



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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Mr. Stephen Chao  
Naval Facilities Engineering Command  
Western Division, Code 18  
Office of Environmental Management  
900 Commodore Drive, Bldg 101  
P.O. Box 727  
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Dear Mr. Chao:

Enclosed are the comments of the Environmental Protection Agency (EPA) to Naval Air Station Moffett Field (NASMF) Draft Quality Assurance Project Plan (QAPP) by PRC. A section of the QAPP refers to the use of memorandums for each field investigation and the terms QAPP and Field Sampling Plans (FSP) were used in what appears to be a different context than is normally utilized in a remedial investigation.

We recommend that repetitive field functions such as drilling methods and sampling technique be referred to as Standard Operational Procedures (SOP) or FSP SOP. Memorandums that documents previous field work, data and proposes additional work should be referred to as the FSP, which would be consistent with CERCLA language and the NASMF Federal Facility Agreement. Also, the use of CERCLA nomenclature will be less confusing to reviewers and to the public when reviewing the administrative record.

The QAPP should serve as a baseline QAPP for analytical services and should be modified by using addendum(s) to meet project and data quality needs. If you have any questions please give me a call at (415) 744-2412.

Sincerely,

Lewis Mitani  
Remedial Project Manager

enclosure

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**NAVAL AIR STATION MOFFETT FIELD  
DRAFT QUALITY ASSURANCE PROJECT PLAN**

1. Missing elements of this Quality Assurance Project Plan (QAPP) include: project objectives and scope; intended data usage; names of key personnel; sample collection and equipment decontamination procedures; calibration standards and their sources; specific data validation criteria for internal consistency, transmittal errors, and verification of lab performance and capability; names of auditors.

2. Cover Page

We do not think it is appropriate for the QA Officer for JMM to both prepare and approve the QAPP. The signature of the document should be a person other than the preparer of the document. The signature also signifies an internal quality control and that QAPP will meet project objectives.

3. Table of Contents

Several errors noted in pagination, such as: 3.0 on page 12, not 11; 3.3.5 on page 17, not 16.

4. Section 2.2.5

Same concern: QA Officers should not be the same persons who approve documents they wrote.

5. Table of Contents

Does not list a required section entitled "Specific Routine Procedures Used to Assess Data Precision, Accuracy, and Completeness."

6. Section 1.3

Apparently, a memorandum will be written for each field investigation (how does this relate to the three steps described in 1.1?) which will provide details about the objective, rationale, sampling locations, parameters, etc. The FSP will provide existing data and detailed site characterizations; these should be made available for review together with the QAPP to verify accuracy and consistency. This memorandum sounds like it is planned to replace the purpose of the QAPP, in which detailed DQOs are to be stated and explained. Will the memorandum go through the same reviews and approvals as the QAPP and FSP? How extensive will be the searches for "existing data." Will it incorporate the EPA's DQO approach and requirements, or be used to amend the existing approved QAPP?

To avoid confusion we recommended repetitive field functions (e.g. drilling methodology, sampling techniques etc.) be referred to as Standard Operational Procedure (SOP) which will serve as a "baseline FSP or SOP FSP". What is referred to as Technical Memorandum are in fact FSP details which includes previous data and sampling rationale with referrences to the SOP. Since Technical Memorandum are important records documenting Navy field work, the memorandum should be referred to as the FSP, consistent with CERCLA language and the Federal Facility Agreement.

7. Section 2.2.12

Should add as data managers' duties "software verification and change approvals."

8. Section 3

Incomplete treatment of QA objectives. These QAOs must be defined in terms of project requirements, not in terms of the capabilities of test methods used. Project requirements must be defined in terms of DQOs for the minimum data quality required to draw valid conclusions to support specific decisions. Individual sites should be closely examined to determine if DQO's are sufficient to provide the degree confidence in the data necessary to meet the sites RI objectives. Furthermore, tables in Appendix C are incomplete, with "tbd" for many methods/parameters.

9. Section 4.0

Without the FSP, it cannot be determined how well the sample site selection was made, with regards to: scientific and regulatory objectives for sampling, including analyte concentrations of interest; statistical method or scientific rationale for choosing sampling sites and frequencies; extent to which the site selection will affect the validity of the data and project objectives. See also comment 6 regarding the use of SOPs, QAPP and FSPs.

10. Table 4-1, Sample Container, Holding Times and Preservative Requirements, Soil and Sediment; Table 4.2 Sample Container, Holding Times and Preservative Requirements, Surface and Groundwater.

The QAPP should make clear whether the SW-846 holding times or the CLP holding times, both of which are presented in these tables, will be observed.

11. Section 6.1.1

Implication here is that the CLP-SAS VOC method has detection limits which "generally" meet ARARs by using a 25-ml volume; then those water samples analyzed using the CLP-RAS SOW, at 5-ml volumes, will not meet ARARs! Are the former sets of samples for "background" or low-level determinations at sites expected to have low levels?

12. Table 6-4

Column listing "CLP-RAS Water" units should be ug/l, not ug/kg.

13. Table 6-15

Maintenance tasks listed are to be performed "regularly," but this is not specified -- days, months, years?

14. Sections 6.1.1 and 6.1.3

Is there any reason to suspect there may be more than 10 VOA TICs or 20 SV TICs that will need to be searched, especially at heavily-contaminated sites? Should a provision be made for this?

15. Section 6.4.1.1. Field Duplicates

If field duplicates samples are submitted blind to the laboratory, how will the laboratory provide limits based on field duplicate results? It would appear the precision of these samples can be used to assess sampling precision, provided the laboratory precision can be isolated. The question of limits set by the laboratory should be clarified.

16. Section 6.4.3.3 Surrogate Standards

The Contract Laboratory Program (CLP) Routine Analytical Service (RAS) protocol requires that samples which have surrogates outside of control limits must be reanalyzed or reextracted and reanalyzed. Data for samples with surrogates outside of control limits in both analysis are reported, and these data would be qualified during subsequent data validation. Normally data are not qualified after only one analysis since it is not clear whether a matrix problem or a laboratory problem led to the surrogates being out. It is recommended the QAPP adopt the RAS approach, at least for analytes to be analyzed by the RAS protocol.

17. Sections 6.5.2.1 and 6.5.2.2

Having the field personnel and lab staff validate their own data is inappropriate a third party should perform this function.

18. Section 6.5.3.2 Laboratory Data Reporting

The CLP RAS and SAS protocols require data be reported on the appropriate EPA forms. Sections 6.5.3.2 indicates data will be presented in tabular form, but the reporting format is dependent on specific laboratory used for the sample analysis. However, the "bullets" indicate QA/QC type summary data sheets will be used and the laboratory will provide the data to complete CLP packages. The QAPP should clarify whether CLP forms will be used or not.

19. Section 7.1

The referenced Laboratory Data Validation Functional Guidelines only cover VOAs, SVs, Pesticides/PCBs, and metals. What about the criteria for validation of other parameters?

20. Section 8.1

Where is a schedule of planned field and lab audits?

21. Page 73, Section 8.2.1

The bullet items listing appropriate steps to solve problems states the discussion will include "Determine whether the Navy should be notified" and the answer should always be "Yes" if there was a problem with corrective action associated and documented.

22. Tables C-7 and C-8

Percentage recovery values listed do not have ranges, they are just single values.

23. Table 3.1

Lists precision goals for field parameters, but no accuracy or completeness goals are listed here or elsewhere for field parameters. Also, there are no goals listed for geochemical analyses or for product analyses, in Section 3 or Appendix C.

24. Appendix C

Tables in C-3, C-4, C-7 and C-8 are missing RPD goals; what will these be, when will they be stated, other than "tbd"?

## 25. Overall, and Especially in Section 3.0

The DQO process should be utilized in future to establish statistically-derived data quality objectives for sampling locations and frequencies, numbers and types of samples, and parameters and criteria. No explanations or background are in the QAPP which would inform the reviewer about this process. There is no evidence of the authors stating the problem, identifying decisions that address the problem, selecting elements affecting the decision, developing the logic statement, establishing constraints on uncertainty, or optimizing a design for data collection. As an aid in that process, it is helpful to use something like the attached "Statistical Sampling Checklist" to provide sufficient information and rationale for the decisions about what to sample, why, when, where, and how much. See also comment number 5 for implementation of the DQO process.

## 26. Appendix D, Special Analytical Service (SAS) Procedures.

The method for the Analysis of Purgeable Halocarbons in Water and Soil by SW-846 Method 8010 is written so the analytes of interest and the compounds used in daily continuing calibrations must be specified. Although the QAPP specifies the target analytes for this method elsewhere, the compounds for daily calibration still need to be specified.

## ATTACHMENT 1

### STATISTICAL SAMPLING CHECKLIST

#### Task 1: Clearly Define Objectives (FSP-2)

State why samples are required and what use is to be made of data.

- List decisions to be made
- List information required for decisions
- List data required for information
- Consider alternative uses for data

#### Task 2: Develop a Sampling Plan (FSP-2 and -3)

State rationale for spatial allocation of samples.

- Discuss representativeness of allocation in terms of project objectives
- Discuss how prior information about site is incorporated into allocation plan

Discuss number of samples to be collected.

- Discuss methods used to derive sample numbers
- Discuss expected rates of false positives and negatives with this sample number

Discuss methods of sample collection.

- Describe process in sufficient detail for field crews
- Describe procedures used for quality assurance
- Discuss how process maintains statistical objectives or randomness, blind samples IDs, etc.
- Discuss how process maintains legal objectives of obtaining a chain-of-custody, obtaining sample permissions, etc.

Describe the field quality assurance samples

- Discuss the frequency and assignments of replicate samples, duplicates samples, split samples, replacement samples

#### Task 3: Develop the Quality Assurance Protocol (QAPP 5, 9, and 10)

Discuss chain-of-custody procedures from sample collection to data base storage.

Discuss laboratory qualifications and experience.

- Reference analytical methods and laboratory experience
- Reference laboratory quality assurance and capacity

**Task 4: Develop Statistical Analysis Procedures**

Discuss proposed statistical analysis techniques.

- Include statistics to be computed, appropriate statistical tests, valid statistical inferences.
- Discuss how analysis methods meet project objectives

Estimate the expected rate of false positives (finding a difference between background samples and site samples when none exists).

- Discuss assumptions made for estimate
- Discuss acceptability of rate of false positives for project objectives

Estimate the expected rate of false negatives (finding no difference between background sample and site sample when one exists).

- Discuss assumptions made for estimate
- Discuss acceptability of rate of false negatives for project objectives

Discuss procedures to be used for non-detects and other data problems.

- Discuss procedures used for nonquantifiable data and data below limit of detection
- Discuss procedures for analyzing analytical results with qualifiers
- Discuss procedures for analyzing analytical results with QA/QC failure

Discuss methods used for collection or analysis errors.

- Discuss methods used for samples with lost or missing results
- Discuss methods used for samples which incorrectly located or collected out of sequence

**Task 5: List Key Assumptions of Sample Allocation and Statistical Analysis (FSP-3, QAAP 7)**

- Create a prioritized list of assumptions and discuss implications of these assumptions not being met.

- Discuss assumptions made for sample allocation such as contaminant transport mechanisms, contaminant chemistry, etc.
- Discuss assumptions made to use proposed statistical procedures such as type of data obtained, probability distributions, correlations among variables, etc.

**Task 6: Cite References that the  
Proposed Statistical Procedure Works**

- Cite analyses performed with data from similar sites
- Refer to expert opinion such as texts and journal articles
- Demonstrate performance with statistical simulations