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12/12/96

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

December 3, 1996

Ms. Darlene Ige
Department of the Navy
Pacific Division
Naval Facilities Engineering Command
(Makalapa, HI)
Pearl Harbor, Hawaii 96860-7300

Re: Draft Phase II Remedial Investigation Sampling and Analysis Plan for the Red Hill Oily Waste Disposal Facility at the Fleet & Industrial Supply Center, Pearl Harbor

Dear Darlene:

The U.S. Environmental Protection Agency (EPA) has received the Draft Phase II Remedial Investigation (RI) Sampling and Analysis Plan (SAP) for the Red Hill Oily Waste Disposal Facility at the Fleet & Industrial Supply Center (FISC), Pearl Harbor, dated August 1996. We have reviewed the aforementioned document and our comments are enclosed.

If you have any questions, please contact Xuan-Mai Tran at (415) 744-2386.

Sincerely,

Xuan Mai

for Lewis Mitani
Remedial Project Manager

Enclosures

cc: Mike Miyasaka, DOH
Donald Gruber, URS

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COMMENTS ON DRAFT PHASE II REMEDIAL INVESTIGATION SAMPLING AND ANALYSIS PLAN AND QUALITY ASSURANCE PROJECT PLAN FOR RED HILL OIL WASTE DISPOSAL FACILITY FISC PEARL HARBOR OAHU, HAWAII

GENERAL COMMENTS/QUESTIONS - SAMPLING AND ANALYSIS PLAN:

1. The SAP appears to use data collected only during the Phase I Investigation. Significant soil analytical and lithologic data were collected during the removal of the Stilling Basin. These data included confirmation soil analytical data from beneath the Stilling Basin, from beneath the underground piping system, and from the replacement monitoring well boreholes. It is recommended that these data be incorporated into the SAP to provide a more focused and comprehensive SAP.

   As expected, the confirmation soil analytical data from the removal action indicate that significant soil contamination (up to 22,000 mg/kg TFH) was not excavated and remains beneath the Stilling Basin. Given that the perched groundwater beneath the site is contaminated and the vertical extent of soil contamination has not been defined, additional "deep" (between approximately 40 and 100 feet below ground surface [bgs]) soil analytical data appear to be required to define the vertical and lateral extent of soil contamination. Although groundwater analytical data from the proposed monitoring wells in the basal aquifer will address the groundwater pathway, it appears additional soil analytical data are required. The total investigation depth is approximately 40 feet bgs. Considering that the depth to the basal aquifer is anticipated to be approximately 100 feet bgs, soil data between 40 to 100 feet bgs may be useful for predicting future impacts on groundwater, if any. At a minimum, soil analytical and geotechnical data should be collected from the proposed basal aquifer monitoring well boreholes between approximately 40 and 100 feet bgs. However, it should be understood that the proposed well locations "step-out" near the site boundaries and given the past disposal activities at the Stilling Basin, "deep" soil contamination may not be observed near the site boundaries.

   Did the results of the soil analytical data from the replacement monitoring well boreholes provide any useful information on the lateral extent of contamination from the Stilling Basin? Additionally, are any of these data useful for the proposed investigation for the unauthorized discharge area (UDA) and the underground piping and oil waste delivery system?

2. Although the plan provides a thorough discussion of the past history at the site, and presents the acquired chemical data from past sampling activities in detail, the rationale

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for conducting only total petroleum hydrocarbon (TPH) analyses is not explained in sufficient detail. Based on the applicable or relevant and appropriate requirements (ARARs) discussed in Section 3, the collection of compound specific data appears to be appropriate, at least on a limited basis. It is recommended that some samples be submitted for compound specific analysis at a frequency comparable to that for TPH. This concern is directed mainly at the compounds that have been previously identified at the site (see Appendix A of the FSP). The soil analysis methods proposed in the FSP (i.e., EPA Method 4030 and the California EPA Method for total petroleum hydrocarbons as diesel [TPH-d]) could possibly be used to aid in the selection of samples for compound specific analyses. This will at the least add confidence to the recommendation for no further action relative to these constituents.

3. Section 2.0, Site Background and Initial Evaluation. This section needs to include the results of the removal of the Stilling Basin. As previously mentioned, additional soil analytical data were obtained subsequent to the Phase I RI report. This data (see General Comment - Sampling and Analysis Plan Comment No.1) should be used to further justify or eliminate any data needs. For example, confirmation soil sampling was performed during removal of the underground piping system; however, these data are not discussed in the SAP. Additionally, soil data from the replacement monitoring well boreholes may be useful for further defining soil conditions in the vicinity of the underground piping, the UDA, and the Stilling Basin. These sampling efforts should be included on figures, as appropriate, throughout this section.

4. Section 4.0, Field Investigation and Analysis Program Criteria. The proposed investigation approach of terminating the subsurface soil investigations when concentrations are below 5,000 mg/kg of TFH may not be suitable at the site. Previous soil analytical results from bodings at the site (Figure 2.4-1) indicate that high concentrations are observed at depth and can be preceded with relatively lower (< 100 mg/kg) concentrations at shallower depths. This pattern of migration may be attributed to site-specific lithologic conditions. As such, terminating the sampling depth using the proposed approach may not define soil quality conditions and is considered to be more applicable to collection of confirmation samples during a removal action. Since the Phase II RI may be the final action at the site, it is recommended that the proposed subsurface sampling extend to a reasonable depth (for example, terminated after three consecutive samples from 5-foot interval show levels of contamination at least an order of magnitude below 5,000 mg/kg). As indicated (Specific Comments - Sampling and Analysis Plan Comment No. 3) soil bodings, as recommended in the Phase I Report, are considered to be a more acceptable approach. Some of these bodings should be advanced below the total investigation depth of approximately 40 feet to fully characterized the lateral and vertical extent of soil contamination associated with either the EAOCs or the Stilling Basin.

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5. The FSP does not address sampling of the perched groundwater at the proposed monitoring wells. It is recommended that at least depth-discrete groundwater samples (i.e., HydroPunch®) be collected and analyzed from the perched groundwater during drilling of these wells. This needs to addressed in the SAP.

SPECIFIC COMMENTS - SAMPLING AND ANALYSIS PLAN:

1. SAP should contain a signature approval page as recommended in referenced documents. The signature page should include signature blocks for all appropriate officials.

Section 1.0, Introduction:

2. Figure 1.1-2. The sources block of this figure references a project at "Halawa, Ewa, Oahu, Hawaii," which should be revised to "Halawa, Oahu, Hawaii." The same source reference occurs in several other figures through out the SAP.

3. Page 1-9, first paragraph. It should be noted that even though the basal aquifer was not investigated as part of the Phase I RI, a leaching calculation presented in Section 5 of the Phase I RI report estimated a soil health based level (HBL) of 3,130 mg/kg for TFH for groundwater-protection purposes. On this basis and the observed site conditions, recommendations for installation of 4 monitoring wells in the basal aquifer and three borings at each of the three EAOCs were made in the report. Generally, this appears to be the most prudent approach for purposes of determining the impact on the basal aquifer and evaluation of lithologic and soil quality conditions between the total investigation depth of approximately 40 feet bgs and the top of the basal aquifer.

   The Navy has committed to drilling 3 wells: 2 downgradient and 1 upgradient to investigate the basal aquifer. We agree with the data needs described in Section 2.4.2.2 that two wells need to be installed downgradient to meet the data needs. There is a degree of uncertainty associated with the groundwater flow direction in the basal aquifer. The Navy should be prepared to address this possibility (see Specific Comments - Sampling and Analysis Plan Comment No. 20).

Section 2.0, Site Background and Initial Evaluation:

4. Page 2-47, Table 2.3-1. Typographical error in the table heading: replace "Deteections" with "Detections."

5. Page 2-61, Section 2.4.1.1, Phase I RI Results, it is recommended that at least some samples be analyzed for constituents such as dissolved oxygen, sulfate, nitrate, iron, etc., to allow for an evaluation of the potential for natural attenuation at each exposure area of concern (EAOC). Dissolved oxygen measurements are usually conducted at the well head.

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6. Figures 2.2-2, 2.2-5, 2.3-2, and 2.4-1. It is recommended these figures be updated to include results of the Stilling Basin removal action. Soil analytical data from the removal action would be useful to guide any additional sampling. Confirmation soil samples were collected from at least nine locations after removal of the slop lines shown on Figure 2.2-5. Why aren't these results presented on the figure? This figure or the other above-referenced figures should also show the limits of the excavation, results of confirmation soil from the excavation, and results from the replacement monitoring well boreholes. Since additional sampling is proposed west of the Stilling Basin (at the UDA) and northeast of the Stilling Basin (at the truckfill stand), the additional information/data would allow the reviewer to assess the adequacy of the proposed sampling.

7. Page 2-72, Section 2.5.2, Phase I RI results. This section appears to be incomplete. There is no discussion of results for TPH, TFH, VOCs and SVOCs. Please complete this section.

Section 3.0, Applicable or Relevant and Appropriate Requirements:

8. Page 3-6, Table 3.2-1, Potential Federal ARARs and TBCs. In the first column, third row, under the heading Resource Conservation and Recovery Act, replace "Maximum Contaminant Level" with "Maximum Concentration of Constituents for Ground-water Protection."

9. Page 3-13, first complete paragraph. The text states secondary maximum contaminant levels (SMCLs) are not enforceable and are not ARARs. SMCLs are not promulgated and the analysis of this requirement is correct; however, this requirement may still be identified as to-be-considered (TBC) guidance. While not enforceable, SMCLs are consistently used and provide the best available standard to evaluate water quality and consumer acceptability. For contaminants without risk-based PRGs, SMCLs may be relevant to establishing sample quantification limits for this FSP or cleanup standards for future remedial action. The SMCLs should be reviewed and considered for contaminants which have no other ARARs or risk-based standard.

10. Page 3-14, last paragraph. EPA Region IX Preliminary Remediation Goals (PRGs) Second Half 1995 are referenced in this FSP. Subsequent to the development of this FSP, EPA Region IX PRGs (August 1996) were issued which provide more current toxicity information. Also included with the recent EPA PRGs, are the soil screening levels (SSLs) for groundwater protection. Although SSLs may not be provided in this EPA document for the contaminant of concern, the SSL may be derived using the EPA Soil Screening Guidance (EPA/540/R-95/128 and EPA/540/R-96/018). The ARARs in the FSP should be updated to reflect the recent EPA PRGs and SSLs.

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11. Page, 3-16, Table 3.3-4. The table provides EPA Region IX PRGs. A cursory review of the PRGs documented on Table 3.3-4 do not correspond to the values provided in the EPA PRGs (August 1996). After reviewing the more current values presented in the EPA document, Table 3.3-4 can be modified (see Comment p.3-14).

12. Page, 3-16, Table 3.3-4. The table provides the HDOH Tier 1 Action Level of 5,000 mg/kg for total fuel hydrocarbon (diesel and middle distillate range). The HDOH TPH-diesel soil action level was empirically developed to prevent potential off-site free product migration from the soil via groundwater as stated in the text and through DHOH policy (DHOH Policy Update; January 4, 1996). However, the HDOH action level was not intended to prevent TPH soil contamination to groundwater. This appears to conflict with SMCLs and the Hawaii anti-degradation policy which may also be potential TBCs. The SMCLs are not enforceable but do establish a threshold odor number (TON) which will hinder use of the aquifer as a drinking water supply. In the case of the Hawaii anti-degradation policy, this state policy was developed to maintain water quality. Allowing the degradation of the aquifer below consumer acceptablity would be a direct conflict with the Hawaii policy. It is recommended that these TBCs be reviewed for consistency and inclusion into the FSP.

13. Page, 3-18, first bullet. The text identifies the requirements of the Coastal Zone Management Act (CZMA) (16 USC 1451) to include a consistency determination which includes a detailed description of the activity. The CZMA does require each federal agency activity affecting any land or water use or natural resource of the coastal zone to be conducted consistent with the state coastal zone management plan (16 USC §1456.c). Notwithstanding this citation, the CZMA appears to consist of administrative requirements irrelevant to the FSP and remedial action. Please clarify what other CZMA substantive requirements are being applied to this site.

14. Page 3-18, last bullet. The text summaries the Hawaii CZMA requirements to require that activities consider the ecological, cultural, historic, aesthetic, recreation, scenic, open space values, and coastal hazards. The substantive requirement description appears to establish limitations or restrictions to the CERCLA activities. However, their is insufficient specificity to evaluate how the requirement will apply to the FSP or remedial action. An explanation of the coastal zone criteria that would restrict the CERCLA action should be presented.

15. Page 3-18, last paragraph. Action-specific requirements are not presented in the FSP. Since the objective for early ARARs/TBCs guidance evaluation is to promote early support agency communication and field activity planning, ARARs identification should include all potential site-specific requirements identified by early communication with the support agencies. Additionally, action-specific ARARs/TBCs are relevant to the FSP (e.g., monitoring well construction, well abandonment, hazardous waste containment,

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investigation-derived waste management). Presentation of the potential action-specific ARARs\TBCs for this FSP should be presented.

Section 4.0, Field Investigation and Analysis Program Criteria:

16. Section 4.1.1, Data Quality Objectives.

A) This section does not discuss the procedures by which data quality will be evaluated, nor does it discuss how data acceptance will be determined. Rather, only project objectives are stated. A discussion of the data quality goals should be presented, and should include, but not be limited to, the following:

- Precision, accuracy, and completeness objectives for field screening analyses, off-site confirmation analyses, and off-site analyses;
- Statements of comparability and representativeness should be provided for all procedures; and
- Acceptable false positive and false negative error rates for onsite field screening data (relative to offsite confirmation data) should be addressed.

The FSP should at least reference the various data quality indicators that will be used to assess data quality The use of single- or double-blind performance evaluation should be considered as key data quality indicators of accuracy. The details of the proposed data quality assessment could be presented in the QAPP and referenced by this section of the FSP.

B) The rationale for screening samples by EPA Method 4030 and then selecting only ten percent of the samples for off-site confirmation should be provided. This confirmation frequency will result in only two and three offsite confirmations at the 8,000 gallon above ground storage tank (AST) and the unauthorized discharge area, respectively. It is recommended that more offsite confirmations be performed, and a rationale for the number proposed should be provided. In addition, it may be appropriate to collect some compound specific data from the samples collected, at least on a limited basis.

C) Soil and groundwater analyses for chemicals like sulfate, nitrate, and iron may help assess the potential for the natural attenuation of contamination at the site. It is recommended that collection of this type of data be considered, thus allowing for an evaluation of the potential for natural attenuation alternatives at the EAOCs.

17. Page 4-12, Section 4.2.1, Data Quality Objectives, first bullet. There is insufficient information in the SAP to support this objective. Please include the necessary data and figures to support this objective.

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18. Page 4-12, Section 4.2.1, Data Quality Objectives, third bullet. This objective is necessary; however, it should be applied to all the EAOCs including the Stilling Basin. Based on the proposed "shallow" sampling plan, this objective will not be achieved. See Specific Comments - Sampling and Analysis Plan Comments No. 3 and General Comments - Sampling and Analysis Plan Comment No. 4.

19. Page 4-13, Section 4.3.1, first bullet. There is insufficient information in the SAP to support this objective. Please include the necessary data or figures to support this objective.

20. Page 4-27, Section 4.4.2.2 Monitoring Well Installation. No information has been provided to indicate the general groundwater flow direction in the basal aquifer. It appears the proposed monitoring well locations are based on the measured flow direction in the perched water zone. It is very likely that the flow direction in the perched and basal aquifer are different. It is recommended that RH-MW06 be relocated approximately 800 feet further west to southwest and RH-MW07 be relocated approximately 400 feet west. Based on the proposed basal monitoring well locations and the uncertainty of the flow direction, it appears a fourth monitoring well located along the west/southwest site boundary may be required to meet the data needs.

21. Page 4-27, Section 4.4.2.2 Monitoring Well Installation. It is indicated that 5-foot core samples will be collected from each borehole at the top of the aquifer and evaluated for fractures and aquifer characteristics. Please indicate in the SAP how the samples will be evaluated for these parameters.

Section 5.0, Field Methods and Procedures:

22. Page 5-3, Section 5.5 - Soil Boring. During drilling of the monitoring well boreholes, it is recommend to switch sampling methods from every 5 feet to continuous coring when near the anticipated depth of the clay layer. Continuous coring should be performed until the clay layer has been fully penetrated. The continuous coring should allow evaluation of the clay layer consistency. Obviously the first section of coring will be performed prior to installation of the conductor casing and then completed after the conductor casing is installed.

23. Figure 5.6-1. It is unclear on the figure how the steel conductor casing will be installed and sealed. Generally a cement grout seal is installed between the outside of the steel conductor casing and the borehole wall. Please explain the installation procedure or correct the figure.

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GENERAL COMMENTS/QUESTIONS - QUALITY ASSURANCE PROJECT PLAN:

1. Sections 7 through 11 are not site-specific and mostly refer to SOPs. These SOPs are somewhat vague. Project-specific information should be included in these sections, along with references to the general SOPs. For instance, will performance evaluation samples be submitted or audits be performed for this field effort? The frequency of both systems and performance audits are not addressed in the SOPs.

2. The analytical methods listed in the various tables of this document are not complete. The last paragraph of Section 1.1 specifies that metals, total alkalinity, chloride, fluoride, surfactants, and total dissolved solids analyses will be performed also. The FSP also indicates that an immunoassay test for TPH will be performed for soils. Please include these in all QAPjP tables (except Table 2.4-1) and the immunoassay test in the QAPjP.

3. Please submit GC/MS and GC data stored on magnetic tape to the Navy for potential future data review.

4. What laboratory will be performing the analyses? Pre-award audits should be conducted for laboratories new to the program. Audit reports and corrective actions should be presented to the regulatory agencies. Please provide an outline for audit reports.

SPECIFIC COMMENTS/QUESTIONS - QUALITY ASSURANCE PROJECT PLAN:

1. Section 1.1, Project Background.

   A) The specific modifications to the "TPH diesel" method should be clarified or referenced in this section. In particular, the method of calibration and quantitation should be clarified, and the appropriateness of using only diesel as a calibrant should be evaluated. Since TPH results will be used to make key decisions regarding the site, the method of calibration and quantitation is an important aspect of data quality. EPA Method 8015B could be used as guidance (see Attachment 1). In addition, the use of the term TFH is unclear, and should be defined or deleted.

   B) It is recommended that groundwater analyses for sulfate, nitrate, iron, and dissolved oxygen be considered. This may help to assess the natural conditions that can affect the fate and transport of the chemicals of concerns at the site. For dissolved oxygen, well head analysis is recommended.

   C) This section should address the proposed use of TPH immunoassay test kits that are mentioned in the FSP. In particular, the method for estimating the precision and accuracy of the field test kits should be addressed. The procedure for evaluating the confirmation results should also be addressed along with the number of false positive and false

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negative results that can be tolerated given the ensuing decisions that will be made at the site.

2. Page 1-3, Section 1.1. This section refers both to TFH and TPH. The footnote on page 1-9 of the FSP indicates the difference between these analyses; however, the reference to these methods in the QAPjP is not consistent with the FSP definition. Please correct.

3. Page 1-3, Section 1.2, Data Quality Objectives. The second sentence of this section refers to an EE/CA. Isn't this Phase II of an RI?

4. Page 1-4, first full paragraph, third sentence. This sentence is incorrect. Dilution is required if the analyte concentration is above the maximum of the calibration range. Please correct.

5. Page 1-4, second full paragraph. Theoretically this is a good idea. How does it apply to this project? Which results, if any, have been previously affected by matrix interferences, necessitating a change in methods? If none, then alter the paragraph to be project-specific (i.e., "The same methods used for the Phase I RI sample analysis will be retained for use during the Phase II RI to facilitate the comparison of Phase I data to Phase II data." end of paragraph).

6. Page 1-5, Table 1.2-1. The field methods presented in Table 1.2-1 should reference the appropriate standard operating procedure, unless the use of the referenced EPA methods is actually planned. This comment also applies to Tables 1.2-2, 1.2-3, and 2.2-1.

7. Page 1-6, Table 1.2-2. This section presents only detection limits, and should actually address the estimated quantitation limits that are planned for data collection. In general, Section 1.2 should provide some discussion of the higher quantitation limits which would be expected for the field screening method relative to the offsite confirmatory method. This sensitivity issue relates directly to a discussion of an appropriate confirmation frequency, which should be addressed somewhere in the SAP.

8. Page 1-6, Table 1.2-2. There is only one number here for each matrix and analyte, yet the title states that both laboratory detection limits and quantitation limits are provided. Please clarify. Are these the only analytes to be analyzed for and reported? If so, please provide the rationale for not reporting the full CLP analyte list. Also, include the project ARARs on this table next to the limits for comparison.

9. Page 1-7, Table 1.2-3. The fourth column indicates "Surrogate Accuracy Criteria." No surrogates are listed in the table. Revise the table to include the surrogates for appropriate methods. Also, other methods (metals, chloride, fluoride) require MS/MSDs and should be included in this table.

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10. Pages 1-7 and 1-8, Table 1.2-3, Data Quality Objectives.

A) QA objectives are not presented in this table for many target compounds. It is recommended that precision and accuracy goals be established based on the sampling design and the decisions that will be made with the data. This is especially true for compounds of potential concern discussed in Appendix A of the FSP.

B) Pages 1-7 and 1-8, Table 1.2-3, Laboratory Control Samples. It is recommended that analytical accuracy be monitored through the use of independent single- or double-blind spikes (i.e., performance evaluation [PE] samples). Preferably, PE samples would be coordinated by a government official, but could also be implemented by the "CTO Senior QA/QC Reviewer." PE sample accuracy objectives would be included in the "LCS" column of Table 1.2-3.

11. Page 1-9, first bullet. Completeness should be calculated as the percent of the amount of acceptable or valid data to the *total amount of data required in the SAP*. If "locations and numbers of samples have been selected to ensure the acquisition of sufficient data to meet the RI objectives," then the failure to collect samples (for whatever reasons) should affect completeness towards the RI objectives. Also, if sample bottles or vials break during shipment or analysis, this should lower the completeness, even though this is not a part of the "total amount of data analyzed." Please revise this bullet.

12. Page 1-10, Figure 1.3-1. A quality assurance officer who is a government employee should be identified in the organization chart. The responsibilities of all project personnel should be included in Section 1.3

Section 4.0, Calibration Procedures, and Section 5.0, Analytical Procedures:

13. Page 4-1. The calibration and analytical procedures that will be used for the immunoassay test kits should be discussed in the section, or the appropriate SOP should be referenced. Several immunoassay test kit SOPs developed by EPA Region 9 have been provided for reference when addressing this concern (see Attachment 2).

Section 6.0, Field Quality Control:

14. Page 6-1. It is recommended that some form of standard reference material be used to evaluate both the field and laboratory results for TPH in soil (e.g., a PE sample). This will allow for a comparison of on-site screening and off-site confirmation analyses.

15. Page 6-1, Section 6.1, first paragraph, last sentence. Table 6.1-2 does not exist. Please revise table reference.

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Section 7.0, Data Statistical Assessment, Validation, Reduction, and Reporting:

16. Page 7-1. Please summarize the frequency of data review and data validation for this project. Full data validation should be performed for at least 10 percent of the samples analyzed, increasing in frequency if errors affecting data quality are identified.

Section 8, Systems and Performance Audits:

17. Page 8-1. Currently, it is not clear what will be done at the site regarding systems and performance audits. This section should be revised to include a discussion of the systems and performance audits that are planned for subject plan. The use of site specific performance audits are recommended.

Section 10, Corrective Actions:

18. Page 10-1. This section should reference the more recent QAPP guidance "Quality Assurance Project Plans, EPA QA/R-5. Interim Final, August 1994.

Section 11, Quality Assurance/Quality Control Reports:

19. Page 11-1. Please provide an outline of the QA/QC section of the Phase II report.

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ATTACHMENT 1:

EPA Method 8015B

ATTACHMENT 2:

EPA Region 9 Field Analytical Services Program (FASP) Standard Operating Procedures for Field Immunoassay Tests.

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