

Oak Ridge Health Study Document Summary Form

#2709

DOCUMENT TITLE: ORNL Contaminated Areas Map	
DOCUMENT NUMBER OR IDENTIFIER: _____	
AUTHOR(S): W.D. Burch	
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CLASSIFICATION CATEGORY: UNK <u>UNC</u> OUC UCNI CL* *Category & Level: FRD or RD or NSI; CONF or S or TS	
SITE(S) DOCUMENT ADDRESSES: K <u>X</u> Y S ORR MELT CLIN WOC WOL POPL EFPC PCE BEAR WATT	
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DOCUMENT CATEGORY	
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Primary category - circle once; Secondary category (optional) - circle twice. Circle only one in a bracketed group.	
DATE ENTERED INTO DATABASE:	BY: _____ InMagic No. _____
KEYWORDS: waste release pit burial ground pond spill leak tank	
ABSTRACT: Memo prepared to accompany ORNL Dwg-71-7043 which identifies <del>contaminated</del> areas where contamination is known to exist as a result of past operations in such facilities as burial grounds, leaching pits, and waste ponds. In addition, it identifies areas where contamination may exist in the ground as the result of accidental spills or leakage. The map is not included, but the memo does contain a list of identifying 51 contaminated locations.	
REVIEWER: GM Bruce	DATE REVIEWED: 5/7/96

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### Classification Categories

UNK Classification Status Unknown  
UNC Unclassified  
OUO Official Use Only  
UCNI Unclassified Controlled Nuclear Information  
CL Classified

### Categories of Classified Information

RD Restricted Data  
NSI National Security Information  
FRD Formerly Restricted Data

### Levels of Classified Information

CONF Confidential  
S Secret  
TS Top Secret

### Areas of Interest

K K-25 (ORGDP) Site  
X X-10 Site / ORNL  
Y Y-12 Site  
S S-50 Site (Thermal Diffusion Plant)  
ORR The Oak Ridge Reservation  
MELT The Melton Hill Reservoir (Clinch from Solway bridge to Melton Hill Dam)  
CLIN The Clinch River from Melton Hill Dam to the confluence with the TN River  
WOC White Oak Creek  
WOL White Oak Lake (White Oak Creek above White Oak Dam)  
POPL Poplar Creek (Above the confluence with the East Fork)  
EFPC East Fork Poplar Creek  
PCE Poplar Creek Embayment (Poplar Cr. below the confluence of the East Fork)  
BEAR Bear Creek  
WATT Watts Bar Reservoir (the TN River from the confluence of the Clinch to Watts Bar Dam)

### Document Categories

AI Accident and Incident Information  
DL Demographic and Land Use Information  
    dr residential (e.g. census data)  
    dc crops (e.g. pasture, gardens, commercial crop production)  
    da animals (e.g. beef and dairy cattle, game fish)  
ED Environmental Monitoring and Research Data  
    ea airborne contaminants  
    ew waterborne contaminants  
    es soil or sediment contaminants  
    ef food product contaminants  
EP Exposure Pathway Information (e.g. parameter references or assessments by others)  
HO Historical Operations Information  
    hp production activities (including pilot plant operations)  
    hr research activities  
    hs support activities  
    hw waste disposal activities  
IN Records of ChemRisk Personnel Interviews  
IP Documents from Interested Parties  
ST Source Term Information (measurements or information to support estimation)  
    sa airborne releases  
    sw waterborne releases  
    ss releases to the soil  
TM Transport Modeling Data (e.g. parameter references or modeling by others)  
WP ChemRisk Work Products (plans, reports, calculations, notes, records of conversations)

*Com. 1122*  
*ORNL 7-9-71*

# INTRA-LABORATORY CORRESPONDENCE

OAK RIDGE NATIONAL LABORATORY

June 17, 1971

To: Distribution  
From: W. D. Burch  
Subject: ORNL CONTAMINATED AREAS MAP

In establishing the Committee on Waste Handling Practices, F. L. Culler asked that a compilation of all contaminated areas at ORNL be made. A map shown on attached ORNL Dwg-71-7043 has been prepared by Bob Hill to identify such contaminated areas. This map describes areas where contamination is known to exist as a result of past operations in such facilities as burial grounds, leeching pits, and waste ponds. In addition, it identifies areas where contamination may exist in the ground as the result of accidental spills or leakage of radioactive materials during process operations.

The contaminated ground areas identified on this map were located with as much accuracy as possible as the result of conversations with a number of people who are familiar with past operations and accidental spills which have occurred at ORNL since 1943. No attempt has been made to assess the inventory of contamination existing in each area. A brief resumé of the information known about each area is included in Attachment 1. To complete this study it is important to get some qualitative numbers on the degree of contamination.

Please review the attached map and let us have your comments concerning the accuracy and validity of the information shown on the map and the descriptive information included in Attachment 1. We request that you consider each location where you have some knowledge about the spill or leak. Please include with your comments any documented information, generally known facts, or even guesses about the area, which you may have concerning the cause of the leak or spill, the contamination which resulted from the leak or spill, and the inventory of radioactive materials expected to be present in the contaminated area. We would also appreciate any comments you may have concerning areas purposely contaminated, such as leeching pits and burial grounds.

This document has been approved for release to the public by:

*David C. Hamlin* 4/29/96  
Technical Information Officer Date  
ORNL Site

If there are omissions, please identify them and provide what information you have. Please return your comments by July 16, 1971, to R. M. Hill, Bldg. 1000, Room 108-C.

*W. D. Burch*

W. D. Burch

WDB:whb

attachments: (2)

Distribution:

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June 14, 1971

The Tabulation of Contaminated Ground Areas in ORNL, Bethel Valley, and Melton Valley Facilities - Item Numbers are Corrected with Key Numbers on ORNL Drawing 71-7043

1. Contaminated ground in Burial Ground No. 1. Closed prior to 1952 (JYG).
2. Contaminated ground in Burial Ground No. 2. Closed prior to 1952 (JYG).
3. Burial Ground No. 3 is contaminated throughout its ground area. Closed 1952 (JYG).
4. Burial Ground No. 4 contains contaminated ground within its boundaries. Opened 1953, closed 1960. (JYG).
5. Burial Ground No. 5 is now in use and contains contaminated ground in most all areas. Opened 1958 (JYG).
6. Burial Ground No. 6
7. through 13. These leaching pit areas have been contaminated in the past as a result of their use as chemical leaching pits for process waste sludge. Several of these pits leaked directly to the adjoining ground and contaminated the area around the pits.
14. Contaminated ground resulting from overflow of the Graphite reactor fuel storage canal. (RLC)
15. Contaminated ground resulting from line leaks at Bldg. 3019.
16. Ground contaminated in 1959 by Bldg. 3019 explosion was removed and buried after the explosion. There may be traces of contaminated ground remaining in this area. (JYG)
17. Contaminated ground resulting from explosion in Bldg. 3019. The prevailing wind at the time of the explosion carried contaminated particles east along the wall of Bldg. 3019 and north between 3001 and 3019. These particles were deposited in the vicinity of Bldg. 3091. (RLC)
18. Area around and base of Bldg. 3091 (Bldg. 3019 stack) is contaminated
19. Contaminated ground in the LITR Settling Basins (Bldg. 3075). These basins have been paved. When in use, contaminated reactor coolant water was dumped into these basins to permit decay of  $^{24}\text{Na}$ . After holdup, this water was discharged to the existing drainage channel in the creek west of Fifth Street. This stream bed is contaminated for an undetermined length along Fifth Street.
20. The ground in the North Tank Farm is likely to be contaminated as a result of leakage from lines broken during early years of ORNL operation.
21. The ground beneath Bldg. 3026 is likely to be contaminated as a result of leaks and spillages during early years of operation in this building.

- 22.
23. The south tank farm is likely to be contaminated but there are no documented reports of ground contamination existing in this area.
24. The area under Bldg. 3515 is contaminated as a result of past use as a radioactive chemical processing plant.
25. This is the approximate area where severe contamination may be found resulting from leaking ILW lines discharging water into a ventilation duct which in turn feeds a sump located at this point.
26. Ground beneath the former semi-works ports of Bldg. 3550 may be contaminated. This building was demolished and all material from the building was moved to the burial ground for disposal.
27. Storage Basin of 3505 is contaminated.
28. Tank pit contamination by leaks in tanks WC 15 and WC 17.
29. Ground contaminated by <sup>90</sup>Sr, north of Bldg. 4508. An unsuccessful attempt was made in 1970 to determine the source of this contamination. (GED Records)
30. The bed of the equalization basin, Bldg. 3524, which feeds the process waste treatment plant contains an undetermined amount of radioactivity.
31. The process waste treatment plant settling basin, Bldg. 3513, contains an undetermined inventory of radioactive sludge in its bed. (General Info.)
32. Process waste ponds, 3539 and 3540.
33. Ground contaminated by an ILW leak.
34. Abandoned 2" ILW line from Melton Valley to Tank W5. Contaminated ground resulting from leakage of this line is located at numbered circles.
35. A leak in the ILW line from Bldg. 7920 contaminated the ditch line along the high flux isotope reactor access road. The liquid from this leakage crossed under the road through the culverts and flowed along the natural drainage parallel to Melton branch circle in a southerly direction.
36. Bldg. 7556 is a settling basin formerly used during operation of Bldg. 7500. This basin has been filled and paved. (RLC)
37. The purge water from the hot storage pool in Bldg. 7500 was discharged to the ground and flowed along natural drainage east of Bldg. 7500. (RLC)
38. The bed of White Oak Creek is contaminated for an undetermined length between Melton Valley Drive and White Oak Lake.
39. The Shale fracturing area contains contaminated ground as a result of spills and leakage at the shale fracturing batch plant in 1970. (JYG).

40. Seepage from Shale fracture plant - 1968-1969 (JYG).
41. ILW waste transfer line break - 1964-1965 (JYG).
42. Leak or seepage from waste lagoon - 1958-1960 (JYG).
43. The bed of White Oak Lake is contaminated as a result of continuous discharge of radioactivity down White Oak Creek since the beginning of operation of ORNL.
44. Leak or seepage from waste lagoon - 1960-1962 (JYG).
45. Spill onto grass along side of Bld.g 3092 (dug up and replaced with clean dirt).
46. (Central Ave. South of Bldg. 3024 Shop) Break in transfer line from WC1 to W5.
47. Drain line break east of Evaporator Bldg. 2531.
48. Break in ILW transfer line NW BG #1 permitted leakage into White Oak Creek.
49. Inactive thorium storage tank Th4 southwest of Bldg. 3500.
50. Transfer line leak into sanitary sewer (1961).
51. Retention ponds for HFIR (7905 and 7906) and TRU Facility (7907 and 7908).
- 52.