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CONTRACT NO. N62473-06-D-2201
CTO NO. 0012

FINAL

ADDENDUM 1

TO THE

DRAFT FINAL SAMPLING AND ANALYSIS PLAN
(Field Sampling Plan and Quality Assurance Project Plan)
October 17, 2007

DATA GAP SAMPLING
FOR OPERABLE UNITS 2A AND 2B
ALAMEDA POINT
ALAMEDA, CALIFORNIA

DCN: ECSD-2201-0012-0002.A1

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TRANSMITTAL/DELIVERABLE RECEIPT

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

Document Control No. ECSD-2201-0012-0002.A1

File Code: 5.0

TO: Contracting Officer
Naval Facilities Engineering Command SW
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Building 127, Room 108
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DATE: 10/26/07
CTO: 0012
LOCATION: Alameda Point, CA

FROM: A. N. Bolt

A. N. Bolt, Program Manager

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

TYPE: ☐ Contract/Deliverable ☒ CTO Deliverable ☐ Notification ☐ Other

VERSION: Final (e.g. Draft, Draft Final, Final, etc.) REVISION #: 1

ADMIN RECORD: (PM to Identify) Yes ☒ No ☐ Category ☐ Confidential ☐

SCHEDULED DELIVERY DATE: 10/17/07 ACTUAL DELIVERY DATE: 10/26/07

NUMBER OF COPIES SUBMITTED: O/11C/9E Copy of SAP to N. Ancog ☒

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

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FINAL
DATA GAP SAMPLING WORK PLAN
FOR OPERABLE UNITS 2A AND 2B

DATED 11 OCTOBER 2007

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

RECORD NO. AR_N00236_002829

FINAL ADDENDUM 2 TO THE
DRAFT FINAL SAMPLING AND ANALYSIS PLAN
(FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN)
DATA GAP SAMPLING FOR OPERABLE UNITS 2A AND 2B

DATED 05 MAY 2008

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

RECORD NO. AR_N00236_003226

INTRODUCTION

Tetra Tech EC, Inc (TtEC) is submitting this addendum to the *Draft Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Data Gap Sampling for Operable Units (OU) 2A and 2B, Alameda Point, Alameda, California* (hereafter referred to as the Draft Final SAP) to the Naval Facilities Engineering Command, Southwest (NAVFAC SW) Quality Assurance Officer for approval. This addendum supplements the Draft Final SAP (TtEC, 2007) that was approved by the Navy on September 7, 2007 (Document Control Number: ECSD-2201-0012-0002).

The OU-2B Site-wide groundwater investigation is discussed in Section 5.10 of the Draft Final SAP. The groundwater investigation is focusing on the vertical and horizontal extent of volatile organic compounds (VOCs) and dissolved metals. As part of the characterization of the second water-bearing zone (SWBZ), 25 Hydropunch® locations are planned with multiple depth sampling at each location. In addition, 60 groundwater monitoring wells (12 well clusters) will be installed in the same vicinity to monitor steady state conditions. All groundwater samples were to be analyzed for VOCs, total extractable petroleum hydrocarbons (TPH-extractable), total purgeable petroleum hydrocarbons (TPH-purgeable), dissolved metals, and natural attenuation parameters.

As a cost-savings measure, this addendum proposes the reduction of TPH-extractable, TPH-purgeable, and natural attenuation parameter analyses for groundwater samples collected using Hydropunch® at the 25 proposed locations. Since the new multi-level monitoring wells and the existing wells at the site will be sampled for TPH-extractable, TPH-purgeable, and natural attenuation parameters, there is sufficient data to meet the data quality objectives (DQOs). Groundwater wells in the first water-bearing zone (FWBZ) at OU-2B will still be analyzed as directed in the Draft Final SAP for TPH-extractable, TPH-purgeable, and natural attenuation parameters.

This addendum also provides for the addition of hexavalent chromium analysis at Hydropunch® groundwater locations S4-HP02, S4-HP03, S4-HP04, S4-HP07, S4-HP08, S4-HP09, and S4-HP10 as shown on Table A.5-1. This analysis has been added in order to better characterize the potential migration of hexavalent chromium in groundwater beneath and in the vicinity of Building 360. Hexavalent chromium has already been included in the Draft Final SAP in Table A.6-2 (UFP-QAPP Worksheet #19), Table A.7-2 (UFP-QAPP Worksheet #15), Table A.7-3, and Table A.7-5 (UFP-QAPP Worksheet #20).

The reduction of TPH-extractable, TPH-purgeable, and natural attenuation parameter analyses and the addition of hexavalent chromium have resulted in modifications to page 14 of 18 of

Table A.5-1 (UFP-QAPP Worksheet #18) in the Draft Final SAP. (See attached revised page 14 of 18 from Table A.5-1.). These changes do not affect any steps in the DQO table.

This addendum also presents the elimination of microbial and natural attenuation parameter analyses for the initial FWBZ Hydropunch® locations at Solid Waste Management Units (SWMUs) discussed in the following sections of the Draft Final SAP: Sections 5.1.1, 5.2.1, 5.7.2, 5.7.3, 5.7.4, 5.8.2, 5.9.1, 5.9.2, and 5.9.3. Microbial and natural attenuation parameter analysis is valuable information if the contaminant concentrations for the initial FWBZ samples are above the screening criteria described in the Draft Final SAP. (If the contaminant concentrations are below the screening criteria, then microbial and natural attenuation monitoring is not necessary.) Therefore, microbial and natural attenuation parameter analyses will only be performed on one step-out or step-down FWBZ location that is the result of the initial FWBZ sample concentrations being greater than the screening criteria. This reduction in analyses is reflected in a revision to footnotes "c" and "d" on page 18 of 18 of Table A.5-1 of the Draft Final SAP. (See attached revised page 18 of 18 from Table A.5-1.) This change does not affect the project DQOs.

Finally, this addendum addresses the removal of purging until parameter stabilization (or for a maximum of one hour) in the FWBZ and SWBZ Hydropunch® locations prior to sampling as described in Section 6.3.3, page A.6-10, Step 5, of the Draft Final SAP. Due to the poor recharge conditions encountered in both the FWBZ and SWBZ using low-flow purging methods, Hydropunch® groundwater samples will be collected using passive (micropurge) sampling methods (EPA, 2005). Samples will be collected after a single volume of pump chamber and discharge tubing has been purged as opposed to purging until parameters have stabilized (or for a maximum of one hour). Subsequently, parameters will not be measured during this time. This change in sampling procedures does not affect the project DQOs.

All policies and procedures set forth in the original SAP that were not modified in this addendum will remain in effect for this investigation.

References:

TtEC. 2007. *Draft Final Data Gap Sampling Work Plan for Operable Units 2A and 2B, Alameda Point, Alameda, California.* September 7.

U.S. Environmental Protection Agency. 2005. *Groundwater Sampling and Monitoring with Direct Push Technologies.* August.

TABLE A.5-1 (Revised)

SAMPLING LOCATIONS, SAMPLE DEPTHS, SAMPLE ANALYSES, AND SAMPLING PROCEDURES

(UFP-QAPP Worksheet #18)

Sampling Location			Matrix	Depth[a] (ft bgs)	Analytical Group	SAP Section
OU	Site	Location*				
2B	SWBZ Groundwater Investigation Locations: S3-HP05, S3-HP06, S4-HP01, S4-HP02, S4-HP03, S4-HP04, S4-HP05, S4-HP06, S4-HP07, S4-HP08, S4-HP09, S4-HP10, S4-HP11, S4-HP12, S11-HP01, S11-HP02, S11-HP03, S11-HP04, S11-HP05, S21-HP07, S21-HP08, S21-HP09, S21-HP10, S21-HP11, S21-HP12		Water	15,25,35,45,55	VOCs, dissolved metals[b], microbial parameters[c, e]., and hexavalent chromium[f]	Section 6.3.3

TABLE A.5-1 (Revised)

SAMPLING LOCATIONS, SAMPLE DEPTHS, SAMPLE ANALYSES, AND SAMPLING PROCEDURES

(UFP-QAPP Worksheet #18)

Sampling Location			Matrix	Depth[a] (ft bgs)	Analytical Group	SAP Section
OU	Site	Location*				
	21	MWs to include: M11-06 S21-TT-MW01 S21-TT-MW02 S21-TT-MW03 S21-TT-MW04 S21-TT-MW05	Water	Midscreen	VOCs, TPH-purgeable, TPH-extractable, dissolved metals[b], microbial parameters[c, e], and natural attenuation parameters[d, e]	Section 6.3.4

Notes:

* All sampling locations (except for monitoring wells) may include step-out/down sampling as described in Sections 5.11 and 5.12 of this SAP.

[a] Samples will be collected at all depths listed. Furthermore, the first unsaturated soil sample depth is based on the initial sample depth described in the SAP. Subsequent sample depths are + or - 1 ft and will be determined by the geologist in the field. Saturated soil depth and groundwater sample depth assumes a 10-ft depth to groundwater.

[b] Metals analysis includes the following analytes: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

[c] Microbial analyses will only be performed for one of the step-out or step-down samples associated with the FWBZ Hydropunch® locations at the SWMUs. (These analyses will not be performed on the initial samples collected from the FWBZ Hydropunch® locations at the SWMUs.) Furthermore, for site 9 and 19, microbial analysis will include cell counts for Eubacteria (EBAC), Dehalococcoides spp. (DHC), and methanogenic bacteria (MGN) via nucleic acid analysis, and total biomass and microbial community structure via ester-linked phospholipid fatty acid (PFLA). For all other sites, microbial analyses will include qEBAC, qPAH, qNAH and qBSS.

[d] Natural attenuation parameter analyses will only be performed on one of the step-out or step-down samples associated with the FWBZ Hydropunch® locations at the SWMUs. (These analyses will not be performed on the initial samples collected from the FWBZ Hydropunch® locations at the SWMUs.) Natural attenuation parameters will include field monitoring parameters (dissolved oxygen and oxidation reduction potential), field test kit analysis (for ferrous iron and carbon dioxide), and laboratory analysis (nitrate, sulfate, and alkalinity). Nutrients include laboratory analysis for ammonia as nitrogen, TKN, and phosphate. (Nitrate is also considered a nutrient.)

[e] Frequency of analyses is listed in Table 3-1 of the Work Plan.

[f] Hexavalent chromium will be included in the list of analyses at locations in and around Building 360 (S4-HP02, S4-HP03, S4-HP04, S4-HP07, S4-HP08, S4-HP09, and S4-HP-10).

Abbreviations and Acronyms:

AOC – Area of Concern
AST – aboveground storage tank
bgs – below ground surface
BTEX – benzene, toluene, ethylbenzene, and xylenes
ft – feet
FWBZ – first water-bearing zone
MTBE – methyl tert-butyl ether
OU Operating Unit
OWS – oil-water separator
PAH – polynuclear aromatic hydrocarbons
PCB – polychlorinated biphenyl
SAP Sampling and Analysis Plan
SVOC – semivolatile organic compound
SWMU – Solid Waste Management Unit
TOC – total organic carbon
TPH – total petroleum hydrocarbons
TPH-extractable – total extractable petroleum hydrocarbons
TPH-purgeable – total purgeable petroleum hydrocarbons
UFP-QAPP – Uniform Federal Policy for Quality Assurance Project Plans
UST – underground storage tank
VOC – volatile organic compound