SAP Worksheet #1: Title and Approval Page

[Document Version (Internal Draft, Draft, Draft Final, Final)]

SAMPLING AND ANALYSIS PLAN

[Preparation Date-Day Month Year]

[Document Title – should reflect nature of project]
[Site Involved]
[Facility]

Prepared for:
Department of the Navy
[Name of Navy Organization]
[Address]

Prepared by:
[Preparer's Name]
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	[Printed Name/Title]	Date
Approval Signature:	[Navy QAO/Chemist Signature]_____	
	[Printed Name/Title]	Date
Other Approval Signature:	[Signature]_____	
	[Printed Name/Title]	Date

EXECUTIVE SUMMARY

Provide a brief summary/outline of the current project and any significant issues with the site. Include a very brief description of the site under investigation, i.e. facility/project site background, and any aspect of site physical setting- topography and climate, geology, hydrogeology that may have significant impacts on the project. Summarize the goal(s) of the current investigation.

CONTENTS

APPENDICES

ACRONYMS AND ABBREVIATIONS

This list needs to be modified with project-specific acronyms only.

AA	Atomic Absorption
ANSI/ASQ	American National Standards Institute/American Society for Quality
ASTM	American Society for Standards and Materials
BOD	Biological Oxygen Demand
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CLP	Contract Laboratory Program
COC	Contaminant of Concern
CRDL	Contract-Required Detection Limit
CSM	Conceptual Site Model
CTO	Contract Task Order
CWA	Clean Water Act
DoD	Department of Defense
DCN	Document Control Number
DQI	Data Quality Indicator
DQO	Data Quality Objective
EPA	Environmental Protection Agency, United States
FCR	Field Change Request
FS	Feasibility Study
FSP	Field Sampling Plan
GC	Gas Chromatograph
GC/MS	Gas Chromatograph/Mass Spectrometer
GIS	Geographic Information System
GPC	Gel Permeation Chromatography
GPS	Global Positioning System
GW	groundwater
ICP	Inductively Coupled Plasma
IDQTF	Intergovernmental Data Quality Task Force
LCS	Laboratory Control Sample
LFB	Laboratory Fortified Blank
LIMS	Laboratory Information Management Systems
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols (Manual)
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MOU	Memorandum of Understanding
MPC	Measurement Performance Criteria
MQO	Measurement Quality Objectives
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSR	Management Systems Review
NEIC	National Enforcement Investigations Center
NIST	National Institute of Standards and Technology
NPL	National Priorities List
PA/SI	Preliminary Assessment/Site Investigation

PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PCBs	Polychlorinated Biphenyls
PDF	Portable Document Format
PG	Professional Geologist
PM	Project Manager
PQOs	Project Quality Objectives
PRP	Potentially Responsible Party
PRQL	Project-Required Quantitation Limit
PT	Proficiency Testing (previously known as performance evaluation (PE) sample)
QA	Quality Assurance
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
QMP	Quality Management Plan
QS	Quality System
QSM	Quality Systems Manual
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RIC	Reconstructed Ion Chromatogram
RPD	Relative Percent Difference
RPM	Remedial Project Manager
RTM	Remedial Technical Manager
RSD	Relative Standard Deviation
RT	Retention Time
SAP	Sampling and Analysis Plan
SD	Standard Deviation
SDG	Sample Delivery Group
SDWA	Safe Drinking Water Act
SOP	Standard Operating Procedure
SQLs	Sample Quantitation Limits
SRM	Standard Reference Material
SVOA	Semivolatile Organic Analytes
SVOC	Semivolatile Organic Compounds
SW	Surface Water
TCLP	Toxicity Characteristic Leaching Procedure
TBD	To Be Determined
TSA	Technical Systems Audit
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers
VOA	Volatile Organic Analytes
VOC	Volatile Organic Compounds
VSP	Visual Sample Plan

SAP Worksheet #2: Sampling and Analysis Plan Identifying Information

(UFP-QAPP Manual Section 2.2.4)

This worksheet shall be completed with project-specific identifying information.

Site Name/Number:

Operable Unit:

Contractor Name:

Contract Number:

Contract Title:

Work Assignment Number (optional):

1. This sampling and analysis plan (SAP) was prepared in accordance with the requirements of the *Uniform Federal Policy for Quality Assurance Plans (UFP-QAPP)* (EPA 2005) and United States (U.S.) Environmental Protection Agency (EPA) *Guidance for Quality Assurance Project Plans, EPA QA/G-5* (EPA 2002).

Identify any additional guidance used to prepare SAP.

2. Identify regulatory program:

RCRA, CERCLA, CWA etc.

3. This SAP is a [project-specific or generic] SAP.

4. List organizational partners (stakeholders) and identify the connection with lead organization:

Organization Partners/Stakeholders	Connection	Date

5. Lead organization: [Naval Division or NAVFAC FEC]

6. If any required SAP elements and required information are not applicable to the project or are provided elsewhere, then note the omitted SAP elements and provide an explanation for their exclusion below:

Provide an explanation on the SAP elements and required information that are not applicable to the project and in the appropriate SAP worksheet(s), as necessary

UFP SAP Worksheet #	Required Information	Crosswalk to Related Information
A. Project Management and Objectives		
Documentation		
1	Title and Approval Page	
2	SAP Identifying Information	
3	Distribution List	
4	Project Personnel Sign-Off Sheet	
Project Organization		
5	Project Organizational Chart	
6	Communication Pathways	
7	Personnel Responsibilities Table	
8	Special Personnel Training Requirements Table	
Project Planning/Problem Definition		
9	Project Scoping Session Participants Sheet	
10	Conceptual Site Model	
11	Project Quality Objectives/Systematic Planning Process Statements	
12	Field Quality Control Samples	
13	Secondary Data Criteria and Limitations Table	
14	Summary of Project Tasks	
15	Reference Limits and Evaluation Tables	
16	Project Schedule/Timeline Table	
B. Measurement/Data Acquisition		
Sampling Tasks		
17	Sampling Design and Rationale	
18	Location-Specific Sampling Methods/ SOP Requirements Table	
19	Field Sampling Requirements Table	
20	Field QC Sample Summary Table	
21	Project Sampling SOP References Table	

UFP SAP Worksheet #	Required Information	Crosswalk to Related Information
22	Field Equipment Calibration, Maintenance, Testing, and Inspection Table	
Analytical Tasks		
23	Analytical SOP References Table	
24	Analytical Instrument Calibration Table	
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	
Sample Collection		
26	Sample Handling System	
27	Sample Custody Requirements	
Quality Control Samples		
28	Laboratory QC Samples Table	
Data Management Tasks		
29	Project Documents and Records Table	
30	Analytical Services Table	
C. Assessment Oversight		
31	Planned Project Assessments Table	
32	Assessment Findings and Corrective Action Responses Table	
33	QA Management Reports Table	
D. Data Review		
34-36	Data Verification and Validation (Steps I and IIa/IIb) Process Table	
37	Usability Assessment	

Notes:
COC chain of custody
QA quality assurance
QC quality control
SOP standard operating procedure

SAP Worksheet #3: Distribution List

(UFP-QAPP Manual Section 2.3.1)

The distribution list is a mandatory SAP requirement. This purpose of this distribution list is for document control. If any changes/amendments are made to the document then this list is used to update all recipients of the revised version. Contractors should determine the distribution list in consultation with the NAVFAC RPM. List those entities who receive copies of the Final SAP, subsequent SAP revisions, addenda, and amendments. The distribution list will be project-specific. Navy RPM input to this list is needed to ensure appropriate regulatory agencies are included on the distribution list. This worksheet will typically include the following entities: Regulator/Stakeholder, Navy RPM, Information Repositories, Contractor project manager, and/or Laboratory analytical coordinator. Deviating from this format is acceptable (e.g. providing a sequential list with names and contact information presented as they would be in a mailing label), but all of the required information in this table shall be included. Some recipients may elect to keep their address private (e.g. public RAB members using private addresses); therefore, although addresses (e-mail or street) are required elements on this table, in some cases it is acceptable to leave this field blank.

SAP Recipients	Title	Organization	Telephone Number (optional)	E-mail Address or Mailing Address

Notes:

SAP Worksheet #4: Project Personnel Sign-Off Sheet

(UFP-QAPP Manual Section 2.3.2)

Contractors or service providers shall use this worksheet to describe the process used for ensuring that all key personnel have read and understand the SAP before performing the tasks as described. The description shall include the procedure to document the requirement, how the verification shall be obtained, and where the documentation will be maintained.

Key personnel may include:

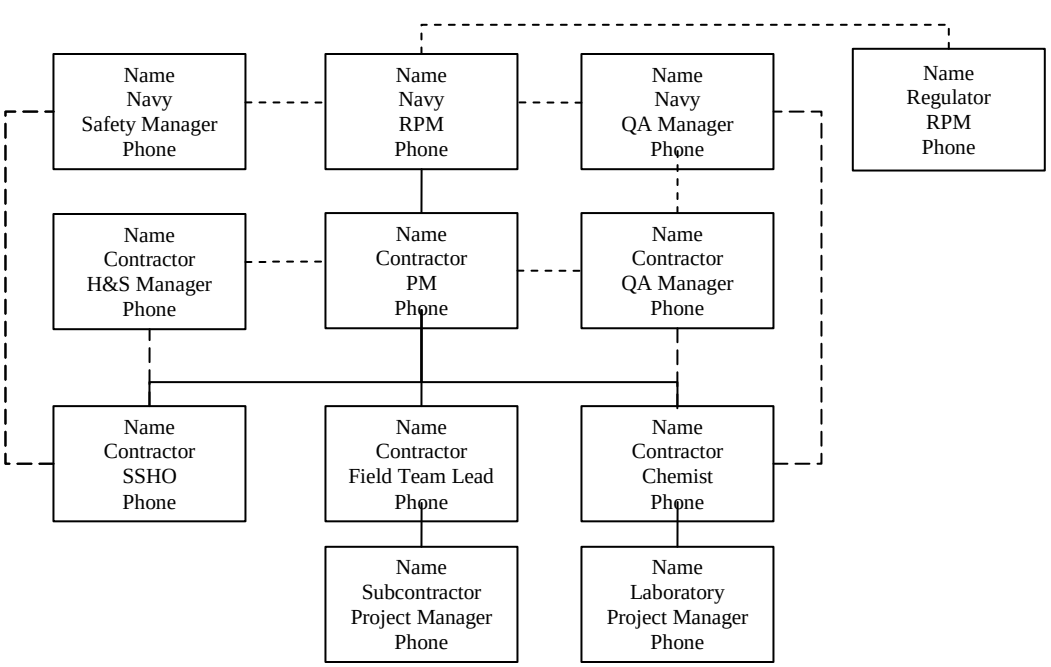
- Field Operations Leader
- Field Task Technical Experts
- Laboratory Project Manager
- Data Validation Manager
- Data Usability Technical Experts

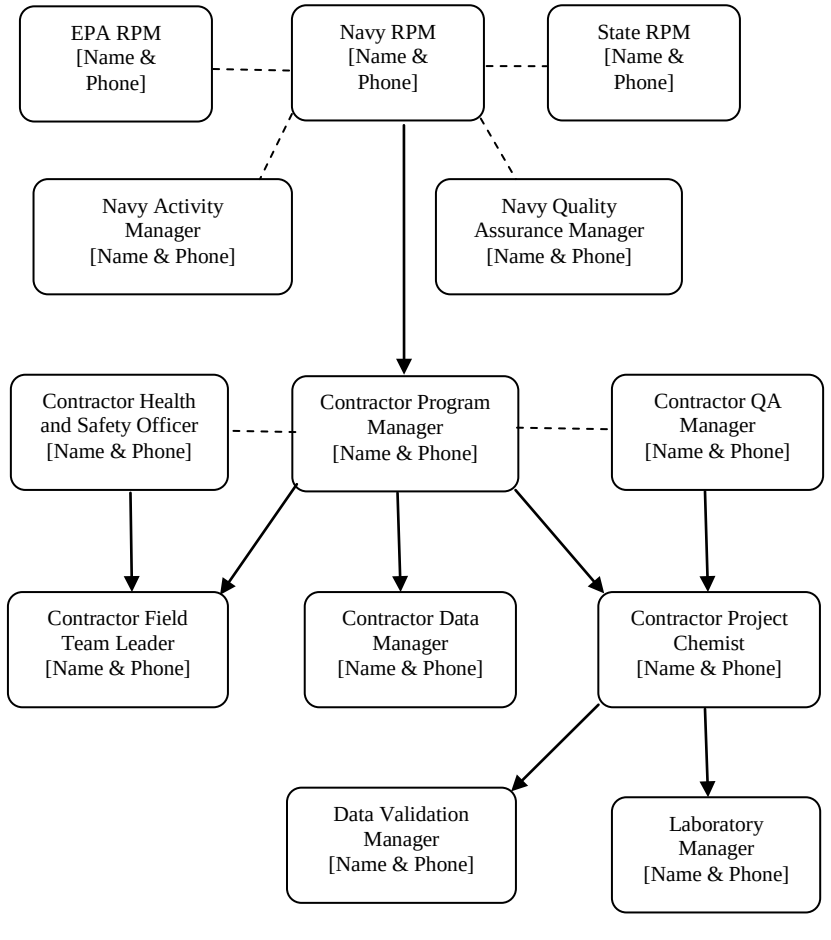
SAP Worksheet #5: Project Organizational Chart

Provide a concise organizational chart for each project. Identify reporting relationships between all organizations involved in the project. Charts must include lines of responsibility and should include lines of communication, and phone numbers of key personnel as well. It is permissible to use "TBD" for subcontractors not chosen prior to preparing the Draft SAP, but relationships between organizations and organizational roles should be noted. Update as necessary in Final SAP.

The following charts are only examples:

Lines of Authority ——————— Lines of Communication - - - - - - - - - - - - -





SAP Worksheet #6: Communication Pathways

(UFP-QAPP Manual Section 2.4.2)

Describe the communication pathways and modes of communication that will be used during the project, after the SAP has been approved. The worksheet needs to promote an understanding of which project team members are exchanging key information. Eleven standard communication drivers are listed which should be addressed; additional drivers may be added as needed. Describe the procedures for soliciting and/or obtaining approval between project personnel, between different contractors, and between samplers and laboratory staff. Timing is the maximum amount of time allowed for the communication event to take place. Pathways describe the type of communication such as e-mail, phone, etc. A text format is acceptable in lieu of the table as long as the eleven key communication drivers and all criteria in the column headings are included.

The communication pathways for the SAP are shown below.

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure (Timing, Pathway To/From, etc.)
Regulatory Agency Interface				
Field Progress Reports				
Stop Work due to Safety Issues				
SAP/WP Changes prior to Field/ Laboratory work				
SAP/WP Changes in the Field				
Field Corrective Actions				
Sample Receipt Variances				
Reporting Lab Quality Variances				
Analytical Corrective Actions				
Reporting Data Validation Issues				
Data Validation Corrective Actions				

Notes:

SAP Worksheet #7: Personnel Responsibilities Table

(UFP-QAPP Manual Section 2.4.3)

Identify key project personnel associated with each organization, contractor, and subcontractor participating in responsible roles; discuss their specific roles and responsibilities. Include additional information as discussed in EPA QA/G-2.1.5. Key personnel may include:

- data users
- decision-makers
- project managers
- QA officers, project contacts for organizations involved in the project
- project health and safety officers
- geotechnical engineers and hydrogeologists
- field operation personnel
- analytical services
- data reviewers.

Title/Role	Organizational Affiliation	Responsibilities

Notes:

SAP Worksheet #8: Special Personnel Training Requirements Table

(UFP-QAPP Manual Section 2.4.4)

The following table is used to identify and describe any specialized/non-routine project specific training requirements or certifications needed by personnel in order to successfully complete the project or task. Safety training is **not** considered specialized training; the OPNAV 5090.1 training requirements represent routine, minimum requirements that are mandatory for all DON projects. It is acceptable to add additional text here explaining routine training requirements. Where it is appropriate, include explanatory text discussing how specialized training will be provided and how the necessary skills will be assured and documented (training should be documented for personnel, but this documentation doesn't need to be included in SAP). For example, if the project requires the use of an XRF instrument, the sampler must be trained in its proper use. If training records and/or certificates are on file elsewhere, document their location in the location column. If training records and/or certificates do not exist or are not available, then this should be noted

Project Function	Specialized Training By Title or Description of Course	Training Provider	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/Certificates

SAP Worksheet #9: Project Scoping Session Participants Sheet

(UFP-QAPP Manual Section 2.5.1)

This worksheet documents to the extent practicable, the dates and participants in project scoping sessions. Complete this worksheet for each project scoping session held. Identify project team members who are responsible for planning the project. The following is the generic form used for scoping meetings. NAVFAC RPMs should include meeting minutes and participant rosters in the project file and administrative record. Correspondence (fax, e-mails etc.) to document consensus decisions and significant discussions, as well as records of communication (including meetings) shall be submitted to the admin record file. There may be multiple entries (tables) for this element. Text format is acceptable for this element in lieu of the table (e.g. meeting minutes) as long as the key information is included. Scoping sessions are not limited to partnering meetings, and may include phone conferences and email correspondence. All consensus decisions made should be documented here.

Project Name:
Site Name:
Projected Date(s) of Sampling:
Site Location:
Project Manager:
Date of Session:
Scoping Session Purpose:

Name	Title	Affiliation	Phone #	E-mail Address	Project Role

Comments/Decisions:

Action Items:

Consensus Decisions:

SAP Worksheet #10: Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2)

This worksheet is intended to present the conceptual site model (CSM) of the project. The level of detail in the CSM should be based on a graded approach based on the nature of work being performed and the intended use of the data. A CSM to support environmental sampling usually includes a narrative description of site history, primary release mechanism, secondary contaminant migration, fate and transport considerations, and land use considerations, and then includes either graphic or narrative components to describe key aspects of the site (site geology, hydrology, topography, weather, etc.) and current interpretation of nature and extent of contamination that will influence the project quality objectives and the sampling design,. Uncertainties associated with the CSM need to be clearly identified. The CSM will continuously evolve as new data are collected.

The information presented on this worksheet should be site-specific. It is unnecessary to describe overall regional information unless it is needed to understand the CSM. There are various formats that can be used to display elements of a CSM. The appropriate format for a CSM will vary with respect to complexity and may change over time depending on site issues, constraints, and requirements associated with management decisions. Formats are specific to the decision-making needs of the site and stakeholder team. For instance, 3-D figures may provide an overall summary, but also may be hard to interpret. On the other hand, cross sections are easier to comprehend, but may not accurately represent site conditions with respect to contaminant plume size and extent.

SAP Worksheet #11: Project Quality Objectives/Systematic Planning Process Statements

(UFP-QAPP Manual Section 2.6.1)

Use this worksheet to develop and document project quality objectives (PQOs). PQO's are developed using a systematic planning process (SPP). EPA's TRIAD Approach and Data Quality Objectives (DQO) Process are examples of systemic planning. Regardless of the SPP applied, the SAP must document the environmental decisions that need to be made and the level of data quality needed to ensure that those decisions are based on sound scientific data. The SAP requires the following critical questions to be answered:

- What is the environmental question that is being answered?
- What are the Project Action Limits (PALs)? (A specific detailed list should be provided in Worksheet #15)
- What will the data be used for?
- What types of data are needed (matrix, target analytes, analytical groups, field screening, onsite analytical or offsite laboratory techniques, sampling techniques)?
- Are there any special data quality needs, field or laboratory, in order to support environmental decisions?
- Where, when, and how should the data be collected/generated?
- List the PQOs in the form of if/then qualitative and quantitative statements.

Information regarding EPA's DQO process can be found at *Guidance on Systematic Planning Using the Data Quality Objectives Process*, TRIAD information can be found at: http://www.triadcentral.org/over/index.cfm

SAP Worksheet #12: Field Quality Control Samples

(UFP-QAPP Manual Section 2.6.2)

Complete this worksheet for each matrix, analytical group, and concentration level. This worksheet is intended to describe how the project will use specific QC samples to assess the principal data quality indicators (DQIs) of precision, bias, representativeness, completeness, comparability, and sensitivity. Identify the QC sample and/or activity and the associated measurement performance criteria (MPC) that will used to assess the DQIs for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for a specific DQI vary within an analytical parameter, i.e., if MPC are analyte-specific, then provide analyte-specific MPC on additional worksheets. Separate worksheets should be provided for each matrix (e.g. Worksheet12.1 Soils, Worksheet 12.2 Sediments, etc.) If information varies within an analytical group, separate by individual analyte.

Measurement Performance Criteria Table – Field QC Samples

QC Sample	Analytical Group	Frequency	Data Quality Indicators (DQIs)	Measurement Performance Criteria

Notes:

SAP Worksheet #13: Secondary Data Criteria and Limitations Table

(UFP-QAPP Manual Section 2.7)

This worksheet is important where secondary data plays a role in meeting project-specific objectives or where secondary data limitations played a role in developing the SAP. Examples of secondary data are maps, figures, tables, photographs, analytical data and associated measurement performance results, summary reports, historical data, and even meeting minutes and/or consensus agreements.

Identify all secondary data and information that will be used for the project and their originating sources. Specify how the secondary data will be used and the limitations on their use. Include any limitations on use of the data in the final report. Examples of limitations are outdated data, transcription errors, lack of validation, insufficient or lack of performance criteria for analytical data, changes in standards or CSM, lack of detail or uncertainty in the information.

If no secondary data has been generated or none will be used, then this worksheet is not necessary.

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (originating organization, report title and date)	Data Generator(s) (originating organization, data types, data generation / collection dates)	How Data Will Be Used	Limitations on Data Use

SAP Worksheet #14: Summary of Project Tasks

(UFP-QAPP Manual Section 2.8.1)

This worksheet should provide a general overview of activities associated with planning, sampling, analysis, quality control, review, data management and reporting. Note that a detailed description of tasks can be found in respective worksheets and/or work plan. If the SAP is a stand alone document, this worksheet may require a higher level of detail. Examples of tasks include:

- Site preparation prior to sampling including utility clearance and clearing/grubbing
- drilling
- well development
- sample collection tasks
- field screening analyses
- quality control tasks
- equipment decontamination
- investigation derived waste tasks
- land surveying
- analytical tasks
- data management and review tasks
- third party data validation

SAP Worksheet #15: Reference Limits and Evaluation Tables

(UFP-QAPP Manual Section 2.8.1)

Complete this worksheet for each matrix sampled (e.g. Worksheet #15.1 Soil, Worksheet #15.2 Groundwater). Identify the target analytes/contaminants of concern and project-required action limits and quantitation goals. Next, list the laboratory-defined detection limits (DLs), limits of detection (LODs), and the limits of quantitation (LOQs) that must be met to achieve the project quality objectives. Strive to achieve project quantitation limits that are at least 3 to 5 times lower than the project action limits. The Project Action Limit Reference refers to the regulatory or site specific decision criterion (e.g. MCLs, PRGs, EALs, etc.) that was used to establish the Project Action Limit for a specific analyte. Additional columns can be added to present multiple decision criteria. If individual action limits are not appropriate, explanation should be provided. The Project Quantification Limit Goal (PQ) should be greater than the LOQ, but if not attainable the team should discuss the approach for using the data in the earlier DQO worksheet.

Matrix:

Analytical Group:

Analyte	CAS No.	Project AL (applicable limits)	Project AL Reference[1]	Project QL Goal (applicable units)	Laboratory Specific Limits [2, 3, 4]		
					LOQs	LODs	DLs

Notes:
1 List the type and source of the PAL used for each matrix specific analyte (e.g. Background, HH-MCL, HH-region III RBC, eco-WQC, eco-Region III BTAG, etc.)
2 Laboratory-specific DLs, LODs, and LOQs are limits that an individual laboratory can achieve when performing a specific analytical method.
3 If Laboratory-specific limits are not-known at time of Draft SAP, place to-be-determined, "TBD", as a placeholder in the columns. However, these fields MUST be populated and approved in the Final SAP prior to the sampling event.
4 Laboratory specific limits may be presented in a different manner if necessary to comply with project or regulatory requirements.

SAP Worksheet #16: Project Schedule/Timeline Table (optional format)

(UFP-QAPP Manual Section 2.8.2)

All project–specific SAPs should include schedule information, but this information does not necessarily have to be presented in the SAP if a separate work plan is prepared. The tabular format below is not mandatory. For example, project timelines created in MS Project or Gantt charts are acceptable. If the SAP is an appendix to a work plan that includes a project schedule, then the crosswalk table can be used to reference the work plan rather than completing this worksheet. Minimum requirements for project schedule include: milestones, duration allotted for activities, and required deliverables. If specific dates are associated with milestones or activities, please include them with this timetable.

Activity	Number of days from start	Duration	Deliverable	Deliverable Due Date

SAP Worksheet #17: Sampling Design and Rationale

(UFP-QAPP Manual Section 3.1.1)

Describe and provide a rationale for choosing the sampling approach and method (e.g., grid system, multi-incremental, judgmental). Describe the sampling design and rationale in terms of what matrices will be sampled, what analytical groups will be sampled and at what concentration levels, the sampling methods and locations (including QC, critical, and background samples), the number of samples to be collected, and the sampling frequency (including seasonal considerations). If software products (e.g. Visual Sampling Plan, ProUCL, etc.) are used, the SAP must document the name and version number of the software and describe how it will be used to determine sampling design**. Include a site map showing the sampling locations; if locations are not known at the time the SAP is finalized, then the boundaries of the sampling area shall be shown.** Include charts, plans, and SOPs (CD format is suitable) and other documents to reference how the sampling points or locations were or shall be precisely determined. **If the TRIAD approach is utilized, then a detailed field decision-making flowchart shall be provided.**

SAP Worksheet #18: Location-Specific Sampling Methods/SOP Requirements Table

(UFP-QAPP Manual Section 3.1.1)

List all site locations that will be sampled and include sample/ID number, if available. (Provide a range of sampling locations or ID numbers if a site has a large number.) Specify matrix and, if applicable, depth at which samples will be taken. In several instances, the depth of the proposed sample is not known. For those cases, an approximate depth and a qualitative descriptor such as "capillary fringe" are sufficient. Complete all required information, using additional worksheets if necessary. The SAP must describe how samples will be collected, referencing field SOPs where appropriate. In addition to the table, supportive text may be needed. The selected sample collection procedures must be appropriate to ensure that project personnel collect representative samples in a consistent manner for all required sample matrices and locations, that contamination is not introduced during collection, and that sample volumes are properly preserved in order to meet project objectives. Field duplicates, if collected, must be documented properly but should remain blind to the laboratory.

Sampling Location / ID Number	Matrix	Depth (units)	Analytical Group	Number of Samples	Sampling SOP Reference[1]

Notes:
1 Standard operating procedure (SOP) or worksheet that describes the sample collection procedures.

SAP Worksheet #19: Field Sampling Requirements Table

(UFP-QAPP Manual Section 3.1.1)

For each matrix and analytical group, list the analytical and preparation method/SOP and associated container specifications, preservation requirements, and maximum holding time. Under sample volume provide the minimum sample volume or mass requirement if it differs from the container volume.

Matrix	Analytical Group	Analytical and Preparation Method / SOP Reference	Containers (number, size, and type)	Sample Volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time[1] (preparation / analysis)

Notes:
1 Maximum holding time is calculated from the time the sample is collected to the time the sample is prepared/extracted.

SAP Worksheet #20: Field Quality Control Sample Summary Table

(UFP-QAPP Manual Section 3.1.1)

Summarize by matrix and analytical group the number of field QC samples (initially identified on worksheet#12) that will be collected and sent to the laboratory. Refer to minimum requirements in the UFP-QAPP Part 2B QA/QC Compendium. Documentation should be included if the total number of field QC may increase due to field activities. If so, reference should be made to Worksheet #12 for field QC frequency. In this case, include on this worksheet the total number of samples that will be generated in the first phase of sampling. Although the MS/MSD is not typically considered a field QC sample it is included here because location determination is often established in the field. If samples will be collected at different depths at the same location, count each discrete sampling depth as a separate sampling location or station.

Matrix	Analytical Group	No. of Sampling Locations	No. of Field Duplicates	No. of MS/MSDs	No. of Field Blanks	No. of Equip. Blanks	No. of VOA Trip Blanks	No. of PT Samples	Total No. of Samples to Lab

Notes:
MS matrix spike
MSD matrix spike duplicate
VOA volatile organic analysis
PT proficiency test

SAP Worksheet #21: Project Sampling SOP References Table

(UFP-QAPP Manual Section 3.1.2)

List all SOPs or relevant sampling methodology associated with project sampling including, but not limited to:

- sample collection
- sample preservation
- equipment cleaning and decontamination
- equipment testing
- inspection and maintenance
- supply inspection and acceptance
- sample handling and custody

Include copies of the SOPs as attachments or appropriately reference the location of each. The reference number can be used throughout the SAP to refer to a specific SOP.

If all field procedure steps are described within the SAP, use the crosswalk table to note that this worksheet is not necessary.

Reference Number	Title, Revision Date and / or Number	Originating Organization of Sampling SOP	Equipment Type	Modified for Project Work? (Y/N)	Comments

SAP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection Table

(UFP-QAPP Manual Section 3.1.2.4)

Identify all field equipment and instruments (other than analytical instrumentation) that require calibration, maintenance, testing, or inspection and provide the SOP reference number for each type of equipment. Note individually each type of activity being performed. In addition, document the frequency of activity, acceptance criteria, and corrective action requirements on the worksheet. Provide narrative summary if manufacturers instructions are being followed. The manufacturers' instructions may be included as an attachment or reference the specific instrument manufacturer's reference number.

Field Equipment	Activity	Frequency	Acceptance Criteria	Corrective Action	Resp. Person	SOP Reference	Comments

Notes:

SAP Worksheet #23: Analytical SOP References Table

(UFP-QAPP Manual Section 3.2.1)

All analytical procedures that will be used in the project must be documented in the SAP or attached document(s) to allow for review and approval. Attachments must be provided or appropriately referenced and available for access. If information is not available at the time of SAP submittal, a placeholder stating the required information is to-be-determined, "TBD", is permissible but is required prior to finalizing the SAP and field implementation. List all SOPs that will be used to perform onsite or offsite analysis. Indicate whether the procedure produces screening or definitive data. Include copies of the SOPs as attachments or reference in the SAP. The reference number can be used throughout the SAP to refer to a specific SOP. If the SOP has been modified for project work, note the modification in the final column

Lab SOP Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work? (Y/N)

Notes:

SAP Worksheet #24: Analytical Instrument Calibration Table

(UFP-QAPP Manual Section 3.2.2)

A list of analytical instrumentation shall be provided. If this information is already a part of the SAP, provide a reference on this worksheet where the information is located. Initial calibration, continuing calibration verifications, and continuing calibration blanks (ICAL, CCV and CCB) entries should both be provided. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet. All instruments must be calibrated according to the schedule specified by the method and instrument manual or SOPs. Name or title of responsible person may be used.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action	Person Responsible for Corrective Action	SOP Reference

Notes:

SAP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

(UFP-QAPP Manual Section 3.2.3)

Instrument and equipment maintenance logs must be kept to document analytical instrumentation and equipment maintenance, testing, and inspection activities. If this information is already a part of the SAP, provide a reference on this worksheet where the information is located. Otherwise use this worksheet to identify all analytical instrumentation that requires maintenance, testing, or inspection and provide the SOP reference number for each. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet. Name or title of responsible person may be used.

Instrument/ Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference

Notes:

SAP Worksheet #26: Sample Handling System

(UFP-QAPP Manual Appendix A)

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

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization):
Sample Packaging (Personnel/Organization):
Coordination of Shipment (Personnel/Organization):
Type of Shipment/Carrier:
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization):
Sample Custody and Storage (Personnel/Organization):
Sample Preparation (Personnel/Organization):
Sample Determinative Analysis (Personnel/Organization):
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection):
Sample Extract/Digestate Storage (No. of days from extraction/digestion):
Biological Sample Storage (No. of days from sample collection):
SAMPLE DISPOSAL
Personnel/Organization:
Number of Days from Analysis:

SAP Worksheet #27: Sample Custody Requirements

(UFP-QAPP Manual Section 3.3.3)

Use a simple narrative format to describe: how samples will be labeled (including how the numeric sequence will be used for sample identification), field sample custody procedures (sample collection, packaging, shipment, and delivery to laboratory), laboratory sample custody procedures (receipt of samples, archiving, and disposal), sample identification procedures, chain-of-custody procedures. Detail on custody transfer procedures for shipment must be included. Include procedures to describe how sample custody and integrity will be maintained and documented. Any electronic or software custody procedures must be documented. **Include examples of chain-of-custody forms, sample identification, custody seals, laboratory sample receipt forms, and laboratory sample transfer forms.** Attach or reference applicable SOPs.

SAP Worksheet #28: Laboratory QC Samples Table

(UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, and analytical group. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions. See Section 2.2 of Part 2B of the UFP-QAPP QA/QC Compendium, and the QA Matrix in Section 3.4 and Tables 4 & 5 for rationale for QC sample collection. Screening analyses should include a decision tree or logical diagram to describe how samples will be selected for subsequent definitive data analysis.

Matrix

Analytical Group

Analytical Method/ SOP Reference

QC Sample:	Frequency & Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	DQI	Measurement Performance Criteria
Method Blank						
LCS						
PT						

Notes:
DQI data quality indicator
LCS laboratory control sample
PT proficiency test

SAP Worksheet #29: Project Documents and Records Table

(UFP-QAPP Manual Section 3.5.1)

Identify the documents and records that will be generated for all aspects of the project including, but not limited to, sample collection and field measurement, onsite and offsite analysis, and data assessment. All project data and information must be documented in a format that is usable by project personnel. Describe how project data and information will be documented, tracked, and managed, from generation in the field to final use and storage in a manner that ensures data integrity, defensibility and retrieval. If electronic data is required the SAP should specify the requirements. All project documents and records that will be generated for every aspect of the project should be identified in the SAP (i.e. sample collection and field measurement records, analytical records, project data assessment records). Use the second column to note where the project documents will be maintained to facilitate future retrieval of this information. Long term storage/location should also be provided (archiving of data after the project is complete).

Document	Where Maintained

SAP Worksheet #30: Analytical Services Table

(UFP-QAPP Manual Section 3.5.2.3)

Identify all laboratories or organizations that will provide analytical services for the project, including onsite screening, onsite definitive, and offsite laboratory analytical work. Group the analytical services by matrix, analytical group, sample location or ID number. If applicable, identify the subcontractor laboratories and backup laboratory or organization that will be used if the primary laboratory or organization cannot be used.

If the project team does not anticipate sending samples to multiple laboratories, the table does not need to be utilized. Instead, please state in abbreviated text the lab to which all samples will be delivered, the data package turnaround time, and the backup laboratory. Describe or provide a table for the requirements for the data package deliverables. See page 91-93 Table 7 of the UFP-QAPP Manual, V.1, March 2005 for additional guidance. Describe the sample collection and field measurements data packages deliverables. Discuss onsite analysis data package deliverables. If the laboratory is not known at time of SAP submission, put "TBD" in the column as a placeholder. A backup laboratory is optional for SAP submittal. If a backup laboratory is not selected, fill fields with "NA" (not applicable).

Matrix	Analytical Group	Sample Locations/ID Numbers	Analytical SOP	Data Package Turnaround Time	Laboratory/Organization[1] (name and address, contact person and telephone number)	Backup Laboratory/Organization (name and address, contact person and telephone number)

Notes:

1 Laboratory meets accreditation requirements to support project needs.

SAP Worksheet #31: Planned Project Assessments Table

(UFP-QAPP Manual Section 4.1.1)

Discuss the different types of assessments for evaluating the project activities. Examples include, but are not limited to: laboratory assessment, field audits, and field documentation review. All field investigations should include at least one field sampling technical systems audit (TSA) at the start of field activities. An audit may be an internal or external contractor audit or government oversight audit. Identify the type, frequency, and responsible parties of planned assessment activities that will be performed for the project. The frequency of the TSAs is dependent on the project-specific quality objectives. If audit forms will be utilized in any of these assessments, include them as attachments.

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (title and organizational affiliation)	Person(s) Responsible for Responding to Assessment Findings (title and organizational affiliation)	Person(s) Responsible for Identifying and Implementing CA (title and organizational affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (title and organizational affiliation)

Notes:
CA corrective action

SAP Worksheet #32: Assessment Findings and Corrective Action Responses Table

(UFP-QAPP Manual Section 4.1.2)

Describe the activities for identifying and correcting any problems encountered during the project that have the potential to impact data quality (e.g., sampling error). For each type of assessment, describe procedures for handling SAP and project deviations.

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (name, title, organization)	Timeframe for Response

SAP Worksheet #33: Quality Assurance Management Reports Table

(UFP QAPP Manual Section 4.2)

Describe the content of each QA management report that will be generated for the project, including an evaluation of measurement error as determined from the assessments. All QA management reports should be included as attachments to the final project report where appropriate. The issues listed on page 103-104 of the UFP-QAPP Manual, V.1, March 2005 must be addressed in the QA management reports or the QA/QC section of the final project report and must include the additional data concerns included but not limited to those listed on Section 4.3 of the UFP-QAPP Manual. (e.g., progress reports, PT sample reports, etc.)

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (title and organizational affiliation)	Report Recipient(s) (title and organizational affiliation)

SAP Worksheets #34-36: Data Verification and Validation (Steps I and IIa/IIb) Process Table

(UFP-QAPP Manual Section 5.2.1), (UFP-QAPP Manual Section 5.2.2), (Figure 37 UFP-QAPP Manual), (Table 9 UFP-QAPP Manual)

Data review procedures and criteria are documented in the SAP to ensure that data are evaluated properly, completely, and consistently for use in meeting project quality objectives (PQOs). Describe the processes that will be followed for data review. Verification (Step I) is a completeness check that is performed before the data review process continues in order to determine whether the required information (complete data package) is available for further review. Validation (Step IIa) is a review that the data generated is in compliance with analytical methods, procedures, and contracts. Validation (Step IIb) is a comparison of generated data against measurement performance criteria in the SAP (both sampling and analytical). The description should detail how each item will be reviewed, when the activity will occur, and what documentation is necessary. *Internal* or *external* is in relation to the data generator. For analytical data validation, the data review input is the matrix and analytical group of the data. The description is then the validation criteria for comparison. Verification and validation inputs for this worksheet include items such as those listed in Table 9 on page 112-113 of the UFP-QAPP Manual, V.1, March 2005. Validation guidance and documents should address items such as those specified on page 115 of the UFP-QAPP Manual (i.e. the process that will be used to validate sample collection handling, field analysis and analytical lab project data). If streamlining of data review is being performed, clearly identify the amounts and type of data to be streamlined, as well as the nature of the streamlining activity in the text. Differentiate between steps IIa and IIb of validation.

Data Review Input	Description	Responsible for Verification (name, organization)	Step I / IIa / IIb [1]	Internal/ External

Notes: 1 IIa=compliance with methods, procedures, and contracts [see Table 10, page 117, UFP-QAPP manual, V.1, March 2005.]
IIb=comparison with measurement performance criteria in the SAP [see Table 11, page 118, UFP-QAPP manual, V.1, March 2005]

SAP Worksheet #37: Usability Assessment

(UFP-QAPP Manual Section 5.2.3)

This worksheet is intended to consider whether the data meets project quality objectives (PQOs) as they relate to the decisions to be made. All types of data (e.g., sampling, on-site analytical, off-site laboratory) are relevant to the usability assessment. On the worksheet, summarize the usability assessment process for the project and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used. Describe the evaluative procedures used to assess overall measurement error associated with the project. Identify the personnel responsible for performing the usability assessment. Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies. Discuss how the entire project team should reconvene to perform the usability assessment to ensure that the PQOs are understood and the full scope is considered. Describe how data quality issues will be addressed and how limitations on the use of the data will be handled. A narrative format is acceptable.