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CROWS LANDING
SSIC NO. 5090.3.A

FINAL

SAMPLING AND ANALYSIS PLAN ADDENDUM NO. 2

Additional Groundwater Sampling
NASA Crows Landing Flight Facility
Crows Landing, California

Environmental Remedial Action
Contract Number N62474-98-D-2076
Contract Task Order 0110

Document Control Number 9329
Revision 0

July 28, 2005

Submitted to:

Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, California 92101

Submitted by:

Shaw Environmental, Inc.
4005 Port Chicago Highway
Concord, California 94520-1120

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Approved by: Bob Hulet Date: 07/25/2005
Bob Hulet
Shaw Environmental, Inc.
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Approved by: Rose Condit Date: 07/25/2005
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Shaw™ Shaw Environmental, Inc.

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CONTRACT : N62474-98-D-2076 **DOCUMENT CONTROL NUMBER : 9556.0**

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Naval Facilities Engineering Command
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1220 Pacific Highway
San Diego, CA 92132-5190

Date : September 12, 2005

CTO : 0110

Location: NASA Crows Landing

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for Bob Hulet
Project Manager

DESCRIPTION OF ENCLOSURE : ***Errata Sheet and Replacement Page for Final Sampling and Analysis Plan Addendum No. 2, Additional Groundwater Sampling, NASA Crows Landing Flight Facility, Crows Landing, Dated July 28, 2005.***

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September 14, 2005

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California Regional Water Quality Control Board
Central Valley Region, Fresno Office
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Fresno, CA 93706-2020

Subj: ERRATA SHEET AND REPLACEMENT PAGE FOR FINAL SAMPLING AND ANALYSIS PLAN ADDENDUM NO. 2, ADDITIONAL GROUNDWATER SAMPLING, NASA CROWS LANDING FLIGHT FACILITY, CROWS LANDING, CALIFORNIA

Dear Mr. Issinghoff:

The Figure 1, "Well Location Map," that was submitted with the Errata Sheet, dated July 28, 2005, was inadvertently sent in error. Please discard the previous submission and replace with this revised Errata Sheet package, which now includes the correct version of Figure 1.

We apologize for any inconvenience and thank you for your patience.

Sincerely,

Bob Hulet
Project Manager
Shaw Environmental, Inc.

Encl: (1) Errata Sheet and Replacement Page for the Final Sampling and Analysis Plan Addendum No. 2. Additional Groundwater Sampling, NASA Crows Landing Flight Facility, Crows Landing, California, July 28, 2005.

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SHAW TRANSMITTAL/DELIVERABLE RECEIPT

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Southwest Division
Naval Facilities Engineering Command
Graciela Steinway, AQE.GS
1220 Pacific Highway
San Diego, CA 92132-5190

Date : August 04, 2005

CTO : 0110

Location: NASA Crows Landing

FROM: Bob Hulet
Project Manager

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ERRATA SHEET

FINAL SAMPLING AND ANALYSIS PLAN ADDENDUM NO. 2, ADDITIONAL GROUNDWATER SAMPLING, NASA CROWS LANDING FLIGHT FACILITY CROWS LANDING, CALIFORNIA

Environmental Remedial Action
Contract Number N62474-98-D-2076
Contract Task Order 0110

Document Control Number 9329
Revision 0

July 28, 2005

On 12 August 2005, Russell Walls, Senior Engineer with the California Regional Water Quality Control Board, Central Valley Region provided the following written comments on the above referenced document:

- The table in Section 3.0 (page 3-1) lists the various monitoring wells that will be sampled for perchlorate. However, a discrepancy exists between the table and Figure 1, "Well Location Map." Monitoring Well CL1-MW-05(S) is listed on the table but not depicted on Figure 1. Monitoring well CL1-MW-07(S) is depicted on Figure 1 but is not listed on the table. Clarification should be provided as to which well will be sampled, and the table and Figure 1 should be consistent.

The following update was made to correct the inconsistency between the table and figure.

Number	Document	Page Number	Updates
1	Final SAP Addendum No. 2	Figure 1	Figure 1 corrected to indicate the location of well CL1-MW-05(S) and well CL1-MW-07(S) removed

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CROWS LANDING
SSIC NO. 5090.3

FINAL SAMPLING AND ANALYSIS PLAN IS IN:

FINAL
PROJECT PLANS
VERIFICATION ACTIVITIES AT VARIOUS SITES

DATED 27 FEBRUARY 2003

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

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Figure 1 Monitoring Well Location Map

Acronyms and Abbreviations

DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HDPE	high-density polyethylene
IT	IT Corporation
mL	milliliter(s)
MS/MSD	matrix spike/matrix spike duplicate
QC	quality control
SAP	Sampling and Analysis Plan

1.0 Introduction

Shaw Environmental, Inc. has prepared this Sampling and Analysis Plan (SAP) Addendum No. 2 to the *Final Sampling and Analysis Plan, Verification Activities at Various Sites NASA Crows Landing Flight Facility* (IT Corporation [IT], 2003) in support of additional groundwater investigation sampling at the NASA Crows Landing Flight Facility. This SAP Addendum is to be used in conjunction with the *Final Sampling and Analysis Plan, Verification Activities at Various Sites NASA Crows Landing Flight Facility* (IT, 2003).

The data collected from additional groundwater sampling will be used to:

- Evaluate for the presence of perchlorate within selected areas at the facility.

The project data quality objectives (DQOs) are presented in the existing parent SAP (IT, 2003). Any changes to the existing SAP are addressed in this Addendum.

The work will be conducted under Contract Task Order 0110 of Naval Facilities Engineering Command Engineering Field Activity-West Environmental Remedial Action Contract Number N62474-98-D-2076.

1.1 Scope and Objectives

The purpose of this SAP Addendum is to define sampling procedures that will be used during the groundwater sampling activities. Field personnel will use this SAP Addendum as a reference.

The scope of work for this project consists of sampling ten existing monitoring wells to evaluate for the presence of perchlorate at selected areas of the site.

Groundwater will be sampled and analyzed to achieve the project objectives. Analytical data collected under the provisions of this SAP Addendum No. 2 will be used to obtain regulatory closure for perchlorate issues.

2.0 Data Quality Objectives

The project DQOs for basewide groundwater sampling and analysis are described in the parent SAP (IT, 2003).

3.0 Sampling Strategy

This section discusses the sampling and analysis strategy.

3.1 Additional Groundwater Sampling

A total of ten groundwater samples will be collected from existing wells and analyzed for perchlorate by U.S. Environmental Protection Agency (EPA) Method 8321 (LC/MS/MS). The wells were selected to provide nature and extent of contamination within the Administration Area Plume, site boundaries, and to possibly identify possible source area.

Specific well IDs are listed below and the locations shown in Figure 1, "Monitoring Well Location Map."

Well ID	Aquifer	Screened Interval
11-MW-03(S)	shallow	50 - 75
11-MW-04(S)	shallow	49 - 74
17-MW-25(S)	shallow	50 - 70
17-MW-25(MS)	mid-shallow	89 - 109
17-MW-26(S)	shallow	45 - 65
17-MW-26(MS)	mid-shallow	86 - 106
CL1-MW-04(S)	shallow	50 - 75
CL1-MW-05(S)	shallow	50 - 75
CL1-MW-06(S)	shallow	54 - 79
CL2-MP-02B	shallow	49 - 74

Groundwater samples will be collected using low-flow sampling techniques following the procedures described in Section 5.1.1 of the parent SAP.

3.2 Investigation-Derived Waste Streams

The project investigation–derived waste will be handled according to the requirements in the parent SAP (IT, 2003).

4.0 Analytical Requirements and Quality Control

This section describes analytical methods, container and preservative requirements, and field and laboratory quality control (QC) samples.

4.1 Analytical Methods

The following chemical analytical method will be used:

- U.S. Environmental Protection Agency, 1996, *Test Methods for Evaluating Solid Waste, SW-846*, Update III, Method 8321A

4.2 Sample Containers, Preservatives, and Holding Times

Sample containers, preservation, and holding time requirements will be in accordance with the EPA method listed below:

Analytes	Method	Container	Preservative	Holding Time
Perchlorate	EPA 8321A	250 mL HDPE	Cool at 4±2°C	14 days

4.3 Field Quality Control Samples

Field QC samples will be collected and analyzed during the project to assess the consistency and performance of the sampling program. Field QC samples for this project will include field duplicates and temperature blanks.

4.3.1 Field Duplicate

Field duplicate pairs consist of two samples of the same matrix (original and duplicate) collected at the same time and location to the extent possible, using the same sampling techniques. The purpose of field duplicate samples is to evaluate the homogeneity of contaminant distribution in the sampled matrix. One field duplicate sample will be collected.

4.3.2 Equipment Rinsate Samples

Equipment rinsate samples are used to evaluate the effectiveness of the decontamination procedure and identify potential cross-contamination during sampling events. All samples will be collected using dedicated sampling equipment; therefore, no equipment rinsate samples will be collected.

4.3.3 ~~4.3.1~~ *Temperature Blanks*

Each cooler will be shipped with a temperature blank. A temperature blank is a sample container filled with tap water and stored in the cooler during sample collection and transportation. The laboratory will record the temperature of the temperature blank immediately upon receipt of the samples.

4.3.4 ~~4.3.2~~ *Matrix Spike and Matrix Spike Duplicate*

The laboratory will analyze one matrix spike/matrix spike duplicate (MS/MSD) for this project. Field personnel will designate one groundwater sample for MS/MSD analysis on the Chain-of-Custody Form, and will collect extra volumes for the analysis.

5.0 Data Management

5.1.~~1.1~~ Electronic Deliverables

The electronic data deliverable (EDD) will be in ASCII format. The analytical laboratory will follow the requirements stated in the Laboratory Interface Document for the Analytical Laboratory EDD. At project closeout, Shaw will submit all analytical data to the Naval Installation Restoration Information Solution (NIRIS) in the Naval Electronic Data Deliverables (NEDD) format.

5.2 Data Validation

An independent third party validation company will validate all analytical data collected under this SAP Addendum No. 2. Data will be validated at 90 percent EPA Level III and 10 percent EPA Level IV. The validation will be in accordance with the, EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA, 1999), and the EPA analytical method requirements. Data will be validated and flagged with the following data qualifiers:

- *J qualifier* denotes the analyte was positively identified, but the associated numerical value is estimated.
- *U qualifier* denotes the analyte was analyzed for, but not detected. The associated numerical value is at or below the reporting limit.
- *R qualifier* denotes the data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.

6.0 References

IT Corporation, 2003, *Final Sampling and Analysis Plan, Verification Activities at Various Sites NASA Crows Landing Flight Facility, Crows Landing, California*, February 27.

U.S. Environmental Protection Agency, 1999, *Contract Laboratory Program National Functional Guidelines for Organic Data Review.*

Figures

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
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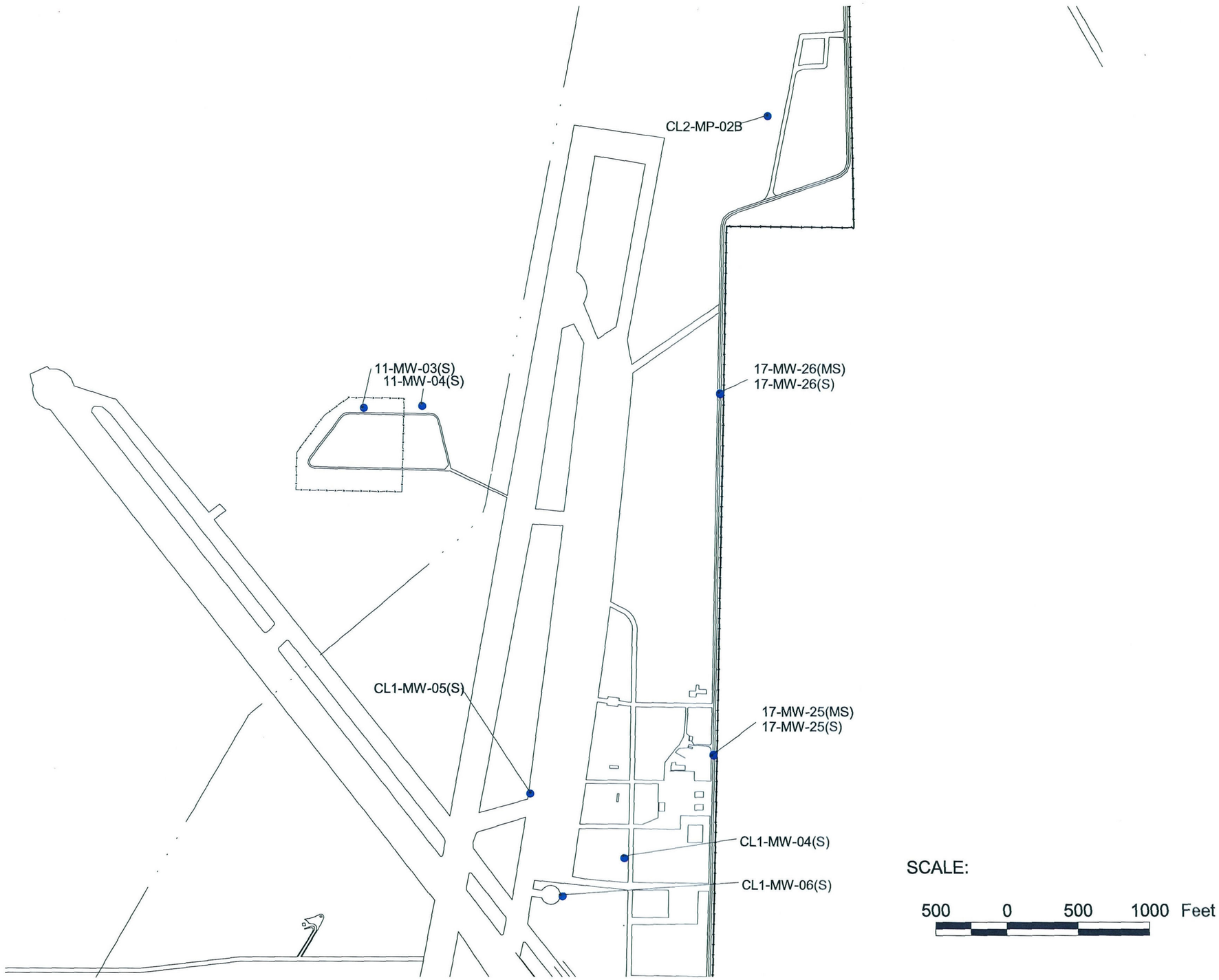

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NASA
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CROWS LANDING, CALIFORNIA

FIGURE 1

WELL LOCATION MAP