

**Final**  
**Kleinfelder Waste Soil Testing Work Instruction**  
**December 20, 2004**  
**DCN No. FWSD-RAC-05-0269**  
**Revision 0**

AR\_N00217\_004088  
HUNTERS POINT  
SSIC NO. 5090.3.A

Recently, Kleinfelder installed six monitoring wells in Parcel E adjacent to the Landfill. Radiological monitoring was not performed during the installation of these wells. The soil removed during the drilling process was collected in a roll-off disposal container, which is presently stored at the Kleinfelder yard at HPS adjacent to Building 241. As a result of the well installation, it is possible that radiological contamination may be present in (1) disturbed soil in the vicinity of the six wells and (2) the waste soil in the roll-off container. To assess this possibility, TtFW will:

- Perform surface scans around the newly installed wells.
- Perform a scan of the roll-off container exterior and the soil within it
- Collect and analyze samples of the soil in the roll off container

The isotopes of concern associated with soil from IR-01/21 are cesium-137 (<sup>137</sup>Cs), radium-226 (<sup>226</sup>Ra), and stontium-90 (<sup>90</sup>Sr). The applicable release limits from Table 1 of this work instruction will apply to the results of the surveys and sample analysis described below.

The radiological surface scans around the newly installed monitoring wells will be conducted in accordance with TtFW's Base-wide Radiological and Contamination Survey Procedure HPO-Tt-006. These scans will be done in an area encompassing a 10-foot radius circle centered on each well.

The exterior of the roll-off container will be scanned in accordance with the TtFW's Base-wide Truck Surveys Using Portable Survey Instrumentation Procedure HPO-Tt-026. The exposed soil in the container will also be surveyed directly using with TtFW's Base-wide Radiological and Contamination Survey Procedure HPO-Tt-006, as explained in the following paragraph.

The roll-off container will be transported to a small fenced off area inside of Parcel E, near "J" Street (between 6<sup>th</sup> Ave. and Spear Ave.). Prior to bringing the roll-off container to this location, ambient background radiation readings will be collected in the area where the bin will be placed in accordance with HPO-Tt-007 and the soil in it will be screened. For screening, the soil from the roll-off container will be removed and spread out on plastic sheeting, with a one-foot maximum thickness. Soil will be spread on two separate pieces of plastic sheeting, with each sheet receiving approximately ½ of the soil from the container. This will ensure that sufficient area is available to maintain the maximum 1-foot thickness of spread soil.

The spread out soil will be scan surveyed with 2"x2" NaI detectors for gamma radiation. The soil on each plastic sheet will then be divided into two sections for the sample collection process. One four-point composite soil sample will be collected from each section; a total of four samples will be collected. The soil will be covered with plastic sheeting while waiting for sample analysis and survey results.

The samples will be analyzed by gamma spectroscopy and forwarded to an independent laboratory for subsequent <sup>90</sup>Sr analysis. Additional samples will be collected if elevated areas of gamma radiation (three sigma above background) are detected during the scan survey. The samples will be collected in accordance with TtFW's Base-wide Sampling Procedures for Radiological Surveys Procedure HPO-Tt-009. The samples will be analyzed by NWT using gamma spectroscopy (NWT SOP TM-020-01-20, Spectral Analysis of Gamma-Ray Emitting

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Nuclides in Soils, Waters, Filters, and Swipes Within the Mobile Laboratory Utilizing the Ortec HPGe Spectroscopy System) for their standard suite of 18 radionuclides of concern at HPS (inclusive of <sup>226</sup>Ra and <sup>137</sup>Cs). A minimum of 10% of the samples (at least one) will also be sent offsite for QA gamma spectroscopy analysis. Sample control and tracking will be conducted in accordance with the TtFW Sample Handling Procedure.

Personnel, tools, materials, or equipment will be frisked prior to leaving the area of each well and after sampling. Frisking will be performed in accordance with TtFW's Base-wide Radiation and Contamination Surveys Procedure HPO-Tt-006. Release limits will be consistent with those used for the release of soil, equipment and materials at HPS as identified in Table 1.

**TABLE - 1**  
**RELEASE CRITERIA**

Radionuclide	Radiation	Loose (dpm/100 cm <sup>2</sup> )	Fixed (dpm/100 cm <sup>2</sup> )	Industrial Reuse – Soil (pCi/g)
radium-226	Alpha	20 α	100 α	1 > background, not to exceed 2 <sup>a</sup>
strontium-90	Beta	200 β <sup>-</sup>	1,000 β <sup>-</sup>	42.3 <sup>b</sup>
cesium-137	Beta / Gamma	1,000 β <sup>-</sup> , γ	5,000 β <sup>-</sup> , γ	0.13 <sup>c</sup>

**Notes:**

- <sup>a</sup> Limit is 1 pCi/g above background; not to exceed 2 pCi/g total, per agreement with EPA
- <sup>b</sup> EPA PRGs for soil for outdoor worker (EPA, 2002)
- <sup>c</sup> Decay-corrected PRG for industrial reuse provided by EPA Region IX.

Types of radiation: α - alpha, γ - gamma, β<sup>-</sup> - beta  
 cm<sup>2</sup> – square centimeters  
 dpm – disintegrations per minute  
 pCi/g – picoCurie per gram

Work will be performed in accordance with the requirements of a TtFW Radiation Work Permit and the TtFW Base-wide Health and Safety Plan.

Personnel assigned the performance of this work will be trained and qualified to perform the tasks required to complete this work instruction.

Kleinfelder has been advised to maintain the roll off container and it's contents onsite pending review of the survey/sampling data by RASO and RASO's subsequent approval of the materials for appropriate disposal.

Survey and sampling data revealing radioactive materials present above the soil release criteria for HPS or those equipment and materials having contamination present that exceeds the values identified in Table 1 will be packaged in an appropriate waste container for subsequent disposal.

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The waste containers will be staged in Building 406 and maintained under NWT's license until disposed of via the LLRW program. Upon RASO approval, clean soils will be placed back into the roll-off container from which it was removed for subsequent disposal by Kleinfelder.



TETRA TECH FW, INC.

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N68711-98-D-5713 (RAC III)

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TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Ms. Beatrice Appling, 02R1.BA
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 01/07/05
CTO: 0072
LOCATION: Hunters Point Shipyard

FROM: Neil Hart, Program Manager

DESCRIPTION: Final Kleinfelder Waste Soil Testing Work Instruction, Revision 0, 12/20/04

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NUMBER OF COPIES SUBMITTED: 0/5C/4E Copy of SAP to N. Ancog

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OTHER: (Distributed by TtFW)
\*See Attached Cover Letter
P. Stroganoff - HPS ROICC
B. Bowers - NWT
L. Lowman / M. Slack - RASO

Date/Time Received



TETRA TECH FW, INC.

January 7, 2005  
FWSD-RAC-05-0269 5.0

Base Realignment and Closure  
Program Management Office West  
Attn: Mr. Ralph Pearce  
1230 Columbia Street, Suite 1100  
San Diego, California 92101

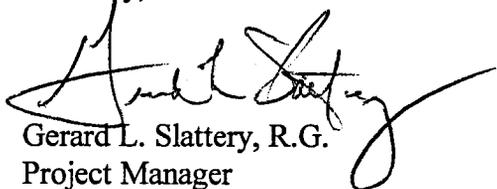
**SUBJECT: FINAL, KLEINFELDER SOIL EVALUATION WORK INSTRUCTION,  
REVISION 0, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA.**

Reference: Contract N68711-98-D-5713, Environmental Remedial Action Contract  
For Sites Southern California, Arizona, New Mexico, and Southern Nevada

Dear Mr. Pearce:

Enclosed is the Final Kleinfelder Soil Evaluation Work Instruction, Revision 0, dated December 20, 2004, for Hunters Point Shipyard, San Francisco, California, which was previously submitted electronically. If you have any questions or require additional information, please contact me at (415) 671-1990.

Sincerely,



Gerard L. Slattery, R.G.  
Project Manager

Enclosures: Final Kleinfelder Soil Evaluation Work Instruction, Revision 0, December 20, 2004