

Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

CONTRACT NO. N62473-06-D-2201
CTO No. 0015

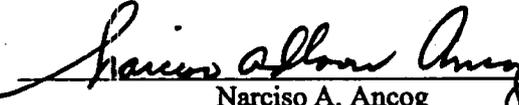
**FINAL
ADDENDUM 1
TO THE
FINAL SAMPLING AND ANALYSIS PLAN
(Field Sampling Plan and Quality Assurance Project Plan)
October 17, 2007**

**INSTALLATION RESTORATION SITES 1, 2, AND 32
FORMER NAVAL AIR STATION ALAMEDA
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

DCN: ECSD-RACIV-07-0748.A1



TETRA TECH EC, INC.
1230 Columbia Street, Suite 750
San Diego, CA 92101-8536
(619) 234-8696

 _____ for	10/10/07
Gregory Joyce Quality Control Program Manager	Date
 _____	10/11/2007
Narciso A. Ancog NAVFAC SW Quality Assurance Officer	Date



TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N62473-06-D-2201 (RAC IV)

Document Control No. 07-0748.A1

File Code: 5.0

TO: Contracting Officer
Naval Facilities Engineering Command SW
Ms. Beatrice Appling, AQE.BA
Building 127, Room 108
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 10/25/07

CTO: 0015

LOCATION: Alameda, CA

FROM:

[Handwritten signature]

A. N. Bolt, Program Manager

DESCRIPTION: Final Addendum 1 to the Final Sampling and Analysis Plan (Field Sampling and Quality Assurance Project Plan) October 17, 2007

TYPE: [] Contract/Deliverable [x] CTO Deliverable [] Notification [] Other

VERSION: Final (e.g. Draft, Draft Final, Final, etc.)

REVISION #: N/A

ADMIN RECORD: Yes [x] No [] Category [] Confidential [] (PM to Identify)

SCHEDULED DELIVERY DATE: 10/17/07 ACTUAL DELIVERY DATE: 10/25/07

NUMBER OF COPIES SUBMITTED: 0/4C/8E Copy of SAP to N. Ancog [x]

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:

TtEC:

OTHER: (Distributed by TtEC)

D. Robinson - BRAC - O/1E

K. Weingardt

D. Silva (EVR.DS) 3C/3E

L. Bienkowski

*BPMOW

(2) Project Site/Field

N. Ancog (EVR.NA) CD

Basic Contract Files (AQE)

IC

Date/Time Received

FINAL
SAMPLING AND ANALYSIS PLAN
(FIELD SAMPLING PLAN AND QUALITY ASSURANCE
PROJECT PLAN)
DATED 02 MARCH 2007

IS APPENDIX B OF THE FINAL TIME-CRITICAL REMOVAL
ACTION WORK PLAN, IR SITE 1, 2, AND 32

DATED 02 MARCH 2007

THIS RECORD IS ENTERED IN THE DATABASE AND FILED
AS

RECORD NO. AR_N00236_002692

1.0 INTRODUCTION

This Addendum 1 to the Final Sampling and Analysis Plan (SAP) included as Appendix B in the *Final Time-Critical Removal Action Work Plan, Document Control Number: ECSD-RACIV-07-0748*, (TtEC, 2007) has been prepared by Tetra Tech EC, Inc. (TtEC) under the Naval Facilities Engineering Command, Southwest (NAVFAC SW) Remedial Action Contract (RAC) IV No. N62473-06-D-2201, Contract Task Order (CTO) No. 0015. This Addendum 1 addresses sampling to be performed in support of the Site Inspection (SI) Report prepared by Bechtel Environmental, Inc. The objective of the SI for Transfer Parcels Federal Agency (FED)-1A, FED-2B, and FED-2C was to characterize potential environmental contamination in soil and groundwater, estimate any potential human-health risk, and identify the presence of any special-status species and/or potential exposure pathways for ecological receptors. During the SI Report preparation, it was determined that 9 locations required resampling for radium-226 (^{226}Ra) due to a change in the regulatory cleanup level from 5 picocuries per gram (pCi/g) (which was the cleanup level at the time the original samples were collected and analyzed) to 1.365 pCi/g (which is the current regulatory cleanup level). Since the original sample analysis was performed at a higher reporting limit based on the cleanup level of 5 pCi/g, the Department of the Navy (DON) recommended resampling and reanalysis of these locations to ensure that a reporting limit less than the current cleanup level of 1.365 pCi/g is achieved.

Although these 9 sample locations are not located within the sites TtEC is currently performing work at under CTO 15, the CTO 15 SAP does cover soil sample collection and analysis for ^{226}Ra where the reporting limit requirement is less than 1.365 pCi/g. Therefore, this Addendum 1 was prepared to include the resampling of these 9 locations in conjunction with the analytical requirements presented in the original SAP.

Figure A1 illustrates the site location and the 9 locations to be resampled. This Addendum 1 will be used in conjunction with the original SAP (Document Control Number ECSD-RACIV-07-0748) and will be distributed to the recipients listed in Table 1-1a. In addition, the sign-off sheet in Table 1-1b will be signed by project personnel involved with the field effort described in this Addendum 1.

This Addendum 1 will be used for the field activities described herein, and all sections from the original SAP not specifically changed in this Addendum 1 will remain in effect for the field effort described herein. The following sections and tables have been revised or added in association with the original SAP:

- Section 1.1
- Table 1-1a (added table)

- Figure A1 (added figure)
- Section 3.0
- Table 3-1a (added table)
- Section 5.4 (added section)
- Table 5-1a (added table)
- Section 6.3.4 (added section)
- Section 7.2
- Section 7.3
- Table 7-1a (added table)
- Table 7-4a (added table)
- Table 7-5a (added table)

1.1 OBJECTIVES

Additional text.

The primary objective of this Addendum 1 is to resample the 9 locations depicted in Figure A1 and analyze the samples for ^{226}Ra .

TABLE 1-1a

**DISTRIBUTION LIST
(UFP-QAPP Worksheet #3)**

This document will be distributed to the following project participants listed below once all approval signatures have been received.

SAP Recipients	Title	Organization	Telephone Number	E-mail Address
Mr. Andrew Baughman	Remedial Project Manager	NAVFAC SW	(619) 532-0902	andrew.baughman@navy.mil
Mr. Mathew Slack	RASO	RASO	(757) 887-4692	mathew.slack@navy.mil
Mr. Narciso Ancog	QAO	NAVFAC SW	(619) 532-3046	narciso.ancog@navy.mil
Ms. Anna-Marie Cook	EPA-RPM	EPA	(415) 972-3029	cook.anna-marie@epa.gov
Ms. Rachel Hurt	Field Biologist	USFWS	(510) 377-8375	rachel_hurt@fws.gov
Mr. Gregory Grace	ROICC	NAVFAC SW	(510) 749-5940	gregory.grace@navy.mil
Mr. Abram Eloskof	Project Manager	Tetra Tech EC, Inc.	(949) 756-7521	abram.eloskof@tteci.com
Mr. Gregory Joyce	QC Program Manager	Tetra Tech EC, Inc.	(360) 598-8117	greg.joyce@tteci.com

Abbreviations and Acronyms:

- EPA - U.S. Environmental Protection Agency
- NAVFAC SW - Naval Facilities Engineering Command, Southwest
- QAO - Quality Assurance Officer
- QC - quality control
- RASO - Radiological Affairs Support Office
- ROICC - Resident Officer in Charge of Construction
- RPM - Remedial Project Manager
- UFP-QAPP - Uniform Federal Policy for Quality Assurance Project Plans
- USFWS - United States Fish and Wildlife Service

TABLE 1-1b

**PROJECT PERSONNEL SIGN-OFF SHEET
UFP-QAPP Worksheet #4)**

I have read and understood the SAP and perform the task as described in the SAP.

Project Personnel	Organization	Title	Signature	Date Addendum Read
Kent Weingardt, P.E.	TtEC	Project Manager		
Greg Joyce	TtEC	Program QC Manager		
Lisa Bienkowski	TtEC	Program Chemist		
Sabina Sudoko	TtEC	Project Chemist		
Vincent Richards	TtEC	Sample Technician		

Notes:

SAP - Sampling and Analysis Plan
UFP-QAPP - Uniform Federal Policy for Quality Assurance Project Plans

3.0 PROJECT OVERVIEW

3.1 BACKGROUND

Additional text.

Transfer Parcels FED-1A, FED-2B, and FED-2C are located in the western portion of Alameda Point along or near San Francisco Bay.

Transfer Parcel FED-1A occupies approximately 400 acres. Approximately 75 percent of the transfer parcel is paved open space; a limited number of buildings and structures are also present. Unpaved grassy areas occupy the remainder of the parcel, with small areas of seasonal wetland habitat present in the western and eastern portions. The DON formerly used the land as aircraft runways, taxiways, and support service facilities (e.g., aircraft-arresting devices, compass pads, and lighting vaults) and as magazines. Currently, a small portion of the transfer parcel is identified as a California Least Tern sanctuary, providing protective habitat for this endangered avian species.

Transfer Parcel FED-2B occupies approximately 27 acres. The transfer parcel is entirely unpaved open space, including seasonal ponds and designated wetland habitat restricted from future residential use.

Transfer Parcel FED-2C occupies approximately 12 acres. The transfer parcel is entirely paved open space and serves as a buffer zone between Transfer Parcel FED-1A and IR Site 26. Historically, Transfer Parcel FED-2C was included in the runway portion of NAS Alameda and was used as a taxiway.

3.2 SCOPE

Additional text.

The scope for this project includes collecting and analyzing soil samples at 9 locations illustrated in Figure A1.

3.3 DATA QUALITY OBJECTIVES

The DQOs for this Addendum 1 are presented in Table 3-1a.

TABLE 3-1a

SUMMARY OF DATA QUALITY OBJECTIVES

State the Problem	Identify the Goals of the Study	Identify Information Inputs	Define the Boundaries of the Study	Develop the Analytic Approach	Specify Performance or Acceptance Criteria	Develop the Plan for Obtaining Data
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
<p>The original analytical results for samples collected at 9 locations throughout Transfer Parcels FED-1A, FED-2B, and FED-2C do not meet current regulatory cleanup level at 1.365 pCi/g for ²²⁶Ra. Therefore, the DON has recommended resampling of these 9 locations in order to meet the current regulatory cleanup level.</p>	<p>Is ²²⁶Ra detected above 1.365 pCi/g in the soil samples collected from the 9 locations throughout Transfer Parcels FED-1A, FED-2B, and FED-2C?</p>	<p>Information inputs will include the analytical results for this project from the soil samples collected.</p>	<p>Figure A1 illustrates the 9 sample locations. Two soil samples will be collected at each location from 0-0.5 foot bgs and 2-2.5 foot bgs.</p> <p>The samples will be collected in September 2007.</p>	<p>If the ²²⁶Ra results are above 1.365 pCi/g, then the results will be reported to the DON to determine further action. Otherwise, the results will be reported to the DON and no further action will be required.</p>	<p>To limit decision errors, analytical method requirements and project-specific DQOs were established. Published analytical methods and requirements in the QSM (DoD, 2006) are the primary determinants of DQOs by establishing limits for precision and accuracy.</p> <p>Field crews will review the original SAP and this Addendum 1 before collection of samples and sign-off on Table 1-1a.</p> <p>Third-party data validation will be performed on the samples collected in conjunction with this Addendum 1.</p>	<p>Two soil sample will be collected at each location in Figure A1. Samples will be analyzed for ²²⁶Ra.</p>

Abbreviations and Acronyms:

- ²²⁶Ra - radium-226
- DoD - Department of the Defense
- DON - Department of the Navy
- Bgs - below ground surface
- DQO - Data Quality Objective
- QSM - Quality Systems Manual
- pCi/g - picocuries per gram
- SAP - Sampling and Analysis Plan

5.0 SAMPLING STRATEGY

5.4 SOIL SAMPLING

Additional section.

Soil samples will be collected at the 9 locations depicted in Figure A1. Soil samples will be collected at 0-0.5 foot below ground surface (bgs) and 2-2.5 foot bgs. Samples will be analyzed for ^{226}Ra . Table 5-1a has been added to list the sample locations, depths, analysis, and sampling procedures.

TABLE 5-1a

SAMPLING LOCATIONS/IDS, SAMPLE DEPTHS, SAMPLE ANALYSES, AND SAMPLING PROCEDURES
(UFP-QAPP Worksheet #18)

Sampling Location	Matrix	Depth (feet)	Analytical Group	Sampling Section Reference
M025-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M025-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M025-E	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M025-E	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M009-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M009-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M104-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M104-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M104-C	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M104-C	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M109-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M109-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M106-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M106-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M015-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M015-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4
M107-A	Soil	0-0.5	Radium-226	SAP Section 6.3.4
M107-A	Soil	2-2.5	Radium-226	SAP Section 6.3.4

Abbreviations and Acronyms:

SAP – Sampling and Analysis Plan
UFP-QAPP – Uniform Federal Policy for Quality Assurance Project Plans

6.0 SAMPLING PROCEDURES

6.3 SAMPLING PROCEDURES

6.3.4 Soil Sampling Procedures

Additional section.

Samples will be collected as follows:

1. Sampling personnel will don a new pair of disposable nitrile gloves immediately before collecting soil samples at each location.
2. Samples will be collected from 0'-0.5 foot bgs by using a sampling core (containing a new six-inch stainless steel liner) that will be driven into the soil with a slide hammer.
3. A hand auger or similar device will be used to access the 2-foot bgs depth. Once that depth is reached, the sampling core (containing a new stainless steel liner) will be driven with a slide hammer into the soil to collect a sample from 2'-2.5 foot bgs.
4. Each end of the liner will be covered with Teflon tape and capped.
5. Each liner will be labeled and clear packing tape will be placed over the label to secure it.
6. Samples will be custody sealed and packaged in accordance with Section 6.6 of the original SAP.
7. Field documentation including field logbooks and COCs will be filled out in accordance with Section 4.0 of the original SAP.
8. The hand auger and sampling core will be decontaminated per Section 6.4 of the original SAP between each sample acquisition.
9. An equipment rinsate sample will be collected per day from the hand auger and sampling core and analyzed for ²²⁶Ra.

7.0 ANALYTICAL DATA QUALITY OBJECTIVES

7.2 DATA QUALITY INDICATORS

Additional text.

Table 7-1a has been added to list the cleanup levels for the soil samples for this project.

7.3 FIELD QUALITY OBJECTIVES

Table 7-4a has been added to include the measurement performance criteria for equipment rinsates. Table 7-5a has also been added to include the field QC sample frequency for the samples collected for this project.

7.3.1 Field Duplicates

Additional text.

Field duplicates will not be collected for the soil samples collected for this project due to 1) the heterogeneity of the soil matrix and 2) collection of samples at specific depths that does not facilitate the collection of a duplicate.

7.3.2 Equipment Rinsate Samples

Additional text.

Equipment rinsates will be collected for this project since non-disposal sampling equipment (hand auger and sampling core) will be used to collect soil samples.

TABLE 7-1a

REFERENCE LIMITS FOR SOIL SAMPLES
(UFP-QAPP Worksheet #15)

Analytical Group/Method ¹	Analyte	CAS Number	Project Cleanup Level for Soil Samples	Project Quantitation Limit	Analytical Method MDLs	Analytical Method QLs	Units
²²⁶ Ra/EPA Method 901.1M	²²⁶ Ra	13982-63-3	1.365 ^a	0.5	0.25	0.5	pCi/g

Notes:

^a The cleanup level is defined as 1 pCi/g plus background value which was established by TtEC during previous investigations at 0.365 pCi/g for ²²⁶Ra.

Abbreviations and Acronyms:

- CAS - Chemical Abstract Service
- ²²⁶Ra - radium-226
- EPA - U.S. Environmental Protection Agency
- MDL - method detection limit
- QL - quantitation limit
- pCi/g - picocuries per gram
- TtEC - Tetra Tech EC, Inc.
- UFP-QAPP - Uniform Federal Policy for Quality Assurance Project Plans

TABLE 7-4a

MEASUREMENT PERFORMANCE CRITERIA – FIELD QC SAMPLES
(UFP-QAPP Worksheet #12)

QC Sample	Analytical Group	Frequency	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
Equipment rinsate	²²⁶ Ra	One per day per equipment	Accuracy	²²⁶ Ra not detected above quantitation limit for equipment rinsate	A

Abbreviations and Acronyms:

²²⁶Ra – radium-226

QC – quality control

UFP-QAPP – Uniform Federal Policy for Quality Assurance Project Plans

TABLE 7-5a

FIELD QUALITY CONTROL SAMPLE SUMMARY
(UFP-QAPP Worksheet #20)

Matrix	Analytical Group	Analytical and Preparation SAP Reference	# of Primary Sampling Locations	# of Field Duplicates	# of MS/MSDs	# of Field Blanks	# of Equipment Rinsates	# of Trip Blanks	Total # of Samples to Laboratory
Soil Samples									
Soil	Radium-226	Section 5.4	9 locations x 2 samples collected per location	N/A	N/A	1	1 per day per equipment	N/A	18 plus field QC samples

Abbreviations and Acronyms:

MS/MSD – matrix spike/matrix spike duplicate

N/A – not applicable

QC – quality control

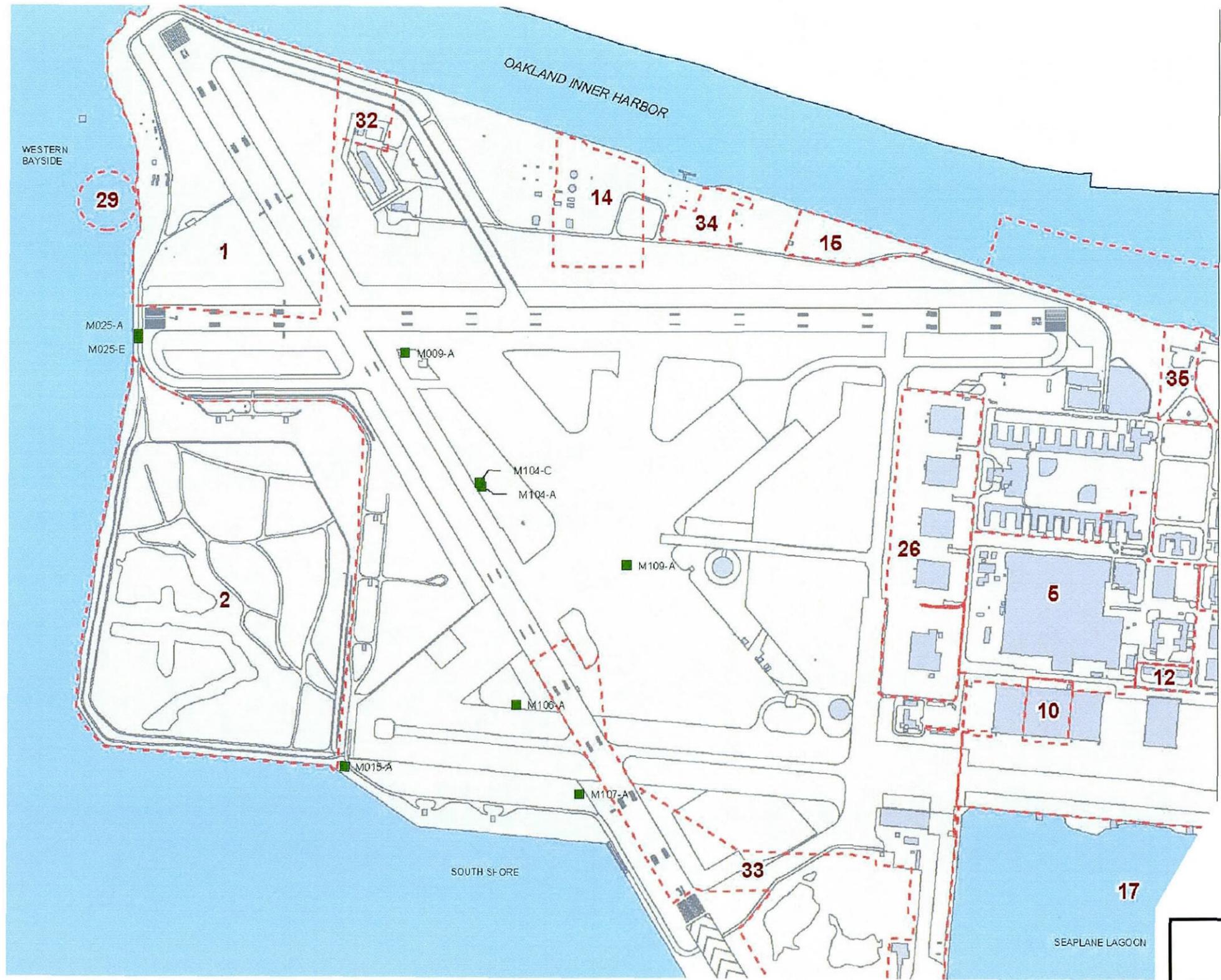
SAP – Sampling and Analysis Plan

UFP-QAPP – Uniform Federal Policy for Quality Assurance Project Plans

FIGURE

DRAWING NO: 070748A1_SAP.DWG
 DCN: ECSD-RACIV-07-0748.A1
 CTO: #0015
 APPROVED BY: AE
 CHECKED BY: LB
 DATE: 10/03/07
 REV:

P: \3210-RAC IV\CTO-0015\DWG\070748\070748A1_SAP.DWG
 PLOT/UPDATE: OCT 15 2007 10:22:54



- Rad-226 Sample Locations
- - - CERCLA Sites
- On-Base Building
- Off-Base Building

Note
 CERCLA Comprehensive Environment Response, Compensation, and Liability Act

Figure A1
RADIUM-226 SAMPLE LOCATIONS
 IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
 ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.