DOE/OR/20722-105

Formerly Utilized Sites Remedial Action Program (FUSRAP)
Contract No. DE-AC05-81OR20722

CHARACTERIZATION PLAN FOR THE FUTURA COATINGS SITE

Hazelwood, Missouri

September 1986

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Advanced Technology

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Subject: Bechtel Job No. 14501, FUSRAP Project
DOE Contract No. DE-AC05-81OR20722
Publication of the Characterization Plan for the Futura Coatings Site
File No. 140, 148

Dear Mr. Wing:

As requested, enclosed are five final copies of the subject document. If you should need additional copies, please contact Tom Dravecky at 576-3043.

Very truly yours,

G. P. Crotwell
Project Manager - FUSRAP

TMD/jll
Enclosures: As stated

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CONCURRENCE

DOE/OR/20722-105

CHARACTERIZATION PLAN FOR THE FUTURA COATINGS SITE

SEPTEMBER 1986

Prepared for

UNITED STATES DEPARTMENT OF ENERGY

OAK RIDGE OPERATIONS OFFICE

Under Contract No. DE-AC05-81OR20722

By

Bechtel National, Inc.

Advanced Technology

Oak Ridge, Tennessee

Bechtel Job No. 14501

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1.0 INTRODUCTION

Characterization of the Futura Coatings site is necessary to estimate the horizontal and vertical boundaries of radioactive contamination exceeding remedial action criteria to approximate the volume of waste located on the site. The intent of this report is to document the scope of the characterization effort on the Futura Coatings site and the methods to be used.

1.1 HISTORICAL OVERVIEW

The Futura Coatings site occupies the western half of the property located at 9200 Latty Avenue in northern St. Louis County within the city limits of Hazelwood, Missouri, approximately 2 mi northeast of the control tower of the Lambert-St. Louis International Airport (Figure 1-1). The property is owned by Jarboe Realty and Investment Company and leased to Futura Coatings, Inc., which manufactures plastic coatings in the three buildings on the property (Figure 1-2). The Futura Coatings site is separated by a chain link fence from the eastern half of 9200 Latty Avenue, known as the Hazelwood Interim Storage Site (HISS) (Figure 1-2).

In 1966, ore residues as well as uranium- and radium-bearing process wastes stored at the St. Louis Airport Site (SLAPS) were purchased and moved to storage at 9200 Latty Avenue by the Continental Mining and Milling Company of Chicago, Illinois. These wastes had been generated by a St. Louis plant from 1942 through the late 1950s under contracts with the Atomic Energy Commission (AEC) and its predecessor, the Manhattan Engineer District (MED). Residues at the SLAPS at that time included pitchblende raffinate residues, Colorado raffinate residues, radium-bearing residues, and barium sulfate cake. The Commercial Discount Corporation of Chicago, Illinois, purchased the residues in January 1967; much of the material was then dried and shipped to the Cotter Corporation facilities in Canon City, Colorado. The source material remaining at the Latty Avenue site was sold to the Cotter Corporation in December 1969. During the period of August through November 1970, Cotter Corporation dried

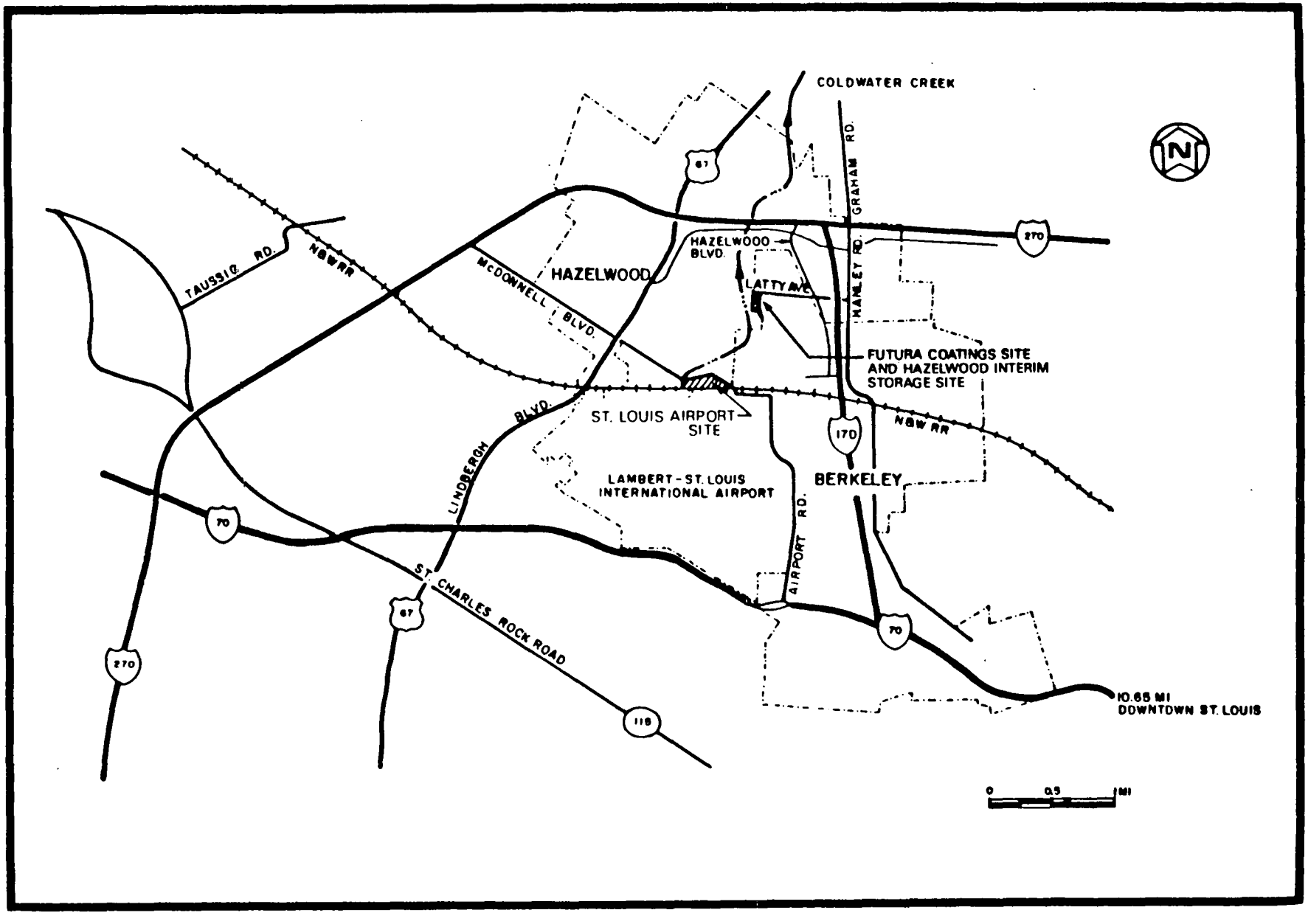

FIGURE 1-1 LOCATION OF THE FUTURA COATINGS SITE

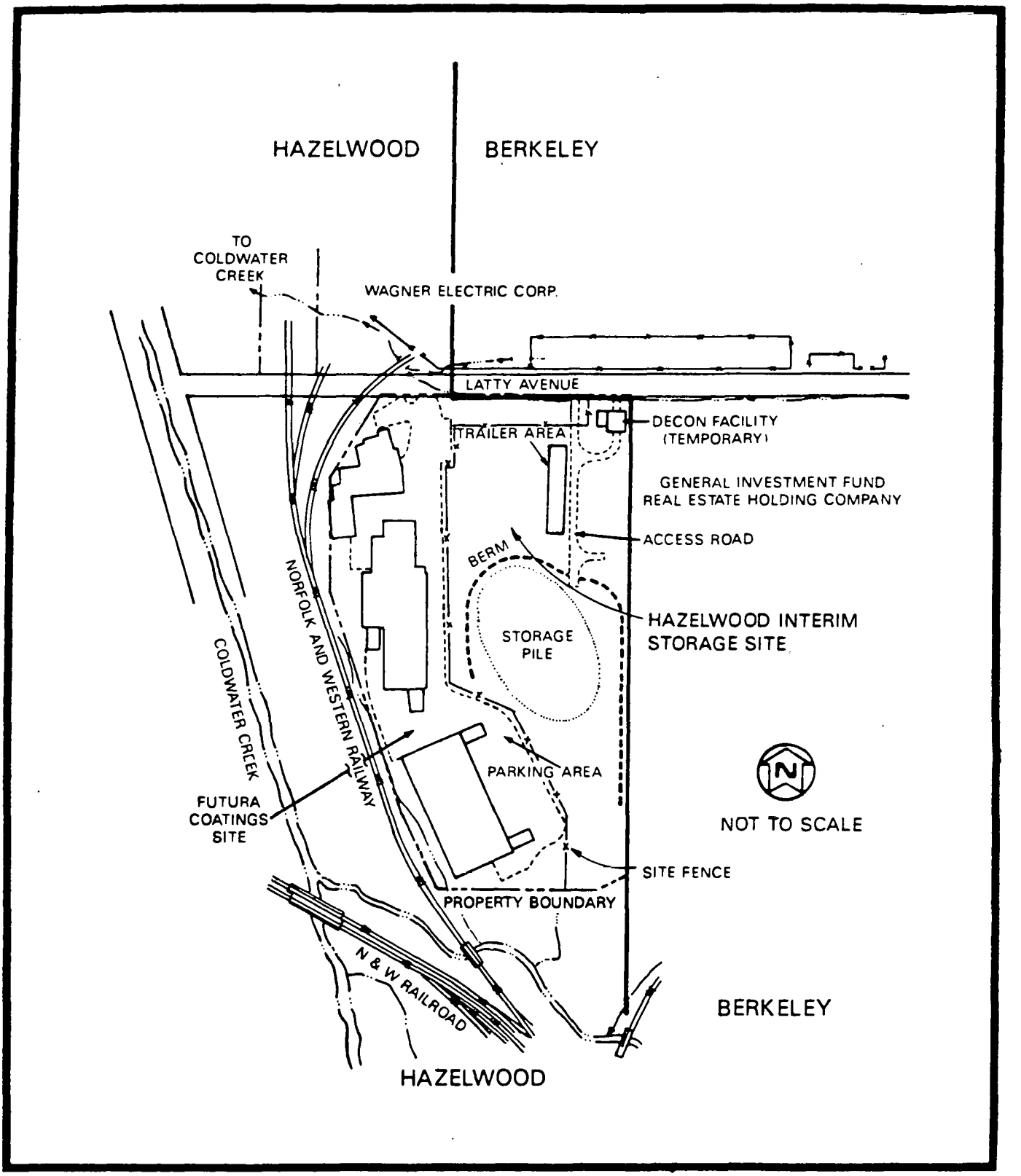

FIGURE 1-2 THE FUTURA COATINGS SITE AND ITS IMMEDIATE VICINITY

some of the remaining residues at the site and shipped them to its mill in Canon City.

In April 1974, the newly established Nuclear Regulatory Commission (NRC) was informed by Cotter Corporation that the remaining Colorado raffinate had been shipped in mid-1973 to Canon City without drying and that the barium sulfate residues had been diluted with site soil and transported to a landfill area in St. Louis County. Reportedly, 12 to 18 in. of topsoil had been removed with the residues.

In 1976, measurements taken by the NRC of radionuclide concentrations in the soil and of radiation levels indicated that residual uranium and thorium concentrations and exposure levels at 9200 Latty Avenue exceeded existing guidelines for release for unrestricted use (Ref. 1). A radiological characterization of the site was also performed by the Oak Ridge National Laboratory (ORNL) in 1977 prior to occupation of the site by the current owner (Ref. 2). Thorium and radium contamination in excess of guidelines was found in and around the buildings and in the soil to depths of as much as 18 in. Consequently, in preparing the western half of the property for commercial use, the owner demolished one building, excavated several areas, paved several others, and erected a number of new buildings. The materials excavated during these activities (approximately 13,000 yd^3) were piled on the eastern half of the property.

Detailed characterization of the Futura Coatings site will be performed under the Formerly Utilized Sites Remedial Action Program (FUSRAP), a DOE program to identify, clean up, or otherwise control sites where low-level radioactive contamination (exceeding current guidelines) remains from the early years of the nation's atomic energy program. Although the contamination in Hazelwood did not result directly from the atomic energy program, the Hazelwood properties were added to FUSRAP by Congress to expedite the decontamination process. Bechtel National, Inc. (BNI) is the Project Management Contractor for FUSRAP. The DOE guidelines governing the remedial action at Hazelwood are presented in Table 1-1.

TABLE I-1

SUMMARY OF RESIDUAL CONTAMINATION GUIDELINES FOR

THE FUTURA COATINGS SITE

SOIL (LAND) GUIDELINES (MAXIMUM LIMITS FOR UNRESTRICTED USE)

Radionuclide	Soil Concentration (pCi/g) above background[a,b,c]
Radium-226 Radium-228 Thorium-230	5 pCi/g, averaged over the first 15 cm of soil below the surface; 15 pCi/g when averaged over any 15-cm-thick soil layer below the surface layer.
Other radionuclides	Soil guidelines will be calculated on a site-specific basis using the DOE manual developed for this use.

STRUCTURE GUIDELINES (MAXIMUM LIMITS FOR UNRESTRICTED USE)

Airborne Radon Decay Products

Generic guidelines for concentrations of airborne radon decay products shall apply to existing occupied or habitable structures on private property that are intended for unrestricted use; structures that will be demolished or buried are excluded. The applicable generic guideline (40 CFR 192) is: In any occupied or habitable building, the objective of remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL.[d] In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL. Remedial actions are not required in order to comply with this guideline when there is reasonable assurance that residual radioactive materials are not the cause.

External Gamma Radiation

The average level of gamma radiation inside a building or habitable structure on a site to be released for unrestricted use shall not exceed the background level by more than 20 uR/h.

Indoor/Outdoor Structure Surface Contamination

	Allowable Surface Residual Contamination[e] (dpm/100 cm^2)		
Radionuclide[f]	Average[g,h]	Maximum[h,i]	Removable[h,j]
Transuranics, Ra-226, Ra-228, Th-230, Th-228 Pa-231, Ac-227, I-125, I-129	100	300	20
Th-Natural, Th-232, Sr-90, Ra-223, Ra-224 U-232, I-126, I-131, I-133	1,000	3,000	220

TABLE I-1

(continued)

Indoor/Outdoor Structure Surface Contamination (continued)

Radionuclide[f]	Allowable Surface Residual Contamination[e] (dpm/100 cm^2) Average[g,h]	Maximum[h,I]	Removable[h,J]
U-Natural, U-235, U-238, and associated decay products	5,000 α	15,000 α	1,000 α
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	5,000 β-γ	15,000 β-γ	1,000 β-γ

[e]These guidelines take into account ingrowth of radium-226 from thorium-230 and of radium-228 from thorium-232, and assume secular equilibrium. If either thorium-230 and radium-226 or thorium-232 and radium-228 are both present, not in secular equilibrium, the guidelines apply to the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that the dose for the mixtures will not exceed the basic dose limit.

[b]These guidelines represent unrestricted-use residual concentrations above background averaged across any 15-cm-thick layer to any depth and over any contiguous 100-m^2 surface area.

[c]Localized concentrations in excess of these limits are allowable provided that the average over 100 m^2 is not exceeded.

[d]A working level (WL) is any combination of short-lived radon decay products in 1 liter of air that will result in the ultimate emission of 1.3×10^5 MeV of potential alpha energy.

[e]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[f]Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

[g]Measurements of average contamination should not be averaged over more than 1 m^2. For objects of less surface area, the average shall be derived for each such object.

[h]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

[I]The maximum contamination level applies to an area of not more than 100 cm^2.

[J]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. The numbers in this column are maximum amounts.

1.2 REVIEW OF EXISTING INFORMATION

Available information on the Futura Coatings site has been reviewed. These reviews included, but were not limited to, all known previous characterization reports by various organizations, documents describing AEC operations that generated the waste stored at 9200 Latty Avenue, topographic surveys, aerial photographs, and eyewitness accounts.

As a result of this effort, a reasonable knowledge of expected site conditions and suspect areas has been obtained. This information will be used to help direct biased sampling activities and will result in a more accurate projection of site conditions while minimizing costs.

1.3 SCHEDULE

The radiological characterization of the Futura Coatings site will be conducted in two phases because of funding and access agreement constraints. Phase I will consist of the establishment of four monitoring locations inside the Futura Coatings buildings in August/September 1986. Phase II will begin in early November with a surface characterization of the Futura Coatings site grounds. Subsurface characterization will follow immediately.

1.4 SUPPORT SERVICES

Accomplishment of the characterization will necessitate the following support subcontracts:

- Surveying services will be required to establish a 50-ft grid system before the start of Phase II characterization activities on the grounds.
- A subcontract will be required for borehole drilling.

2.0 RADIOLOGICAL CHARACTERIZATION

2.1 SCOPE/PURPOSE

Radiological characterization of the Futura Coatings site will be conducted to determine approximate horizontal and vertical limits of contamination, to determine ranges of radionuclide concentrations, and to estimate the volume of contaminated material presently on-site. An important secondary objective is to identify and evaluate any pathways by which contamination might have migrated from the site. Individual activities designed to cost-effectively accomplish these goals are delineated in a checklist presented in Appendix A. The following subsections provide more detail associated with the checklist. The planned level of effort from Thermo Analytical/Eberline (TMA/E), the BNI radiological support contractor, is documented in Appendix B.

2.2 PHASE I CHARACTERIZATION ACTIVITIES

2.2.1 Building Surveys

The three buildings on the property were constructed for use by Futura Coatings. Three of the buildings that existed when the property was purchased have been incorporated into the three present complexes on-site. For this reason, samples and measurements will be taken from the exterior and interior surfaces of all buildings. These measurements will include direct and transferable contamination measurements. These surveys are designed to detect the presence of radioactively contaminated dust in the buildings. Airborne transport of dust into the buildings is one of the principal exposure pathways for occupants of the Futura Coatings complex.

2.2.2 Monitoring Locations

Four monitoring locations will be established in the various Futura Coatings buildings to monitor radiological conditions inside.

The three exposure pathways that may affect Futura Coatings personnel will be monitored by one thermoluminescent dosimeter (TLD) for monitoring the beta and gamma exposure rates, one Terradex cup for monitoring radon concentrations that may arise from radium-226 contamination, and one air particulate sampler for collecting airborne dust inside the buildings.

2.3 PHASE II CHARACTERIZATION ACTIVITIES

2.3.1 Site Grid System

A civil surveyor will establish a 50-ft grid over the entire Futura Coatings site by staking or nailing the intersections of a series of mutually perpendicular lines. The grid origin used during the 1984 remedial action along the Latty Avenue right-of-way will be reestablished (Figure 2-1). Each intersection will be marked with grid coordinates. The grid will be tied to the Missouri state grid system with sufficient detail to allow reestablishment of the grid at some future date. All property boundaries will be located and set. A drawing showing the property boundaries, fences, roads, gravel, asphalt, buildings, landmarks, grid intersections, and other improvements will be provided by the surveyor. This drawing will help identify surface obstructions and ground elevations, as well as problem areas that will significantly affect the cost of remedial action.

2.3.2 Surface Characterization

Surface characterization will precede subsurface investigations so that an understanding of contamination patterns is gained before biased borehole locations are selected. This will ensure that the depth of all surface contamination is known.

Surface characterization will consist of the activities listed below.

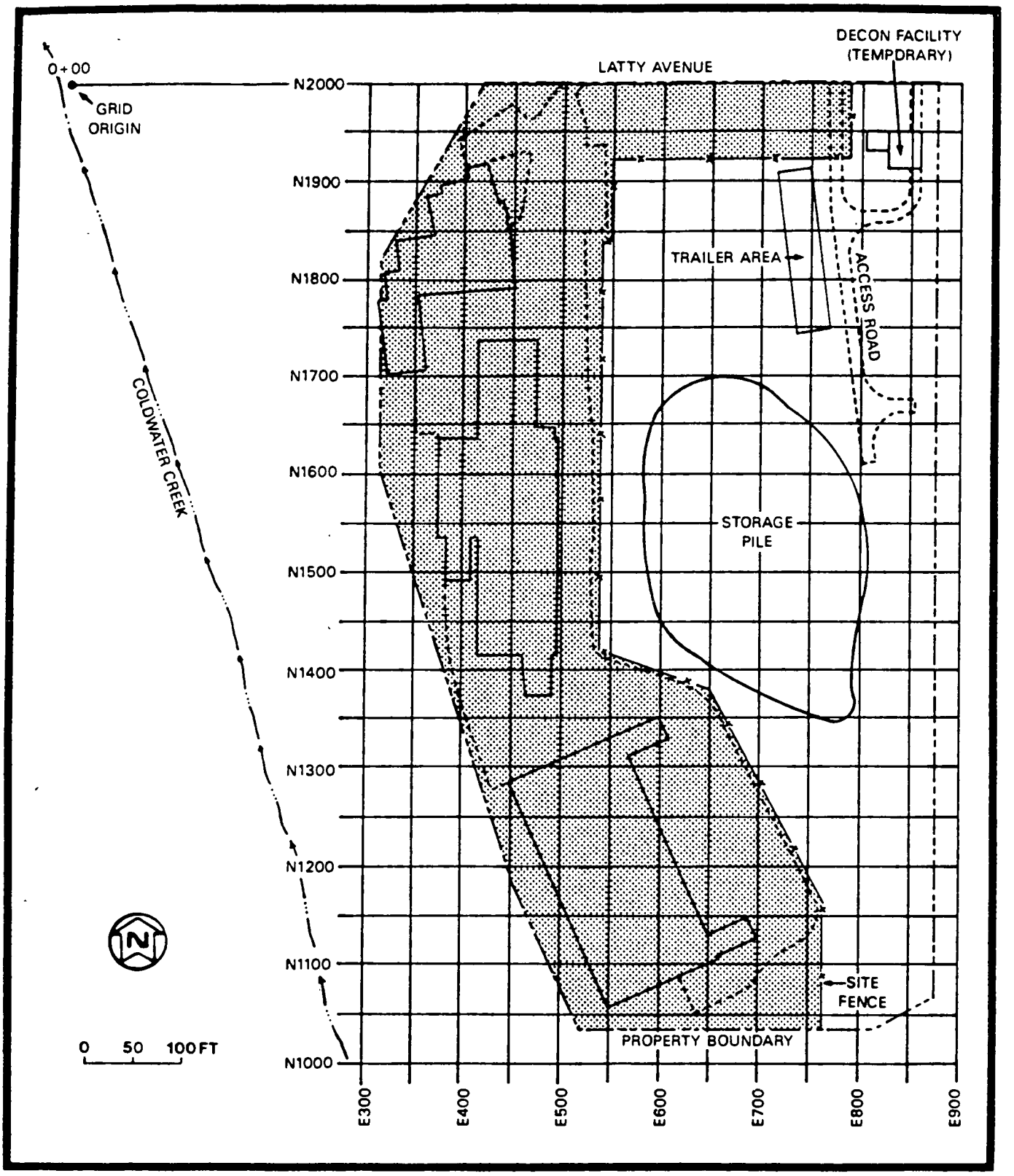

FIGURE 2-1 GRID FOR THE FUTURA COATINGS SITE

- Walkover surveys will be performed that consist of gamma radiation scans of individual 50-ft by 50-ft grid blocks. Areas in which readings exceed twice normal background levels will be marked on a site drawing. The walkover survey covers essentially 100 percent of the ground surface and ensures that hotspots between grid points are detected.

- Cone-shielded gamma scintillometer measurements will be made at no greater than 12.5-ft intervals in areas of contamination identified during the walkover survey. These measurements minimize discrepancies in the size of a given area that might have been created by lateral gamma flux (shine) from other contaminated areas nearby. Data obtained from this survey will permit refinement of the boundaries of contaminated areas established on the basis of the walkover scans.

- Soil samples (0 to 6 in.) will be collected from selected locations on both systematic and biased spacing. Locations will be selected after review of the gamma scanning data. Samples will be analyzed for uranium-238, thorium-230, and radium-226. The samples will be selected to determine radionuclide concentrations in areas where the surface scan data are ambiguous. Since thorium-230 analyses are costly, the number of these samples will be minimized.

- Sediment samples will be collected from all drainage pathways, including ditches, swales, berms, culverts, and creeks. These samples will be analyzed for uranium-238, thorium-230, and radium-226. The analyses will help quantify radionuclide concentrations in pathways leaving the site.

2.3.3 Subsurface Investigation

Systematic subsurface investigation will be conducted by drilling boreholes at approximately 50 selected grid intersections. Systematic subsurface investigation is necessary to 1) define vertical excavation limits, 2) estimate the volume of waste, and 3) provide assurance to the Independent Verification Contractor that major subsurface deposits have been identified. Biased locations will also be chosen to gain information from areas of suspected contamination and to reduce some uncertainties in the waste volume estimates. At least one borehole will be drilled in each area where elevated concentrations of surface radioactive contamination are found so that the depth of the contamination can be determined. Boreholes will be advanced until the field geologist indicates that undisturbed soil has been reached.

Subsurface soil samples will be collected continuously by a split-spoon sampler driven in advance of the auger. Once drilled, each characterization hole will be temporarily lined with a closed-end, 4-in.-diameter PVC casing while it is gamma logged. Gamma logging will be conducted by lowering a gamma scintillometer into the borehole. This detector will be calibrated to allow correlation from counts per minute to picocuries per gram (pCi/g). Gamma radiation measurements will be made typically at 1-ft vertical intervals; however, the interval may be smaller near the boundaries of contamination to more accurately determine the boundary between clean and contaminated soil.

After each borehole is systematically logged, the depth of gamma-emitting radionuclide contamination in it will be compared with depths of contamination in other boreholes in the area. If a significant difference is noted, additional holes will be drilled at a closer spacing to better define the areas of contamination. These holes will be logged and sampled in the manner described above. Once sampled, all holes will be sealed using bentonite and/or cement/bentonite grout.

Although continuous samples will be taken from each borehole, the cost of analyzing all samples for thorium-230 (an alpha emitter undetectable in situ) is prohibitive (approximately $90/sample). Previous experience has shown that the concentration of thorium-230 typically exceeds the concentration of radium-226 by a factor of at least 5 (in similar residues from a uranium feed materials plant in St. Louis). Therefore, as long as radium-226 is detectable using the gamma scintillometer, it is reasonable to assume that the thorium-230 concentration exceeds the guideline of 15 pCi/g. Samples suspected of containing thorium-230 will first be subjected to high-resolution gamma spectrometry analysis for radium-226, thorium-232, and uranium-238. Based on these results, successively deeper samples will be selected for analysis until results indicate that the thorium-230 concentration is less than 15 pCi/g.

For boreholes where the gamma logs do not indicate any contamination, the surface soil sample will be analyzed. It is important to note that the budget for soil sample analysis for this characterization assumes an average of three samples per borehole.

2.3.4 Data Review

Meetings of the field characterization team will be held after each successive stage of the characterization to review and discuss the findings to date. At these meetings, problem areas and inconsistencies with current and historical data will be identified, and a strategy for continued investigation will be developed. The meetings will serve to structure the characterization sequentially so that information collected in each phase is built upon and clarified throughout the course of the survey.

Field data will be submitted to the BNI Oak Ridge office on a daily basis for interpretation by the BNI health physics staff. This will allow monitoring of progress and real-time resolution of problems. Changes in methodology can be implemented to refine the characterization and gain better information in a cost-effective manner.

2.4 DOCUMENTATION

All data collected during the survey will be transmitted daily to the BNI Oak Ridge office via the TMA/E Oak Ridge office in an approved format (graphically whenever possible). Before the start of field activities, the field team will be provided with blank grid drawings on which to plot field measurements. The field team will assign a scale to the grid blocks, which will permit later interpretation of the drawings.

These drawings will show:

- Surface walkover scan findings in the form of grid blocks showing radiation levels greater than twice background

- All cone-shield readings in counts per minute
- Locations of all surface soil and sediment samples, identified in such a way that the results of laboratory analyses for each location can be clearly associated with the corresponding point on the drawing
- Locations of all boreholes with identification numbers corresponding to gamma logs and soil samples
- Sketches of buildings, surface obstructions, irregularities, drainage pathways, culverts, fences, roads, landmarks (to rough scale)

2.5 REPORTING

A formal radiological characterization report will be prepared to present the data collected and an interpretation of the results. The main objectives of the report will be to present the current radiological conditions at the Futura Coatings site and to provide an estimate of the volume of waste on the site.

3.0 PERSONNEL HEALTH AND SAFETY

The health and safety of site personnel performing characterization activities will be protected through the implementation of the FUSRAP Occupational Health/Industrial Hygiene Plan (PI 26.0) (Ref. 3). This plan is based on prudent practices that are designed to minimize the hazards posed by substances that may be present on-site.

A brief description of the FUSRAP Occupational Health/Industrial Hygiene Plan follows.

- General Policy, Organization, and Responsibility: Delineates the responsibilities of key FUSRAP personnel for implementing the plan, including coordinator and management review of the overall health protection system.

- Medical Screening: Establishes scope of and criteria for pre-work, periodic, and follow-up medical assessment to ensure the evaluation of site personnel health status during performance of project work.

- Personnel Protective Apparel and Equipment: Discusses specific health protection systems, including personnel protective apparel and equipment requirements; environmental hygiene monitoring equipment; equipment/personnel decontamination procedures; radiological health protection systems; availability of first-aid, safety, and fire protection equipment on an emergency basis; and rationale for identification of certain on-site conditions as health hazards.

- Conduct of On-site Workers and Visitors: Itemizes general health and safety procedures as well as prohibited practices for performing work on-site.

- Field Personnel Health and Safety Training: Sets forth training objectives and proposed instructional outline to ensure comprehensive health and safety training of site personnel; reviews the personnel protection program in detail; and delineates emergency procedures, prohibited procedures, and general safety requirements for conducting site work.

- Special Conditions for Specific Operations: Details the potential health hazards present during drilling and excavation operations (i.e., gases, volatile organics, and hydrogen sulfide).

REFERENCES

1. No report available. Information obtained from NRC docket file.

2. Oak Ridge National Laboratory. Radiological Survey of the Property at 9200 Latty Avenue, Hazelwood, Missouri, (Draft), September 1977.

3. Bechtel National, Inc. Generic Occupational Health/Industrial Hygiene Plan for FUSRAP/SFMF Sites, FUSRAP Project Instruction 26.0, Oak Ridge, TN, January 1985.

APPENDIX A
RADIOLOGICAL CHARACTERIZATION CHECKLIST FOR THE FUTURA COATINGS SITE

APPENDIX A

RADIOLOGICAL CHARACTERIZATION CHECKLIST FOR THE FUTURA COATINGS SITE

Action	Completed	
	Initials	Date
1. Review of Historical Information		
a. previous radiation surveys	_____	_____
b. operations descriptions	_____	_____
c. photos	_____	_____
d. interviews		
1) operations personnel (hire as consultants?)	_____	_____
2) neighbors	_____	_____
3) others	_____	_____
e. Aero Space Research resources	_____	_____
f. NRC License Files	_____	_____
g. others		
2. Property Surveys		
a. obtain blank grid drawings	_____	_____
b. obtain old and new topographic maps	_____	_____
c. confirm that the property is staked at 50-ft intervals	_____	_____
3. Walkover Tour of Site (note on drawings)		
a. rubble	_____	_____
b. surface obstructions	_____	_____
c. buried utility lines	_____	_____
d. utility poles	_____	_____
e. culverts	_____	_____
f. stockpiles	_____	_____
g. grates, drains	_____	_____
h. others (wells, etc.)	_____	_____

4. Characterization Team Review of Preliminary Information

   a. compare old and new topographic maps for changes _____ _____

   b. develop sketches of properties from historical information _____ _____

5. Surface Gamma Surveys

   a. walkover with unshielded gamma scintillometer _____ _____

   b. cone-shielded gamma survey to define boundaries of contaminated areas _____ _____

6. Team Meeting to Review Gamma Scans

   a. map areas exceeding preselected limits with unshielded scan _____ _____

   b. map areas exceeding preselected limits with cone-shield results _____ _____

   c. check consistency of surface scans with historical information _____ _____

   d. plan locations for systematic and biased surface soil samples _____ _____

   e. plan sediment sampling locations

      1) culverts _____ _____

      2) drainage ways _____ _____

      3) inside storm sewers _____ _____

      4) outfalls _____ _____

      5) others _____ _____

   f. plan locations for systematic boreholes _____ _____

   g. plan locations for sampling around Item 3 problem areas _____ _____

7. Surface Soil Sampling (as planned in 6d) _____ _____

8. Sediment Sampling (as planned in 6e) _____ _____

9. Subsurface Investigations (as planned in 6f)

   a. drill systematic boreholes to depth of undisturbed soil _____ _____

b. obtain surface elevation of boreholes _____ _____

c. gamma log boreholes _____ _____

d. review gamma logs for uniformity of contamination layers _____ _____

e. plan biased borehole locations to resolve inconsistencies between systematic boreholes _____ _____

f. repeat steps a. through d. for biased boreholes _____ _____

10. Team Meeting to Review Sampling

a. were all planned samples collected? _____ _____

b. were sufficient samples collected to

1) establish background? _____ _____

2) calibrate cone shield? _____ _____

3) calibrate unshielded gamma walkover survey? _____ _____

4) calibrate borehole gamma logs? _____ _____

c. were problem areas from Item 3 characterized?

1) sides? _____ _____

2) bottoms? _____ _____

3) top? _____ _____

d. were boreholes drilled in each area of surface contamination? _____ _____

e. identify all areas that are unmeasurable _____ _____

f. graphically review data to ensure that all areas have been characterized _____ _____

11. Review of Data for Consistency with Historical Information _____ _____

12. Field Sample Collection Forms

a. do coordinates on samples match those on forms? _____ _____

b. are all samples on collection forms? _____ _____

c. were all logged samples shipped? _____ _____

d. was copy of field sample collection sent to TMA/E Oak Ridge office? _____ _____

e. was copy of collection form sent with samples to laboratory? _____ _____

13. Transmittal of all Field Notes, Data, and Drawings to TMA/E Oak Ridge Office _____ _____

14. BNI/EH&S Interpretation of Characterization Data

a. surface

1) develop surface contamination isopleths _____ _____

2) compare BNI and characterization team isopleths _____ _____

b. subsurface

1) correlate soil samples and borehole gamma logs to determine cpm/pCi/g _____ _____

2) develop contamination isopleths at various depths _____ _____

a) map all borehole logs that exceed criteria _____ _____

b) map all borehole logs with increasing trends regardless of magnitude _____ _____

15. Comparison of Contamination Limits and Historical Information for Consistency _____ _____

16. Transmittal of Data for Review to BNI Engineering Department with Copies to Construction and the Characterization Team _____ _____

APPENDIX B
STAFFING/BUDGET FOR
THERMO ANALYTICAL/EBERLINE
FOR THE CHARACTERIZATION OF THE
FUTURA COATINGS SITE

APPENDIX B
STAFFING/BUDGET FOR THERMO ANALYTICAL/EBERLINE FOR THE CHARACTERIZATION OF THE FUTURA COATINGS SITE

Funding authorized for TMA/E support of Phase I of the characterization is limited to $20,000. This level of support will accomplish procurement and establishment of the building monitoring locations as well as the performance of a limited survey of building surfaces.

Funding has not yet been appropriated for support of the Phase II characterization which will be performed in FY 1987. It is anticipated that funding of approximately $80,000 for TMA/E will be required to provide the level of support necessary to accomplish the characterization and to continue building monitoring.