FUSRAP

CCN: 119033

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COMM REF

ADMIN RCD

SUBJECT Oxford Site - Coordination of Rad. Surveys

FROM G. L. Palau TO M. E. Murray COMM DATE 08/03/94

ADDR CODE 525/MA (NUMBER ST) CLOSES CCN WBS 109

SUBJECT CODE 7315 AFFECTED DOCUMENT

RESPONSE TRACKING INFORMATION

ACTION DESCRIPTION: Rqst conc

PRIMARY:	PRIMARY:
OWED TO: Palau	OWED BY: Murray (ORG)
(ORG) TARGET DATE 08/15/94	CLOSING CCN COMPL. DATE / / CLOSING REF
SECONDARY:	SECONDARY:
OWED TO:	OWED BY: (ORG)
(ORG) TARGET DATE / /	CLOSING CCN COMPL. DATE / / CLOSING REF

MESSAGE:

			W/A	W/O				W/A	W/O				W/A	W/O
DIRECTOR, FSRD:	L. Price	FSRD			PROGRAM MANAGER:	J. Waddell	SAIC			PROGRAM MANAGER:	R. Harbert	BPM		
DEP. DIRECTOR, FSRD:	W. Seay	FSRD			DEPUTY PROGRAM MGR:	T. Patterson	SAIC			DEPUTY PROGRAM MGR.:	P. Crotwell	BPM		
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SECRETARY:	M. Seiber/M. Dyke	FSRD								GEOTECH		BET		
FSRD CHRON FILE			1							ENVIRON SAFETY & HEALTH		BEH		
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										PROJECT ADMINISTRATION		BPA		
					TMA/EBERLINE		BET			PROJECT AUTOMATION		BAU		
					SITES: 158 NFSS					PROJECT CONTROLS		BPC		
ANL:	A.J. Dvorak	ANL			TONAWANDA INFO CTR.					TECHNICAL REPORTS		BTR		
	A. Geisler	ANL			137 WISS					QUALITY ASSURANCE		BQA		
	G. Maraman	ANL			138 MISS/INFO CTR					ADMIN RCD/INFO REPOSITORY				
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PLEASE RETURN TO PDCC FOR CORRECTIONS

119033

Bechtel

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Job No. 14501, FUSRAP Project
DOE Contract No. DE-AC05-91OR21949
Code: 7315/WBS: 109

AUG 03 1994

Oak Ridge National Laboratory
Measurements Applications and Development Group
MS 6285
P.O. Box 2008
Oak Ridge, TN 37831-6285

Attention: Michael E. Murray

Subject: Oxford Site - Coordination of Radiological Surveys and Remedial Action Activities at the Former Alba Craft Facility and the Residential Property at 525 S. Main, Oxford, Ohio

Dear Mr. Murray:

Enclosed is a copy of the final Post-Remedial Action Survey Plan that describes the radiological parameters and methodologies that the Bechtel team plans to implement during the remediation at the Oxford Site. Your comments on the draft plan, as well as your comments from the meeting (6/23/94), have been incorporated into this version of the plan.

Currently Bechtel is planning to mobilize to the site on August 27, 1994. We anticipate having excavated areas ready for post-remedial action survey and verification around the middle of October.

On behalf of the entire team, I look forward to working with the ORNL team to once again complete an expedited remedial action together. Please sign and return a copy of this letter acknowledging you have received, and understand the principles, methodologies, and coordination framework outlined in, the final plan.

Sincerely,

for
G. L. Palau
Project Manager - FUSRAP

Michael E. Murray
Oak Ridge National Laboratory

cc: Dave Adler (FSRD)

Bechtel National, Inc.

ACTION REQ'D [X] YES [ ] NO DUE DATE 8/15/94
RESPONSE TO CHRON NO. _____
☐ FFA ☐ Permit ☐ Milestone ☐ OCR ☐ CCN ☐ CAR ☐ Mid-Yr ☐ Yr-End ☐ Periodic Rpt

ALBA CRAFT AND VICINITY PROPERTIES POST-REMEDIAL ACTION SURVEY PLAN

PURPOSE

The purpose of this plan is to describe the methodologies that the Formerly Utilized Sites Remedial Action Program (FUSRAP) will use for radiological surveys, sampling, and analysis to document the final condition of the Alba Craft properties as radioactively clean according to the release standards of Department of Energy (DOE) Order 5400.5 (reference 1). This plan addresses the DOE protocol for verification and certification of sites under FUSRAP (reference 2).

Bechtel National, Inc. (BNI) will be the FUSRAP remedial action contractor, and the Oak Ridge National Laboratory (ORNL) will act as the Independent Verification Contractor.

REFERENCES

(1) DOE Order 5400.5, Radiation Protection of the Public and Environment, Washington, D.C.

(2) DOE, 1990, Verification and Certification Protocol for the Office of Environmental Restoration FUSRAP and D&D Program, Revision 3, November.

(3) ORNL, 1993. Results of the Radiological Survey at the former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001), BNI CCN 102192, March.

(4) ORNL, 1993. Radiological Surveys of Vicinity Properties of Former Alba Craft Facility, M. Murray to A. Williams, BNI CCN 111026, November 19.

(5) ORNL, 1994. Summary of Site Visit and Information Concerning the Church of God, M. Murray to A. Williams, BNI CCN 112674, January 20.

(6) ORNL, 1994. Summary of Work and Information Concerning the Municipal Landfill in Oxford, Ohio, M. Murray to A. Williams, BNI CCN 112675, January 20.

(7) ORNL, 1994. Radiological Survey Results for 601, 602, 609, 611, 516, and 613 South Main Street, M. Murray to A. Williams, BNI CCN 112677, January 21.

(8) ORNL, 1994. Results of Radiological Survey at 525 South Main Street, Oxford, Ohio (OXO002), from M. Murray to A. Williams, BNI CCN 115778, April 22.

(9) BNI, 1994, "ALB-Historical Info-Public Meeting Notes (3/22/94)," memo to file from M. J. Williams, BNI CCN 117579, June 21.

(10) Argonne National Laboratory (ANL), 1994, Derivation of Uranium Residual Radioactive Material Guidelines for the Former Alba Craft Laboratory Site, Oxford, Ohio (ANL/EAD/TM-9).

(11) Wagoner, J. W., 1994, Memorandum, "Designation of Vicinity Properties in Oxford, Ohio," BNI CCN 117155, June 8.

(12) ThermoAnalytical (TMA), Health Physics Operational Procedures Manual

A) 3C.2 "Determination of Background"
B) 3B.1 "Delineation of Survey Areas in Open Land"
C) 3B.3 "Gamma Ray Exposure Rate Surveys at 1-Meter in Open and Enclosed Areas"
D) 3A.2 "Direct Surface Contamination Survey"
E) 3A.3 "Transferable Surface Contamination Survey"
F) 4A.1 "Systematic and Bias Surface Soil Sampling (Radiological)"

(13) BNI, 1993, Instruction Guide for Post-Remediation Survey of Soil, 191-IG-032, Revision 0.

(14) BNI, 1992, Instruction Guide for Decontamination of Field Sampling Equipment at FUSRAP Sites, 191-IG-011, Revision 5

(15) BNI, 1993, Instruction Guide for Surface Water and Sediment Sampling Activities, 191-IG-028, Revision 0.

(16) BNI, 1994, How to Ship Samples from a FUSRAP Site, PI R4.7, Revision 2.

BACKGROUND

From 1952 to 1957 Alba Craft Laboratory, Inc. was a subcontractor to National Lead of Ohio (NLO), which was a primary contractor for the Atomic Energy Commission (AEC). Alba Craft provided a variety of machine shop services on normal uranium metal for NLO, including general machining and developmental machining of threaded slugs for the Savannah River Site in the early years, and large production scale hollow drilling and turning slugs in later years for Savannah River Site and Hanford facility reactors. NLO also used the Alba Craft facilities in 1954 and supplied its own operators and material for machining. The total quantity of uranium machined by Alba Craft is estimated at several hundred tons; the quantity machined by NLO during 1954 is unknown.

As a result of these activities at the AEC-contracted Alba Craft site, equipment, buildings, and land at some the site and at some properties in the immediate vicinity became radioactively contaminated resulting in low levels of contamination (references 3 - 8). At contract termination, sites used by contractors were decontaminated in accordance with the standards and survey methods in use at that time. Since the original assessments, radiological criteria and guidelines for the release of such sites for unrestricted use have become more stringent. As a result, the Formerly Utilized Sites Remedial Action Program (FUSRAP) was established in 1974 to identify these formerly used sites and to reevaluate their radiological status.

The former Alba Craft building is a composite of three cinder block structures joined to appear as one building. The first building, now the west wing, was free-standing and housed the original laboratory. Doors opened on the north wall and on the southern end of the east wall. The eastern wing was built and connected to the western by a small corridor along the north end. Operations moved to the eastern wing after its completion. The last addition was the large room to the north (reference 9). Uranium milling operations were also conducted in the west and north wings of the building.

RESIDUAL CONTAMINATION GUIDELINES

The source of contamination of the designated properties was uranium metal milling operations in the Alba Craft building. Contamination around the building and on the properties along the facility boundary is the result of migration of that material by such mechanisms as disposal (sweeping or washing through doorways, dumping), tracking in shoes and on clothing, and washing through drain lines and storm sewer.

The applicable residual contamination guidelines are as follows:

- The site-specific criterion for soil is 35 pCi/g for total uranium (reference 10).

- The residual contamination guidelines for fixed and transferable radioactive contamination (dpm/100 cm^2) (reference 1):

Radionuclide	Average	Maximum	Removable
U-Natural, U-235, U-238, and associated decay products	5,000 α	15,000 α	1,000 α

DECONTAMINATION ACTIVITIES

The designated Alba Craft properties are (references 3, 8, and 11):

- Alba Craft Laboratory Site Properties, 10 - 14 West Rose
- 525 South Main Street
- 550 South Main Street
- West Rose Avenue in the vicinity of the site.

With the exception of the Alba Craft Laboratory building, all remaining designated areas of contamination are exterior: yard areas at 525 South Main Street, sewer drain at 550 South Main Street, and West Rose Avenue in the vicinity of the site.

DOE has also indicated that it is their expectation that regardless of whether a site has been designated, it is appropriate for remediation staff to establish fences and other access control measures at the site before beginning remedial action, and to remove any residual uranium located within this control area (reference 11). Real Estate Instruments shall be in place for all properties remediated.

At a minimum, remediation of the site will consist of:

- prior to demolition of the building, spot decontamination/removal of components of the Alba Craft facility structure including but not limited to expansion joints, masonry block, and overhead joists, in order to better protect the health and safety of the workers and residents in the vicinity of the property

- total demolition of the building with subsequent rubblization

- following demolition of the building, excavation of soil with total uranium concentrations exceeding the 35 pCi/g site-specific guideline

Consequently, verification surveys and sampling will focus on confirming that soil remaining after remedial action does not contain radioactive contamination at concentrations exceeding applicable guidelines. To the extent necessary, equipment used during the decontamination activity will be cleaned and surveyed for surface contamination prior to release.

Areas where remediation activities will be conducted will include, but not be limited to, those identified by the designation contractor in the site designation reports (references 3 and 8). The soil samples collected for designation of the site were initially screened using a site-specific criterion for total uranium that was higher than 35 pCi/g; consequently, to meet the 35 pCi/g criterion, some additional areas must be remediated that were not specifically identified in the designation reports (reference 7). These areas will be subject to excavation for remediation.

Figures 1a and 1b (and Design Drawing 109-DD460-C03) delineates those general areas that will be excavated. These areas of radioactive contamination include a portion of the footprint of the former Alba Craft facility to a depth of 2 feet and various areas immediately adjacent to the building; areas along the boundaries of several properties in the immediate vicinity of the Alba Craft building, West Rose Avenue adjacent to the Alba Craft facility; the area along the storm sewer on the property at 550 South Main Street; and the eastern side of the driveway, the flower bed at the north entrance, and one location in the south yard of the 525 South Main Street property.

POST-REMEDIATION SURVEYS AND SAMPLING

Following remediation, the FUSRAP Radiological Support Subcontractor (ThermoAnalytical, TMA) will perform post-remedial action surveys and sampling to determine the completeness of the corrective action and to document that the site now complies with the applicable criteria.

Survey Equipment

The recommended equipment for use by FUSRAP for release of equipment and materials from the site includes:

- Alpha Scintillation detector (Eberline AC-3 or equivalent)
- Beta/Gamma Pancake GM detector (7 mg/cm^2 mylar shielded (Eberline HP-210 or equivalent)
- Alpha Scintillation Counter (Eberline SAC-4 or equivalent)

The recommended equipment for use by FUSRAP for Post-RA verification includes:

- Portable Ratemeter/Scaler (Eberline PRS-1 or equivalent)
- Gamma Scintillation Detector (Eberline SPA-3 or equivalent), or low range/high range HP-270 or equivalent
- Reuter-Stokes Pressurized Ion Chamber (PIC)
- Field Instrument for Detection of Low-Energy X-Rays (FIDLER)

The calibration sources and methods for instrument calibration will be coordinated between Bechtel and ORNL to insure compatibility and reproducibility of results.

Background Measurements

Prior to performing post-remedial action surveys, TMA will obtain site-specific background measurements from three remote background locations in the general vicinity of the site (0.5 to 3 miles) according to TMA procedure 3C.2 (reference 12A). The location for background measurements will be selected by Bechtel and TMA, and background measurements will be made at each location by TMA and ORNL.

Surveys

After completion of excavation of the contaminated soils, TMA shall conduct post-remedial action surveys to verify satisfactory decontamination of the area. A survey grid shall be established at the site, conforming to the specifications in TMA procedure 3B.1 (reference 12B) and the "Instruction Guide for Post-Remediation Radiological Survey of Soil" (191-IG-032) (reference 13), and surveys shall be conducted in each square of the 10 m by 10 m grid. ORNL will use the same grid.

TMA will measure external gamma radiation exposure at a height of 1 m in the center of each survey grid block as required by 191-IG-032 (reference 13) using methods in accordance with TMA procedure 3B.3 (reference 12C).

Any structures left after remediation, such as pipes, will be surveyed for alpha and beta/gamma direct and transferable contamination according to TMA procedures 3A.2 and 3A.3 (references 12D and 12E).

Soil Sampling

TMA shall also collect post-remedial action soil samples to verify satisfactory remediation of the area. Samples shall be collected in each square of a 10 m by 10 m grid as directed in 191-IG-032 and TMA procedure 4A.1 (references 12F and 13). Based on current estimates of anticipated areas of excavation, a minimum of 11 samples will be collected; conservative estimates suggest 25 samples (21 from the Alba Craft properties and those in the immediate vicinity, and 4 from 525 South Main Street). ORNL may collect splits concurrently.

Samples from each grid square shall be collected using properly decontaminated sampling equipment (reference 14).

TMA samples shall be handled using the same custody and labeling methodology described for sediment samples in the "Instruction Guide for Surface Water and Sediment Sampling Activities" 191-IG-028 (reference 15) and the sample surveying, packaging, and shipping methodology in PI R4.7 "How to Ship Samples from a FUSRAP Site" (reference 16).

Samples shall be analyzed in the field using the field portable gamma spectroscopy system. All significant peaks will be noted. Of these samples, 5% will be analyzed by gamma spectroscopy in the TMA laboratory.

Quality Assurance/Quality Control

QA/QC field duplicate samples and measurements shall be collected at a frequency of one additional sample/measurement for each 20 collected.

Rinse blanks from decontaminated sampling equipment shall be collected at the rate of one rinse per day of sampling. Rinse blanks shall be collected according to the recommendations in 191-IG-028 (reference 15).

Data Quality Objectives

The detection limit for total uranium by gamma spectroscopy shall be less than 17 pCi/g (half criterion); therefore, the detection limit for uranium-238 shall be less than 8 pCi/g. Quality indicator goals shall be as follows: Precision, $\pm$ 2 sigma; completeness, 75%; Accuracy, $\pm$ 25%). QA/QC samples are discussed in the previous section.

BECHTEL/ORNL COORDINATION

Bechtel is the contractor responsible for completing the remedial action. To define the areas for remediation, Bechtel used data collected by ORNL during designation, as well as supplemental information obtained by Bechtel as part of pre-RA planning and scoping.

Bechtel will have responsibility for "hot spot" decontamination, subsequent dismantlement and demolition of the building, and excavation of contaminated soil. Upon completion of these activities, ORNL will commence verification of the remediation of the ground surface. ORNL will perform a walkover survey on the surface of the ground using a FIDLER or equivalent to measure beta-gamma radiation directly. The result of this walkover survey shall be used to determine whether there are areas requiring additional remediation. This survey is expected to include all areas previously identified as being contaminated on the designated properties and on those properties in the immediate vicinity of the Alba Craft properties (Figures 1a and 1b). Bechtel will assist ORNL in this survey by interfacing with property owners in advance to secure their approval for property access.

Bechtel will initiate remediation concurrent with ORNL verification activities, to the extent that remediation does not interfere with verification. Bechtel will provide ORNL access to remediation results as they become available. The Bechtel Site Superintendent will notify ORNL when remediation of an area is complete, and ORNL will perform final independent verification surveys of the area. ORNL may collect soil sample splits concurrent with Bechtel sampling efforts.

Remedial action will continue until ORNL agrees decontamination is complete based on direct reading measurements and field gamma spectroscopy results. Bechtel and ORNL may both utilize the field gamma spectroscopy system. Measurements taken by Bechtel and ORNL at identical locations should agree within the 95 percent confidence interval for the analytical methods used (reference 2). For consistency and ease of data comparison, Bechtel and ORNL shall utilize the same type of calibration techniques, calibration sources, and survey techniques in conducting the surveys. Bechtel and ORNL shall establish a mutually agreeable survey grid across the decontaminated areas and shall conduct their surveys referring to that grid.

Upon agreement by both parties that the site is decontaminated, ORNL will then demobilize, and Bechtel will remain to restore the site to the condition agreed upon by the property owner(s).

Bechtel will provide final verified sample results to ORNL as soon as they are available. Bechtel will prepare a post-remedial action report (PRAR) for DOE review (copy to ORNL) within 3 months following demobilization, and then begin completion of the Certification Docket. ORNL will issue a verification report to DOE (copy to Bechtel) within 4 months following demobilization (reference 2).