quench factors employed?

4.7 If yes for 4.6, is it documented?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

MEASURING RADIOACTIVITY

PHOTOGRAPHY

Radiography_____

Auto-radiography_____

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

DEVICE INFORMATION

1.1 Is this system used to monitor:

- ☐ X-rays ☐ Beta ☐ Gamma
☐ Neutrons _____

QA ASPECTS

2.1 Is the system calibrated?

2.2 If yes for 2.1, at what frequency? _____

2.3 Are the standards used for calibration applicable for the radiation monitored? _____

OPERATIONAL CRITERIA

3.1 Is the film double sided?

3.2 Is an intensified screen used?

3.3 If yes for 3.2, identify its composition: _____

3.4 Is a converter foil used?

3.5 If yes for 3.4, identify its composition: _____

4.1 Is a combination filter used?

4.2 If yes for 4.1, is it consistent with the radiation information given in 1.1?

4.3 If yes for 4.1, does the composition of the filter vary with respect to thickness _____ and location? _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 2.9, 3.1.1, 3.1.2, 3.2.5.2

Portable Ion Chambers

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 Is this system used to monitor:
- ☐ X-rays ☐ Beta ☐ Gamma
- ☐ Neutrons _____
- 1.2 Is the unit gridded? _____

QA ASPECTS

- 2.1 Is the system calibrated? _____
- 2.2 If yes for 2.1, at what frequency? _____
- 2.3 Are the standard used for calibration applicable for the isotopes to be analyzed? _____

OPERATIONAL CRITERIA

- 3.1 What is the wall thickness? _____
- 3.2 What is the wall's composition? _____

- 3.3 Please list the isotopes monitored with this unit:

- 4.1 Typical gas(es) used: _____ / _____ / _____
- 4.2 Typical Operational pressure(s): _____ / _____ / _____

- 5.1 Is the unit used in the pulse _____ or current _____ mode?
- 5.2 Is the unit used in an "integration" mode? _____
- 5.3 What are the energy response characteristics?: _____

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.5.2

MEASURING RADIOACTIVITY

Thermoluminescent Dosimeters

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 List the material used in the detector: _____
- 1.2 Is this system used to monitor:
- ☐ X-rays ☐ Beta ☐ Gamma
 - ☐ Neutrons _____

QA ASPECTS

- 2.1 Is an activator used? _____
- 2.2 If yes for 2.1, please identify: _____
- 2.3 How many chips are used in each dosimeter packet? _____
- 2.4 Are the standards used for calibration applicable for the isotopes to be analyzed? _____
- 2.5 Are these devices calibrated in free air _____ or on a phantom? _____
- 2.6 Is a beam source _____ or an open source _____ used for calibration?

OPERATIONAL CRITERIA

- 3.1 Please fill out table:

Phosphor Used	Packaging of Phosphor ¹	Rad Type Monitored

1: E=Extrusion P=Powder W=Wire

- 4.1 What is the typical time used for analysis?: _____
- 4.2 What is the typical atmospheric pressure during the analysis?: _____
- 4.3 Is the atmospheric pressure the same for the calibration and the intended analysis? _____

- 4.4 Has an energy calibration been done? _____
- 4.5 If yes for 4.4, when was the last calibration date? _____
- 4.6 How often is the calibration as stated in 4.4 performed? _____

- 5.1 At what frequency are the dosimeters annealed? _____
- 5.2 If used, outline annealing procedure: Temp. used _____ Time: _____

- 6.1 What is the typical time between exposure and measurement? _____

7.1 In brief, how are anonymously high or low readouts for individual chips addressed?

8.1 Are TLD readers used in the field?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.5.2

MEASURING RADIOACTIVITY

Gamma Spectrometry

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
Evaluator(s):	
CONTACTS: (NAME/TITLE)	
<u>Sampling Technician</u>	
SOP IDENTIFICATION:	

DEVICE INFORMATION

- 1.1 What system is used for detection? o Solid State Detectors o Scintillators
o Other

QA ASPECTS

- 2.1 What type of data reduction system is in use? _____
- 2.2 Is it validated? _____

OPERATIONAL CRITERIA

- 3.1 How often are background spectra taken? _____
- 3.2 If high count rates are seen, are dead time corrections made? _____
- 3.3 Are the standards used for calibration applicable for the isotopes to be analyzed? _____
- 4.1 Are the following items monitored? _____

4.1 Are the following items monitored:	
	Frequency of Monitoring / Examination
o Energy Calibration	
o Efficiency Calibration	
o Full width at Half-Height (Measured at:)	
o Instrument Gain	
o Inter-Element Correction Factors	
o Radioisotopic Factors	

- 5.1 For long sampling times is the principle of "spectrum stabilization" employed?
6.1 Are coincidence_____ or anti-coincidence_____ systems used?
7.1 Are self-absorption corrections made for samples?
7.2 Are counting geometries reproducible?

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.5.2

Radon Gas Counting System

NAME OF FACILITY:

SITE ID:

DATE OF ASSESSMENT:

ASSESSOR(S):

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION:

QA ASPECTS

1.1 Is the system calibrated?

1.2 If yes for 1.1, at what frequency is it monitored? _____

1.3 Are the standards used for calibration applicable for the radiation monitored?

OPERATIONAL CRITERIA

2.1 What type of sample is being taken?:

- ☐ Grab
- ☐ Integrated
- ☐ Continuous

2.2 Typical sampling time used: _____

3.1 Please fill out the checklist indicating the type of detection system in use.
A chart is provided which gives examples of typical detection systems

Comments:

See Sampling Quality Assurance Guidance Document, Sections 2.5.2, 3.2.5.2

Radon Gas Counting Checklist:

	Detection System	Sampler Type	Sampler Vol./Wt.	Sampler Filling Method	Measurement Period	Lower Limit of Detection	Sensitivity
*	Ionization Chambers						
	Pulse						
*	Scintillation Cell						
*	Continuous Scin. Cell						
*	Electrostatic Collection						
	ZnS to Film						
	ZnS to PMT						
	SS to MCA						
	PERM (LiF)						
	EGARD (LiF)						
	⁽²²²⁾ Rn only (Zns to PMT)						
	Charcoal Adsorption						
*	Filtration						
	Single Filter						
	Two Filter						
*	Nuclear Track Detector						

Radon Gas Counting Examples:

	Detection System	Sampler Type	Sampler Vol./Wt.	Sampler Filling Method	Measurement Period	Lower Limit of Detection	Sensitivity
*	Ionization Chambers						
	<u>Pulse</u>	Flask	Up to 1 L	Evac. or Flow thru	1000 min.	0.74 Mbq.	
*	Scintillation Cell		0.1 L.	Evac.	60 min.	1.1 Mbq	
			0.45 L.	Ecav.	60 min.	3.7 Mbq	
			0.14 L.	Flow thru	60 min.	3.7 Mbq	
*	Continuous Scin. Cell		0.1 L.	Flow thru			1 K bq m ⁻³
			1.5 L.	Flow thru			40 Bq m ⁻³
*	Electrostatic Collection						
	ZnS to Film		0.03 L.	Diff.	170 hr.		15kBqm ⁻³
	ZnS to PMT		0.9 L.	Diff.	40 min.	26 Bq m ⁻³	
	ZnS to PMT		3 L.	Diff.	40 min.	7.4 Bq m ⁻³	
	SS to MCA		10 L.	Diff.	40 min.	0.7 Bq m ⁻³	
	SS to MCA		2 L.	Diff.	10 min.		40 Bq m ⁻³
	PERM (LIF)		1.5 L.	Diff.	7 days	1.1 Bq m ⁻³	
	EGARD (LIF)		1.0 L.	Diff.		3.3 Bq m ⁻³	
	⁽²²²⁾ Rn only (ZnS to PMT)		1.9 L.	Diff.	60 min.	2.2 Bq m ⁻³	
	Charcoal Adsorption		150 g.	Diff	-		1.1 Bqm ⁻³
			80 g.	Diff.	72 hr.	11 Bq m ⁻³	-----
			25 g.	Diff.	50 hr.		40 Bq m ⁻³
*	Filtration						
	<u>Single Filter</u>		----- -----	10min-3hr Filtration		1 Bq m ⁻³	
	<u>Two Filter</u>		140 L. Decay Chamber	Cont. Filtration			4 Bq m ⁻³
	<u>Two Filter</u>		600 L. Decay Chamber	Cont. Filtration			0.4 Bqm ⁻³
	<u>Two Filter</u>		100 L.	Cont. Filtration		0.4 Bq m ⁻³	
*	Nuclear Track Detector				3 Month	500 Bq m ⁻³ day	

SECTION 2.3

**LABORATORY AND FIELD
QA/QC ASSESSMENT PLATES**

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LABORATORY AND FIELD QA/QC ASSESSMENT PLATES

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I. ORGANIZATION EVALUATIONS

NAME OF FACILITY: _____

SITE ID: _____

DATE OF ASSESSMENT: _____

ASSESSOR(S): _____

CONTACTS: (NAME/TITLE)

Sampling Technician

SOP IDENTIFICATION: _____

Project Manager/Title: _____

QA Officer: _____

Data Management: _____

Assessment Team Leaders: (Listed below)

Sampling: _____

Sampling: _____

Sampling: _____

Laboratory: _____

Laboratory: _____

Laboratory: _____
(P=Produce, F=Fish, M=Milk, G=Grass)

Sample Control Officer: _____

Health & Safety Officer: _____

PERSONNEL

- 1.1 Has a laboratory manager been identified?
- 1.2 Has the QA officer been identified?
- 1.3 To whom does the QAO report go? _____
- 1.4 Has a RSO been identified?
- 1.5 Has a sample custodian been identified?
- 1.6 Have all analysts been identified?

- 2.1 Was the Project Director _____ and/or Manager _____ available during the evaluation?
- 2.2 Are resumes available for all laboratory personnel?
- 2.3 Are the same personnel described in the Sampling and/or QA plan performing on-site sampling procedures?

- 3.1 Is there adequate supervision of the technical staff?

TRAINING

- 1.1 Is a written training plan available?
- 1.2 Does the written training plan outline the training frequency and re-training procedures?
- 1.3 Does the written training plan outline the required performance criteria needed to be accomplished before training is considered complete?

- 2.1 Are there established written procedures for training staff to perform analytical methods?
- 2.2 Have all laboratory and sampling personnel been trained according to site requirements?
- 2.3 Are appropriate individuals performing the training?
- 2.4 Is the training documented?
- 2.5 Do these procedures contain specific precision and accuracy levels to be achieved by the analysts before they can begin working on actual samples?

- 3.1 Do interview and inspection of records indicate that personnel are trained to meet laboratory objectives?
- 3.2 Are the assigned laboratory personnel qualified to perform the work assigned to them in accordance with laboratory QA/QC manual requirements?

PERSONNEL SAFETY

- 1.1 Is a Safety Officer designated?
- 1.2 Are personnel involved in safety program identified?
- 1.3 Are backup personnel designated?

- 2.1 Do laboratory personnel observe safety regulations?
- 2.2 Are the laboratory personnel wearing the following, where required?
 - a) Safety glasses/goggles
 - b) Gloves
 - c) Lab coats/apron
 - d) Safety shoes
 - e) Respirators

- 3.1 Is a Health and Safety Coordinator (HSC) on site?
- 3.2 Is the HSC a professional Industrial hygienist?
- 3.3 Has a Safety Plan been approved?
- 3.4 Is the Safety Plan in place?

- 4.1 Is staff trained in safety procedures/policies?
- 4.2 Is training documented? _____ At what interval is training? _____

Comments:

See Analytical Laboratory Quality Assurance Guidance Document, Sections 2.1, 2.2
See Sampling Quality Assurance Guidance Document, Sections 2.1, 2.2

II. QUALITY ASSURANCE

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

QUALITY ASSURANCE PROGRAM

- 1.1 Has a QA Plan been implemented?
- 1.2 Are QA responsibilities clearly defined?
- 1.3 Are QA reporting relationships clearly defined?
- 1.4 Does the overall quality assurance program ensure the accomplishment of the laboratory objectives?
- 1.5 Are all procedures and protocols for implementing the QA program approved by the QA officer and senior laboratory management prior to use?
- 1.6 Are all the QA procedures and revisions documented in written form and assigned a unique identification code including date of implementation?
- 1.7 Is the QA/QC plan available to lab personnel?
- 1.8 Are personnel aware of their QA responsibilities?

- 2.1 Does the laboratory maintain a manual specific to all the analyses performed in the laboratory?
- 2.2 Is the laboratory procedures manual available to laboratory personnel? ____ controlled copies? ____
- 2.3 Is the manual reviewed/updated regularly?
- 2.4 Are the following elements adequately covered, maintained and implemented:
 - a.) Personnel
 - b.) Organization chart
 - c.) QA/QC responsibilities
 - d.) QA/QC reporting relationships
 - e.) Facilities and equipment
 - f.) Analytical instrument operations
 - g.) Procurement and inventory practice
 - h.) Documentation of procedures
 - i.) Preventive maintenance
 - j.) Reliability of data
 - k.) Proficiency/reference material used
 - l.) Data review and validation
 - m.) Feedback and Corrective Action
 - n.) Technical complaint handling procedure
 - o.) Instrumentation calibration
 - p.) Recordkeeping and data storage
 - q.) Security

- 3.1 Are the QA/QC procedures specified in the manual followed as required?
- 3.2 Are written protocols provided for modifying existing methods?
- 3.3 Are written protocols provided for approving new methods?
- 3.4 Is there a plan for the management to review analytical data records?
- 3.5 Is there a plan for the management to review sampling and screening records?

- 4.1 Do responses indicate that project and supervisory personnel place positive emphasis on QA/QC?
- 4.2 Have the responses of personnel with respect to QA/QC been open and direct?
- 4.3 Do the responses indicate that the project and supervisory personnel are aware of the application of QA to the project?
- 4.4 Was the QA Officer available during the evaluation?
- 5.1 Have any QA deficiencies been discussed during the evaluation/preassessment?
- 5.2 What procedures are followed when QA/QC deficiencies are identified?

MAINTENANCE PROCEDURES

Instrument Maintenance

- 1.1 Are schedules for instrument maintenance established?
- 1.2 Are the schedules followed?
- 1.3 Have maintenance procedures been written for each device used for lab analysis, field screening, and field sampling?
- 1.4 Is a manufacture's manual available to support these written procedures?
- 1.5 Are dedicated instrument operation logs maintained for each analytical instrument?
- 1.6 Are records maintained in a logbook of all instrument maintenance?
- 1.7 Have the instruments been maintained in accordance with the applicable QA/QC manual and instrument operation manual?
- 1.8 Are all instrument modifications documented in a permanent record?

Calibration Procedures

- 2.1 Have calibration procedures been prepared for each instrument used for sample analysis?
- 2.2 Is the calibration verified by reference material or independent standards?
- 2.3 What was the date of the last calibration for the instrument: _____
- 2.4 What was the maximum time between calibrations for this instrument: _____

Service Contracts

- 3.1 Are there service contracts on any (or all) major analytical instruments?
- 3.2 Is information on the service contracts for the instruments available?

QC MATERIALS AND METHODS

- 1.1 Are the following materials and methods used:
 - a.) Reference materials
 - b.) Surrogates
 - c.) Blanks
 - d.) Duplicate samples
 - e.) Spiked samples
 - f.) Quality control charts with defined limits
- 1.2 Are corrective actions steps defined and followed for out-of-control conditions?
- 1.3 Are QC summaries prepared regularly and properly recorded?
- 1.4 Are analysts responsible for data entry on QC charts?
- 1.5 Are QC charts reviewed?
- 1.6 If yes to 1.5, who reviews the charts? _____
- 1.7 If yes to 1.5, how often? _____
- 1.8 If yes to 1.6, is this an appropriate individual?
- 2.1 Have written analytical procedures for instrument standardization been provided for all analyses for each instrument used for sample analysis?
- 2.2 Are the analytical procedures used for instrument standardization the same procedures used for actual sample analysis?

STANDARDS

- 1.1 Are laboratory analytical standards traceable to recognized standard reference materials such as NIST, or, are they certified by the supplier?
- 2.1 Is a standards preparations and tracking logbook maintained?
- 3.1 Are prepared standards labeled with:
 - a) Identification
 - b) Concentrations
 - c) Date of preparation
 - d) Date of expiration
 - e) Initials of the person who prepared the standard
 - f) Lot or batch number
 - g) Solvent
- 4.1 Are standards properly prepared and stored?
- 4.2 Are standards stored within the shelf life?
- 5.1 Are reagent grade or higher purity chemicals used to prepare standards?
- 6.1 Is the following information available for reference materials and standards:
 - a) Chemical grade or purity
 - b) Manufacturer
 - c) Date of expiration
 - d) Identification and lot or batch number
 - e) Container opening record
 - f) Shelf-life
 - g) Receipt date
 - h) Date of preparation
 - i) Procedures used for preparation

WATER

- 1.1 Does the laboratory have a source of deionized/demineralized water?
- 1.2 Is ASTM Type II water (or equivalent) produced by distillation or deionization so that the conductivity is less than 1 mho/cm?
- 1.3 Is this water used for:
 - Standards
 - Blanks
 - Analysis
- 2.1 Is the lab water checked daily for conductivity and properly recorded?
- 2.2 Does the purity of the water meet the established requirements?
- 2.3 Is the result recorded in a logbook and initialled?
- 2.4 If yes to 2.3, at what frequency?
- 2.5 Is the lab water source properly maintained?
- 2.6 Is 2.5, documented?
- 3.1 Can the laboratory document that analyte water is available for preparation of standards and blanks?
- 3.2 Is the lab water documented to be free of all the analytes being tested for?
- 3.3 If yes to 3.2, what is the frequency of this testing?
- 3.4 If yes for 3.3, this testing documented?

PERFORMANCE EVALUATION SAMPLES

- 1.1 Are performance evaluation samples routinely analyzed?
EPA: _____
DOE: _____
Others: _____
- 1.2 Is this documented?
- 1.3 Are all results within applicable QC limits?
- 1.4 Are there procedures for "out-of control" situations?
- 1.5 Have corrective actions plans resulting from performance evaluations samples been implemented?

INTERNAL ASSESSMENT AND CORRECTIVE ACTION

- 1.1 Who is responsible for receiving assessment samples?
- 1.2 Who is responsible for splitting, preparation and duplicate samples?
- 1.3 Are assessment samples submitted double blind?
- 2.1 How often are internal assessments done? _____
- 2.2 Is the internal assessment program effective?
- 3.1 Has a formal corrective action program been implemented?
- 3.2 Have corrective action recommendations during previous evaluation been implemented?
- 3.3 Have corrective actions been documented?
- 3.4 Is there a technical complaint handling procedure?

DECONTAMINATION PROCEDURES

- 1.1 Do lab personnel conform with the appropriate decontamination procedures?

DATA DOCUMENTATION

- 1.1 Have standard curves and quality control limits been adequately documented?
- 1.2 Are the limits of detection determined and reported for each analyte or parameter?
- 1.3 Are quality control charts maintained for each routine analysis?
- 1.4 Does the analytical and QC data meet the QC criteria as specified in the applicable QAP, QAPjP, SAP, DQO, QA/QC manual etc.?
- 1.5 When data is out of control, do the records indicate some statement on the usefulness of the data?
- 1.6 Do QC records show corrective action when analytical results fail to meet QC criteria?
- 1.7 Do records indicate corrective action that has been taken on rejected (unreportable) data?
- 1.8 Are QC data accessible for all analytical results?
- 2.1 Are all data and records retained under security for the time period required by the applicable QA project plan and applicable sampling and analysis plan?
- 2.2 Are data calculations documented?
- 2.3 Are data calculations checked by a second person?
- 2.4 Do supervisory personnel routinely review the data and QC results?
- 2.5 Are in-house QA evaluations conducted at least annually?

Comments:

See Analytical Laboratory Quality Assurance Guidance Document, Sections 2.6, 2.9, 4.1, 4.3, 5.1
See Sampling Quality Assurance Guidance Document, Sections 2.3, 2.5.1, 2.6, 2.9

III. FACILITIES AND EQUIPMENT

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

GENERAL (FACILITIES)

- 1.1 Does the laboratory have adequate workspace?
- 1.2 Is the laboratory maintained in a clean and organized manner?
- 1.3 Are adequate facilities provided for separate storage of supplies, samples, extracts and standards, including cold storage?
- 1.4 Does the laboratory have adequate workspace for sample preparation?
- 1.5 Is the general housekeeping of sampling and/or sample preparation facilities maintained?
- 1.6 Are laboratory areas provided for trace level analytical work appropriately designed to prevent cross contamination?
- 1.7 Are the wet chemical analyses performed away from the instrument room(s)?
- 1.8 Are the samples and standards prepared for analysis in different locations?
- 1.9 Are contamination free work areas provided?
- 2.1 Are voltage control devices used on major instrumentation?
- 3.1 Are all the instruments properly vented?
- 3.2 Is laboratory airflow, temperature, and circulation adequate?
- 4.1 Is the laboratory secure?
- 4.2 Is the distribution of keys limited?
- 4.3 Is access to controlled areas enforced?

HOODS

- 1.1 Are exhaust hoods provided that allow adequate workspace within?
- 1.2 Do the exhaust hoods have adequate airflow?
- 1.3 Is the airflow checked regularly?
- 1.4 Is the exhaust hood area used as a storage device?

- 2.1 Do the exhaust hoods have a face velocity of 80-100 ft./min.?
- 2.2 Are there any records to document 2.1?
- 2.3 Are the hoods supplied with at least 70% outside air?
- 2.4 Are there any records to document 2.3?

- 3.1 Are hoods provided for work with the following?
 - a) Perchloric Acid
 - b) Corrosive materials
 - c) Dusty materials
 - c) Volatile materials
 - d) Radioactive material

- 3.2 Are operations that should be performed in a hood actually performed in a hood?

SAFETY EQUIPMENT

- 1.1 Are safety showers installed?
- 1.2 Are safety showers checked at required intervals?

- 2.1 Are eye wash stations available?
- 2.2 Are eye wash stations operable?
- 2.3 Are eye wash stations checked at required intervals?

- 3.1 Are fire extinguishers available?
- 3.2 If yes to 3.1, are regular maintenance schedules followed?
- 3.3 Is a fire blanket available?

BALANCES

	Quantity	Model/Manufacturer	Condition
Analytical:			
Top Loaders:			
Class S Weights:			
Balance Table:			

- 1.1 Are analytical balances located away from drafts?
- 1.2 Are analytical balances located away from areas subject to rapid temperature changes?
- 1.3 Have the balances been calibrated within the last year by a certified technician?
- 1.4 Is 1.3 documented?
- 1.5 Are the balances checked with Class S standard weights on a routine basis and properly recorded in a log book? _____ At what frequency? _____
- 1.6 Are calibrated check weights used prior to sampling? _____ At what frequency? _____
- 1.7 Is this documented?

OVENS/Drying Areas

	QUANTITY	MODEL	CONDITION
Drying Ovens:			
Air Drying Surfaces:			
Muffle Furnaces:			

- 1.1 Is the temperature of the unit recorded in logbooks? ____ At what frequency?
- 1.2 Do the records indicate satisfactory operation of the units?
- 1.3 Does the laboratory have adequate workspace for adequate drying?
- 1.4 Is cross contamination between samples in drying areas prevented?
- 1.5 Are the ovens in use designed with proper air flow to prevent cross contamination?

COLD STORAGE (refrigerators and freezers)

	Quantity	Model	Condition
Freezers:			
Refrigerators:			

- 1.1 Is the temperature of the cold storage units recorded in logbooks? ____ At what frequency?
- 1.2 Is the temperature of the cold storage units verified by an independent temperature recording device?
- 1.3 Is there a temperature gauge on the outside of each cold storage unit that measures the temperature of the unit?
- 1.4 Is the location of the temperature gauge (on the outside of the unit) such that it represents the temperature throughout the unit?

- 2.1 Is a NIST certified thermometer available?
- 2.2 Are the thermometers calibrated against this certified thermometer on an annual basis?
- 2.3 Is 2.2 documented?

- 3.1 Are adequate cold storage facilities provided for sample storage?
- 3.2 Are contingency plans available if the cold storage units malfunction?
- 4.1 Are all stored samples tightly closed?
- 4.2 Are any open samples stored in cold storage units?
- 4.3 Are the cold storage units labeled "FOR LAB USE ONLY, NO FOOD OR DRINK"?
- 4.4 Are any food or drinks stored in the sample storage cold units?
- 4.4 Are there any biological samples stored in the units?
- 4.5 Are there any reagents stored in the units?
- 4.6 If chemicals are stored in refrigerator, is the storage proper (do the chemicals require it be explosion proof)?
- 4.7 Are precautions taken to minimize cross contamination of chemicals or samples by chemical vapors?

REAGENTS/CHEMICALS STORAGE and DISPOSAL

- 1.1 Are reagent preparations properly labelled?
- 1.2 Are reagents properly stored and dated upon receipt and when first opened?
- 1.3 Are sample bottles, preservatives, and other supplies quality assured?
- 1.4 Are all chemicals dated upon receipt and discarded when the shelf life expires?
- 2.1 Are reagents and chemicals of adequate grade for the intended use?
- 2.2 Is certification of material composition provided when required?
- 3.1 Are materials adequately stored to prevent degradation?
- 3.2 Are proper storage facilities available for chemicals?
- 3.3 Are storeroom personnel trained in:
 - a) Proper handling?
 - b) Storage of chemicals?
 - c) Is this documented?
- 4.1 Are chemical waste disposal procedures/policies adequate?
- 4.2 Are chemical waste disposal procedures/policies known and followed?

Comments:

See Analytical Laboratory Quality Assurance Guidance Document, Sections 2.3, 3.1, 3.1.4, 3.1.5
 See Sampling Quality Assurance Guidance Document, Sections 2.3, 3.2.3

IV. SAMPLE MANAGEMENT

NAME OF FACILITY:	
SITE ID:	
DATE OF ASSESSMENT:	
ASSESSOR(S):	
CONTACTS: (NAME/TITLE)	
Sampling Technician	
SOP IDENTIFICATION:	

SAMPLING SITE SAFETY

- 1.1 For sampling sites where routine operations do not occur and there is no established protocol, are the principal hazards and the protective measures taken determined by document review by the team leader and the contractor H&S representative?
- 2.1 Are acid/base spill kits and eye wash kits available in each sampling vehicle?
- 3.1 Are normal on-site field sampling activities conducted in at least Level-D-protection? (Coveralls, steel toed boots, latex surgical gloves, safety glasses and hard hats where required).
- 4.1 Are any food, drink, tobacco or lotions being used during sampling activities?
- 5.1 Are sampling personnel fit-tested and trained in the use of respirator protection?
- 5.2 Are any members of the sampling team trained in First Aid/CPR?
- 6.1 Have all sampling personnel undergone medical examination as required by protocol?
- 6.2 Do all sampling personnel have their radiation exposure histories completed prior to beginning sampling? (where applicable)
- 7.1 Are Material Safety Data Sheets available at all times for inspection by the field sampling team?
- 8.1 Are sample locations surveyed for radiation and vapor hazards using portable instruments? (where applicable)

SAMPLE TRACKING

Chain Of Custody

- 1.1 Is a sample custodian designated?
- 1.2 Are sample custodian procedures and responsibilities documented?
- 1.3 Are chain of custody procedures documented? _____ Effective? _____
- 1.4 Is there evidence that one individual has been assigned the responsibility to ensure that the chain of custody procedures have been met?

Who: _____

- 1.5 Does the implementation of chain of custody procedures require that only authorized personnel collect, transfer, store, analyze, and dispose of or destroy samples?
- 1.6 Are the following items included on the chain of custody:
- a) Sampling time and location?
 - b) Sample identification?
 - c) Client identification?
 - d) Contract/Project code?
 - e) Field sample identification code?
 - f) Laboratory identification code?
 - g) Analysis requested?
 - h) Documentation of sample preservation?
 - i) Sample analysis dates?
 - j) Sample reporting dates?
 - k) Time of Receipt?
 - l) Date of Receipt?
 - m) Shipping record?
 - n) Sample ID for sample splits sent off-site?
 - o) Documentation of sample disposal?
 - p) Sample extracts and digestates?
- 1.7 Is all sample data traceable to all points from sample receipt to sample analysis reports?

Sample Receipt

- 1.1 Is the custody traceable after receipt by the laboratory?
- 1.2 Is the sample receipt documented? and include the following:
- a) Sample ID
 - b) Identity of the receiver
 - c) Date and time of receipt
- 1.3 Is a unique sample ID code assigned to each sample?
- 1.4 Is the condition of the sample upon receipt routinely documented?
- 1.5 Are pH and temperature checked to verify acceptable preservation?
- 1.6 Are procedures established if preservation is unacceptable?

Variance

- 1.1 Are procedures available for overload situations?
- 1.2 Are procedures available for mishandling?
- 1.3 Are corrective action reports associated with variances and nonconformance with sample documentation available?

SAMPLE DOCUMENTATION

Sample Logbooks

- 1.1 Are detailed sample logbooks routinely maintained and documented?
- 2.1 Are samples logged in promptly?

Holding Times

- 1.1 Are samples prepared, digested, extracted and analyzed within recommended holding times?

STORAGE AND DISPOSAL

Sample Storage

- 1.1 Is the storage facility for samples and sample extracts adequate?
- 1.2 Is sample storage secure and documented?
- 1.3 As appropriate, are samples stored in the dark and/or at 4°C to maintain appropriate preservation?
- 1.4 Is sample removal from storage routinely documented in terms of the following?
 - a) Date and time of removal
 - b) Responsible person
 - c) Date and time of return
 - d) Volume of sample removed

Sample Disposal

- 1.1 Are sample extracts and digestates stored under appropriate custody and security and other conditions necessary to maintain sample integrity?
- 1.2 Is date and time of sample disposal (including all extracts and digestates) routinely recorded, along with identity of disposer, in a logbook or by another procedure?

CONTRACTOR LABORATORY

- 1.1 Are contractor laboratories used?
- 1.2 If yes to 1.1, is the contract laboratory QA/QC program equivalent to guidelines of the facility administering the contract?

SAMPLE ARCHIVING

Labeling

- 1.1 Are archived samples labelled?
- 1.2 Is sample identification permanent and legible?

Procedure

- 1.1 Is there a sample storage procedure?
- 1.2 If yes to 2.1, explain:

- 1.3 Is a map or key showing the location of the archived samples readily available?
- 1.4 Are archived samples easily retrieved?
- 1.5 Are sample numbers cross referenced with field data and documented?
- 2.1 Are the procedures and responsibilities of the sample custodian documented?

DATA DOCUMENTATION

Analyst Notebooks

- 1.1 Are written procedures documented for preparation of analysts notebooks?
- 1.2 Are the analyst laboratory notebooks routinely completed for all analysis?
- 1.3 Are the analysts records permanently bound with preprinted consecutively numbered pages?
- 1.4 Do analysts logbooks routinely contain the applicable information, which should include the following?
 - a. Identification of analysts?
 - b. Signature of analyst on each page of logbook?
 - c. Analysis type (analyte and parameter)?
 - d. Sample prep used?
 - e. Analytical method used?
 - f. Samples analyzed?
 - g. Date and time of each analysis?
 - h. Date and time of sample preparation?
 - i. Volume of sample used and dilution factors?
 - j. Analytical results?
 - k. Analytical problems encountered and corrective actions taken?
 - l. All factors affecting reported results (including QC limits exceeded)?
 - m. All raw and reduced data (including e.g. chromatograms)?
- 1.5 Has the analyst avoided obliterating entries to logbooks and other data and instrumentation?
- 1.6 Are the logbooks maintained in a legible manner?
- 1.7 Are all corrections to the data initialled and dated?
- 1.8 Is "white-out" used?
- 1.9 Is pencil used for entering data?
- 1.10 Are inserts (e.g. chromatograms, instrument printouts) permanently affixed in the logbook and signed across the insert edge and page?
- 1.11 Where applicable, is the analyst referencing reports or memoranda pertinent to the contents of the entry?
- 1.12 Has the supervisor of the analyst maintaining the laboratory records examined the records periodically and certified with date, signature, and appropriate comments whether the records are being maintained in the required manner?

Data Quality Checks

- 1.1 Is there an established procedure for re-analysis of samples?
- 1.2 Is data approved, verified and does it receive final QC checks before release?

DATA MANAGEMENT VALIDATION PROCEDURE

- 1.1 Are there written procedures and protocols for data handling, storage and processing?
- 1.2 Are there established procedures for determining the degree of data completeness and adequacy?

COMPUTER SYSTEMS

Data Input

- 1.1 Does the data system include a user log which prevents undetected or unreported access to the system?
- 1.2 Are there established procedures to verify the correctness of the data entry?
- 1.3 Are the procedures outlined in 2.2 routinely implemented?

Data Output

- 1.1 Are there established procedures for verifying the correctness and consistency of data output in relation to entered raw data?
- 1.2 Are the procedures outlined in 1.1 routinely implemented?
- 2.1 Are the data reasonably accessible to authorized users?
- 2.2 Are data reduction and manipulation techniques acceptable and well documented?
- 2.3 Has a suitable format for reporting data been established?

Backup System

- 1.1 Are backup records of the data management system files routinely prepared and filed?

Performance Documents

- 1.1 Does the analytical report contain the following:
 - a. Name and address of the laboratory?
 - b. Unique identification (including pages)?
 - c. Test item identification and description?
 - d. Date of receipt of test item?
 - e. Date of analysis?
 - f. Analysis results?
 - g. Chain of custody forms?
 - h. Identity of analytical method, with any additions and modifications?
 - i. Description of sampling procedure?
 - j. Identification of any non-standard methods used?
 - k. Measurement uncertainty?
 - l. Signature and date?
 - m. Statement regarding reproduction of the report?

Nonconformance Documents

- 1.1 What type of flagging system is used for nonconformance data?
- 1.2 Does SOP say that nonconformance data to be indicated in the report?
- 1.3 Is 1.2 implemented?
- 1.4 What does sample manager do if data is not in compliance with contract and/or QC requirements?

RECORDS MANAGEMENT

Procedures

- 1.1 Are document custody procedures written and accessible to all appropriate individuals?
- 1.2 Are written document preparation and custody procedures available to all appropriate personnel?
- 1.3 Does the laboratory maintain project files which include all sample and laboratory custody and analysis data, documents and records?
- 1.4 Are all documents in a project file uniquely and sequentially numbered?
- 1.5 Are all records maintained permanently?

Records Area

- 1.1 Does the facility have a secure designated area where all laboratory and sampling records are stored?
- 1.2 Is access to this area restricted to authorized personnel?
- 1.3 Are records kept in fire-proof file cabinet?

- 2.1 Is a master inventory list maintained?
- 2.2 Are all records present as represented by the inventory?
- 2.3 Are records regularly reviewed and approved?

- 3.1 Are records adequate to permit repeat of test/analysis?

Comments:

See Analytical Laboratory Quality Assurance Guidance Document, Sections 3.0, 5.1, 6.2, 6.3
See Sampling Quality Assurance Guidance Document, Sections 3.2, 3.3, 3.4, 5.1