



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
January 9, 1978

Mr. R. H. Bauer, Manager
Chicago Operations Office
U. S. Department of Energy
9800 South Cass Avenue
Argonne, Illinois, 60439

Dear Mr. Bauer:

The enclosed NRC Form 173, Standard Order for DOE Work, for \$25,000 is hereby submitted in accordance with Section III.B.2 of the ERDA (DOE)/NRC Interagency Policy Agreement of March 11, 1977. Standard terms and conditions for NRC work as approved jointly by NRC and Headquarters, DOE apply for this effort.

Please indicate DOE acceptance by signing and returning the enclosed NRC Form 173 to the NRC Office of the Controller, Division of Accounting, with a copy to S. L. Ramos of this office.

If you have any questions, please contact Tom Lonergan, NRC OIE Region III Office Technical Monitor: (FTS 387-9252) or Headquarters Administrative Monitor, Steve Ramos (FTS 492-8192). Thank you for your assistance.

Sincerely,

L. I. Cobb, Executive Officer
for Management & Analysis
Office of Inspection & Enforcement

Enclosure:
Standard Order for DOE Work No. 30-78-17
FIN A2131

cc w/encl: S. Ramos
→ D. Sly
R. Shumway
E. Frigillana

T. Lonergan

NRC FORM 173
(6-77)

U.S. NUCLEAR REGULATORY COMMISSION

ORDER NUMBER

30-78-17

DATE

1/5/78

STANDARD ORDER FOR ERDA WORK

ISSUED TO: (ERDA Office)

ISSUED BY: (NRC Office)

Chicago Operations Office

Inspection and Enforcement

PERFORMING ORGANIZATION AND LOCATION

Argonne National Laboratory
Argonne, Illinois

FIN TITLE

Study of Thorium Residuals in West Chicago, Illinois-Extension

ACCOUNTING CITATION
APPROPRIATION SYMBOL

31X0200.308

BSR NUMBER

30-19-01

FIN NUMBER

A2131

WORK PERIOD - THIS ORDER

FIXED ☐ ESTIMATED ☒
FROM 1/9/78 TO 6/1/78

OBLIGATION AVAILABILITY PROVIDED BY:

A. THIS ORDER

\$25,000

B. TOTAL OF ORDERS PLACED PRIOR TO THIS DATE WITH THE PERFORMING ORGANIZATION UNDER THE SAME "APPROPRIATION SYMBOL" AND THE FIRST FOUR DIGITS OF THE "BSR NUMBER" CITED ABOVE.

\$25,000

C. TOTAL ORDERS TO DATE

(TOTAL A & B)

\$50,000

D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER.

\$25,000

FINANCIAL FLEXIBILITY:

- ☒ FUNDS WILL NOT BE REPROGRAMMED BETWEEN FINs. LINE D CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.
- ☐ FUNDS MAY BE REPROGRAMMED NOT TO EXCEED $\pm 10\%$ OF FIN LEVEL UP TO \$50K. LINE C CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.

STANDARD TERMS AND CONDITIONS PROVIDED ERDA ARE CONSIDERED PART OF THIS ORDER UNLESS OTHERWISE NOTED.

ATTACHMENTS:

THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER:

- ☐ STATEMENT OF WORK
- ☐ ADDITIONAL TERMS AND CONDITIONS
- ☐ OTHER

SECURITY:

- ☒ WORK ON THIS ORDER IS NOT CLASSIFIED.
- ☐ WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED.

REMARKS:

This work order is subject to the applicable sections of the NRC/DOE Interagency Agreement once authorized by both parties.

ISSUING AUTHORITY

ACCEPTING ORGANIZATION

SIGNATURE

L. I. Cobb

SIGNATURE

TITLE

Executive Officer for Management & Analysis

TITLE

DATE

NRC FORM 173 (6-77)

NUCLEAR REGULATORY COMMISSION
PROGRAM BUDGET

DRAFT

IDENT. NO. A2131

MAY 1977

1. TITLE
Study of Thorium Residuals in West Chicago,
Illinois - Extension



U of C-AUA-USERDA

2. BUDGET ACTIVITY NO.
ERDA 40-10-01-03 NRC 30-19-01
ANL 8M470 (EIS)

3. SCIENTIST RESPONSIBLE
P. F. Gustafson/N. A. Frigerio

4. WORK STARTED
FY 1977

5. RELATED WORK (With Same Contractor or Others)
Related to ERDA Radiological Survey of Selected Former MED/AEC Sites,
and ERDA Phase I and Phase II studies of Inactive Uranium Mill Tailings
Piles.

6. MANPOWER AND COST DATA

	FY 1977	FY 1978 PRESIDENT'S BUDGET	FY 1978 INCREM. REQUIRE	FY 1979
6a. <u>DIRECT MANPOWER</u> (Man Years)				
SCIENTIFIC				
REGULAR	0.9	-	0.2	-
TEMP. PAID BY ANL	-	-	-	-
TOTAL SCIENTIFIC	0.9	-	0.2	-
OTHER TECHNICAL				
REGULAR	-	-	0.2	-
TEMP. PAID BY ANL	-	-	-	-
TOTAL OTHER TECHNICAL	-	-	0.2	-
TOTAL MAN YEARS	0.9	-	0.4	-
6b. <u>OPERATING COSTS</u> (In Thousands)				
EFFORT-RELATED COSTS	37.4	-	17.8	-
MATERIALS AND SERVICES	12.5	-	7.2	-
MAJOR PROCUREMENTS	-	-	-	-
TOTAL COST	49.9	-	25.0	-

6c. RECAP OF SUBACTIVITIES

Not Applicable

6d. MAJOR PROCUREMENTS

None

(over)

DRAFT7. DESCRIPTIONBackground

Starting some 30 or more years ago, solid waste material from the Lindsay Light and Chemical Company's West Chicago, Illinois, Plant was used as part of a land-fill operation in what is now Reed-Keppler Park, a public park in West Chicago. At the same time much of this waste material found its way out of the factory, off the factory site, and into various public and private areas around West Chicago. These included the watershed down Kress Creek into the DuPage River, the present West Chicago Sewage Treatment Plant, and numerous other places about the City. Much of the waste material was residue from processing of monazite sand to extract thorium for gas mantles, and/or rare earth elements for a number of uses. The residuals contained varying amounts of natural radioactivity consisting primarily of ^{232}Th and its radioactive decay products, and very small amounts of uranium and its associated daughters.

Contaminated areas will be surveyed, sampled, and measured so as to determine the actual quantities of radioactive materials present, and the actual gamma dose rates at 1 meter above the surface. For the purposes of this work, contaminated areas are taken to be those outside the Kerr-McGee property itself; i.e., areas contiguous to the property, Reed-Keppler Park, the West Chicago Sewage Treatment Plant, Kress Creek down to the DuPage River, and any other areas found to have excess radiation or radioactivity to the extent of twice or greater the standard deviation of the natural background in that area.

Scope

On the ground, and aerial surveys of West Chicago have indicated a large number of areas in the City with gamma dose rates attributable to thorium and its daughters significantly above the general background of the area. The most active areas are the several hundred acres surrounding the factory and its waste site, Reed-Keppler Park, and the West Chicago Sewage Treatment Plant. In addition, about two dozen other areas have been identified as having gamma radiation levels at least suggestive of thorium contamination. The majority of these are clustered relatively close to a line ranging from Reed-Keppler Park past the factory and waste treatment plant and down to the DuPage River.

Objectives

The first objective is to erect a suitable fence to enclose and prevent public access to the area of Reed-Keppler Park within which dose levels are >0.2 mR/hour. Such fence will include an access gate to permit entry of such vehicles as may be needed in an eventual removal operation. The second objective is the determination of the spatial distribution of radioactive residue within the landfill area. This will be done by coring and ~~reaching over~~ the area in question according to a systematic sampling plan. All samples will be analyzed for radioactivity by gross ~~counting~~ counting, and a limited number will be analyzed for specific radionuclides. The distribution so determined will provide a basis for deciding upon the final disposition of the residue in a manner which is both protective of public health and cost-effective.

gamma counting

(Continuation)

NUCLEAR REGULATORY COMMISSION
PROGRAM BUDGET**DRAFT**

IDENT. NO. A2131

MAY 1977

1. TITLE

Study of Thorium Residuals in West Chicago,
Illinois - Extension

2. BUDGET ACTIVITY NO.

ERDA 40-10-01-03 NRC 30-19-01
ANL 8M470 (EIS)

U of C-AUA-USERDA

7. DESCRIPTION (continued)

Objectives (continued)

The third objective is to survey the area of West Chicago and its environs, as laid out by the ARMS aerial radiological survey. Areas where any excess radiation or radioactivity is found, or suspected, will be surveyed, sampled, and measured to determine the external gamma dose rate at 1 meter above the surface, and the extent and location of any material containing .02% thorium or greater. This data will be reported in the forms of tables, graphs, and maps, with estimates of error.

Accomplishments in FY 1977

The first two objectives were met; the fence was erected, and the distribution of radioactive residue with Reed-Keppler Park was determined. These findings were summarized in an interim report, "Radioactivity Survey of Reed-Keppler Park, West Chicago, IL" by R. S. Stowe and N. A. Frigerio.

Anticipated Accomplishments in FY 1978

Technical data will be collected in the following areas:

- Reed-Keppler Park
- Mello-Joy Street Subdivision
- Kress Creek area
- City Sewage plant
- Seventeen spots identified by the aerial survey

These data will include:

- Location of all licensable quantities of source material in the areas involved.
- Gamma dose rates at 1 meter above the ground in areas of concern exterior to any known fenced deposits.

These data will be combined with the data contained in the interim report into a final report. Graphical displays accompanied by explanatory text will be used to describe the radiation and radioactivity attributable to thorium residuals in the West Chicago area. The report will include the results of evaluations made to date of air, water and soil radioactivity in the areas of concern. The report will also contain a summary review of the aerial survey data and a characterization of the magnitude of public exposure above the natural background resulting from identified deposits.

(over)

No Expected date of publication of Rpt?

DRAFT

8. EXPLANATION OF MAJOR PROCUREMENTS

Not Applicable

9. EXPLANATION OF EQUIPMENT OBLIGATIONS

Not Applicable